

Ochwalkee Creek TMDL Implementation Plan Narrative Wheeler County, Georgia

Introduction

Ochwalkee Creek has been listed as an impaired water body on the State of Georgia's 303(d) list of impaired waters. Because of the recent drought, Ochwalkee Creek has become an intermittent stream. The lack of consistent water flow and the resultant high water temperatures of remaining pools of stagnant water has quite likely contributed to a potential water quality problem resulting from the presence of pH (Hydrogen Ion Concentration). As for pH, there is definitely a concern expressed by the local citizenry to improve the levels of pH to meet the state of Georgia's criterion. Locals noted a number of concerns that could possibly contribute to the pH problem of the Ochwalkee Creek watershed in some form. Committee members noted a trailer park that is located approximately 150 yards from the U.S. 280 monitoring station. Locals also noted the large beaver population that exists in the creek. A sand pit facility was mentioned in the committee meeting because of its location along the creek between GA 19 and U.S. Highway 280. Locals pointed out that there has been a change in the overall landscape of the Ochwalkee Creek watershed over the last 15 years. They also noted that approximately 25 percent of land that was once cropland has now turned into timberland, thus reducing the amount of agricultural limestone being put back into the soil. Locals suggested that littering is a problem in the Ochwalkee Creek watershed as well. They cited a couple of locations where residents have dumped items such as tires, refrigerators, and other items into the creek. Long time residents noted the recent absence of red fin and jack fish, which have been native to the Ochwalkee Creek watershed for a number of decades. Many felt that because of the nature of rain the pH levels would be affected. Along with rain, the soil in the Ochwalkee Creek watershed is mostly sandy and silt loam, as noted in the TMDL. The TMDL Implementation Plan concentrates on educating the public about non-point sources of water pollution and encouraging the use of best management practices at the agriculture, forestry, and urban and residential levels. Even if the locals do an excellent job with implementing BMPs and improving overall water quality, meeting the state standard for pH may be impossible because of natural background levels, and acidic rainfall impacted by pollution sources elsewhere. A more involved and in-depth monitoring program can also help better define the issues and resolve any local concerns.

Background and Purpose

Ochwalkee Creek, lying in Wheeler County, is in the Lower Oconee River Basin and eventually flows into the Oconee River. The 24-mile segment with headwaters in Laurens County is currently listed on the 303(d) list in the State of Georgia for violating the water quality standard for pH.

pH, or hydrogen ion concentration, is the acidic or basic nature of a solution. pH levels can be affected by nature in a number of ways. Rainfall and different types of soil tend to make the pH level of a solution more acidic in nature. Excess temperatures make the level of pH rise according to how high a temperature may increase. Also, submerged plants (hydrilla and water lilies, for example) and animals affect pH when they persist in a solution without being washed out by events such as a rainfall.

The U.S. Clean Water Act requires a TMDL, or Total Maximum Daily Load, to be established for each pollutant in every body of water on the 303(d) list. A TMDL is a calculation of the maximum amount of pollutant, from both point and non-point sources, that a water body can receive and still adhere to the minimum water quality standard developed by the State of Georgia. The United States Department of Interior-Geological Survey (USGS) and the Georgia Environmental Protection Division (GAEPD) gathered samples from the creek beginning in January of 1999 through December of 1999 for pH. The GAEPD tested samples to detect the levels of pH. The pH level criterion for the State of Georgia is between 6.0 and 8.5. Ochwalkee Creek violated the State of Georgia's pH criterion 9 of the 20 times it was measured in 1999, or 45.00%. None of the 9 violations went above the criterion. All of them fell below the criterion. It should also be noted that out of the 9 violations, the lowest measurement was 5.2, which is not extremely low. Normal rainfall in the area is estimated to have a pH of 5.6. In 2000, the 24-mile segment of Ochwalkee Creek was placed on the 303(d) list.

The purpose of this implementation plan is to identify the actions that must be taken in the future to improve all pH measurements to fall within the State of Georgia's criterion by 2012. This should improve the water quality and alleviate any concerns that may exist while better enabling Ochwalkee Creek to meet the state water quality standard, although local action alone may not be able to accomplish this.

Plan Preparation

The implementation plan was developed by the Heart of Georgia Altamaha RDC with the assistance of a watershed committee comprised of stakeholder representatives from the forestry industry, agriculture, the Georgia Forestry Commission, the Ochopee Soil and Water Conservation Committee, Cooperative Extension Service, the Pine Country R C & D, the NRCS, Ocmulgee RiverKeeper, the Department of Human Resources South Central Health District, Wheeler County Commission, a mayor of a local town, a local city administrator, and the local president of Farm Bureau. The Heart of Georgia Altamaha RDC was in charge of drafting the plan under a contract signed with the GA EPD to prepare a TMDL Implementation Plan. A preliminary copy of the plan and planning process was discussed and a presentation was given at the initial watershed committee meeting on February 13, 2003 at the Wheeler County Service Center. Along with the watershed committee, landowners with 500 acres

or more of property within two miles of either side of the creek were invited to attend this initial committee meeting to give comments.

A meeting to educate the public and receive further stakeholder input by discussing and reviewing the draft plan took place with a presentation at the Wheeler County Service Center in Alamo, GA on March 20, 2003. At this meeting, any landowners who owned 25 acres or more of property within two miles of either side of the creek were sent a letter informing and inviting them to the public meeting. Fourteen persons attended this meeting. Public comments were solicited and input was placed into the plan. The plan addresses the steps that will be taken in the future to improve the water quality standard. The plan provides for monitoring and implementation actions to achieve goals submitted on the TMDL. A draft of the final plan was mailed to the watershed stakeholder committee on May 16, 2003, for solicitation of comments before final submittal to EPD.

