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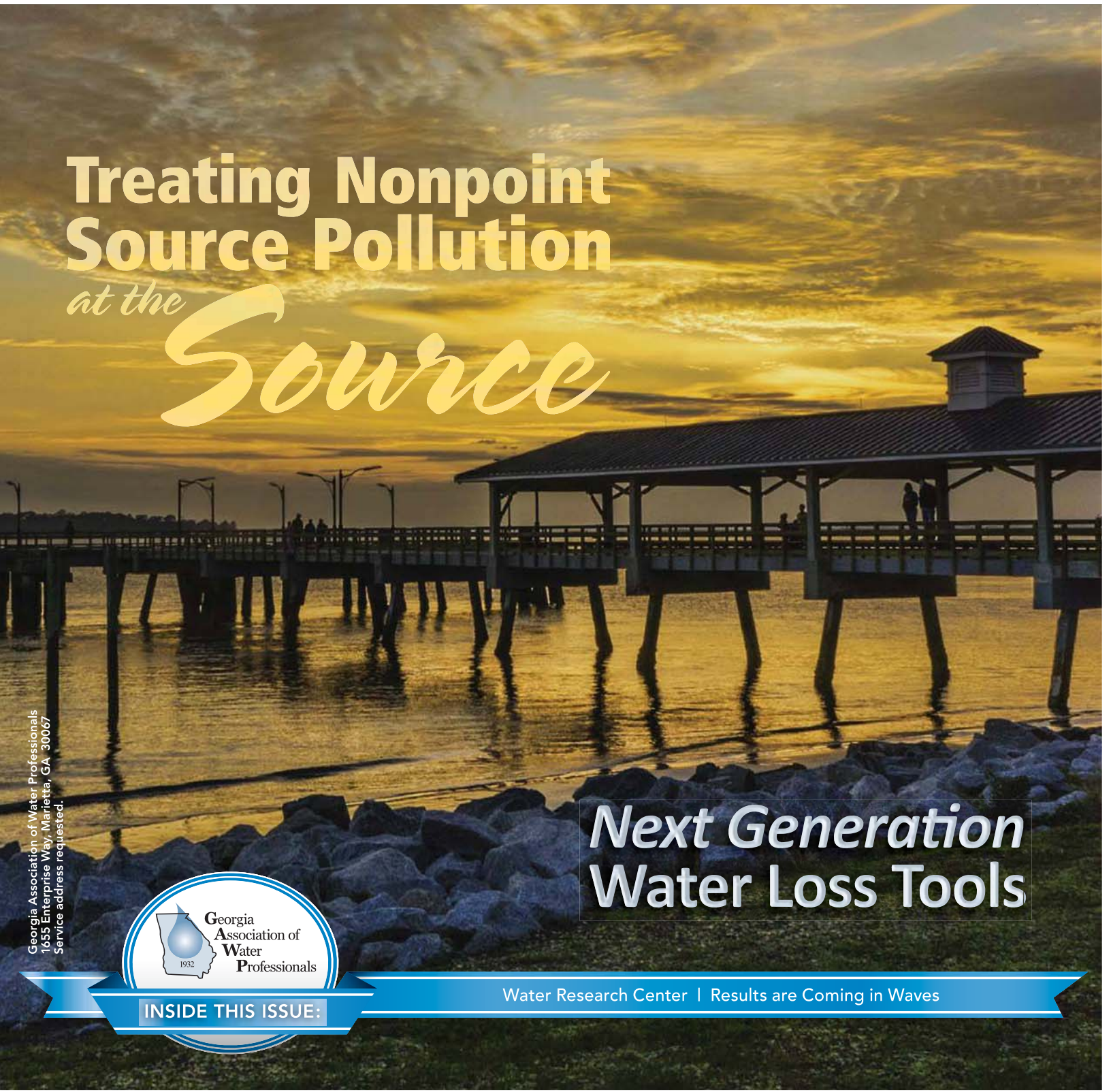

Treating Nonpoint Source Pollution *at the Source*

Next Generation Water Loss Tools

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Treating Nonpoint Source Pollution at the Source

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Cattle fencing – Fencing animals out of ponds protects water quality

Community water systems do an important job in Georgia where the majority of people depend on water systems for the management and protection of their drinking water. A significant cost to any water system is the treatment of raw water to remove contaminants before it can be delivered to customers. We know that if water arriving at treatment plants contains less pollution, then treatment costs can be lowered resulting in less expense to the water system and lower costs to water users.

The Georgia Soil and Water Conservation Commission (GSWCC), along with the 40 Soil and Water Conservation Districts, has been actively involved in several projects to improve the quality of water before it reaches the water treatment plant. In each of these projects, the key has been the voluntary cooperation of landowners to improve their management practices to reduce runoff from their land into bodies of water.

Clean Water Act

The Federal Water Pollution Control Act, otherwise known as the Clean Water Act, is considered the cornerstone for U.S. water quality policy. The term "best management practice" (BMP) was introduced in the Clean Water Act and relates to methods of reducing the amount of pollutants entering water bodies (rivers, marine waters, streams, or lakes). A BMP is defined as a practice or combination of practices determined to be the most effective practical means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

For water bodies that are already polluted, the federal government requires the development of total maximum daily loads (TMDLs). The U.S. Environmental Protection Agency (EPA) defines TMDL as "a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards."

