

STATE OF GEORGIA

TIER 2 TMDL Implementation Plan (Revision # 01)

Segment Name: Williamson Swamp Cr (Wadley)

Date: Sept. 17, 2007

River Basin: Ogeechee River Basin

Local Watershed Governments:

Emanuel County, Jefferson County, City of Bartow, City of Wadley, Washington County, City of Davisboro, City of Riddleville, City of Tinnelle, City of Sandersville and Emanuel County

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.

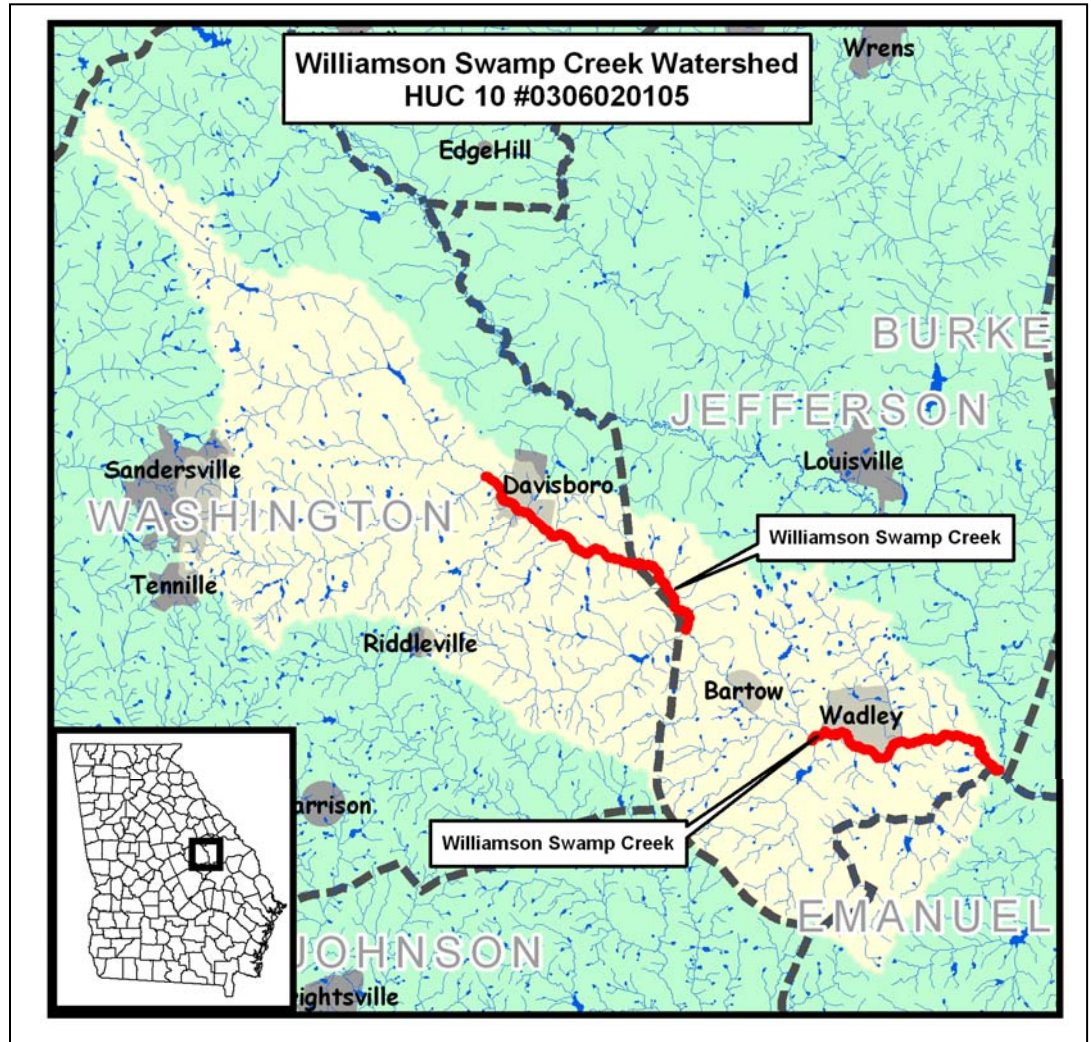


Table 1. IMPAIRED SEGMENTS IN THE HUC 10 WATERSHED

IMPAIRED SEGMENT	IMPAIRED SEGMENT LOCATION	EXTENT (mi/ac)	CRITERIA VIOLATED	EVALUATION
Williamson Swamp Creek	Mill Creek to Ogeechee River, Wadley	9 miles	Fecal Coliform	NS
*Williamson Swamp Creek	Mill Creek to Ogeechee River, Wadley	9 miles	Dissolved Oxygen	NS
Williamson Swamp Creek	Highway 24 to Limestone Creek, Davisboro	12 miles	Fecal Coliform	NS

* Plan to be done by EPD

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

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 **bold** and underlined.