TMDL Data and Potential Sources of Pollution

In January 1999, the USGS and the GAEPD began a follow-up sampling and monitoring study as a part of a five-year River Basin Planning cycle (Georgia EPD). The GAEPD tested samples to detect the levels of pH. The pH level criterion for the State of Georgia is a level between 6.0 and 8.5. Ochwalkee Creek violated the State of Georgia's pH criterion 9 of the 20 times it was measured in 1999, or 45.00%. None of the 9 violations went above the criterion. All of them fell below the criterion. It should also be noted that out of the 9 violations, the lowest measurement was 5.2, which is not extremely low. As noted above, it is not clear that the natural background level of Ochwalkee Creek does not fall near or below the state standard pH level, or that any pH problems are truly impacted by local action. In 2000, the 24-mile segment of Ochwalkee Creek was placed on the 303(d) list.

The Ochwalkee Creek watershed consists primarily of forest and cropland, with minimal areas of pasture and wetlands. Fifty-eight percent is comprised of forest and another seventeen percent is cropland.

At the committee meeting, committee members mentioned a trailer park that is located approximately 150 yards from the monitoring station at U.S. Highway 280 that could possibly contribute to the pH problem in Ochwalkee Creek. Committee members noted the large number of mobile homes that exist in the trailer park. This would allude to the presence of septic tanks, or the lack thereof, as a possible non-point contributor.

As mentioned in the introduction, the erection by beavers of large dams has been a continuous problem for Ochwalkee Creek. Committee members noted a bounty that is currently being placed on beavers in a neighboring county; however, the members said because the population of beavers that currently exists is so large, a bounty would not lower the beaver population to have a significant effect.

Nonetheless, the continuous damming of the streams and the resultant stagnation that is produced remains a concern.

Locals also noted a large sand pit facility that sits along Ochwalkee Creek. The plant is located between GA Highway 19 and U.S. Highway 280. As mentioned earlier, different types of soils can produce effects in the pH level of a stream. Locals mentioned that because of the types of sand that exists at the facility, the pH levels could be lowered if any runoff from the facility flows into the creek.

A change in the overall landscape of the Ochwalkee Creek watershed was pointed out because of the significance in the way that the land has been used over the past fifteen years. Approximately fifteen years ago, twenty-five percent more of the land in the watershed was used as cropland. Now, that land has been turned into timberland. Locals said this fact was significant in determining a possible non-point source(s). Locals felt this has definitely reduced that amount of agricultural limestone that could have possibly been contributing to the pH problem in the watershed.

Committee members mentioned that dumping by residents is a problem in the Ochwalkee Creek watershed. Locals said that they have been trying to catch people dumping items like tires, refrigerators, and other household products in the creek. Committee members expressed the need for a local landfill. They noted that there is not a county landfill in Wheeler County. The closest one exists in neighboring Telfair County. Committee members suggested that the problem of dumping would probably be less significant if the local citizenry did not have to travel as far to dispose of such items.

Natives to the Ochwalkee Creek watershed area also noted a recent change in the fish community that once existed in the Ochwalkee Creek watershed. Locals noted, for many decades, the existence of red fin and jack fish in the Ochwalkee Creek watershed. However, the locals noted, the red fin and jack fish have disappeared in recent decades.

Despite the issues discussed above, it would appear that the purported problem concerning pH levels in Ochwalkee Creek is a minor one at best. Although there were several violations of the state water quality standard as discussed earlier, all but one of the violations were minimal in nature and fell around 5.6 or 5.7, which is the natural pH of rainfall. The one violation that measured 5.2 could allude to a more significant problem along some point of the creek, possibly explaining the loss of red fin and jack fish. However, the remaining data indicate that the overall issue of pH does not appear to be very significant. If the possible non-point sources discussed above are adequately addressed, this may help to alleviate the issue of pH in the creek. More than likely, state action on pollution sources elsewhere contributing to acidic rainfall, would have a bigger impact on pH levels in Ochwalkee Creek than any local action.

Regulatory and Voluntary Measures: Existing and Future

Septic tank ordinances are an effective way to curtail urban and residential runoff. In Wheeler County, such ordinances are not in effect, although septic tank installations are regulated. It is important that future septic tank regulations, particularly relating to post-construction maintenance, be implemented at the local level. Future use of residential BMPs should also be explored as a practical means of limiting residential runoff. The local Cooperative Extension office can help individual homeowners assess and utilize BMPs through its Home*A*Syst Program.

Public education measures, beginning with the TMDL Implementation Plans and continuing in the future concerning Best Management Practices, are an efficient way to reach the local citizenry. Agriculture BMPs include, but are not limited to, the use of a waste storage structure, conservation tillage, waste storage pond, diversion, fencing, filter strips, stock trails/walkways, stream/shoreline protection, nutrient management, and well protection. The beavers have contributed to the problem by killing the natural filter strips of trees along the creek. Farmers utilize some of the agriculture BMPs currently; however, many do not practice them, and some do not know how to define a BMP. The NRCS and the Pine Country RC&D continue to work with farmers by educating them and providing them with the proper resources/information to enable them to install current and future BMPs. Cooperative Extension can also provide individually tailored assistance with BMPs through its Farm*A*Syst Program.

The use of forestry BMPs are becoming more prevalent, however, some foresters continue to ignore forestry BMPs. The Georgia Forestry Commission has and continues to make a conscious effort to educate and monitor BMPs by aerial surveillance. Some forestry BMP categories include, but are not limited to, harvesting in SMZ's, mechanical site preparation, chemical site preparation, fertilization, firebreaks, skid trail stream crossings and road crossings, and logging roads. The State Implementation Committee of the forest industry's Sustainable Forestry Initiative can lend valuable support/assistance. The Georgia Forestry Commission is also currently doing a study of the utilization and effectiveness of forestry BMPs in Georgia in the hope of improving the program.

The City of Glenwood currently does not have planning and zoning regulations within the city limits. Wheeler County currently does not have any planning and zoning regulations in the unincorporated areas as well. Wheeler County enforces erosion and sedimentation control measures at the state level. However, there are no erosion and sedimentation measures enforced at the local level.