BMPs are used as a tool in TMDL Implementation Plans to reduce and prevent pollutants from entering water sources and to lower the number of water bodies failing to meet federal and state water quality standards.

The 1987 amendments to the Clean Water Act established the Section 319 Nonpoint Source Management Program. Under Section 319, states receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and monitoring to assess the success of specific nonpoint source implementation projects.

These projects, commonly referred to as 319 projects, are funded in Georgia through the Georgia Environmental Protection Division Nonpoint Source Implementation Grant.

Alternative Water Source: Water Tank – A concrete water trough offers livestock an alternative to drinking directly out of a creek and promotes water quality by eliminating contamination from animal manure

Nonpoint Source Pollution and TMDL Implementation Plans

Nonpoint source (NPS) pollution is a broad-based term. The agriculture industry has been identified by the EPA as a significant contributor of NPS pollution in the United States. Much of the difficulty with NPS pollution is in defining the source of this type of pollution.

NPS pollution can be a slow, gradual process or a sudden, unpredictable process in which there is a release of pollutants into water bodies. Typically, NPS pollution is unintentional. Small, often unobservable releases of pollutants in runoff from various land uses add up over time as sources of water quality degradation.

Agriculture is Georgia's largest industry, so it is not surprising that it has been identified as one of the contributors to NPS pollution in the state. Potential agriculture-related pollutants include pathogens, sediment, and nutrients, which result in water failing to meet designated use standards.

To tackle these problems, a TMDL Implementation Plan is adopted for each body of water that is not supporting its designated use. The plan is a strategy and a work plan for achieving water resource goals that provides assessment and management information for a geographically defined watershed.

It includes the analyses, actions, participants, and resources related to development and implementation of the plan. The planning process uses a series of cooperative, iterative steps to characterize existing conditions, identify and prioritize problems, define management objectives, and develop and implement protection or remediation strategies as necessary.

GSWCC has received Section 319 grants to implement TMDL Implementation Plans in several areas of the state. Our efforts have shown recent success for the Middle Coosawattee River, which flows through Gilmer, Gordon, Murray, and Pickens counties in North Georgia. We are now developing a Watershed Management Plan (WMP) for the Cedar and Folsom Creek watersheds in Wilcox County (South Central Georgia).

Middle Coosawattee River

With funding provided by Section 319 of the Clean Water Act, GSWCC worked in voluntary cooperation with agricultural producers to identify areas of concern to reduce nonpoint source pollution in the Middle Coosawattee River. Those included improper spreading of animal manure near streams, runoff from stored manure, and unrestricted livestock access to streams.

To improve water quality, two miles of fencing was erected to reduce livestock access to creeks, and winter feeders were installed to reduce soil erosion from feeding areas. In addition, stack houses, heavy-use livestock areas, and watering facilities were built. Among the measures taken, 196 acres of pasture were planted in clover following tornados in the project area that created a need for soil stabilization and pasture re-establishment.

By sharing the cost of installing conservation practices with landowners, GSWCC was able to make measurable improvements to the Talking Rock Creek, Little Scarecorn Creek, Salacoa Creek, and Lick Creek. This is resulting in cleaner water downstream in the Middle Coosawattee River Watershed, which runs through Gilmer, Gordon, Murray, and Pickens counties.

Overall, the installation of conservation practices in the watershed reduced nitrogen entering the Middle Coosawattee River by an estimated 63 percent, reduced phosphorus by an estimated 80 percent, and reduced sediment by an estimated 57 percent.[1]

Stack House and Composter – A stack house allows for litter storage until it can be used for other purposes or can be transported off-farm

Farmer response to this project was positive in terms of behavior and attitude. Residents in the project area were interested in cost-share funding that allowed them to improve their farming operation's viability while also improving and protecting natural resources. By changing behaviors, we hope to have a long-lasting positive effect on the water that flows in this river.

Cedar and Folsom Creeks

The watersheds of Cedar and Folsom Creeks comprise approximately 68,426 combined acres and are located in the northern portion of Wilcox County, Georgia. In 2007, the GA EPD evaluated both creeks due to impaired biological communities as a result of sediment loading.

The long-term goal of the project is to meet the recommended sediment load reductions in the TMDL, thus leading to the delisting of Cedar and Folsom Creeks. GSWCC identified the watersheds of Cedar and Folsom Creeks as a suitable project area for development and implementation of a WMP because of environmental conditions and impairments of the watersheds, the number of agricultural producers located within the watersheds, landowner needs, and the current listing status on the GA EPD 305(b)/303(d) integrated report.

As with the Middle Coosawattee River project, public involvement was a crucial aspect of the watershed planning process. The Cedar and Folsom Creeks watershed advisory committee consisted of representatives from the Georgia Forestry Commission, University of Georgia Cooperative Extension Service, Heart of Georgia Regional Commission, Natural Resources Conservation Service, and U.S. Fish and Wildlife Service. A stakeholder committee that included local business and landowners, farmers, forestry and logging industry representatives, and county and regional representatives was formed to assist with the watershed planning process and plan development. The committee was responsible for identifying issues of concern within the watersheds.