The Ogeechee River Basin is located in mid to southeastern Georgia, encompassing approximately 5,540 square miles. The Ogeechee River Basin is bordered by the Oconee and Altamaha River Basins to the west and the Savannah River Basin to the east. The Ogeechee River originates in Greene County, in central Georgia. In the headwaters, the North and South Forks of the Ogeechee River join to form the Ogeechee River. The River then flows approximately 245 miles southeast toward the Atlantic Ocean. The Canoochee River originates in Emanuel County and flows southeast to join the Ogeechee River near Richmond Hill where it then flows to the Atlantic Ocean. The Ogeechee River Basin contains parts of Piedmont and Coastal Plain physiographic provinces, which extend throughout the southeastern United States.

The Ogeechee River basin is flanked by the Altamaha and Oconee River basins to the west and the Savannah River basin to the east. The headwaters are located in the southeastern edge of the Piedmont Province and the basin continues southeastward to the Atlantic Ocean. In the headwaters, the North and South Fork Ogeechee Rivers join to form the Ogeechee River which runs 245 miles in a southeasterly direction nearly the entire length of the basin. The Ogeechee River basin is located entirely in the State of Georgia and drains approximately 5,540 square miles.

The Ogeechee River basin is further into four subbasins, or Hydrologic Unit Codes (HUCs). Each subbasin, or HUC8, is divided further into HUC10s and HUC 12s. Williamson Swamp Creek is located in HUC10 #0306020105 as shown in yellow in the map on page 1. The HUC10 extends into parts of Emanuel County, Jefferson County, and Washington County, Georgia. The impaired stream segment of Williamson Swamp Creek extends from just east of the City of Wadley in Jefferson County to the county boundary.

The HUC10 covers 1,912,586 acres and includes portions of the cities of Bartow, Wadley, Davisboro, Riddleville and Tinnell. The data table below shows the current land use for the portions of Emmanuel, Jefferson, and Washington Counties that are within the HUC10. Most notably, the HUC10 is characterized by agriculture, forestry, and residential land uses.

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Current Land Use in HUC10 # 0306020105				
	Current Land Use	Area	Acres	Percentage
Jefferson County	Agriculture/Forestry	27,223,741,435	624,971	32.50%
	Commercial	42,882,119	984	
	Public/ Institutional	57,251,056	1,314	
	Residential	402,433,995	9,239	
	Total:	27,726,308,605	636,508	
Washington County	Agriculture/Forestry	47,842,328,214	1,098,309	57.00%
	Commercial	2,010,166	46	
	Industrial	399,653,860	9,175	
	Residential	252,854,505	5,805	
	Total:	48,496,846,745	1,113,334	
City of Bartow	Agriculture/Forestry	17,804,843	409	0.40%
	Commercial	2,643,468	61	
	Industrial	6,272,446	144	
	Public/ Institutional	9,296,035	213	
	Residential	111,431,153	2,558	
	Transportation/Communication/Utilities	27,161,567	624	
	Undeveloped/Unused	160,696,442	3,689	
	Total:	335,305,953	7,698	
City of Davisboro	Agriculture/Forestry	142,584,213	3,273	0.80%
	Commercial	102,606,620	2,356	
	Public/ Institutional	199,159,345	4,572	
	Residential	211,863,258	4,864	
	Total:	656,213,436	15,065	
City of Sandersville	Agriculture/Forestry	320,997,243	7,369	2.20%
	Commercial	229,967,263	5,279	
	Industrial	241,550,621	5,545	
	Public/ Institutional	14,532,705	334	
	Park/Recreational/Conservation	7,689,616	177	
	Residential	1,055,197,047	24,224	
	Transportation/Communication/Utilities	898,992	21	
	Total:	1,870,833,488	42,948	
City of Wadley	Agriculture/Forestry	301,791,793	6,928	1.60%

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	Commercial	3,337,228	77	
	Industrial	129,659,664	2,977	
	Public/ Institutional	36,288,852	833	
	E	10,872,225	250	
	Residential	394,044,249	9,046	
	Transportation/Communication/Utilities	105,918,136	2,432	
	Undeveloped/Unused	372,372,303	8,548	
	Total:	1,354,284,451	31,090	
Unknown (Area outside CSRA RDC Jurisdiction)	Total:	4,743,298,696	108,891	5.60%
Total Land Use for HUC 10 #0306020105:		83,312,257,886	1,912,586	100%
Source: CSRA Regional Development Center, 1994 and 2005				

The land directly surrounding the stream segment, or the HUC12, is characterized in the table below. The HUC12 covers 165,624 acres and its land is made up by more than 88% forest, row crops and woody wetlands.