The implementation of Land Use Management Regulations is planned in the future on a county-by-county basis. The regulations will be put into place as the necessary support at the local level is obtained. They will be enforced by local

governments, GA DNR, GA Department of Human Resources, GA Department of Community Affairs, and the GA Forestry Commission. The regulations would utilize state-mandated environmental planning criteria, local planning and zoning ordinances, BMPs for agriculture and forestry, erosion and sedimentation measures, and septic tank permitting to manage runoff and development. The Heart of Georgia Altamaha RDC will provide technical assistance in developing a "zoning lite" ordinance to encourage local governments to implement planning and zoning measures.

Storm Water Management Regulations are planned for implementation in the future as well on a county-by-county basis. The new regulations will be put into effect as requisite local support is obtained, and the GA DNR, GA EPD, and local governments will enforce them. The regulations would utilize local ordinance enforcement to produce better erosion and sedimentation control at the time of construction. These regulations could possibly require post-construction erosion and sedimentation control and possibly utilize passive design elements in new developments and stream buffers to prevent runoff.

A Cooperative Monitoring Program is needed for future implementation. The GA DNR, GA EPD, local governments, and possibly local volunteers would conduct the program. Additional regular monitoring of Ochwalkee Creek is needed to better define pollutant sources. The program could also consist of a scientific study of issues such as pH levels in slow-moving blackwater streams. It also could possibly seek funding and cooperation for watershed assessments, including possible model demonstration assessments for small watersheds, and develop a program for implementation assessments for Ochwalkee Creek.

An implementation of an Adopt-A-Stream program is needed. The program would be utilized through various organizations and groups throughout the watershed. The program will provide updates on current stream conditions in the future as the requisite funding and support are developed.

Schedule for Implementation

BMPs for the agriculture and forestry community will be promoted beginning in 2003 and continuing. The schedule for implementing the Land Use Management Regulations and the Storm Water Management Regulations is on a county-by-county basis in the near future, as local support is obtained. It would be helpful if the Cooperative Monitoring Program could be implemented in 2003 pending funding. An Adopt-A-Stream Program would also be helpful if implemented by 2004, pending local support and funding.

Monitoring Plan

The GA Forestry Commission will continue to do aerial and land surveillance of the watershed area. It is possible for Adopt-A-Stream monitoring to begin to take place in the future, as the requisite funding and support are developed. State study of the natural background levels of pH is also needed, with possible

reduction of the state standard as appropriate. State action on pollution sources other than local which impact the pH of rainfall in the area may be necessary.

Funding

The GA Forestry Commission will continue to do aerial and land surveillance of the watershed area. Also, the Georgia Forestry Commission will continue to administer Best Management Practices Assurance Examinations. The U.S. Fish and Wildlife Service is funding a program called "Partners for Wildlife," which is sponsored through the GA Soil and Conservation Service. Also, some funding will originate from the USDA through the Farm Service Agency and the Natural Resource Conservation Service. The UGA Cooperative Extension Service is funding two programs; Home*A*Syst and Farm*A*Syst, which are enacted by the local agriculture extension agent offices. Finally, the State Implementation Committee (SFI) is funding a program called "Sustainable Forestry Initiative." The National Fish and Wildlife Foundation is funding a program called the General Grant Challenge Program. The Georgia Department of Natural Resources Wildlife Resources Division has produced two booklets that are available to the public, "Small Game Management in Georgia" and "Beaver Management and Control in Georgia." Additional funding is likely needed to establish more in-depth monitoring.

Criteria to Determine Progress

The criteria to determine whether progress toward attainment is being made will be shown through the results of future monitoring by obtaining the State of Georgia's criterion for pH levels in Ochwalkee Creek.

Conclusion

Improved future utilization and implementation of best management practices at the agricultural, forestry, and urban levels will provide substantial progress in obtaining the State of Georgia's criterion for pH levels in Ochwalkee Creek. In actuality, meeting the state standards for pH levels in Ochwalkee Creek may be illusive and nearly impossible, especially as the result of local action. An examination of a potential non-point source(s) would help to determine if a problem exists from that concern, and to what extent such a problem may exist. Any action(s) taken as a result of such an examination would further assist in producing progress. We anticipate the removal of Ochwalkee Creek from the State of Georgia's 303(d) list.

STATE OF GEORGIA
TMDL IMPLEMENTATION PLAN
WATERSHED APPROACH
Oconee River Basin

Local Watershed Governments

Heart of Georgia-Altamaha RDC
 Wheeler County
 Laurens County
 City of Glenwood

TMDL Implementation Plans are platforms for establishing a course of actions to restore the quality of impaired water bodies in a watershed. They are intended as a continuing process that may be revised as new conditions and information warrant. Procedures will be developed to track and evaluate the implementation of the management practices and activities identified in the plans. Once restored, appropriate management practices and activities will be continued to maintain the water bodies.

This Implementation Plan addresses an action plan, education/outreach activities, stakeholders, pollutant sources, and potential funding sources affecting the sub-basin. In addition, the Plan describes (a) regulatory and voluntary practices/control actions (*management measures*) to reduce target pollutants, (b) milestone schedules to show the development of the management measures (*measurable milestones*), (c) a monitoring plan to determine the efficiency of the management measures and measurable milestones, and (d) criteria to determine whether substantial progress is being made towards reducing pollutants in impaired waterbodies. The overall goal of the Plan is to define a set of actions that will help achieve water quality standards in the state of Georgia. Following this section is information regarding individual segments.

