

Georgia's Statewide Nonpoint Source Management Plan

Georgia Department of Natural Resources
Environmental Protection Division
2019 Update

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EXECUTIVE SUMMARY

Georgia's initial *Nonpoint Source Assessment Report* and *Nonpoint Source Management Program* were completed in compliance with the Water Quality Act of 1987 and approved by the U. S. Environmental Protection Agency (USEPA) in January 1990. The biennial report, *Water Quality in Georgia*, as required by Section 305(b) of Public Law 92-500, serves as the current process adopted by the Georgia Environmental Protection Division (GAEPD) for updating the *Nonpoint Source Assessment Report*. Similarly, every five years, GAEPD reviews and revises the *Statewide Nonpoint Source Management Plan* (Plan). The Plan provides specific long term goals and short term activities to ensure the implementation of the *Nonpoint Source Management Program*. The Plan keeps the *Nonpoint Source Management Program* current and serves as an up-to-date tool for controlling and preventing pollution from nonpoint sources. This document represents a revision of the *Statewide Nonpoint Source Management Plan*, updated in 2000 and 2014, and will be in effect from 2019 through 2024.

The revision is intended to meet the requirements for funding under Section 319(b) of the Clean Water Act and USEPA Section 319 program guidelines published April 2013. The *Statewide Nonpoint Source Management Plan* continues to implement a watershed approach and is designed to be an informative planning document for all partners and stakeholders involved in the prevention, control, and abatement of nonpoint sources of pollution in Georgia.

This revision reflects new priorities and practices toward nonpoint source pollution control and achieving Georgia's water quality standards for fishable and swimmable waters. The Plan includes the following updates:

1. The 2019 Plan is organized by significant land use categories (agriculture, silviculture, urban, wetlands, coast, surface mining, and groundwater). This structure is a change from the 2014 version, which organized the Plan by functional areas. GAEPD chose to reformat the Plan along land use areas to better align with the TMDL development and implementation process. The Plan continues to include the comprehensive categories of nonpoint source pollution identified by USEPA (agriculture, silviculture, construction, urban runoff, resource extraction, land disposal, and other nonpoint sources).
2. The 2014 Plan was developed as an inventory of all nonpoint source management in Georgia. The 2019 Plan is intended to be a useable planning document with direct implementation goals. The 2019 Plan refocuses on long-term and short-term goals and reduces the amount of background information provided. Through this process, the Regional Planning and Statewide Water Planning sections were combined, as were the Healthy Watershed Initiatives and 319 Grants sections. The New Tools and Watershed Prioritization sections were identified as providing historical value, but no new goals or recommendations. As a result, these sections were removed. No other sections were removed in this revision.
3. The 2019 Plan includes a number of new or updated goals under each chapter and section. Completed goals, such as the update to the Georgia Stormwater Management Manual or the approval of the Coastal Nonpoint Source Program, have been removed. Goals have been updated to refocus on current nonpoint source management priorities and lessons learned.

4. The 2019 Plan includes a new “Assessment of Plan Implementation” chapter. This chapter has been added to reflect how GAEPD will assess the efficacy of various Best Management Practices (BMPs) and water quality improvement efforts. This chapter will go beyond the tracking procedures outlined in the previous version to explicitly connect plan implementation to water quality.

ACKNOWLEDGEMENTS

GAEPD would like to thank the following contributors:

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INTRODUCTION

This revision of the *Statewide Nonpoint Source Management Plan* was developed through a collaborative process, incorporating input from stakeholders involved in nonpoint source pollution management activities throughout Georgia and technical experts most familiar with nonpoint source pollution in Georgia. This revision encompasses and includes by reference all previous revisions of Georgia's *Statewide Nonpoint Source Management Plan* except where those revisions are superseded by sections of this current revised plan with new goals and objectives.

GAEPD is responsible for administering and enforcing laws to protect the waters of the State, defined to include surface water and groundwater. Consequently, GAEPD has been designated as the administering or lead agency for implementing the State's *Nonpoint Source Management Program*. Regulatory responsibilities include establishing water quality use classifications and standards, assessing and reporting on water quality conditions, issuing point source discharge permits, issuing nonpoint source permits, issuing surface and groundwater withdrawal permits, and regulating land-disturbing activities. These regulatory programs are complemented by non-regulatory programs, including Section 319(h) Nonpoint Source Implementation Grants, Clean Water State Revolving Fund, Georgia Project WET (Water Education for Teachers), Georgia Adopt-A-Stream, and Rivers Alive.

State agencies are essential partners in efforts to implement the State's Nonpoint Source Management Program. These partners include the Coastal Resources Division (CRD) and the Wildlife Resources Division (WRD) in the Georgia Department of Natural Resource (GADNR); the Georgia Department of Public Health (GADPH); Georgia Forestry Commission (GFC); the Georgia Soil and Water Conservation Commission (GSWCC); and the Georgia Environmental Finance Authority (GEFA).

Georgia has documented successful implementation of the plan since 2009. Over the past nine years, GAEPD has published 14 stories about primarily nonpoint source-impaired waterbodies in Georgia where restoration efforts, funded by Section 319(h) Nonpoint Source Implementation Grants, have led to documented water quality improvements. Additional information on Georgia's Success Stories can be found at <https://www.epa.gov/nps/nonpoint-source-success-stories-georgia>.

GAEPD Mission Statement

The Georgia Environmental Protection Division (GAEPD) protects and restores Georgia's environment. We take the lead in ensuring clean air, water and land. With our partners, we pursue a sustainable environment that provides a foundation for a vibrant economy and healthy communities.

GAEPD Vision Statement

- Georgia's environment is healthy and sustainable. Natural resources are protected and managed to meet the needs of current and future generations.
- All Georgians understand the importance of a healthy and sustainable environment and act to protect and restore it.
- GAEPD is responsive, effective and efficient. Associates are valued and empowered to use their expertise and creativity as leaders in protecting Georgia's environment.

Nonpoint Source Management Program Goal

The overall goals of the *Statewide Nonpoint Source Management Program* are to protect and restore Georgia's waters and to manage grant funds effectively. These goals are encapsulated in the Key Components section. Long-term goals and strategic action plans are provided throughout the Plan in the relevant sections.

The Clean Water Act and Georgia

The Clean Water Act (CWA) of 1972 is the overarching federal law for managing surface water quality in the United States. The CWA employs regulatory and non-regulatory tools to reduce discharges of pollution into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The CWA's goal is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters" so as to improve "water quality which provides for the protection and propagation of fish, shellfish and wildlife and provides for recreation in and on the water," wherever attainable. The fundamental purpose of the CWA has been widely communicated as making the nation's waters "fishable and swimmable." GAEPD is the delegated authority to administer the Clean Water Act requirements in Georgia.

Water Quality Standards

Georgia has 14 major river basins: Altamaha, Chattahoochee, Coosa, Flint, Ochlockonee, Ocmulgee, Oconee, Ogeechee, St. Marys, Satilla, Savannah, Suwannee, Tallapoosa, and Tennessee. The rivers in Georgia provide the water needed by aquatic life, animals, and humans. Georgia's water also provides significant recreational opportunities, is used for industrial purposes, drives turbines to provide electricity, and assimilates wastes.

The Board of Natural Resources (DNR Board) is authorized to establish water quality standards for the waters of the State. The State's water quality standards include designated uses, narrative and numeric criteria that are protective of the designated uses, and an antidegradation policy that does not allow the lowering of the quality of high quality waters in the State unless the lowering is necessary to accommodate important economic and social development.

Each water body in the State is assigned a designated use. For each designated use, water quality standards or criteria have been developed that establish the framework used by GAEPD to make regulatory decisions. All of Georgia's waters are classified with a designated use of fishing, recreation, drinking water, wild river, scenic river, or coastal fishing. A complete summary of water use classifications and criteria for each use can be found in Georgia's Rules and Regulations for Water Quality Control.

During the 2016 Triennial Review, GAEPD proposed *E. coli* and enterococci criteria for waters designated as fishing, coastal fishing, and drinking water to protect members of the public engaged in secondary contact recreation. The proposed criteria were adopted by the DNR Board, and GAEPD is awaiting approval of these new criteria from USEPA. Georgia has also adopted 31 numeric criteria for protection of aquatic life and 94 numeric criteria for the protection of human health. Georgia's Rules and Regulations for Water Quality Control contain a list of toxic substance criteria that apply to all waters in Georgia.

Georgia has eight large publicly-owned lakes that have site-specific water quality standards: West Point, Jackson, Walter F. George, Lanier, Allatoona, Carter's, Oconee, and Sinclair. The site-specific criteria adopted include chlorophyll-a, pH, total nitrogen, and total phosphorus. Criteria for bacteria, dissolved oxygen, and temperature that support each lake's designated use also apply. Standards for major tributary phosphorus loadings were also established for West Point, Jackson, Walter F. Georgia, Lanier, Allatoona, and Carter's Lakes. The standards for the eight lakes are summarized in Georgia's Rules and Regulations for Water Quality Control.

Water Quality Monitoring

Georgia's Watershed Protection Branch works to effectively manage, regulate, and allocate the water resources of Georgia. To achieve this goal, monitoring the water resources of the State is necessary to establish baseline and trend data, document existing conditions, examine trends, establish wasteload allocations for new and existing facilities, verify water pollution control plan compliance, study impacts of specific discharges, determine improvements resulting from upgraded water pollution control plants, support enforcement actions, collect data for criteria development, document water use impairment and reasons for impairment, and develop TMDLs. Trend monitoring, lake, stream, and estuary sampling, intensive surveys, biological monitoring, toxic substance sampling, aquatic toxicity testing, and facility compliance sampling are some of the monitoring tools used by the GAEPD to assess Georgia's water resources. More information can be found in GAEPD's Monitoring Strategy and Quality Assurance Program Plan.

Water Quality Assessment 305(b)/303(d)

Water quality data are assessed to determine whether a waterbody meets its water quality standards. If the water quality standards are met, then the water body is said to be "supporting" its designated use. If the water quality standards are not met, then the water body is said to be "not supporting" its designated use. The data reviewed include GAEPD monitoring data, data from other State, Federal, and local governments, and data from groups with approved Sampling & Quality Assurance Plans (SQAPs). Guidance on submitting water quality data for use by the GAEPD in the listing process can be found in the *Guidance On Submitting Water Quality Data For Use By The Georgia Environmental Protection Division In 305(b)/303(d) Listing Assessments (2002)*.

Assessment of Causes of Nonsupport of Designated Uses

There are many potential pollutants that may impair the designated use of rivers, streams, lakes, estuarine, and coastal waters. These pollutants are referred to as the causes of nonsupport. Georgia's Integrated 305(b)/303(d) List of Waters includes all waters for which available data were assessed against applicable water quality standards and the designated uses were determined to be supported, not fully supported, or more data is needed before an assessment can be made ("assessment pending"). The List of Waters includes a "causes" column for each assessed waterbody.