Pollutant Load Reductions

Goals for pollutant load reductions were divided into three categories: short-term, mid-term, and long-term. Short-term goals cover a period of approximately less than two years following implementation of BMPs. Mid-term goals range for a period of two to five years, while long-term goals are greater than five years after implementation of the BMPs.

Short-term goals included participation of landowners, farmers, and the Wilcox County Road Department; identification of exact site locations for management measures; and initiation

Table 1. Elements of a Watershed Management Plan (WMP)

- Identify the causes and sources of pollution that need to be controlled.
- Determine load reductions needed for each pollutant.
- Develop nonpoint source (NPS) management measures that will be implemented to achieve reduction goals and critical areas where measures will be needed.
- Identify technical and financial assistance needed to implement the plan.
- Develop information/education component that identifies education and/or outreach activities for plan implementation.
- Schedule for implementing NPS management measures.
- Develop interim milestones to track implementation of management measures.
- Develop set of criteria to determine if load reductions are being met.
- Develop a monitoring component to evaluate effectiveness of management measures or BMPs over time.

and implementation of recommendations from the WMP within three months of approval of the WMP by the GA EPD.

Mid-term goal was a 35 percent reduction in sediment after initial implementation of WMP recommendations.

Long-term goals were defined as sustained community involvement in water quality protection, TMDL goal of 68.3 percent reduction in sediment in Cedar Creek and a 60.2 percent reduction in sediment in Folsom Creek, and a delisting of the two creeks.

Implementing WMP

Agricultural strategies are planned to include establishment of riparian buffers, stormwater management strategies, and controlling agricultural runoff associated with row crops, small-scale cattle facilities, and poultry houses.

Since a significant source of sediment loading with the watersheds was attributed to unpaved roads, it has been recommended that the local road department adopt maintenance practices and BMPs from the Georgia *Better Back Roads Field Manual* to achieve a reduction in sediment loading associated with erosion and sedimentation from unpaved roads in the two watersheds.

To implement each task needed to make the WMP a success, a responsible party has been identified along with proposed funding sources. Authorities or organizations relied upon for WMP implementation will include GSWCC, NRCS, Heart of Georgia Regional Commission, and the University of Georgia Agricultural Pollution Prevention Program.

Results

Following implementation of the BMPs within each watershed, it is estimated that sediment loading since 2007 for the Cedar Creek watershed will be reduced approximately 53 percent. For the Folsom Creek watershed, the estimated modeled reduction in sediment loading will be 67 percent.

Next Projects Now Underway

GSWCC is also working on a new Clean Water Act Section 319 project called the Nutrient Management Planning Initiative that will include two project areas. One is located in the Settingdown Creek Watershed that runs through North Georgia (primarily within Dawson and Forsyth counties but also a portion of Cherokee and Pickens counties).

The other project area is the Altamaha River Basin. The goal in this project area is to reduce water pollutants in Appling, Glynn, Jeff Davis, Long, McIntosh, Montgomery, Tattnall, Toombs, and Wayne counties (Southeast Georgia).

For both projects, GSWCC staff will conduct a free on-farm assessment, offer free soil testing, develop an updated Nutrient Management Plan (NMP), provide a record-keeping handbook to each farmer, and offer some limited incentive payments for participation in the program. GSWCC will assist in identifying potential funding sources to complete improvements based on the farm assessment. There is no cost to farmers for any of these services, although farmers may have to pay for some or all of the cost of improvements depending on the availability of funding sources, such as the USDA-NRCS Environmental Quality Incentives Program (EQIP) and other programs funded through the Farm Bill.

NMPs are key to reducing NPS pollution and are recommended for all animal feeding operations, including poultry farms. An assessment and updated NMP saves costs while improving soil health and water quality by avoiding the over application of fertilizers to fields, preventing runoff of nutrients into creeks and streams, and improving the disposal of dead animals.

Agricultural producers in either of these areas that are interested in participating in these projects should contact GSWCC staff. For the Settingdown Creek Watershed, individuals should contact Jessica Bee in the GSWCC Region I office in Calhoun by calling 706-624-1434 or emailing *jbee@gaswcc.org*. In the Altamaha River Basin, individuals should contact Jason Mallard in the GSWCC Region III office in Statesboro by calling 912-681-5241 or emailing *jmallard@gaswcc.org*.

GSWCC has produced a free manual, Best Management Practices for Georgia Agriculture, listing agricultural water quality improvements, which is available online at *http://gaswcc.georgia.gov/best-management-practices-georgia-agriculture*. Printed copies can be obtained free of charge, as well.

We believe, and these projects demonstrate, that working in voluntary cooperation with private landowners is the best way to make lasting improvements to the quality of water that runs through agricultural land in Georgia and reducing the cost of treating this water when it arrives at your water system.

[1] Estimates for reductions in nitrogen and sediment loadings were based on the Region 5 EPA model, as per EPD recommendations at this point. Long-term monitoring is not being completed at this time due to a lack of funding.