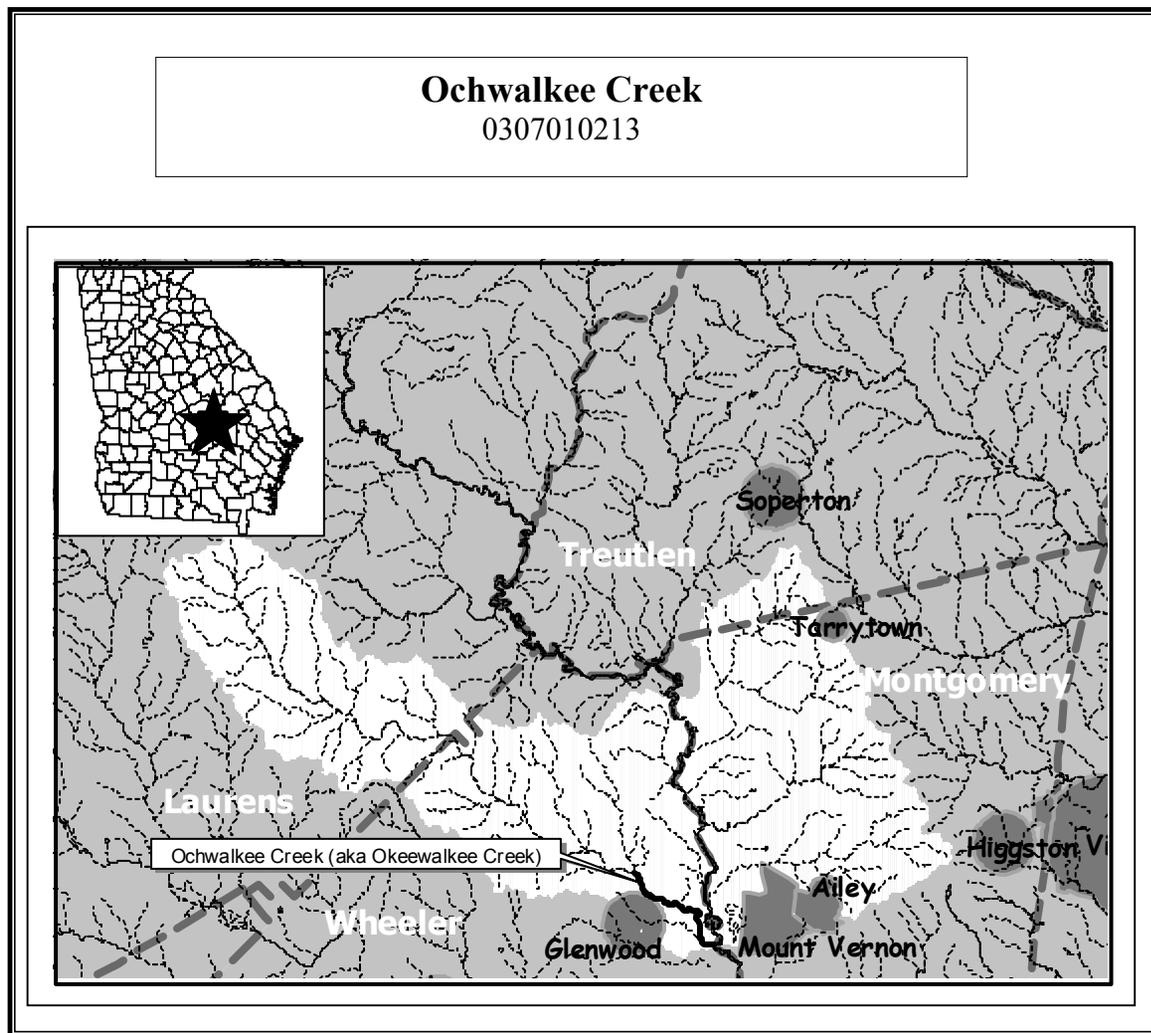


FIGURE 1

Impaired Waterbody*	Impaired Stream Location	Impairment
1. Ochwalkee Creek (aka Okeewalkee Creek)	Little New York Road to Oconee River	pH
2.		
3.		

*These Waterbody Numbers are referenced throughout the Implementation Plan.

POLLUTANT:	SOURCE:	EFFECT:	WHAT CAN I DO?	
			At Home: Community, School	At Work: Business, Government
<input type="checkbox"/> Dissolved Oxygen (DO)	<input type="checkbox"/> Industrial	<input type="checkbox"/> Habitat	Get Involved in Adopt-A-Stream Public Education Use Proper BMPs Check Septic System	Develop Zoning Ordinances Dispose of Harmful Chemicals Properly
<input type="checkbox"/> Fecal Coliform (FC)	<input checked="" type="checkbox"/> Urban	<input type="checkbox"/> Recreation		
<input type="checkbox"/> Sediment	<input checked="" type="checkbox"/> Agriculture	<input type="checkbox"/> Drinking Water		
<input type="checkbox"/> Metals	<input checked="" type="checkbox"/> Forestry	<input type="checkbox"/> Aesthetics		
<input type="checkbox"/> Fish Consumption Guidelines (FCG)	<input checked="" type="checkbox"/> Residential	<input checked="" type="checkbox"/> Other (Please List)		
<input checked="" type="checkbox"/> Other (Please List) pH	<input type="checkbox"/> Other (Please List)	Fishing		

INFORMATION/EDUCATION/OUTREACH ACTIVITIES

An education/outreach component will be used to enhance public understanding of and participation in implementing the TMDL Implementation Plan.
List of all previous and planned information/education/outreach activities.