Assessment of Potential Sources of Nonsupport of Designated Uses

Pollutants that impact waterbodies in Georgia may come from point or nonpoint sources. Georgia's Integrated 305(b)/303(d) List of Waters includes a "sources" column for each assessed waterbody.

Total Maximum Daily Loads Development

Waterbodies on the 303(d) list are required to have a Total Maximum Daily Load (TMDL) evaluation for the water quality constituent(s) in violation of the water quality standard. A TMDL is the calculation of the maximum amount of pollutant a waterbody can receive and still safely meet water quality standards. The TMDL allocates the load to point sources, (Wasteload Allocation or WLA), and nonpoint sources (Load Allocation or LA), which includes both anthropogenic and natural background pollutant sources. The equation for calculating TMDLs is:

$$\text{TMDL} = \sum \text{WLA} + \sum \text{LA} + \text{MOS}$$

where WLA is the wasteload allocation assigned to existing and future point sources and constitutes a water quality based effluent limit; LA is the load allocation attributed to existing or future nonpoint sources of pollution and to natural background sources, tributaries, and adjacent streams; and MOS is the margin of safety that can be either implicit or explicit.

GAEPD conducts a significant amount of modeling in the development of WLAs and TMDLs. A summary of recent TMDL activity is in the table below.

Year	# of segments with TMDL revised/ developed	River Basins	EPA Approval
2011	21 (2010 303(d) List)	Altamaha, Ocmulgee, Oconee	2012
2012	29 (2010 303(d) List)	Chattahoochee, Coosa, Flint	2013
2013	38	Coosa, Ogeechee	2014
2015	135 (2014 303(d) List)	Coosa, Ogeechee, Satilla, Savannah, Suwanee, Tallapoosa, and Tennessee	2016
2016	91 (2014 303(d) List)	Altamaha, Ocmulgee, Oconee, Chattahoochee, Flint, Satilla, and Suwanee	2017

Table 1. A summary of the number of segments with a TMDL revised or developed in a given year. As of 2018, Georgia has developed 1,855 TMDLs covering 21 different pollutants.

TMDL Implementation

TMDLs are implemented through changes in National Pollutant Discharge Elimination System (NPDES) permits to address point source improvements and through the use of BMPs to address nonpoint source pollution. GAEPD coordinates with local governments and industries to update NPDES permits to address point sources (see NPDES Permit Program section). The development and implementation of various types of TMDL implementation plans is used to address the nonpoint sources of pollution. These types of plans include Tier 2 implementation plans, Watershed Improvement Plans (WIPs), and Watershed Management Plans (WMPs).

Tier 2 implementation plans initiate public outreach, bring together local stakeholder groups to assess the sources and causes of the impairment, identify appropriate management practices and activities, and set forth a plan of action to monitor progress and achieve the TMDL for each segment impairment. As of 2010 GAEPD no longer completes Tier 2 plans.

WIPs build local capacity for watershed management within the State’s Water Planning Regions as defined by the *Georgia Comprehensive State-wide Water Management Plan* and lead to the restoration of impaired stream segments. These plans, divided into two one-year contracted

phases, fund development of local partnerships, identification of specific pollution sources, initial targeted monitoring and visual field surveys, prioritization of pollution sources and pollution reduction controls, development of schedules, and the final strategy for securing funds to implement restoration activities or BMPs. Both WIPs and WMPs meet the USEPA Nine Key Elements of Watershed Planning and Natural Resources Conservation Service Environmental Quality Incentives Program (NRCS EQIP) eligibility priorities, which can lead to additional funding from 319(h) grants and other resources. These plans are intended to be a road map in addressing water quality concerns within small watersheds (Hydrologic Unit Code [HUC] 10 & 12). The Nine Key Elements provide a solid and consistent framework for watershed-based plans and cover plan components such as assessments, stakeholder involvement, outreach, implementation schedules, milestones and management measures.

NPDES Permit Program

When the TMDL for an impaired stream identifies point source discharges as the primary cause for water quality impairments, GAEPD utilizes NPDES permits to implement point source approaches for water quality improvement. NPDES permits are issued for all point source discharges to waters of the state.

Wastewater

The Clean Water Act requires NPDES permits for point source wastewater dischargers, compliance monitoring for those permits, and appropriate enforcement action for violations of the permits. In 2014-2018, NPDES and Pretreatment permits were issued, modified, or reissued for 562 municipal and private discharges and for 439 industrial discharges.

Combined Sewer Overflows

GAEPD has issued NPDES permits to the three cities in Georgia that have Combined Sewer Overflows (CSOs) in their wastewater collection systems: Albany, Atlanta, and Columbus. The permits require that the CSO not cause violations of Georgia Water Quality Control Standards.

Stormwater

The Federal Clean Water Act Amendments of 1987 require NPDES permits to be issued for certain types of stormwater discharges, with a primary focus on stormwater runoff from industrial operations, including large construction, and large urban areas. USEPA promulgated the Phase I Stormwater Regulations on November 16, 1990. Then, in 1999, USEPA promulgated the Phase II regulations for stormwater, which included regulating small MS4s and small construction and providing a No Exposure Exclusion option for industrial stormwater. GAEPD developed and implemented a stormwater strategy which assures compliance with the Federal Regulations.

Construction Stormwater

GAEPD implements a permit program regulating stormwater discharges from construction activities. The program is implemented through three general NPDES permits, which were reissued in August 2018. Key changes to the permits included adding electronic reporting requirements and requirements for the management of construction materials on site, per the 2014 Effluent Limitations Guidelines and Standards for the Construction and Development Point

Source Category rule. Changes in the permit will lead to better design, installation, and maintenance of BMPs for land-disturbing activities.

Municipal Stormwater

Phase I permit requirements apply to Large and Medium Municipal Separate Storm Sewer Systems (MS4s). Forty-five Phase I Large MS4 permits were issued in June 1994 and 13 Phase I Medium MS4 permits were issued in April and May of 1995. These permits are issued for a five-year period and have been reissued several times since their initial issuance.

Georgia issued the first Phase II Small MS4 permits in 2002. All of Georgia's Phase II permits are general permits. Phase II permit requirements currently apply to 106 municipalities, 6 Department of Defense bases and the Georgia Department of Transportation. Like the Phase I Large and Medium permits, these permits are issued for a five-year period and have been reissued several times since their initial issuance.

With each reissuance, the permits have contained more measurable and enforceable requirements. During the most recent round of MS4 permit reissuance beginning in 2017, Georgia further implemented green infrastructure (GI) and low impact development (LID) requirements first introduced in the 2012 and 2014 permits. Updated post-construction standards were introduced in the permit that align with the Georgia Stormwater Management Manual (GSMM). The second edition of the GSMM was published in 2016 and included updates to the technical requirements and added certain planning elements of the Coastal Stormwater Supplement that rely heavily on GI/LID practices to create sustainable development and reduce urbanization's impact on water quality.

Industrial Stormwater

Since 1993, Georgia has regulated stormwater runoff associated with industrial activity through a general permit. Following Federal guidance, stormwater regulations emphasize source control and implementation of site-specific BMPs that are combined with benchmark monitoring of stormwater discharges for many industrial sectors. To date, approximately 3,000 facilities have either submitted Notices of Intent (NOIs) to gain coverage under this general permit or No Exposure Exemptions (NEEs) to be exempted from permit coverage.

The 2017 reissuance of the Industrial General Permit for stormwater (IGP) incorporated USEPA's 2015 Electronic Reporting Rule. Implementation of e-reporting allows GAEPD to provide compliance assistance to the regulated community through more accurate permittee data and annual report submittals. _____

Nonpoint Source Pollution Plan – Overview

Georgia is rich in water resources, with approximately 44,056 miles of perennial streams, 23,906 miles of intermittent streams, and 603 miles of ditches and canals for a total of 70,150 stream miles. The State also has 4.8 million acres of wetlands, of which 9% are tidally affected, 425,582 acres of public lakes and reservoirs, 854 square miles of estuaries, and 100 miles of coastline.

Fecal coliform, biota (sediment), and dissolved oxygen (DO) make up the majority of the listed impairments and Georgia's TMDLs; therefore, this Plan focuses pollutant reduction and restoration activities on these pollutants. Addressing these major pollutants may also address co-occurring pollutants, such as metals.

Nutrient pollution is a national priority; therefore, GAEPD added nutrients to the Plan's list of priority pollutant (fecal coliform, biota, and DO). Georgia has taken substantial steps to address nutrient pollution. Georgia has nutrient and chlorophyll standards for eight major lakes and a strategy outlining the process for developing nutrient standards for 26 other lakes, 11 estuaries, and possibly streams, rivers, and wetlands. GAEPD has developed nutrient TMDLs for three lakes that have chlorophyll as the biological response indicator for nutrient enrichment. These TMDLs address watershed contributions from stream tributaries to these lakes. Additionally, Georgia borders Florida, Tennessee, Alabama, South Carolina, and North Carolina, and is required to meet nutrient criteria for these states at the state line. This means that Georgia must determine nutrient load allocations to meet the other state's nutrient criteria and TMDLs.

Because land use affects the types and quantities of nonpoint source pollutants, understanding the land uses in a given watershed provides important insight into the sources of nonpoint source pollutants. During TMDL development and source loading assessments, land use is determined to identify potential sources of impairment for 303(d) listed waters. Combining the information in the 303(d) list with the 2014 Georgia Land Use Trends (GLUT) coverage and the source assessments found in the TMDLs can provide insight into the effect of land use on water quality.

This information can be used to generalize the extent to which Georgia streams are impaired for fecal coliform, biota, DO, and nutrients in urban vs nonurban watersheds. Nonurban land uses account for approximately three times as many impaired miles as urban land uses. This information, combined with Georgia's land use data, supports the distribution of work within the Plan between silviculture, agriculture, and urban BMPs. The extent to which each land use contributes to each pollutant listed on the 303(d) list is unknown. General extrapolations can be made in relation to the impaired water and the contributing watershed primary land use.

Georgia's *2019 Statewide Nonpoint Source Management Plan* encompasses statewide nonpoint source issues. Actions called for in this Plan are regulatory or non-regulatory in nature, fall to programs within GAEPD or other state agencies, and rely on the participation of partnering organizations. In all cases, the actions called for in this plan are intended to reduce, remove, or protect waters in Georgia from the effects of nonpoint source pollution.