HUC12 Land Use for Williamson Swamp Creek		
	Acres	Percentage
Open Water	802	.5%
Residential	1,402	.8%
High Intensity Commercial, Industrial, Transportation	514	.3%
Bare Rock, Sand Clay	95	.1%
Quarries, Strip Mines, Gravel Pits	101	.1%
Transitional	8,633	5.2%
Forest	62,962	38%
Row Crops	58,951	35.6%
Pasture, Hay	7,078	4.3%
Other Grasses (Urban, recreational; e.g. parks, lawns)	160	.1%
Woody Wetlands	24,913	15%
Emergent Herbaceous Wetlands	13	0%
Total	165,624	100%
Source: TMDL for Fecal Coliform in Ogeechee River Basin		

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The current TMDL of the stream segment indicates possible sources of fecal coliform contamination in Williamson Swamp Creek are nonpoint sources. Nonpoint sources are diffuse, and generally, but not always, involve accumulation of fecal coliform bacteria on land surfaces that wash off as a result of storm events. Possible non-point sources of contamination include, but are not limited to, wildlife, agriculture, and urban development.

The importance of wildlife as a source of fecal coliform bacteria in streams varies considerably, depending on the animal species present in the subwatersheds. Based on information provided by the Wildlife Resources Division (WRD) of GA DNR, the animals that spend a large portion of their time in or around aquatic habitats are the most important wildlife sources of fecal coliform. Waterfowl, most notably ducks and geese, are considered to potentially be the greatest contributors of fecal coliform. This is because they are typically found on the water surface, often in large numbers, and deposit their feces directly into the water. Other potentially important animals regularly found around aquatic environments include raccoons, beavers, muskrats, and to a lesser extent, river otters and minks. Population estimates of these animal species in Georgia are currently not available.

Deer Population per Mile²	
County	2001-2005 Optimum population (number/mi²)
Emanuel	35
Jefferson	35
Washington	35
Source: TMDL Ogeechee Creek	

White-tailed deer have a significant presence throughout the Ogeechee River Basin. The 2001 deer census for Emanuel, Jefferson, and Washington Counties are presented in the table.

Beyond non-point source, it is important to mention other significant activities relevant to water quality planning and management present in the HUC10. Within the HUC10, some activities that may influence the contamination of Williamson Swamp Creek are Water Pollution Control Facilities (WPCFs), National Pollution Discharge Elimination System (NPDES), and Confined livestock and Confined Animal Feeding Operations (CAFOS).

In general, industrial and municipal wastewater treatment facilities have NPDES permits with effluent limits. These permit limits are either based on federal and state effluent guidelines (technology-based limits) or on water quality standards (water quality-based limits).

Municipal and industrial wastewater treatment facilities' discharges may contribute fecal coliform to receiving waters. There are sixteen NPDES permitted discharges with flows greater than 0.1MGD identified in the Ogeechee River Basin that discharge treated municipal wastewater. The Table below provides the monthly average discharge flows and fecal coliform concentrations for the Wadley Pond treatment facility, obtained from 2002 Discharge Monitoring Report (DMR) data.

Facility Name	NPDES Permit No.	Receiving Stream	Actual 2002 Discharge		NPDES Permit Limits		Number of Violations July 1998-June 2002
			Average Monthly Flow (MGD) ¹	Geometric Mean (No./ 100 mL) ²	Average Monthly Flow (MGD)	Average Monthly FC (No./ 100mL)	
Wadley Pond	GA0021024	Williamson Swamp Creek	0.19	Not measured	0.215	No FC permit limit	0

Another possible source of fecal coliform contamination is from Confined livestock and confined animal feeding operations (CAFOs). CAFOs are characterized by high animal densities which results in large quantities of fecal material being contained in a limited area. Processed agricultural

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manure from confined hog, dairy cattle, and select poultry operations is generally collected in lagoons. It is then applied to pastureland and cropland as a fertilizer during the growing season, at rates that often vary monthly.

In 1990, the State of Georgia began registering CAFOs. Many of the CAFOs were issued land application or NPDES permits for treatment of wastewaters generated from their operations. The type of permit issued depends on the operation size (i.e., number of animal units). According to the Georgia Department of Agriculture, the Giesbrecht Farm Dairy is the only CAFO located in the in the HUC 10 that is registered or has land application permits.