Responsible Organization Or Entity	Description	Impacted Waterbodies*	Target Audience	Anticipated Dates (MM/YY)
Heart of Georgia Altamaha RDC	TMDL Presentation at Wheeler County Service Center for the committee	Ochwalkee Creek	Local Governments, Agriculture Organizations, Georgia Forestry Commission, Forestry Industries, Ohoopee Soil and Water Conservation Service, Natural Resource Conservation Service, A Member of the RDC Regional Advisory Committee, Pine Country RC & D, DHR South Central Health District, Ocmulgee RiverKeeper	February 13, 2003
Heart of Georgia Altamaha RDC	A Press Release to The Wheeler County Eagle concerning Public Meeting (March 13, 2003)	Ochwalkee Creek	General Public	March 13, 2003
Heart of Georgia Altamaha RDC	A Public Service Announcement to WYSC (102.7 FM) in McRae, GA	Ochwalkee Creek	General Public	March 17-20, 2003
Heart of Georgia Altamaha RDC	TMDL Presentation for Public Meeting at the Wheeler County Service Center in Alamo, GA	Ochwalkee Creek	Landowners with 25 Acres or more within 2 miles on either side of Ochwalkee Creek in Wheeler County	March 20, 2003
Heart of Georgia Altamaha RDC	TMDL Presentation at City of Glenwood City Council Meeting	Ochwalkee Creek	City Officials	March 5, 2003
Heart of Georgia Altamaha RDC	TMDL Presentation at Wheeler County Commissioners Meeting	Ochwalkee Creek	County Officials	April 7, 2003

STAKEHOLDERS

EPD encourages public involvement and the active participation of stakeholders in the process of improving water quality. Stakeholders can provide valuable information and data regarding their community and the impaired water bodies and can provide insight and/or implement management measures.

List of local governments, agricultural organizations or significant landholders, commercial forestry organizations, 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
Georgia Forestry Commission	105 Martin Luther King Jr. Drive	Soperton	GA	30457	(912)-529-6652	
Ochoopee Soil and Water Conservation District	RT 2 Box 199	Glenwood	GA	30428	N/A	
Wheeler County Cooperative Extension Service	203 West Forest Avenue	Alamo	GA	30411	(912)-568-7138	
Wheeler County Farm Bureau	RT 2	Glenwood	GA	30428	(912)-568-7516	
Wheeler County Commissioners	209 West Forest Avenue	Alamo	GA	30411	(912)-568-7135	
City of Glenwood	PO Box 616	Glenwood	GA	30428	(912)-523-5223	
DHR South Central Health District	2121-B Bellevue Road	Dublin	GA	31021-2998	(912)-275-6618	
Pine Country RC & D	105 Martin Luther King Drive	Soperton	GA	30457	(912)-529-6652	
Rayonier Southeast Forest Products	PO Box 626	Jesup	GA	31598	(912)-427-5280	
Ocmulgee RiverKeeper	2340 Clayton Street	Macon	GA	31204	N/A	
International Paper	RT 2 Box 2	Soperton	GA	30457	(912)-529-3447	
Natural Resource Conservation Service	303 Fulton Street	Mt. Vernon	GA	30445	(912)-583-4541	
City of Alamo	PO Box 646	Alamo	GA	30411	(912)-568-7153	

WATER BODIES/STREAMS COVERED IN THIS PLAN:

These impaired streams are located in the same sub-basin identified by a HUC10 code. Most of the information contained in this section comes from the 303(d) list and has been completed by employees of the EPD Water Protection Branch. Data that placed stream on 303(d) list will be provided upon request.

Waterbody Name #1	Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Ochwalkee Creek (aka Okeewalkee Creek)	Little New York Road to Oconee River	18	Fishing	NS
Primary County	Secondary County	Second RDC	Source (Point/ Nonpoint)	
Wheeler	Laurens		Nonpoint	
Pollutants	Water Quality Standards	Required Reduction	TMDL ID	Date TMDL Established
pH	6.0 – 8.5 standard units	N/A		February 2002

POLLUTANT SOURCES

It is important to recognize the potential source(s) causing water quality impairment. Each source must be controlled to comply with target TMDL/Load Allocations for each pollutant. Included is a description of how the sources contribute to the impairment and the waterbody that is impaired.

List of major nonpoint source categories and sub-categories or individual sources (Urban Runoff, Agriculture, Forestry, Municipal Sewage Treatment Plant)

Pollutant	Sources of Pollutants	Description of Contribution To Impairment	Impacted Waterbodies*
pH	Agriculture	Possible introduction of animal waste from upslope practices and sediment from storm water runoff when BMPs are not followed	Ochwalkee Creek
pH	Forestry	Possible introduction of runoff resulting from timber practices when BMPs are not followed	Ochwalkee Creek
pH	Residential	Possible introduction of discharges resulting from septic tank runoff and littering from nearby residential areas	Ochwalkee Creek
pH	Municipal (Wastewater)	Possible introduction of wastewater discharges from City of Glenwood	Ochwalkee Creek

MANAGEMENT MEASURES, MEASURABLE MILESTONES AND SCHEDULE

(i.e. Local codes and ordinances, Erosion and Sedimentation Control, Storm Water Management, Local water resource monitoring)

The following table lists management measures that have been or will be implemented to achieve water quality standards and the load reductions established in the TMDL. The management measures, including regulatory or voluntary actions or other controls by governments or individuals, specifically apply to the pollutant and the waterbody for which the TMDL was written. A description is provided of how these management measures are/will be accomplished through reliable and effective delivery mechanisms, and how these management measures are/will help achieve the target TMDL. Included is the source of the pollutant, anticipated/past effectiveness of the management measure (very effective, somewhat effective, not effective), the current status (i.e. enforced, in-progress, planning), and measurable milestones and schedule. Milestones are used to measure progress in attaining water quality standards and to determine whether management measures are being implemented.