This plan is organized into the following land use categories: silviculture, agriculture, urban, wetlands, coast, surface mining, and groundwater. Each land use category is organized to be useful independently of other land use categories. _____

Silviculture

Georgia's forests have a significant effect on water quality. Of Georgia's 37 million acres of land area, 24.8 million acres is forestland, of which 23.6 million acres is timberland available for commercial use. This is more timberland acreage than any other state. While the vast majority of Georgia forestland is available for commercial utilization, private non-industrial landowners own 80% of Georgia's timberland, corporate landowners own 12%, and land in public ownership makes up 8%.

Georgia's forestlands provide myriad benefits to citizens, including clean air and clean water. As of 2008, Georgia's forest resources contribute approximately \$27.2 billion and 118,423 jobs annually, making forestry Georgia's second largest employer. Effective stewardship of Georgia's forestlands is critical to preserve the quality of life and economic well-being of Georgia and its citizens.

Silviculture is the management of land for timber and other forest products through normal forestry practices in an ongoing fashion, not simply the harvesting of timber for the purpose of land conversion to another use. The effect of silviculture on water quality depends on site characteristics and climatic conditions, as well as the forest practices used and how well those practices are employed. Of the nonpoint source pollution related to silvicultural activities, an estimated 90% originates from either poorly located roads or improperly constructed forest roads.

Without properly implemented BMPs, the potential for increased sediment, stream temperature, and nutrient loading and decreased DO levels may occur. Forestry activities, such as harvesting and road building, can also affect hydrology of the watershed; therefore, pre-harvest planning needs to be considered on the watershed and subwatershed scale. Forestry BMPs provide guidelines on properly using and implementing forestry practices to avoid and/or reduce NPS pollution impacts. When implemented well, these BMPs are highly effective. Some silviculture activities that contribute to nonpoint source pollution are provided in the table below:

Pollutant of Concern	Common Silviculture Sources
Fecal coliform	Silviculture is not a common source of fecal coliform
Biota (sediment)	Poorly located, constructed, and/or maintained roads Logging slash and debris deposited in streams can alter stream flows and increase sedimentation
Dissolved oxygen	Excessive organic debris generated by forestry activities can increase biochemical oxygen demand and decrease DO Removing vegetation can increase stream temperatures, reducing DO
Nutrients	Forest fertilizers Sudden removal of vegetation can increase leaching of nutrients from the soil Note: Relative to other land uses, fertilizer applications for forestry are

generally infrequent and minimized due to economics and efficiency.

Silviculture Nonpoint Source Program

The silviculture component of the *Nonpoint Source Management Program* has its origins in a collaborative partnership initiated by the Governor's Silviculture Nonpoint Source Pollution Technical Task Force in 1977. This technical task force was developed, as required by the Federal Water Pollution Control Act, to assess the extent to which silvicultural activities and practices, primarily those contributing to soil erosion and sedimentation, were negatively affecting water quality in Georgia. The task force developed guidelines for the protection and improvement of the physical, chemical, and biological integrity of the State's waters so that they remain fishable and swimmable for current citizens and future generations.

The initial task force involved the Georgia Forestry Commission (GFC), GAEPD, Warnell School of Forest Resources at the University of Georgia (UGASFR), University of Georgia College of Agriculture and Environmental Sciences (UGACES), United States Forest Service (USFS), the Natural Resources Conservation Service (NRCS), Georgia Soil and Water Conservation Commission (GSWCC), Georgia Forestry Association (GFA), Georgia Farm Bureau Federation (GFBF), the forestry industry, and Georgia Conservancy.

At the conclusion of a three-year study, recommendations to minimize or eradicate water quality impacts were developed and published in 1981. These recommendations, labeled as BMPs, were published in a manual entitled *Georgia's Best Management Practices for Forestry*. Since its initial publication, the manual has received key updates to reflect changes in technology and rules and regulations. The current version of the manual was published in May 2009. The manual was again updated, reviewed, and vetted by various stakeholders in late 2018. The updates in the new manual are relatively minor, but they do add further clarifications to long-term proven and successful forestry BMPs. The newly updated manual will be published in early 2019.

Since 1991, the GFC has conducted BMP Implementation and Compliance Surveys designed to assess the status of practices to reduce and eliminate negative water quality impacts of silviculture. These survey efforts, coupled with BMP assurance examinations conducted in the course of carrying out complaint resolution, provide insight into progress achieved in BMP implementation and compliance. With the release of the *Results of Georgia's 2017 Silvicultural Best Management Practices Implementation and Compliance Survey*, the statewide average of BMP implementation has improved substantially from 65% in the 1991 report to its current level of 93.17%. In fact, the scores have been at high levels for over a decade, ranging from 90% to as high as 95.3% in 2011. The number of actual water quality risks has also decreased since the late 1990s, ranging from 448 in 1998, to a low of just 22 in 2009, with the latest figure from 2017 being just 51. Actual water quality risks are now relatively rare and tend to be concentrated on a small number of poorly executed sites; however, education, monitoring, and complaint investigation/mediation is necessary to keep scores high and the occurrence of actual water quality risks low.

Education of the commercial forestry community through workshops, demonstrations, presentations, and direct communication is a major component of the silviculture portion of the *Statewide Nonpoint Source Management Plan*. Additional components include: survey efforts to

determine BMP implementation and compliance; periodic evaluation and revision of BMPs; and maintenance of a Statewide network of foresters who investigate and review complaints, conduct special investigations, and when necessary, direct enforcement actions to resolve challenging or difficult problems.

The GFC also investigates and mediates complaints or concerns involving forestry operations on behalf of GAEPD and the United States Army Corps of Engineers (USACE) when wetlands are involved. GFC has no regulatory authority and works to achieve voluntary compliance. In situations where compliance is not voluntarily resolved, cases are worked through the Sustainable Forestry Initiative's (SFI) Inconsistent Practices Committee or are turned over to GAEPD, USACE, or USEPA for enforcement action.

Silviculture Resources

- *Georgia's Best Management Practices for Forestry Manual*. Provides effective BMPs to prevent or reduce nonpoint pollution from forestry operations.
- GFC's direct forestry advice, management plans, and educational programs. GFC foresters provide this service continually to citizens and landowners on the full range of forestry topics, including soil and water conservation and forestry BMPs. This is also a key component when investigating/mediating complaints.
- *Statewide Silvicultural BMP Implementation and Compliance Surveys*. These surveys are used to determine: rates of BMP implementation; acres in BMP compliance; effectiveness of BMPs for any needed modifications; actual miles of streams that may have forestry water quality impairments; and targets for future training.
- Georgia Master Timber Harvester Program. This logger education program includes a component devoted to the protection of water resources and BMP implementation.
- Reforestation Cost-sharing Programs. The NRCS and the Farm Services Agency (FSA) provide cost-share funds for reforestation under two main programs: the Conservation Reserve Program, and the Environment Quality Incentives Program (EQIP). GFC acts as a technical advisor and partner for these cost-share programs. GFC also administers cost-share funds for restoration and prevention of pine beetles under the Southern Pine Beetle Cost Share Program, funded by USFS.
- *Land Resources and Management Plan*. This plan provides the USFS with direction for management of land in the National Forest System. Approximately 865,000 acres in Georgia are in the National Forest System.

Long Term Goals and Strategic Plan

Long Term Goal 1: Update and revise the Master Timber Harvester (MTH) Program to reflect results from the most current *Silvicultural BMP Implementation and Compliance Survey* in 2020, 2022, and 2024.

Activity: GFC will continue to offer Continuing Logger Education (CLE) opportunities.

Timeframe: Throughout 2019-2024.

Funding: 319 funds and match.

Performance measure: Provide at least two BMP demonstration Field Days available for CLE credit annually. Track the number of attendees at each of the Field Days.

Results: Attendees will receive up-to-date information about silviculture BMPs, which

will result in better BMP implementation.

Deliverables: Provide a summary of activities for inclusion in the 319(h) Annual Report prepared by GAEPD for USEPA.

Activity: GFC will continue to monitor stream crossings, especially the use of temporary bridges for logging, in order to update information and materials provided at MTH training to reflect the impact of stream crossings.

Timeframe: Completed during each *Silviculture BMP Implementation and Compliance Survey*.

Funding: 319 funds and match.

Performance measure: Updated information of monitored stream crossings with each *Silviculture BMP Implementation and Compliance Survey*.

Results: Monitoring stream crossings will provide information about the effect of silviculture on streams in these potentially highly-affected areas. This information can be integrated into training to promote BMP implementation and good stewardship.

Deliverables: A copy of the updated information and materials that are provided at MTH training.

Activity: GFC will meet with MTH program stakeholders to determine if the current curriculum addresses the results of the BMP Survey.

Timeframe: No later than 2024.

Funding: 319 funds and match.

Performance measure: GFC to host a minimum of one annual conference call or meeting.

Results: Stakeholder engagement is an important part of implementing any education program. By receiving feedback from stakeholder, GFC will be in a better position to provide relevant and useful information.

Deliverables: Stakeholder meeting agenda and summary.

Long Term Goal 2: Revise and update Georgia's Best Management Practices for Forestry Manual to reflect changes in logging practices and BMPs by 2030.

Activity: Initiate the revision and update process for *Georgia's Best Management Practices for Forestry Manual*.

Timeframe: Ongoing through 2024.

Funding: 319 funds and match.

Performance measure: GFC will provide regular updates to GAEPD on revision progress.

Results: *Georgia's Best Management Practices for Forestry Manual* is an important resource for foresters. An updated manual would provide current information for effective BMP implementation, protecting water resources.

Deliverables: Annual updates.

Long Term Goal 3: Conduct biennial Silvicultural BMP Implementation and Compliance Survey in 2019, 2021, and 2023.

Activity: GFC will inspect an average of 21,000 acres for each *Silvicultural BMP Implementation and Compliance Survey*.

Timeframe: Biennial, occurring in 2019, 2021, and 2023.

Funding: 319 funds and match.

Performance measure: Number of acres inspected.

Results: The biennial survey provides critical information about BMP implementation rates. Understanding BMP implementation allows GFC and partners to update education and outreach efforts and track program effectiveness.

Deliverables: Biennial survey report.

Long Term Goal 4: Conduct Statewide BMP assurance monitoring of active forestry operations annually.

Activity: Identify active forestry sites and respond to complaints and requests.

Timeframe: Ongoing.

Funding: 319 funds and match.

Performance measure: On behalf of the GAEPD, Local Issuing Authorities (LIAs), USACE, and USEPA, investigate, mediate, and advise all parties concerning complaints and requests as they occur on forestry sites. Historically, there have been as many as 75 complaints/requests per year.

Results: Complaint response will allow GFC to directly address instances of nonpoint source pollution leaving forestry sites and entering waterbodies. By targeting areas of impairment, the effect of this intervention may be even more pronounced.

Deliverables: Summary or log of complaints and responses, including locations.