Name	City	County	Animal Type	Total No. of Animals	Permit No.
Giesbrecht Farm	Davisboro	Washington	Dairy		GAU700000

Fecal coliform bacteria contributions from deer to water bodies are generally considered less significant than that of waterfowl, raccoons, and beavers. This is because a greater portion of their time is spent in terrestrial habitats. This also holds true for other terrestrial mammals such as squirrels and rabbits, and terrestrial birds (GA WRD, 2002). However, feces deposited on the land surface can result in the introduction of fecal coliform to streams during runoff events. It should be noted that between storm events, considerable decomposition of the fecal matter might occur, resulting in a decrease in the associated fecal coliform numbers. This is especially true in the warm, humid environments typical of the southeast.

Agricultural livestock are a potential source of fecal coliform to streams in the Ogeechee River Basin. The animals grazing on pastureland deposit their feces onto land surfaces, where it can be transported during storm events to nearby streams. Animal access to pastureland varies monthly, resulting in varying fecal coliform loading rates throughout the year. Beef cattle spend all of their time in pastures, while dairy cattle and hogs are periodically confined. In addition, agricultural livestock will often have direct access to streams that pass through their pastures, and can thus impact water quality in a more direct manner (USDA, 2002).

The table below provides the estimated number of beef cattle, dairy cattle, goats, horse, swine, sheep, and chickens by category reported by county. These data were provided in the TMDL and are based on 2003 data from Natural Resources Conservation Service (NRCS).

County	Livestock								
	Beef Cattle	Dairy Cattle	Goats	Horses	Hogs	Sheep	Chickens-Layers	Chickens-Broilers Sold	Chickens-Breeders
Emanuel County	12,400	-	2,000	480	600	-	-	-	-
Jefferson County	11,800	1,200	2,500	80	500	10	-	-	-
Washington County	7,000	600	3,500	650	50	-	-	-	-
Source: Natural Resources Conservation Service, 2003									

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
Williamson Swamp Creek	Mill Creek to Ogeechee River, Wadley	Fecal Coliform	2.82E+10	Must meet WQS	3.41E+12	3.82E+12

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 source loads estimated in the TMDL.

Table 3. SOURCES OF IMPAIRMENT INDICATED IN THE TMDLs

CRITERIA VIOLATED :FC	WQ STANDARD	SOURCES OF IMPAIRMENT	NEEDED % REDUCTION (FROM THE TMDL)
Fecal Coliform	1,000 per 100 ml (geometric mean Nov-April)	Non-point Source	92%
	200 per 100ml (geometric mean May-Oct)	Municipal Sewer Treatment Plant	

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.

Identification and ranking of potential sources or causes of impairment were performed through a visual survey of the watershed and involvement of the stakeholder group. The visual survey was conducted on March 2, 2007 and covered Williamson Swamp Creek HUC12.¹ Images of the existing stream channel and land use conditions were recorded and specific locations of potential sources of pollution were mapped using GPS technology.

Visual survey confirms tabular land use data of the Williamson Swamp Creek watershed. Current land use data for the HUC 12 indicates that most of the land is forestry or agriculture. In contrast, a visual survey of the area indicates portions of land that are not accounted for in the current land use data. For example, the city of Wadley has new transitional (picture 3 and 4), residential and commercial property in close proximity to the contaminated stream segment.

¹ All observations were based on the current conditions observed by CSRA Regional Development Center Staff at the time of the visual field survey.

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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: Fecal Coliform .

POTENTIAL SOURCES	ESTIMATED EXTENT OF CONTRIBUTION		ESTIMATED PORTION OF CONTRIBUTION		IMPACT RATING (A X B)
	Comments	Rating (A)	Comments	Rating (B)	
Agriculture	Medium	3	Unable to estimate portions	UNK	UNK
Forestry	Medium	3	Unable to estimate portions	UNK	UNK
Municipal Sewer	Medium	3	Unable to estimate portions	UNK	UNK

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, and recommendations.

A total of two stakeholder group meetings were held for the development of the Williamson Swamp Creek TMDL Implementation Plan. The first meeting was held on January 18, 2007 and four stakeholders were in attendance. The second stakeholder meeting was held on May 29, 2007 and there were two attendees. During the first stakeholder meeting, general background information on the TMDL process was provided and an open discussion of potential sources of pollution was held.

During the second stakeholder meeting, a watershed characterization was conducted using the images collected during the field survey and locations of potential sources of pollution according to the stakeholders. Ranking impairment sources was found to be difficult without additional monitoring data, but with the limited resources available the stakeholders ranked the impairments in the following order: non-point sources and a municipal sewer treatment facility. Without ongoing monitoring data, the stakeholders were not able to readily identify estimated percentages of pollution from each source.

Stakeholders were given an additional opportunity to comment on the TMDL Implementation planning process when they were asked to view the draft Implementation plan via the RDC website. Stakeholders were given a two week period to make comments and suggest changes to the Implementation plans before final drafts were submitted to EPD.