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Georgia Water Quality Control Act (OCGA 12-5-20)	Georgia DNR, EPD	Makes it unlawful to discharge excessive pollutants into waters of the state in amounts harmful to public health, safety or welfare, animals, or the physical destruction of stream habitat	1964	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Agriculture, Residential, Forestry, Municipal	Ochwalkee Creek	Effective in point source pollution in dealing with local governments and industry/ Limited effectiveness in dealing with non-point sources

Measurable Milestones	Schedule		Comments
	Start	End	
Land Use Application System Permits NPDES Permits	1964	Ongoing	Work with local governments and others to increase monitoring of Land Use Application System Permits and NPDES Permits/No NPDES Permits have been issued for the Ochwalkee Creek Watershed

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Forestry Water Quality Program	Georgia Forestry Commission	Designated by EPD to lead the effort to develop BMPs, educational BMP programs, forestry complaint resolution process and BMP monitoring, conducts biennial BMP monitoring, complaint investigation and mediation	1999 Manual	Current	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Preharvesting planning, road management, harvesting, forest chemical management	Ochwalkee Creek	Established BMPs effective in limiting runoff and less effective in limiting debris associated with timber practices

Measurable Milestones	Schedule		Comments
	Start	End	
Harvesting in SMZ's, Mechanical Site Preparation, Chemical Site Preparation, Fertilization, Firebreaks, Skid Trail Stream Crossings/Road Crossings, Logging Roads	1999 Manual	Ongoing	Additional installation of BMPs possible, depending on future monitoring results

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Agricultural BMP's	Georgia Soil and Water Conservation Service, Georgia Department of Agriculture	Leads effort in agricultural water quality program, develops agricultural BMP educational and monitoring efforts	1987	Current	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Pesticide management, animal facility runoff, irrigation water management	Ochwalkee Creek	Utilization of BMPs has been found to be effective in controlling runoff and other contaminants from farming practices

Measurable Milestones	Schedule		Comments
	Start	End	
Waste Storage Structure, Conservation Tillage, Waste Storage Pond, Diversion, Fencing, Field Borders, Filter Strips, Stock Trails/Walkways, Stream/Shoreline Protection, Nutrient Management, Well Protection, Land Use Application System Permits and NPDES Permits	1987	Ongoing	Additional BMPs possible depending on results of future monitoring/ Work with local governments and others to increase monitoring of Land Use Application System Permits and NPDES Permits

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Nutrient Application Plan	Natural Resource Conservation Service	Leads effort in agricultural water quality by developing plans to control nutrient runoff	2000	Current	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Pesticide management, irrigation water management	Ochwalkee Creek	Effective in the initial stages of the program's beginning if plans are followed properly

Measurable Milestones	Schedule		Comments
	Start	End	
Increase the number of farming establishments utilizing nutrient application plans to limit nutrient runoff	2000	Ongoing	Plans will continue to be effective at the local level if they continue to be implemented by more and more farming establishments

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Georgia Erosion and Sedimentation Control Act (OCGA 12-7-1)	Georgia Department of Natural Resources Environmental Protection Division and Local Governments	Authorizes local governments to adopt a comprehensive ordinance governing land-disturbing activities within local planning and zoning jurisdictions and require the use of BMPs	Amended 2000	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Agricultural, Residential, Municipal,	Ochwalkee Creek	Effectiveness is minimal due to a lack of local enforcement of erosion and sedimentation control measures

Measurable Milestones	Schedule		Comments
	Start	End	
Local erosion and sedimentation control measures	2003	Ongoing	Work with local governments to obtain a greater enforcement of erosion and sedimentation control measures at the local level

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Comprehensive Nutrient Management Plan (CNMP)	Agriculture Extension Service, Department of Natural Resources	Leads effort in agricultural water quality by developing plans to control animal waste runoff	2001	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Animal facility runoff	Ochwalkee Creek	Effective in the initial stages of the program's beginning and if the plans are carried out properly

Measurable Milestones	Schedule		Comments
	Start	End	
Increase the number of farming establishments implementing plans/Encourage increased compliance with plan requirements	2001	Ongoing	Plans will continue to be effective at the local level if they continue to be implemented by more and more farming establishments

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Local Septic Tank Permit Ordinance	Georgia Department of Human Resources and Local Governments	Authorizes the regulation of septic tanks, including placement, installation and maintenance	1969	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Residential	Ochwalkee Creek	Effective at point of construction and poor at point of post-construction follow up maintenance

Measurable Milestones	Schedule		Comments
	Start	End	
Continuous updating of health inspector manual to upgrade current standards	1969	Ongoing	Better enforcement at local level needed

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Georgia Planning Act (OCGA 12-2-8)	Georgia Department of Natural Resources and Local Governments	Authorized DCA to develop minimum planning standards and procedures that local government planning and zoning jurisdictions could adopt and enforce pertaining to the protection of river corridors, mountains, water supply watersheds, groundwater recharge areas, and wetlands	1989	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Agricultural, Residential, Municipal	Ochwalkee Creek	Effectiveness is minimal because of lack of land use management regulations at the local level

Measurable Milestones	Schedule		Comments
	Start	End	
Land Use Management Regulations	2003	Ongoing	Need to work with local governments to establish land use management regulations and other regulations as appropriate/ Need to work with local governments in enforcing DNR's Part 5 Environmental Planning criteria to better protect local streams

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Land Use Management Regulations	Heart of Georgia Altamaha Regional Development Center, Local Governments, Georgia Department of Natural Resources, Georgia Department of Human Resources, Georgia Department of Community Affairs, Georgia Forestry Commission	Utilize state-mandated environmental planning criteria, local planning and zoning ordinances, BMPs for agriculture and forestry, and septic tank permitting to manage runoff and development, RDC will provide technical assistance in developing a model “zoning-lite” ordinance to encourage local governments to implement planning and zoning measures	Adopted on a County-by-County basis	Planned	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Agricultural, Municipal, Residential	Ochwalkee Creek	Not very effective due to lack of Land Use Regulations on county-wide level

Measurable Milestones	Schedule		Comments
	Start	End	
Establishment of County-wide Land Use Regulations	2008	Ongoing	There is a need to work with local governments to adopt Land Use Regulations

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Cooperative Monitoring Program	Georgia Department of Natural Resources, Georgia Environmental Protection Division, Local Governments, Heart of Georgia Altamaha Regional Development Center	Seek a scientific study of issues such as natural dissolved oxygen levels in slow-moving streams, could seek funding/cooperation for watershed assessments including possible model demonstration assessments for small watersheds, develop a program for implementation assessments for the Ochwalkee Creek Watershed		Planned	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Agricultural, Municipal, Residential	Ochwalkee Creek	Anticipated effectiveness is significant because of more frequent monitoring which will produce better and more frequent data