Long Term Goal 5: Prepare the Silvicultural portion of the biennial report, *Water Quality in Georgia*, as required by Sections 303(d), 305(b), and 319(a) of the CWA.

Activity: Produce the Silvicultural section of the Water Quality in Georgia report by December 31 of 2019, 2021, and 2023.

Timeframe: Biennial, by December 31.

Funding: 319 funds and match.

Performance measure: Timely delivery of the silviculture section.

Results: Tracking is an important component of plan implementation. This information will allow GAEPD, USEPA, and other partners to see the work done in silviculture and the effect on water quality.

Deliverables: Silviculture section of *Water Quality in Georgia*.

Long Term Goal 6: Achieve a minimum of 90% compliance for all recommended BMPs for silviculture through 2030.

Activity: Identify BMPs with lowest percentage of compliance.

Timeframe: Prior to the 2021 and 2023 survey cycles.

Funding: 319 funds and match.

Performance measure: Provide list of compliance percentages (scores) to the BMP committee for review and comment.

Results: To improve water quality, partners must be aware of weak links and potential failure points. By identifying BMPs with the lowest percentage of compliance, GFC can target these weak links and protect water quality.

Deliverables: A list of compliance percentages for each BMP.

Activity: Provide a plan of action to address lowest percentage BMP categories for the following two-year survey cycle.

Timeframe: Prior to the 2021 and 2023 survey cycles.

Funding: 319 funds and match.

Performance measure: Demonstrate an improvement in compliance for BMPs addressed in the plan of action and/or maintenance of a 90% score or higher.

Results: The plan of action will allow GFC to systematically and effectively address the BMPs with the lowest compliance percentage. This will result in improved compliance scores and better water quality outcomes.

Deliverables: Plan of action, compliance percentages for identified BMPs

Activity: Educate private landowners on forestry BMPs.

Timeframe: Continually, upon identifying lowest percentage BMP categories.

Funding: 319 funds and match

Performance measure: Hold at least one meeting and make materials accessibly online.

Results: Education is important for proper BMP implementation. By targeting the education on the BMPs with the lowest compliance percentage, GFC can use resources effectively and see gains in compliance rates and water quality outcomes.

Deliverables: Meeting agenda and notes, materials shared online

Agriculture

Agriculture is an important sector of Georgia's economy. According to the 2017 Georgia Farm Gate Value Report published by the University of Georgia Center for Agribusiness and Economic Development, agriculture contributed a total farm gate value of \$13.7 billion in 2017. Beyond the farm gate, agriculture contributes a total of \$73.3 billion to Georgia's \$972 billion economy (2018 Ag Snapshots, the University of Georgia Center for Agribusiness and Economic Development). Georgia ranks first in the 2016 national commodity rankings in the production of blueberries, broilers, peanuts, and pecans; second in cotton and rye; third in bell peppers, cucumbers, peaches and sweet corn; fourth in cantaloupe, total pullets, and watermelon; and fifth in squash and tobacco. According to the 2012 Census of Agriculture, Georgia has 42,257 farms with 9.6 million acres of land devoted to farms and an average farm size of 228 acres. There were 3.6 million acres of harvested cropland and 1.1 million acres of irrigated farm land in 2012.

Georgia's agriculture is diverse. The largest commodity group is poultry and eggs, contributing 38.9% of the farm gate value, followed by the production of row and forage crops (17.6%), livestock and aquaculture (10.8%), vegetables (8.3%), and ornamental horticulture (6.1%). Agriculture is located throughout Georgia, however, most of the cropland is located in south Georgia, while north Georgia counties account for a higher percentage of the poultry and livestock production.

Agriculture can lead to degraded water quality if BMPs are not properly implemented. Nationally, agricultural nonpoint source pollution is the leading source of water quality impacts to surveyed rivers and lakes, the third largest source of impairments to surveyed estuaries, and a major contributor to groundwater contamination and wetland degradation (National Water Quality Inventory, USEPA, 2004). Modeling for the implementation of the Regional Water Plans, as well as for TMDLs and watershed management planning processes, often indicates that agricultural contributions are significant. Some agricultural activities that contribute to nonpoint source pollution are provided in the table below:

Pollutant of Concern	Common Agriculture Sources
Fecal coliform	Improper land application of animal wastes Improper manure application Direct animal input
Biota (sediment)	Soil loss from cropland Removal of bank vegetation can lead to bank erosion, which can be amplified by allowing livestock unrestricted access to streams
Dissolved oxygen	Animal wastes, including bedding materials, and other organic solids can decrease DO
Nutrients	Fertilizer application Animal wastes

Agricultural Nonpoint Source Program

An effective agricultural nonpoint source management program requires many partners working together with input from key stakeholders, including farmers. Conservation practices that managers recommend must be based on sound science and economics and have the potential to achieve water quality goals. The University of Georgia College of Agricultural and Environmental Sciences (UGA CAES) and the United States Department of Agriculture's Agricultural Research Service (USDA ARS) conduct numerous studies around Georgia on a variety of agricultural management practices. Many of these studies are focused on evaluating the effectiveness of various BMPs and have been published in scientific literature and Extension bulletins.

Once research and data have identified effective conservation practices, farmers, agency personnel, and private and nonprofit entities must work together to implement those practices in the most effective locations and ensure that the practices are properly managed and maintained. The Georgia Soil and Water Conservation Commission (GSWCC) and cooperating agencies promote the voluntary adoption of BMPs through educational programs and materials. Created in 1937, the GSWCC was formed to protect, conserve, and improve the soil and water resources of Georgia. Much of GSWCC's work is completed through locally-led Soil & Water Conservation Districts. Each district is comprised of anywhere from one to nine counties. All of Georgia's 159 counties belong to one of 40 Soil & Water Conservation Districts. A Commission Board appointed by the Governor and comprising five supervisors from different regions of the State serves as the coordinator and guide for these efforts.

In addition to the technical support and education programs described above, certain agricultural activities, specifically Concentrated Animal Feeding Operations (CAFOs), are subject to regulatory programs. The Georgia rules require animal feeding operations with more than 300 animal units (AU) to apply for a permit. CAFOs are regulated primarily through state-issued land application system (LAS) permits, though some may be covered by federal NPDES permits. Currently, 114 farms have liquid manure systems that require permits. Of these, 110 have state LAS permits and 4 have federal NPDES CAFO permits. There are 37 large farms (greater than 1000 AU) and 73 medium farms (between 300 and 1000 AU). These farms, with their liquid waste lagoons and spray fields, are important managers of water resources. To more effectively implement regulatory activities on these farms, GAEPD has contracted with the Georgia Department of Agriculture Livestock/Poultry Section (GDA) for inspections, complaint investigations, nutrient management plan reviews, permit administrative support, and enforcement assistance.

Agriculture Resources

- GSWCC Programs. GSWCC's agricultural programs include the Small Farms Program, mobile irrigation lab, and intelligent irrigation scheduling.
- *Best Management Practices for Georgia Agriculture*. GSWCC and cooperating agencies developed this manual to promote the voluntary adoption of BMPs. This manual is designed to provide the agriculture community with information about effective BMPs that protect surface water quality, as well as support agency personnel as they educate farmers about BMPs. It is a compilation of conservation practices that address surface water quality and includes an estimate of the effectiveness and relative cost of each BMP.
- *Small Farm Nutrient Management Primer: For Un-Permitted Animal Feeding*

Operations (SFNMP). Georgia has developed this primer to provide information about nutrient management to the agriculture community.

- Farm Bill Funded Programs and Grants. Contact the local NRCS office for additional information about programs and funding opportunities.
- GAEPD CAFO Compliance Assistance materials and website. GAEPD is developing additional information for CAFOs to assist in permit compliance. Visit the GAEPD website for additional information.
- GAEPD Agricultural Water Metering Program. In December 2016, GAEPD assumed oversight of Georgia's water metering program. Per recommendations of the Governor's Agricultural Permitting Compliance Task Force, GAEPD was charged with developing a plan to install water meters at every permitted withdrawal due a state funded meter (permits issued before 01/01/2003) to obtain clear and accurate data for management of the state's water resources and the water conservation efforts of producers. This program produces a large amount of valid and valuable data that has greatly improved current water use estimates and supported forecasting of future water use.

Long Term Goals and Strategic Plan

Long Term Goal 1: Improve communication and coordination on nonpoint source pollution issues among Georgia's agricultural community.

Activity: Establish an agricultural nonpoint source working group that includes partner agencies, farm organizations, and other stakeholders to improve overall communication, planning and implementation of activities.

Timeframe: Meet at least once annually.

Funding: Staff time.

Performance measure: GAEPD will establish initial list of invitees to serve on the Georgia agricultural NPS task force. GAEPD will host annual meetings of invitees to discuss nonpoint source issues affecting the agriculture community.

Results: Consistent communication with stakeholders will enable communication about BMP implementation, information gaps and needs, and nonpoint source issues. This information can inform 319 grant activities and future updates to the *Statewide Nonpoint Source Management Plan*, leading to more effective water quality projects.

Deliverables: Invitee list, meeting agendas, meeting notes.

Activity: GAPED will improve coordination with State NRCS and local conservation districts through greater involvement in the State Technical Committee, EQIP committee, and local work groups.

Timeframe: Attend State Technical Committee meetings as they are scheduled.

Funding: Staff time.

Performance measure: GAEPD will attend NRCS State Technical Committee meetings and provide input.

Results: The long term vision is to be working cooperatively with Georgia NRCS to maximize the return on the Federal investment and ensuring that these efforts are coordinated with, and where appropriate, focused on, addressing issues critical to implementation of the agriculture portion of this Plan.

Deliverables: Meeting attendance, meeting notes.

Activity: Develop and promote clear, user-friendly educational information on Federal, State, and local government regulations and activities related to water quality laws, permitting requirements, cost-share opportunities, TMDLs, conservation initiatives, and other policies and programs.

Timeframe: Identify opportunities through the agricultural nonpoint source working group and through current partners.

Funding: 319 funds and match.

Performance measure: GAEPD and partners will develop new information materials as needs arise.

Results: Education and outreach is a bedrock component of nonpoint source pollution strategies. By providing clear and relevant information, stakeholders will have the knowledge and resources to implement BMPs and improve water quality.

Deliverables: New resources, such as educational materials and websites.

Activity: Develop and implement a CAFO compliance assistance program to provide relevant, up-to-date information to the regulated and non-regulated community. This information will cover permitting, BMPs, and grant opportunities.

Timeframe: Ongoing.

Funding: Staff time.

Performance measure: GAEPD will increase communication with and information provided to CAFOs with and without LAS or NPDES permits. This includes updating regularly scheduled presentations with new information, updating websites, and direct communication with stakeholders.

Results: These compliance assistance activities should improve BMP performance and LAS permit compliance for CAFOs, resulting in water quality improvements.