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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

First Name	Company/Org	Mailing Address	City	State	Zip	Phone	E-Mail
Tammy W. Cheely	UGA Cooperative Extension Office	PO Box 186	Warrenton	GA	30828	706-465-2136	tcheely@uga.edu
Samuel Duggan	Hancock County Board of Commissioners	Courthouse Square	Sparta	GA	31087	706-444-5746	
Michale P. Eskew	City of Washington	P.O. Box 9	Washington	GA	30673	706-678-3277	mpeskew@washingtonwilkes.org
Al Prazier	EPD (East Central District)	1885-A Tobacco Road	Augusta	GA	30906	706-792-7744	
Gregory C. Glover		312877 Broad Street, Suite 205	Sparta	GA	31087	706-444-6596 ext. 11	gregglov@uga.edu
Judy Gordon	Sierra Club (Savannah River Group)	P.O. Box 3434	Augusta	GA	30914	706-650-8314	jgordon77@comcast.net
John Graham	Warren County Board of Commission	521 Main Street	Warrenton	GA	30828	706-465-2171	warrencoboc@classicsouth.net
Jimmie Harris	CSRA RC&D	3456-D Peach Orchard Rd.	Augusta	GA			Jimmie.harris@ga.usda.gov
Jimmy Holten	Hancock Building and Zoning	64-C Courthouse Square	Sparta	GA	31087	(706)-444-6181	hancockcountybuildingzoning@yahoo.com
Jennifer Jackson	Wilkes County Health Department	204 Gordon St.	Washington	GA	30673	706-678-2622	
James Kennedy	Georgia Forestry Commission, Hancock Co., Dist. 5	4157 Hwy 22	Sparta	GA	31087	706-444-1244	gfc05070@gfc.state.ga.us
Hazel Langrall	CSRA Land Trust	P.O. Box 148	Augusta	GA	30903	706-312-5263	hazel@csrlt.org
Don McCarty	EPD (NE District Office)	745 Gaines School Rd.	Athens	GA	30605	706-369-6376	
Sam Moore	Wilkes Co Board of Commission	23 Court Street, Room 222	Washington	GA	30673	706-678-2511	
Reggie Morgan	Georgia Forestry Commission, District 3	2755 Mennonite Church Rd.	Stapleton	GA	30823	478-625-3319	jeffersonunit@gfc.state.ga.us; rmorgan@gfc.state.ga.us
Keith Murphy	Georgia Forestry Commission, District 3	758 Warrenton Road, SE	Crawfordville	GA	30631	706-456-2383	taliaferrounit@gfc.state.ga.us
Scotty Palmer	Greensboro Service Center	1600 S Main Street	Greensboro	GA	30642	706-453-7021	
Rory Richardson	NRCS Service Center Office		Washington	GA	30673	706-678-2630	
Joe Riley	CSRA Resource	3456 D Peach Orchard Rd	Augusta	GA	30906	706-798-7967	

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	Conservation & Development						
Hal Sharpe	Georgia Forestry Commission, District 3	2088 Warrenton Hwy.	Thomson	GA	30824	706-595-4661	mcduffieunit@gfc.state.ga.us
Marcie A. Simpson	UGA Cooperative Extension Office	23 Court Street, Courthouse, Room 109	Washington	GA	30673	706-678-2332	simpson@uga.edu
Mamie D. Smith	Hancock County Board of Commissioners	Courthouse Square	Sparta	GA	31087	706-444-5746	
William P. Smith	Wilkes County Extension Service Courthouse	23 E. Court St.	Washington	GA	30673	706-678-2332	wpsmith@uga.edu
David L. Tyler	Wilkes County Board of Commission	23 Court Street, Room 222	Washington	GA	30673	706-678-2511	wcboc@washingtonwilkes.org
David H. VanHart	City of Washington	P.O. Box 9	Washington	GA	30673	706-678-3277	
Charles W. Ware	Taliaferro County Board of Commissioners	P.O. Box 114	Crawfordville	GA	30631	706-456-2494	taliaferro@nu-z.net
Harold West	Georgia Forestry Commission	119 Hwy 49	Milledgeville				
Clois Witt	Taliaferro County Health Department	P.O. Box 184	Crawfordville	GA	30631	706-456-2316	

Major stakeholders in attendance of the stakeholder meetings are listed in Appendix A.