Measurable Milestones	Schedule		Comments
	Start	End	
Implementation of Adopt-A-Stream programs with various organizations for purposes of more sampling/Additional monitoring to increase the amount of data collected	2003	Ongoing	Utilize monitoring programs of Georgia Forestry Commission, NRCS, Adopt-A-Stream to gather updated sampling data on a more frequent basis

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Environmental Code Enforcement	Local Governments, Department of Natural Resources, Environmental Protection Division	Utilize local ordinances to ensure greater compliance with state environmental codes at the local level	2008	Planned	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Municipal, Residential	Ochwalkee Creek	Limited effectiveness due to lack of enforcement at county-wide level

Measurable Milestones	Schedule		Comments
	Start	End	
Establishment of code enforcement program	2008	Ongoing	Greater enforcement of state standards at the local level could help to reduce the amount of man made wastes entering into local streams

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Clean Water Act, Section 404 CFR Part 232.3 (Pine Plantation Regulations)	US EPA, Army Corps of Engineers	Requires normal forestry practices to adhere to BMPs and 15 baseline provisions for forest road construction and maintenance in and across waters of the U.S., including lakes, rivers, perennial and intermittent streams, wetlands, sloughs, and natural ponds in order to qualify for the silvicultural exemption from the permitting process	1988	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Forestry	Ochwalkee Creek	Significantly effective in controlling runoff in silviculture practices

Measurable Milestones	Schedule		Comments
	Start	End	
Installation of additional BMPs/Increase compliance with BMPs and education by Georgia Forestry Commission and industrial forestry companies	2008	Ongoing	Based on future monitoring results, additional BMPs may be required

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Federal Farm Bill	U.S. Department of Agriculture	Prohibits landowners from converting forested wetlands to agricultural uses (swamp buster)		Current	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Forestry	Ochwalkee Creek	Effective in leaving forested wetlands in their natural state

Measurable Milestones	Schedule		Comments
	Start	End	
Increase number of farmers utilizing incentive programs to keep forested wetlands in their natural state	1940's	Ongoing	Legislative updates should continue to increase program incentives

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Standards of Practice (OCGA 43-1-19)	Georgia State Board of Registration for Foresters	Failure to practice professional forestry in accordance with generally accepted standards of practices (includes BMPs) shall constitute unprofessional conduct and shall be grounds for disciplinary action	1993	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Forestry	Ochwalkee Creek	Effective in ensuring professional standards of forestry practices

Measurable Milestones	Schedule		Comments
	Start	End	
Keeping professional standards updated and enforced	1993	Ongoing	Standards need to be closely monitored and continuously enforced to ensure professional conduct

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Forestry BMPs	Georgia Forestry Commission	BMP Categories include Harvesting in SMZ's, Mechanical Site Preparation, Chemical Site Preparation, Fertilization, Firebreaks, Skid Trail Stream Crossings and Road Crossings, Logging Roads	1999	Current	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Forestry	Ochwalkee Creek	Somewhat Effective but could be more so with increased utilization by more farming establishments

Measurable Milestones	Schedule		Comments
	Start	End	
Continuous installation of new BMPs as appropriate	1999	Ongoing	Need for monitoring of BMPs to monitor utilization and effectiveness/Need for continued and stronger industry enforcement

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Storm water Management Regulations	Georgia Department of Natural Resources, Environmental Protection Division, and Local Governments	Utilize local ordinance enforcement to produce better erosion/sedimentation control at the time of construction, could possibly require post-construction erosion/sedimentation control, could use passive design elements in new developments and stream buffers to prevent runoff	Adopted on a County-by-County basis	Planned	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
pH	Municipal	Ochwalkee Creek	Limited Effectiveness due to lack of erosion and sedimentation regulations

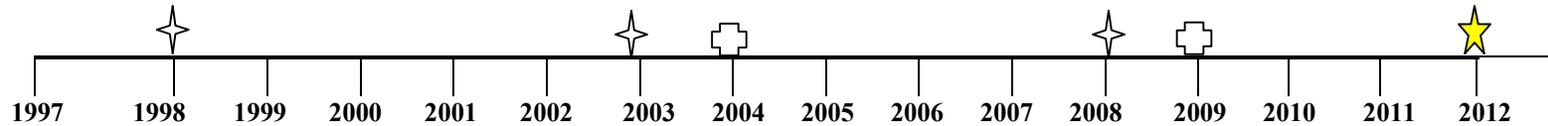
Measurable Milestones	Schedule		Comments
	Start	End	
File for NPDES general land disturbance permit/ Phase II General Industrial Permits	2003	Ongoing	ISTEA Exemption ends for all local governments in March 2003/All cities and counties will need to file Notices of Intent by this date

POTENTIAL FUNDING SOURCES The identification and discussion of dedicated funding is important in determining the economic feasibility of the above-mentioned management measures.