Deliverables: Meeting agendas and notes, presentation slides, website

Long Term Goal 2: Continue to support targeted on-the-ground implementation of agriculture BMPs through the use of planning, data analysis and other prioritization approaches to ensure water quality improvements result from those BMPs.

Activity: Continue to develop and update Watershed Management Plans (WMPs) for streams impaired by nonpoint sources in areas with significant agriculture land use. Provide information about existing WMPs through a website that stakeholders and the public can easily access.

Timeframe: Ongoing.

Funding: 319 funds and match.

Performance measure: Current and new partners will continue to develop WMPs for waterbodies impaired by nonpoint source pollution in areas with significant agriculture land use.

Results: WMPs outline sources of nonpoint source pollution and provide specific, clear actions for addressing those sources. These plans, or an equivalent, are necessary for receiving competitive 319 funds for implementing BMPs. By developing these plans, more waterbodies will be eligible for 319 implementation activities.

Deliverables: WMPs, map identifying watersheds with WMPs.

Long Term Goal 3: Identify new tools and strategies for reducing fecal coliform, sediment, and nutrient loads from agriculture nonpoint sources.

Activity: Utilize existing monitoring data and encourage longer-term monitoring of WMP and post-construction BMP sampling locations to target BMP placement and reduce pollutant loads in agricultural areas.

Timeframe: Ongoing.

Funding: Staff time, 319 funds and match.

Performance measure: Reduced loads in targeted stream segments where agriculture is identified as the cause of impairment, resulting in the delisting of impaired stream segments.

Results: This data could inform the effectiveness of current employed methods, along with providing support toward delisting efforts.

Deliverables: Data, updated priority lists.

Activity: Assess new water quality management tools, such as water quality trading, to determine if they can be effectively applied to support the objectives of this plan and Georgia's water quality control program.

Timeframe: Ongoing, with work to be completed by 2022.

Funding: Staff time, 319 funds and match.

Performance measure: GAEPD will lead the development of a water quality trading guidance document.

Results: Water quality trading and other market-based strategies have the potential to lead to cost-effective reductions in pollutant loads in impaired watersheds. As such, this tool should be fully explored and implemented to the extent practicable.

Deliverables: Water quality trading guidance document.

Long Term Goal 4: Reduce nutrient loads from agriculture sources.

Activity: Assist Georgia's agricultural water permittees in developing Nutrient Management Plans (NMPs) and documenting current nutrient reduction efforts on their farms.

Timeframe: 2019-2024.

Funding: Staff time, 319 funds and match.

Performance measure: Develop outreach materials, including template documents, guidance information, presentations, and websites, that target agriculture water permit holders. Work with partners to implement a two-year pilot program where selected participants attend two facilitated workshops where they will receive an introduction to environmental farm planning and assistance in completing an initial NMP workbook to document current nutrient management efforts by that producer.

Results: These efforts will encourage the voluntary development and submittal of NMPs that can become a part of a Farm Use Permit file. NMPs can be linked with agriculture water permits, which would provide protection of agriculture water users, protective of Georgia's watersheds, and a proactive move that would convey a "good faith" effort to partners. Using an Environmental Farm Plan (EFP) framework as a voluntary,

confidential, self-assessment, farm managers can identify nutrient management strengths and weaknesses of their farming operations. The planning process results in the development of a NMP to reduce nutrient loading to water bodies shared by Georgia and neighboring states.

Deliverables: Outreach materials, workshop slides, workshop attendance lists.

Activity: Encourage and support all animal feeding operations to develop and implement Comprehensive Nutrient Management Plans (CNMPs).

Timeframe: Ongoing.

Funding: Staff time, 319 funds and match

Performance measure: With cooperating organizations (GSWCC, GSWCD, GA Milk Producers Association, Georgia Farm Bureau Federation, GA Pork Producers Association, CES, and NRCS), conduct statewide and watershed-based demonstrations and BMP implementation of Comprehensive Nutrient Planning, lagoon maintenance or decommissioning, irrigation systems, and waste and effluent management systems.

Results: Development and implementation of CNMPs can lead to better BMP implementation and positive water quality impacts.

Deliverables: Demonstration projects, workshop presentations, attendance lists, CNMPs

Long Term Goal 5: Reduce sediment loads from agriculture nonpoint sources.

Activity: Address irrigation water use and associated nutrient and sediment losses from pasture land and crop fields in areas identified by Regional Water Planning efforts and WMPs.

Timeframe: Ongoing.

Funding: 319 funds and match, State Seed Grants, aim to leverage NRCS efforts.

Performance measure: Promote the implementation of BMPs that reduce sediment loads from agricultural areas including: Better Back Roads project, BMPs that reduce runoff associated with crop irrigation, stream buffer protection, conservation tillage and cattle enclosures.

Results: Targeting sediment-specific BMPs in areas impaired by sediment from nonpoint source runoff can result in reduced loads and subsequent water quality improvements.

Deliverables: Final reports and load reduction estimates from grant-funded projects that implement these BMPs.

Long Term Goal 6: Continue to support the NRCS National Water Quality Initiative (NWQI) to implement conservation practices in priority watersheds.

Activity: Provide input to NRCS on priority watershed selection and assist with funding support of implementation of conservation practices.

Timeframe: Ongoing.

Funding: 319 funds and match.

Performance measure: GAEPD will provide recommendations on NWQI watersheds annually, when requested by NRCS.

Results: Targeting implementation of conservation practices in NWQI watersheds can result in measurable water quality improvements by reducing the contribution from

agriculture.

Deliverables: List of recommended watersheds for NWQI focus, final reports from grant-funded projects in NWQI watersheds.

Urban

Georgia is a fast growing state, particularly in urban areas. Nonpoint sources are a significant contributor to water quality impairment in many urban waterbodies. Various activities and processes contribute to nonpoint source pollution of urban streams, including: sedimentation associated with land disturbing activities; stormwater runoff from developed residential, commercial, and industrial areas; combined sewer overflows; illicit discharges; spills; improper storage or disposal of deleterious substances; septic systems; and intermittent failure of sewage systems. In addition to those activities, the landscape of urban areas, dominated by impervious surfaces, can increase both the quantity of stormwater runoff and the amount of pollution picked up by that stormwater runoff. Hydrologic and habitat modification, including alternations in flow regime due to development, stream channelization, and clearing of riparian vegetation can further diminish the integrity of urban streams. Some urban activities that contribute to nonpoint source pollution are provided in the table below:

Pollutant of Concern	Common Urban Sources
Fecal coliform	Sewer system overflows or leaks Failing septic systems Pet waste
Biota (sediment)	Soil loss from exposed soils Removal of bank vegetation can lead to bank erosion High velocity stormwater runoff can scour streambanks
Dissolved oxygen	Pet waste Improperly disposed of leaf and limb debris, yard clippings
Nutrients	Fertilizer application Pet waste

This chapter of the *Statewide Nonpoint Source Management Plan* is divided into sections, each focusing on a different urban-related activity with the potential to affect water quality. The sections include stormwater, onsite sewage disposal systems (OSDS), dirt roads, land disturbance, floodplain management, and safe dams.

Urban Nonpoint Source Program – Stormwater

States, Federal agencies, and jurisdictions throughout the country are shifting to a new paradigm for managing urban stormwater runoff by using Low Impact Development (LID) and Green Infrastructure (GI) to protect or mimic natural hydrology. Using GI and LID is in direct contrast to conventional stormwater management, which focused on moving water away from a site as quickly as possible through structures such as gutters, curbs, pipes, and canals. GI and LID use a collection of site design approaches to address stormwater runoff and impaired waters, which includes: preservation of natural vegetation; reduction in impervious surface; lengthening the stormwater flow paths and time of concentration; infiltration and filtration; and stormwater

retention and detention areas. These approaches remove pathogens, sediment, and nutrients from stormwater and reduce the volume and rate of stormwater flows. Depending on the practice and site conditions, GI and LID practices can have a number of economic benefits and increase community resilience to drought and extreme flooding.

Both regulatory and non-regulatory initiatives are starting to reflect the new information about the water quality benefits of GI and LID. The reissuance of the Phase I Medium MS4 permits and Phase II Small MS4 general permit all in 2017 and the reissuance of the Phase I Large MS4 permits in 2019 added a runoff reduction standard and updated the previous GI program components required for regulated municipalities.

Furthermore, several partners are undertaking efforts to reduce barriers to GI and LID implementation and provide education and technical assistance to local governments, designers, developers, and the general public. The Metropolitan North Georgia Water Planning District (MNGWPD) developed five model stormwater management ordinances and other guidance and outreach materials as a resource for municipalities in the Atlanta metropolitan area and in other regions. With support from GAEPD, GEFA, a Technical Advisory Group, and a consultant team, the Atlanta Regional Commission (ARC) completed the update to the *Georgia Stormwater Management Manual (Volume 1 and 2)* (GSMM) in 2016. The Georgia Association of Water Professionals (GAWP) has led a Stormwater Advisory Committee to develop Georgia-specific GI and LID training for all interested stakeholders.

Long Term Goals and Strategic Plan

Long Term Goal 1: Track research on the performance and effectiveness of GI/LID practices, and collect performance data from Georgia projects in a range of locations and applications to ensure the highest levels of effectiveness.

Activity: Support, and where appropriate, require performance monitoring of installed GI and LID practices to provide local data on BMP cost, performance, and installation and maintenance requirements.

Timeframe: Ongoing.

Funding: 319 funds and match.

Performance measure: Publication and dissemination of monitoring results. As lessons are learned from monitoring activities, the BMP guidance will be refined, as appropriate.

Results: A concerted effort to monitor and report on the effectiveness of GI/LID practices installed in a variety of physiographic, land use and climatic contexts throughout the State can help better quantify the benefits of GI and LID.

Deliverables: Monitoring data, updated BMP guidance.

Activity: Disseminate relevant GI research and BMPs through partnerships with existing conferences, institutions and organizations. Target relevant stakeholders, including practitioners and elected officials.

Timeframe: Ongoing, as appropriate opportunities arise.

Funding: Staff time.

Performance measure: GAEPD participation in the identified conference and other opportunities.

Results: Dissemination of GI research and results is important for thoughtful and effective implementation. Water quality results cannot be achieved without appropriate siting, installation, and maintenance of these BMPs.

Deliverables: Presentation slides.

Long Term Goal 2: Ensure that potential implementers of GI/LID practices, including the construction industry and municipalities, are aware of and have access to the necessary information to successfully install, maintain and monitor their projects.

Activity: Partner with an appropriate entity to provide ongoing training on the GSMM and GI and LID projects.

Timeframe: At least one workshop every other year.

Funding: 319 funds and match, leverage current partnerships.

Performance measure: Minimum of three workshops.