VI. MANAGEMENT MEASURES AND ACTIVITIES

Table 6A identifies significant BMPs that either have been or may be implemented 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: Fecal Coliform

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 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.		R	Ongoing	UNK	>75% when properly applied with to forestry road construction and maintenance
Georgia Water Quality Control Act (OCGA 12-5-20)	GA DNR EPD	Makes it unlawful to discharge excessive pollutants (sediments, nutrients, pesticides, animal waste, 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		A	Ongoing	UNK	

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<p>Georgia's Best Management Practices</p>	<p>Georgia Forestry Commission (matters involving enforcement are generally referred to GA EPD)</p>	<p>destruction of stream habitats. GFC program to inform landowners, foresters, timber buyers, loggers site preparation and reforestation contractors and others involved with silvicultural operations about commonsense, economical effective practices to minimize nonpoint source and thermal pollution. GFC encourages and monitors compliance and conducts a complaint resolution program.</p>		<p>A</p>	<p>Ongoing</p>	<p>UNK</p>	<p>>75% when properly applied to site preparation and harvesting activities.</p>
<p>Georgia Forestry Commission Monthly BMP Assurance Examination</p>	<p>Georgia Forestry Commission (matters involving enforcement are generally referred to GA EPD)</p>	<p>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.</p>	<p>Federal and State</p>	<p>A</p>	<p>Ongoing</p>	<p>UNK</p>	
<p>Memo to the Field: Application of BMPs to mechanical silvicultural site preparation activities for the establishment of pine plantations in the Southeast (Silviculture)</p>	<p>EPA/ US Army Corps of Engineers - (cases normally referred to GFC to make initial determination)</p>	<p>Identifies certain bottomland hardwood wetlands that should be subject to permitting if converting to pine plantations.</p>	<p>State</p>	<p>A</p>	<p>Ongoing</p>	<p>UNK</p>	
<p>Federal Farm Bill (Swampbuster, Ag)</p>	<p>US Department of Agriculture Natural Resource Conservation Service</p>	<p>Prohibits landowners participating in federal price support programs from converting forested wetlands to agriculture</p>	<p>Federal</p>	<p>A</p>	<p>Ongoing</p>	<p>UNK</p>	
<p>Partners for Fish and Wildlife</p>	<p>US Fish and Wildlife Services</p>	<p>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.</p>	<p>Federal variable cost share</p>	<p>P</p>	<p>Ongoing</p>	<p>UNK</p>	

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Farm Bill 2002	United States Department of Agriculture / National Resources Conservation Services	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	UNK	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 50% cost share with possible additional incentive payments	P	Ongoing	UNK	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	Ongoing	UNK	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	P	Ongoing	UNK	Varies with BMP applied.
Wetlands Reserve Program (WRP)	Natural Resources Conservation Services	Provides technical and financial assistance to landowners to enhance degraded wetlands degraded by farming or draining. There are three options with WRP to receive funds that have differing time agreements and easements resulting in different cost share. In all programs participants control access to the land, may lease or use land for hunting, fishing, and other passive recreational activities. Compatible uses are allowed as long as they do not degrade the wetland.	Federal Cost Share 1. Permanent Easement :Pays appraised value of land (\$2,000/ acre cap) and 100% of costs of restoration. 2. 30-Year Easement : Pays 75% of appraised value of land and 75% of restoration costs. 3. Restoration Cost Share Agreement: Pays 75% of restoration costs, no easement on the property.	P	Ongoing	UNK	Effectiveness will vary with the specific application and must be individually determined.
Conservation Security Program (CSP)	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 watersheds with greatest potential for improving water quality, soil quality and grazing land condition. In 2005, the	Federal Cost Share There are three tiers of involvement, which result in differing expectations and cost share opportunities.	A	Ongoing	UNK	Effectiveness will vary with the specific application and must be individually determined.

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		four watersheds of focus will be the Ichawaynochaway, Kinchagoonee-Muckalee, Middle Flint, and Upper Ochlockonee. An enhancement example is to install a riparian buffer.					
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.	P	Ongoing	UNK	Varies with BMP applied.
GA Growth Planning Act (OCGA 12-2-8)	GA DNR, Department of Community Affairs, and local units of government.	Authorized GA DNR to develop minimum planning standards and procedures that local jurisdictions could adopt and enforce pertaining to the protection of river corridors, mountaintops, water supply, watersheds/reservoirs, groundwater recharge areas, and wetlands. Silvicultural activities may be exempted from permitting requirements provided the activity complies with BMPs.	State	A	Ongoing	UNK	
Federal Farm Bill (Swampbuster Ag)	United States Department of Agriculture / Natural Resources Conservation Services	Prohibits landowners participating in federal price support programs from converting forested wetlands to agriculture.	Federal	A	Ongoing	UNK	
Water Bank Act	United States Department of Agriculture / Natural Resources Conservation Services	To preserve, restore and improve wetlands of the Nation and thereby to conserve surface waters to preserve and improve habitat for migratory waterfowl and other wildlife resources to retire lands not in agricultural production to enhance the natural beauty of the landscape and to promote comprehensive and total water management planning. 10-year contracts with landowners to preserve wetlands and retire adjoining agricultural lands.	Federal Annual payments may be made to participating owners, and the costs of conservation measures may be shared. Total annual payments to owners were limited to \$10 million in any year.	A	Ongoing	UNK	Effectiveness will vary with the specific application and must be individually determined.
Georgia Water Quality Control Act (OCGA 12-5-20)	Georgia Department of Natural Resources Environmental Protection Division	Makes it unlawful to discharge 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	State	A	Ongoing	UNK	