Funding Source	Responsible Authority	Status	Anticipated Funding Amount	Impacted Waterbodies*
Georgia Forestry Commission	Georgia Forestry Commission	Current	Unknown	Ochwalkee Creek
Georgia Department of Natural Resources	Environmental Protection Division	Current	\$75,000.00	Ochwalkee Creek
U.S. Environmental Protection Agency	U.S. Environmental Protection Agency	Planned	Unknown	Ochwalkee Creek
U.S. Department of Agriculture	Farm Service Agency	Planned	Unknown	Ochwalkee Creek
U.S. Department of Agriculture	Natural Resource Conservation Service	Planned	Unknown	Ochwalkee Creek
U.S. Fish and Wildlife Service	Georgia Soil and Water Conservation Service (“Partners for Wildlife” Program)	Planned	Unknown	Ochwalkee Creek
University of Georgia Extension Service	Local Cooperative Extension Service (Home*A*Syst Program)	Planned	Unknown	Ochwalkee Creek
University of Georgia Extension Service	Local Cooperative Extension Service (Farm*A*Syst Program)	Planned	Unknown	Ochwalkee Creek
State Implementation Committee	Sustainable Forestry Initiative Program	Planned	Unknown	Ochwalkee Creek
Georgia Forestry Commission	Georgia Forestry Commission (Best Management Practices Assurance Examinations)	Current	Unknown	Ochwalkee Creek
The National Fish and Wildlife Foundation	The National Fish and Wildlife Foundation (General Challenge Grant Program)	Planned	Unknown	Ochwalkee Creek
Georgia Department of Natural Resources (Wildlife Resources Division)	Georgia Department of Natural Resources (Wildlife Resources Division) “Small Game Management in Georgia” & “Beaver Management and Control in Georgia” Booklets	Current	Unknown	Ochwalkee Creek

PROJECTED ATTAINMENT DATE

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



- EPD Monitoring
- Evaluate TMDL & Attainment Date
- Project Attainment

MONITORING PLAN

The purpose of this monitoring plan is to determine the effectiveness of the target TMDL and the management measures being implemented to meet water quality standards. List of previous, current or planned/proposed sampling activities or other surveys. (Monitoring data that placed stream on 303(d) list will be provided if requested.)

Name Of Regulation / Ordinance Or Management Measure	Organization	Impacted Waterbodies*	Pollutants	Purpose/Description	Time Frame		Status (Previous, Current, Proposed)
					Start	End	
1999 Study	United States Geological Survey	Ochwalkee Creek	pH	To detect the levels of pH at the USGS Certified Station #02224600 (Near Glenwood, GA)	1/99	12/99	Previous
Best Management Practices Monitoring	Georgia Forestry Commission	Ochwalkee Creek	pH	Within the watershed, can conduct monthly aerial and land reconnaissance to identify recent forestry practices, conduct BMP audit, and make recommendations for remediation if problems are found		On-going	Current

CRITERIA TO DETERMINE WHETHER SUBSTANTIAL PROGRESS IS BEING MADE

The following set of criteria will be used to determine whether any substantial progress is being made towards reducing pollutants in impaired waterbodies and attaining water quality standards. Discussion on each criteria is recorded in the space provided. Additional relevant criteria are presented in comments.

Percent of concentration or load change (monitoring program) Return the pH levels to sufficiently meet the State of Georgia’s criterion.

If monitoring results show that it is unlikely that the TMDL will be adequate to meet water quality standards, revision of the TMDL may be necessary.

- Categorical change in classification of the stream (delisting the stream is the goal) Classification is proposed to remain fishing/ Delist from 303(d) list

- Regulatory controls or activities installed (ordinances, laws) Work with local governments and individuals to install Erosion and Sedimentation Controls, Land Use Management Regulations (Development Regulations such as stream buffers, limited impervious cover, porous pavement materials, limited clearing, grading, and disturbance); BMPs, Storm Water Management, Code Enforcement, etc. to help reduce runoff and minimize land disturbance.

- Best management practices installed (agricultural, forestry, urban) Forestry- (Harvesting in Streamside Management Zones, Mechanical Site Preparation, Chemical Site Preparation, Fertilization, Firebreaks, Skid Trail Crossing and Road Crossings, Logging Roads) Agriculture – (Waste Storage Facilities, Conservation Tillage, Waste Storage Pond, Diversion, Fencing, Field Borders, Filter Strips, Stock Trails/Walkways)

COMMENTS

Attachments

- Appendix A – Ochwalkee Creek Watershed Proposed TMDL Implementation Plan Committee Meeting Invitation List (February 13, 2003)
- Appendix B – Ochwalkee Creek Watershed Proposed TMDL Implementation Plan List of Major Landowners Invited to Committee Meeting (February 13, 2003)
(Wheeler County)
- Appendix C – Ochwalkee Creek Watershed Proposed TMDL Implementation Plan Committee and Major Landowners Meeting Sign-in Sheet
(February 13, 2003)
- Appendix D – Ochwalkee Creek Watershed Proposed TMDL Implementation Plan Committee and Major Landowners Meeting Handout
(February 13, 2003)
- Appendix E – Stakeholder Notification List for Ochwalkee Creek Watershed Proposed TMDL Implementation Plan Public Meeting (March 20, 2003)
(Wheeler County)
- Appendix F – Press Release for Public Meeting for Ochwalkee Creek Watershed Proposed TMDL Implementation Plan in The Wheeler County Eagle
(March 13, 2003)
- Appendix G – Public Service Announcement concerning Ochwalkee Creek Watershed Proposed TMDL Implementation Plan given to WYSC-FM (102.7 in McRae, GA) (March 17-20, 2003)
- Appendix H – Ochwalkee Creek Watershed Proposed TMDL Implementation Plan Public Meeting Sign-in Sheet (March 20, 2003)
- Appendix I – Ochwalkee Creek Watershed Proposed TMDL Implementation Plan Public Meeting Handout (March 20, 2003)
- Appendix J – Memo to City of Glenwood City Council to be placed in the March 4th, 2003 Meeting Agenda Packet (February 5, 2003)
- Appendix K – Memo to Wheeler Co. Commissioners to be placed in the April 7th, 2003 Meeting Agenda Packet (March 5, 2003)
- Appendix L - Ochwalkee Creek Watershed Proposed TMDL Implementation Plan Handout for Wheeler County Commissioners Meeting and City of Glenwood City Council Meeting
- Appendix N – Ochwalkee Creek Watershed Proposed TMDL Implementation Plan Committee Review Memo (May 16, 2003)

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**Environmental Protection Division of the Department of Natural Resources,
State of Georgia.**

TOGETHER WE CAN MAKE A DIFFERENCE!