Results: Support the continued implementation and updating of training opportunities for stormwater professionals. Improved training opportunities will result in better maintained and functional stormwater BMPs.

Deliverables: Workshop agenda, presentation, attendee list.

Long Term Goal 3: Continue to support the implementation of GI and LID projects in priority and impaired watersheds, with an emphasis on operations and maintenance and post-construction monitoring.

Activity: Encourage GI retrofits and new BMPs to reduce nonpoint source pollution from existing development in urban areas.

Timeframe: Ongoing.

Funding: 319 funds and match.

Performance measure: Installation of new GI BMPs. Development of high-visibility, publically-accessible demonstration projects in priority areas, such as the coast.

Results: Continued implementation of new GI BMPs and retrofits in highly urban areas and in priority watersheds can have many benefits, including: increasing awareness of GI and LID; more information about operation and maintenance; local demonstrations of effectiveness; and relevant post-BMP monitoring data. This information can encourage future GI and LID projects and provided critical information about their efficacy.

Deliverables: BMPs and retrofits, grant updates and reports, monitoring data

Long Term Goal 4: Document and disseminate the costs and benefits of GI and LID practices, and promote resources that are available for their implementation.

Activity: Compile existing research, collect local monitoring data as available, and disseminate findings related to the economic cost-benefit of GI/LID, as available.

Timeframe: Through 2024.

Funding: Staff time, 319 funds and match.

Performance measure: Production of a fact sheet or white paper on the actual costs and benefits of GI/LID compared to conventional grey infrastructure, and distribution to appropriate stakeholders.

Results: One of the most frequently identified barriers to the implementation of GI/LID noted by stakeholders is the perception that GI/LID is not cost-effective and requires extensive labor-intensive maintenance. Real analyses of installed GI/LID practices are needed, with attention to installation costs, maintenance costs, performance. A comparison to the same data from conventional grey infrastructure would allow for a thorough understanding on the relative costs and benefits of each approach.

Deliverables: White paper.

Urban Nonpoint Source Program – Onsite Sewage Disposal System (OSDS)

Onsite Sewage Disposal Systems (OSDS), usually referred to as septic systems, are common ways of decentralized sewage management. In Georgia, decentralized systems that are designed to treat over 10,000 gallons per day (gpd) of wastewater are regulated by GAEPD. The Department of Public Health (DPH) regulates decentralized systems that treat less than 10,000 gpd and discharge into an absorption field.

Currently, the Rules of the Department of Public Health (Ga. Comp. R. & Regs. R. 511-3-1-.05) prohibit location of a septic tank within 50 feet of existing or proposed wells, springs, sink holes, or suction water lines, and the tanks must be located downgrade from wells or springs if physically possible. Septic tanks cannot be less than 25 feet from lakes, ponds, streams, water courses, and other impoundments; less than 10 feet from pressure water supply lines, or less than 10 feet from a property line. No septic tank can be installed less than 15 feet from a drainage ditch. When properly sited, designed, installed, and maintained, OSDS effectively reduce or eliminate most human health or environmental threats posed by pollutants in wastewater (Radcliffe et al, 2006).

The entities responsible for most OSDS oversight in Georgia are County Boards of Health (CBH). However, the property owner is responsible for properly operating and maintaining the onsite sewage management system. Maintenance must be conducted in accordance with the *Manual for On-Site Sewage Management Systems*. If a septic system is not properly managed and does not function properly, contaminant-laden effluent can either pond on the surface of the field, posing a public health threat, or drain into groundwater or surface waters, contaminating them with pathogens, nitrates, oils, and detergents and other household chemicals, potentially threatening public health. Post-installation management of OSDS is critical for ensuring functional systems and minimizing the potential for nonpoint source pollution.

Long Term Goals and Strategic Plan

Long Term Goal 1: Promote the use of the Well and Septic Tank Referencing and Online Mapping program (WelStrom).

Activity: GAEPD and partners will promote WelStrom to non-participating health departments and keep a log of other septic data sources. Where appropriate, information regarding septic tanks from 319 funded septic BMP projects will be entered in WelStrom.

Timeframe: Ongoing.

Funding: Staff time, 319 funds and match.

Performance measure: Non-participating health departments will begin using WelStrom. Information from 319 funded septic BMP projects will be entered in

WelStrom. GAEPD will create a list of septic data sources.

Results: More data about septic tank locations and issues will allow for better watershed modeling and targeted BMP implementation.

Deliverables: Septic tank data.

Long Term Goal 2: Continue or initiate studies of septic density, water quality, and watershed hydrology to build comprehensive knowledge of the effects of OSDS, if any, on water quality.

Activity: Identify parts of prioritized watersheds, if any, which have been affected by OSDS, either due to the high density or poor function of septic systems. Assess any connection between OSDS impacts and water quality degradation.

Timeframe: Through 2024.

Funding: 319 funds and match, information sharing with partners.

Performance measure: Collect research findings on effects of septic tanks on water quality. Generate a map identifying watersheds most likely affected by septic.

Results: Preliminary data from 319-funded and partner projects indicate that septic tanks may vary in their effect on water quality. Understanding the conditions under which septic tanks become a significant contributor to water quality impairment can allow for better targeted interventions and more effective use of funds.

Deliverables: Data, study results, map.

Long Term goal 3: Support septic tank BMPs in watersheds with documented negative effects of septic tanks on water quality.

Activity: Fund the implementation of septic tank BMPs in watersheds with documented negative effects of septic tanks on water quality.

Timeframe: Ongoing.

Funding: 319 funds and match.

Performance measure: Implementation of septic tank BMPs.

Results: In areas where septic tanks are a known and documented water quality concern, direct implementation through septic BMPs can help improve water quality.

Deliverables: Quarterly and annual grant reports, BMP installation documentation

Urban Nonpoint Source Program - Dirt Roads

According to the Federal Highway Administration, there are more than 4 million miles of roads in the U.S., which include nearly 1.4 million miles of unpaved gravel or dirt roads. As of 2017, Georgia has more than 97,000 miles of paved roads, and more than 28,200 miles of unpaved roads, which does not include private roads or ramps. Sediment from roads and ditch banks contribute heavy loads to adjacent streams and has a detrimental effect on fish and other aquatic life by either smothering habitat or interfering with feeding and reproduction.

Acknowledging that sediment affects habitat and increases maintenance costs for local and State governments, GAEPD, in partnership with the Pine Country and Two Rivers Resource Conservation and Development Councils (RC&D), developed the *Georgia Better Back Roads Field Manual* (Better Back Roads Manual) in July 2009. This is the first Georgia manual of standards which describes and illustrates cost effective BMPs that stabilize unpaved roadways

and reduce sedimentation. Techniques such as reconstructive grading, stormwater outlet transitioning, and culvert installations for stream crossings are detailed in the manual. The overall goal of the project was to provide local governments with cost effective actions that can be adopted by road crews to realize long term economic savings and cleaner streams. The Better Back Roads Manual will be updated periodically to refine the practices and provide additional guidance for coastal communities.

Long Term Goals and Strategic Plan

Long Term Goal 1: Reduce sediment loads from dirt roads to Georgia's waterways.

Activity: Continue to fund Better Back Roads implementation projects located in watersheds impaired by sediment from dirt roads.

Timeframe: Ongoing.

Funding: 319 funds and match.

Performance measure: Number of Better Back Roads projects funded, number of BMPs implemented.

Results: Targeted Better Back Roads BMPs can reduce sediment loads into waterbodies, thereby improving water quality. The ultimate goal is delisting the streams.

Deliverables: Quarterly and annual reports from grants, load reduction estimates from BMP implementation, documentation of BMP implementation

Activity: Provide training and education opportunities for local city and county road managers and other stakeholders who can implement Better Back Roads BMPs.

Timeframe: Through 2024.

Funding: 319 grants and match.

Performance measure: Fund a minimum of one Better Back Roads training workshop in the Piedmont or Mountain Region and a minimum of one Better Back Roads training workshop in the Coastal Plain Region.

Results: Stakeholder education is critical for BMP implementation. By providing these workshops to decision-makers and other stakeholders, more and better Better Back Roads BMPs could be implemented.

Deliverables: Workshop presentation, attendance list

Activity: Compile information on successful technical strategies and lessons learned during implementation and maintenance of Better Back Roads BMPs in order to update the Better Back Roads Manual.

Timeframe: 2019-2020.

Funding: 319 grants and match.

Performance measure: Completion of review and update of materials as necessary.

Results: Accurate technical information is critical for the successful implementation and maintenance of Better Back Roads BMPs.

Deliverables: Revised Better Back Roads Manual

Urban Nonpoint Source Program – Land Disturbing Activities

Management of water quality effects of land disturbing activities is primarily defined by the Georgia Erosion and Sedimentation Act. Signed into law in April 1975, the Act establishes a

comprehensive, statewide program for erosion and sedimentation control to be accomplished through adoption and implementation of local ordinances and programs which regulate land disturbing activities, including stream buffer protection. The Act establishes a permit process for land-disturbing activities, with some exemptions. To receive a permit, an applicant must submit an erosion and sedimentation control plan specifying BMPs.

The Erosion and Sedimentation Act was amended in 1980, 1985, and 1988 to strengthen GAEPD's regulatory overview and enforcement capability and to remove certain exemptions. Subsequent amendments authorized GAEPD to grant variances for the conduct of land disturbing activities within certain distances of a stream, established a buffer requirement for the construction of single family dwellings along certain trout streams, and provided for the substitution of BMPs for numeric limits in permits for land disturbing activities.

As directed by the 1996 amendments to the Georgia Water Quality Control Act, the DNR Board adopted a narrative in-stream standard for turbidity in 1997. The turbidity standard requires that there be no substantial visual increase in turbidity due to human activities. Consistent with other nonpoint source management programs in Georgia, the new standard emphasizes BMPs. This standard provides an avenue for enforcement action under the Georgia Water Quality Control Act from construction activities.

In 2015, the Erosion and Sedimentation Act was amended to provide for a 25-foot buffer on coastal marshlands. This added to the existing 25-foot buffer along all banks of state waters with wretted vegetation, with some exclusions such as ephemeral streams, and the existing 50-foot buffer along the banks of any state waters classified as "trout streams," also with several exclusions.

GAEPD's and GSWCC's oversight activities include overviews of local programs in areas with significant development underway. The purpose is to ensure that local issuing authorities comply with their ordinances.

Long term goals and Strategic Plan

Long Term Goal 1: Improve communication with stakeholders and the public about stream buffer protections and variances.

Activity: Improve the accessibility of buffer variance public notices posted on the GAEPD website.

Timeframe: Ongoing.

Cost and funding: Staff time.

Performance measure: Improvements to the public notices archive section, increased organization for ease of use.