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Georgia Best Management Practices	Georgia Department of Agriculture / Georgia Environmental Protection Division for enforcement action.	destruction of stream habitats. Informs those involved in the agricultural business of effective practices to minimize nonpoint source pollution.	State	A	Ongoing	UNK	Varies with BMP applied.
Georgia Rules and Regulations for Water Quality Control Chapter 391-3-6-.20 & .21	Georgia Department of Agriculture / Georgia Environmental Protection Division for enforcement action.	Outlines the Swine and non-swine Feeding Operation Permit Requirements for Concentrated Animal Feeding Operations (CAFOs) with more than 300 animal units. CAFOs of more than 300 but equal to or less than 1000 animal units receive a land application system (LAS) permit. Larger CAFOs with more than 1000 but less than 3000 must obtain an NPDES permit from EPD.		A	Ongoing	UNK	Assume no discharge and >75% removal.
National Pollutant Discharge Elimination System (NPDES) Permit Regulations for CAFOS (40 CFR Part 122 & 412)	Environmental Protection Agency and Georgia Environmental Protection Division	Permitting program created under the Clean Water Act to protect and improve water quality by regulating Concentrated Animal Feeding Operations (CAFOs) and providing minimum permit requirements for CAFOs of more than 1000 animal units.	Federal and State	A	Ongoing	UNK	Assume no discharge and >75% removal.
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	UNK	Effectiveness will vary with the specific application and must be individually determined.
Farm Bill 2002	United States Department of Agriculture / Natural Resources Conservation Services	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	UNK	Varies with BMP applied.
Conservation of Private Grazing Land Program	United States Department of Agriculture / Natural Resources Conservation Services	This technical assistance will offer opportunities for: better grazing land management; projects for improving water quality include: protecting soil from erosive wind and water; conserving water; providing habitat for wildlife; sustaining forage and grazing plants.	Federal (Farm Bill 2002) This is not a Cost-Share Program.	P	Ongoing	UNK	Varies with BMP applied.
Conservation	Natural Resources	This is the first program that	Federal (Farm Bill	A	Ongoing	UNK	Varies with BMP applied.

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Security Program (CSP)	Conservation Services	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 watersheds with greatest potential for improving water quality, soil quality and grazing land condition, In 2005, the four watersheds of focus will be the Ichawaynochaway, Kinchagoonee-Muckalee, Middle Flint, and Upper Ochlockonee. An enhancement example is to install a riparian buffer,	2002) Cost Share. There are three tiers of involvement, which result in different expectations and cost share opportunities.				
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	P	Ongoing	UNK	Varies with BMP applied.
Wetlands Reserve Program (WRP)	Natural Resources Conservation Services	Provides technical and financial assistance to landowners to enhance degraded wetlands degraded by farming or draining. There are three options with WRP to receive funds that have differing time agreements and easements resulting in different cost share. In all programs participants control access to the land, may lease or use land for hunting, fishing, and other passive recreational activities. Compatible uses are allowed as long as the do not degrade the wetland.	Federal (Farm Bill 2002) Cost Share 1. Permanent Easement :Pays appraised value of land (\$2,000/ acre cap) and 100% of costs of restoration. 2. 30-Year Easement: Pays 75% of appraised value of land and 75% of restoration costs. 3. Restoration Cost Share Agreement: Pays 75% of restoration costs, no easement on the property.	P	Ongoing	UNK	Effectiveness will vary with the specific application and must be individually determined.
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 if 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.	P	Ongoing	UNK	Effectiveness will vary with the specific application and must be individually determined.
Section 319(h) Non-point Source	Georgia Environmental Protection Division	Funds distributed through a competitive process to public	Federal and State Cost Share Program.	A	Ongoing	UNK	Effectiveness will vary with the specific application and

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Implementation Grant		agencies, regional development centers, State colleges and universities, and State agencies. Eligible projects include TMDL or Watershed Management Plan Implementation, BMP Demonstrations, and Information and Education.	Recipient must provide 40% match.				must be individually determined.
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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 3). 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: Fecal Coliform