Results: By providing more accessible information, relevant stakeholders can be more informed about public noticed buffer variance applications.

Deliverables: Updated website.

Activity: Annual website review to ensure existing guidance documents are up-to-date and to provide new guidance documents as needed

Timeframe: Ongoing, annual review to be completed before June 30 each year.

Cost and funding: Staff time.

Performance measure: Completion of annual review and update of materials as necessary.

Results: Accurate information is critical for the timely processing of applications, and improves communication with stakeholders.

Deliverables: Website update log with date of review and summary of any updates.

Urban Nonpoint Source Program – Floodplains

Finding the delicate balance between development in areas prone to flooding and environmental sustainability is a difficult undertaking. Successful, sustainable flood hazard reduction solutions need to be based on the forces at work in floodplains and coastal zones and also on the natural functions that these flood-prone areas provide.

Critical to flood risk management is participation in the National Flood Insurance Program (NFIP). The NFIP was established with the passage of the National Flood Insurance Act of 1968. The NFIP is a federal program enabling property owners in participating communities to purchase flood insurance as protection against flood losses, while requiring state and local governments to enforce floodplain management ordinances that aim to reduce future flood damage. Participation in the NFIP is voluntary. In Georgia, there are 561 participating communities in all of the State's 159 counties, as of 2019. There are 86 communities with mapped Special Flood Hazard Areas (SFHAs) that are not participating.

GAEPD, as a Cooperative Technical Partner (CTP) with the Federal Emergency Management Agency (FEMA), is tasked with managing the preparation of updated regulatory and non-regulatory flood risk products to help communities better identify, assess, and communicate their vulnerability to flood hazards. GAEPD also maintains the Georgia DFirm website, which provides technical and outreach information for community officials and the public, including a “look up” tool that allows the public to enter their address and determine their flood risk. GAEPD also provides community outreach and assistance through a structured Community Assistance Program State Support Services Element (CAP SSSE) funded by FEMA.

The NFIP has a voluntary program known as the Community Rating System (CRS). The CRS program encourages community floodplain management activities that exceed the minimum NFIP requirements and in exchange, insurance premium discounts are offered to residents and businesses in the community. GAEPD coordinates with FEMA and the International Organization for Standardization (ISO) to undertake community CRS reviews and provide any assistance that may be needed in satisfying the program requirements. GAEPD supports Georgia Emergency Management and Homeland Security Agency (GEMHSA) Mitigation staff in promoting the CRS program at mitigation workshops. In an effort to increase the number of CRS participating communities and improve classification, GEMHSA incorporates CRS information in the overall ranking of mitigation projects. Currently, there are 53 communities participating in the CRS, of which 15 are coastal communities.

The Georgia coastal communities continue to actively participate in a Coastal CRS User's Group. The group meets every two (2) months and efforts are currently underway to encourage other coastal communities. GAEPD, working with the Georgia Association of Floodplain

Managers, is currently working to establish a CRS User's Group for communities in metropolitan Atlanta.

Long Term Goals and Strategic Plan

Long Term Goal 1: Promote participation in voluntary flood management programs, such as the NFIP and CRS.

Activity: Conduct at least 15 presentations to government and elected officials about the NFIP and CRS.

Timeframe: Through 2024.

Funding: FEMA

Performance measure: GAEPD will make presentations at meetings hosted by State, County and Local associations to promote support for the NFIP and CRS.

Results: Adoption and implementation of ordinances and practices for the NFIP and CRS is critical for improving floodplain management. Decision-makers must be informed

Deliverables: Meeting agendas, attendance lists, presentation materials.

Activity: Currently there are 86 communities with mapped Special Flood Hazard Areas that are not participating in the NFIP. Although NFIP participation is voluntary, GAEPD will continue to actively work with these communities to encourage participation.

Timeframe: Through 2024.

Funding: FEMA

Performance measure: Increase participation in the NFIP by adding 20 new communities.

Results: Participation in the NFIP can provide multiple benefits to a community and its citizens.

Deliverables: List of NFIP communities.

Long Term Goal 2: Conduct reviews of Flood Damage Prevention Ordinances.

Activity: GAEPD will review at least 130 Flood Damage Prevention Ordinances.

Timeframe: Through 2024.

Funding: FEMA

Performance measure: It is anticipated that over the next 5 years Preliminary Maps will be issued for 130 communities in the Lower Savannah, Upper Oconee, Withlacoochee, Little (Withlacoochee River) and Lower Flint watersheds. Ordinances for these communities will be reviewed.

Results: Prior to adoption of new maps, GAEPD will review each community's flood damage prevention ordinance and work with local floodplain administrators to ensure that their ordinance is compliant with the NFIP.

Deliverables: Ordinance reviews.

Long Term Goal 3: Provide community assistance in implementing floodplain management through the Community Assistance Program.

Activity: Conduct at least 50 Community Assistance Visits.

Timeframe: Through 2024.

Funding: FEMA

Performance measure: Conduct 50 visits, including of visits to all 26 communities classified by FEMA as Tier I.

Results: The Community Assistance Visit serves the dual purpose of providing technical assistance to the community and assuring that the community is adequately enforcing its floodplain management regulations.

Deliverables: Log of visits.

Activity: Provide training to Floodplain Managers in Georgia.

Timeframe: Through 2024.

Funding: FEMA

Performance measure: Provide specific training courses throughout Georgia for Floodplain Managers, including a course about managing Floodplain Development through the NFIP.

Results: Training is critical for appropriate floodplain management. Routine and regular trainings with up-to-date information will allow floodplain managers to more effectively implement their floodplain management ordinances.

Deliverables: Training materials, attendance lists.

Urban Nonpoint Source Program – Safe Dams

The Georgia's Safe Dams Act and the program were created in 1978 following the failure of the Kelly Barnes Lake Dam near Toccoa, Georgia, on November 6, 1977. This dam failure resulted in 39 deaths and enormous property damage. The lives lost and property damage was confined to the Toccoa Bible College located below the dam. The failure of the Kelly Barnes Lake Dam was also the catalyst for the creation of a national dam safety program.

The Act and the Rules for Dam Safety establish the functions of the program and defines Category I, Category II, and exempt dams. The fourth edition of the Engineer Guidelines further clarifies the requirements of the Act and Rules.

Category I dams are required to meet certain design standards and be permitted by the Safe Dams Program. The owner of a Category I dam must submit a permit package that includes a compliance assessment report, plans for addressing items from the compliance report, Operation & Maintenance Plan, and an Emergency Action Plan (EAP). Upon approval of the plans, a permit is issued for the construction and operation of the dam. All Category I dams are required to have a Safe Dams permit; Category II dams do not require such a permit.

GAEPD is required to re-inventory the Category II dams at least once every five years. Current

procedures involve: 1) the classifiers sending notices to the dam owners of Category II dams alerting them to the upcoming re-inventory and asking if there have been any changes to the dam or ownership; 2) reviewing and verifying ownership changes through the county tax records; 3) using aerial imagery to evaluate if there are any new structures in the potential dambreak zone below the Category II dams; and 4) the classifiers conducting on-site inspections of the dam and a search of the downstream area to locate any potential hazards. If a potential hazard is identified, the dam is placed on the To Be Studied List for further evaluation.

GAEPD staff is authorized to perform inspections to carry out the requirements of the Act. This would include inspections to determine classification, to obtain inventory information, to evaluate the need to rehabilitate the dam, and to determine if a Category I dam is being maintained properly. The staff also performs emergency responses on dams wherein they serve as the state's technical experts on dams, and coordinate with local and state emergency response personnel and dam owners.

Experience has shown that dam owners are willing to work towards bringing their dam into compliance once they have been educated on the potential risks and consequences. Educating the dam owner, as well as local government entities and the general public, is crucial in gaining understanding and thus ultimately compliance on dams. The Georgia Safe Dams Program has embarked on efforts to educate owners and others about dams. Since 2010, the program has hosted five dam owner workshops with a total of over 400 owners attending. In 2018, two workshops were held with a total attendance of over 60. The program intends to host another workshop for dam owners in 2019 with at least one per year for the next three years.

Long Term Goals and Strategic Plan

Long Term Goal 1: Continue nonpoint source cross-training of Safe Dam personnel as needed to identify and report nonpoint source pollution violations including violations to the Erosion and Sedimentation regulations and stream buffers.

Activity: GAEPD will promote nonpoint source cross-training of Safe Dam personnel including erosion and sedimentation certification and stream buffer violation determinations. Each individual Safe Dam employee will attend one cross-training when opportunities occur.

Timeframe: Ongoing.

Funding: Staff time.

Performance measure: Each individual Safe Dam employee will attempt to attend at least one cross-training when opportunities occur.

Results: Ensuring a better understanding of nonpoint source issues among programs that deal with those issues indirectly can improve outcomes for projects that affect nonpoint sources.

Deliverables: Training notes, attendance lists.

Long Term Goal 2: Provide various training opportunities for dam owners about dam maintenance and requirements.

Activity: GAEPD personnel will provide various training opportunities for dam owners

on at least an annual basis.

Timeframe: At least once a year through 2024.

Funding: Staff time.

Performance measure: Track the number and topic of the training opportunities, along with number of attendees.

Results: By improving the maintenance of hydromodification projects, such as dams, erosion and sedimentation may be reduced, leading to better water quality outcomes.

Deliverables: Training materials, attendance list.

Long Term Goal 3: Protect water resources by ensuring that appropriate stream buffer protections, including obtaining appropriate variances, are taken by dam owners during dam rehabilitation projects.

Activity: GAEPD staff will coordinate internally on any dam rehabilitation projects to ensure a Stream Buffer Variance is obtained.

Timeframe: As projects occur.

Funding: Staff time.

Performance measure: Safe Dams staff will direct dam owners to the appropriate Erosion and Sedimentation personnel to discuss stream buffer variance requirements.

Results: This coordination will result in appropriate stream buffer variance applications being filed, ensuring that no land disturbance takes place in the buffer without appropriate variances and permits.

Deliverables: Meeting agenda, notes.

Long Term Goal 4: Ensure that any dam removal projects are conducted to protect downstream water quality.

Activity: As the Safe Dams Program continues to work to permit Category I structures, there are dam owners who are deciding their best option is to breach the dam. GAEPD staff will coordinate internally to ensure appropriate measures are taken to minimize impacts from the breach.

Timeframe: Whenever a dam owner intends to breach their dam.

Funding: Staff time.

Performance measure: Routine meetings between staff as issues arise.

Results: By encouraging this coordination, impacts to water quality from hydromodification and dam activities may be reduced.

Deliverables: Meeting agenda, notes.