SIGNIFICANT POTENTIAL SOURCES (1) (From Table 3)	IMPACT RATING (2) (From Table 3)	APPLICABLE BMPs (3) (From Table 6A)	EVALUATION SUMMARY (4)	ADDITIONAL INFORMATION / MEASURES NEEDED (5)
Non-point Sources	UNK	Georgia's Best Management Practices		Additional monitoring.
		Section 319(h) Non-point Source Implementation Grant		
		Environmental Quality Incentives Program (EQIP)		Education for hunters, citizens, and other interested parties.
Municipal Sewage Treatment Plant	UNK	Georgia Water Quality Control Act (OCGA 12-5-20)		Additional monitoring.
		GA Growth Planning Act (OCGA 12-2-8) <i>Georgia Water Quality Control Act (OCGA 12-5-20)</i>		

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: Fecal Coliform

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)
Outreach and Education	State, RDC, local, NRCS, County Extension Service	Develop program to educate hunters and property owners to discourage the placement (illegal dumping) of animal (both wild game and domestic) carcasses in or near bodies of water, specifically streams on the 305(b)/303(d) list.	State, Federal, local NR	NR	Ongoing	UNK	UNK

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 [].

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	
Fecal Coliform	EPD, USGS	Current	Every 5 years		Ongoing monitoring of impaired stream segment in order to update state 305(b) and 303(d) lists of impaired waters.

VIII. PLANNED OUTREACH FOR IMPLEMENTATION

Table 8 lists and describes outreach activities that will be conducted to support this implementation plan, or help to improve water quality in the segment watershed. Identify either the projected start date or completion date. 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	START OR COMPLETION DATE
CSRA Regional Development Center	The CSRA RDC will make the TMDL Implementation plan available to interested stakeholders and will meet with and discuss the plan with interested parties. The RDC will also inform all governing bodies affected by or potentially affected by the plan.	Any interested stakeholder or governing body in the 13 county CSRA region.	Ongoing

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

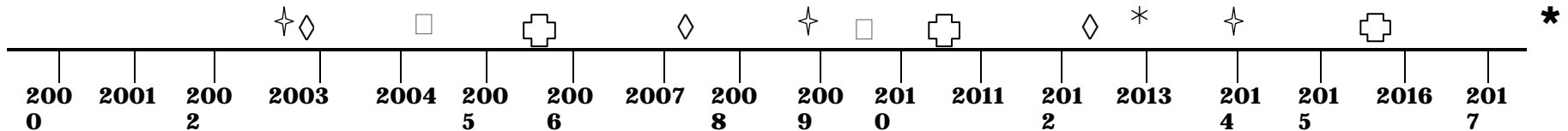
Table 9 tracks and reports progress of significant management measures identified in Tables 6A, 6B, and other sections of this plan, including outreach, additional monitoring and assessments, and enhancement or installation of BMPs. Significant activities and the target dates of accomplishment are listed under STATUS, 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 PROPOSED INSTALLED	COMMENT
Federal Clean Water Act Section 404	EPD	Ongoing	
Georgia Water Quality Control Act (OCGA 12-5-20)	GA DNR EPD	Ongoing	
Georgia's Best Management Practices	Georgia Forestry Commission , GA EPD	Ongoing	

PROJECTED ATTAINMENT DATE

The projected date to attain and maintain water quality standards in this watershed is 10 years from receipt 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:	Amanda Prior		
Agency:	CSRA Regional Development Center		
Address:	3023 Riverwatch Parkway		
City:	Augusta	ST:	GA ZIP: 30907
E-mail:	aprior@csrardc.org		
Date Submitted to EPD:	August 1, 2007	Revision:	01

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APPENDIX A.
STAKEHOLDERS

All stakeholders with a major interest in this watershed, including local governments, agricultural or commercial forestry organizations, significant landholders, businesses and industries, and local organizations, including environmental groups and individuals, are listed in Table 5. Attendees of the stakeholder meeting on January 16, 2007 and June 5, 2007 are listed in the table below.

Jan. 9, 2007	June 7, 2007
Jim Crawford, UGA Cooperative Extension Office	Jimmies Harris, CSRA RC&D
Larry Rollins, Georgia Forestry Commission	Reggie Morgan, Georgia Forestry Commission
Harold West, Georgia Forestry Commission	
Jimmie Harris, CSRA RC&D	

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. Georgia EPD has developed guidelines for revising existing TMDL implementation plans.

N/A – This is a new TMDL implementation plan.

APPENDIX C.

FIELD SURVEYS, NOTES, PHOTOGRAPHS, AND MAPS.



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