Wetlands

Conservation and protection of wetlands in Georgia is primarily implemented through a federal program managed by USACE. Under Section 404 of the CWA and Section 10 of the Federal Rivers and Harbor Acts, USACE administers a permit program applicable to a range of activities in, on, or around waters of the United States, including wetlands. Activities regulated under Section 404 include excavating, dredging, or depositing fill materials in waters and wetlands across the nation. Section 404 permit review and issuance follows a sequence process that encourages permittees to avoid impacts to wetlands. If this is not possible, then permittees must make efforts to minimize impacts and, finally, should neither of the previous two options be possible, permittees are required to mitigate the aquatic environment. Historically, a few activities have been exempt from permit requirements, including construction or maintenance of farm ponds and irrigation ditches, maintenance of drainage ditches, construction of temporary sedimentation basins, and construction or maintenance of farm, forest or temporary roads done in accordance with BMPs. Ongoing agricultural and silvicultural activities may also be exempt from Section 404 regulations.

GAEPD is responsible for review and issuance of project-specific water quality certifications under terms of Section 401 of the CWA for those projects which are substantial enough to require a USACE 404 Individual Permit due to the magnitude of wetland and/or stream impacts. Most of these projects are exercises in civil engineering and land planning, with associated common earthwork, grading and site preparation, and without the presence of any extraordinary contaminants as would affect waters of the state. The requirements under state law for proper erosion and sedimentation control for such projects are mandated by reference under conditions of the 401 water quality certifications which are issued for such projects, thereby addressing the issue of nonpoint source pollution control. In addition to the more common 401 water quality certification projects that simply present issues of earthwork erosion control, the GAEPD also reviews a relatively small number of projects wherein specific issues, such as the on-site presence of particular contaminant materials or the geographic length or widespread nature of a project, must be considered. Such projects may include the routing and construction of petroleum or natural gas pipelines; the maintenance dredging of man-made lakes with associated handling and disposal of sediments which may contain various metals, pesticides, etc.; and, the reclamation and re-purposing of previous industrial sites which may contain contaminants such as metals, organic chemicals, dioxins, PCBs, etc. To be protective of waters of the state, the 401 water quality certifications for such projects contain more detailed and particular special conditions to address any contamination or project implementation challenges. As such, nonpoint source pollution as would potentially derive from such projects would be appropriately addressed by the special conditions drafted into the 401 water quality certification.

GAEPD also considers the offset or mitigation for Section 404 stream and wetland impacts through GAEPD's work with an Interagency Review Team (IRT). The IRT consists of USACE as the lead agency, USFWS, USEPA, GAEPD, and occasionally the National Oceanic and Atmospheric Administration/National Marine Fisheries Service for coastal zone projects. A key function of the IRT is the administration and oversight of the implementation of wetland and stream mitigation projects that are an integral part of the USACE 404 wetland and stream regulatory program. Most of these mitigation projects are conceived and operated as free-market mitigation banking ventures, wherein a bank sponsor entrepreneur generates wetland or stream

mitigation credits that can be purchased and used by 404 permit applicants as compensation for project impacts to natural resources. Such mitigation projects are composed of various applications and combinations of restoration, enhancement and/or preservation of wetland and stream resources.

Effectively sited, designed and implemented mitigation projects can reduce nonpoint source pollution in that wetlands in particular can function as landscape scale buffers capable of absorbing excess nutrients, sediment and other pollutants before they reach receiving water bodies. By participating with fellow IRT members in the mitigation banking oversight process, GAEPD can work to require that the highest and most effective level of wetland and stream mitigation projects are implemented, thereby reducing nonpoint source pollution.

GAEPD has a special focus on the coast through the Coastal 401 Water Quality Certification Review. Section 319 funds provide support for a dedicated environmental specialist in the Coastal District office. This specialist has experience in nonpoint source pollution, stormwater, buffers, and erosion and sediment control issues in coastal Georgia. The 401 review conducted by this specialist ensures State water quality standards will be met, with emphasis on impaired or threatened coastal waters and habitats.

Long Term Goals and Strategic Plan

Long Term Goal 1: Increase understanding of wetland restoration and mitigation sites to ensure effective practices.

Activity: Investigate the efficacy of wetland restorations. In particular, focus on the issue of hydric soil character and aspect in transition from the central strongly saturated zones of a wetland, through transitional margin zones toward uplands, with such hydric soil conditions being correlated to seasonal and climate-influenced groundwater as assessed by transects of groundwater well/hydric soil stations.

Timeframe: Through September 2020.

Funding: FY2015 Wetland Program Development Grant.

Performance measure: Completion of the grant and all related requirements.

Results: Information obtained from this investigation can be used by the IRT in conjunction with wetland mitigation bank consultants/designers to achieve the most effective, accurate, and confidently proven wetland restorations.

Deliverables: Document for the IRT summarizing study findings.

Activity: Assess long-established wetland mitigation sites that have been previously implemented by Georgia Department of Transportation (GDOT). Both wetland creation methods as well as rehabilitation of impaired, altered natural wetland habitats were employed for these compensatory wetland projects which date back approximately 15-25 years. Phenomena such as establishment of groundwater and surface water wetland hydrology and connectivity to adjacent waterways, hydric soil formation processes, relative performance and benefits of actively planted vs. naturally recruited vegetation specimens, and wetland habitat assessment would be the focus of this work.

Timeframe: Through September 2021.

Funding: FY2018 Wetland Program Development Grant.

Performance measure: Completion of the grant and all related requirements.

Results: Understanding the behavior over time at wetland mitigation sites of hydric soil formation, wetland hydrology establishment, and relative success and establishment of planted vs. naturally colonizing wetland tree and shrub cover allows for better understanding of effective wetland mitigation.

Deliverables: Document for the IRT summarizing study findings.

Long Term Goal 2: Enhance 401 Water Quality Certification reviews in the 24-county coastal area.

Activity: Continue thorough 401 Water Quality Certification reviews conducted by a coastal specialist. This review process includes developing a recommendation for issuance, conditional issuance or denial of coastal area applications for 401 Water Quality Certification.

Timeframe: Ongoing as projects requiring 401 Water Quality Certification reviews are submitted.

Funding: 319 funds.

Performance measure: Number of reviews conducted per year.

Results: Where appropriate, management measures to control, prevent, or reduce coastal nonpoint source pollution will be incorporated in 401 Water Quality Certification reviews. Documents for review include applications, public notices, mitigation plans, site studies and correspondence for each project proposal.

Deliverables: Completed 401 Water Quality Certification reviews.

Coast

Although the coastline of Georgia is relatively small, only extending for approximately one hundred miles, more than half of the State's land is drained by rivers that flow into the Atlantic Ocean. Additionally, the coast of Georgia contains almost one-third of the remaining tidal marsh in the eastern United States. The rare landscapes and ecosystems of coastal Georgia are threatened by increasing development in the 11 coastal counties (see Urban chapter), and by nonpoint source pollution carried in rivers and streams flowing from the upland 13 counties to the coast.

On November 1, 2018, the Georgia Coastal Nonpoint Program was approved by the National Oceanic and Atmospheric Administration (NOAA) and the USEPA. The Coastal Nonpoint Program outlines 56 management measures for nonpoint source pollution control to restore and protect coastal waters. Upon approval, the Georgia Coastal Nonpoint Program became a part of the *Statewide Nonpoint Source Management Plan*. This chapter will serve as a guide for the water quality efforts initiated by GAEPD and GAEPD's partners on the coast.

While the Coastal Nonpoint Program focuses on the 11 coastal counties, this Coast chapter of the *Statewide Nonpoint Source Management Plan* focuses on the 13 upland counties, as well as the 11 coastal counties. This chapter of the Plan will focus on reducing pathogens, sediment, dissolved oxygen, and nutrient impairments. While mercury presents water quality challenges for the coast, the majority of mercury comes from atmospheric deposition and therefore is not a key focus area for this Plan. By reducing runoff and erosion and sedimentation, this chapter of the Plan can also result in some reduction to mercury loads. Implementation of BMPs designed to reduce and control runoff from land disturbance activities, urban areas, agriculture, and silviculture, as well as BMPs that restore natural drainage patterns are encouraged in the 24 coastal counties of Georgia.

Long Term Goals and Strategic Plan

The 24 coastal counties see significant agriculture, silviculture, and urban land uses. The specific goals under those sections encompass coastal Georgia. Therefore, those goals will not be restated here. The goals in this section focus on targeted activities for the coastal counties.

Long Term Goal 1: Expand ambient water quality monitoring at key locations within the 11 coastal counties.

Activity: Coordinate with GAEPD water quality monitoring staff. Provide recommendations for sampling locations within the 11 coastal counties using data collected through various GAEPD watershed programs.

Timeframe: Through 2024.

Funding: Staff time.

Performance measure: Develop recommendations each year for submittal to the water quality monitoring staff. Follow-up with staff to identify which recommendations were implemented.

Results: Additional monitoring information on the coast can provide more accurate and current insights into water quality challenges in this unique ecosystem. This will in turn allow the deployment of nonpoint source BMPs in the areas where they are most needed.

Deliverables: Annual lists of recommended sites for monitoring.

Activity: Encourage the growth of Adopt-a-Stream (AAS) volunteer monitoring groups throughout the 11 coastal counties.

Timeframe: Through 2024.

Funding: Staff time, 319 funds and match, FY2013 Wetland Program Development Grant.

Performance measure: Track the number of AAS volunteer monitoring groups active in the 11 coastal counties. Identify opportunities for growing that number.

Results: Additional monitoring information on the coast can provide more accurate and current insights into water quality challenges in this unique ecosystem. By engaging citizen scientists, GAEPD will not only provide a pathway for stakeholder engagement in watershed protection, but also receive valuable water quality data.

Deliverables: Annual summary of the number of location of new AAS groups, outreach materials encouraging participation.

Long Term Goal 2: The Georgia Erosion and Sedimentation Act was amended in 2015 to include a 25-foot buffer on coastal marshland as measured from the coastal-marshland upland interface, with several specific exceptions. GAEPD and GADNR-CRD will continue to implement the marshland buffer protections, and identify areas for education, outreach, and improved coordination.

Activity: GAEPD, in coordination with GADNR-CRD, will ensure that this buffer is protected through field visits and buffer variance application reviews.

Timeframe: Ongoing, through 2024.

Funding: Staff time.

Performance measure: Track the number of field visits and the number of coastal marshland buffer variance applications. Communicate with GADNR-CRD as necessary to identify efficiencies. As necessary, develop outreach materials to educate stakeholders about the coastal marshland buffer.

Results: This GAEPD/GADNR-CRD coordination will provide better protection of coastal marshland buffers. Buffers are an important BMP for reducing nonpoint source pollution.

Deliverables: Field visit logs and reports, log of coastal marshland buffer variance applications, meetings notes from any coordination meetings, outreach materials.

Long Term Goal 3: Explore innovative techniques to better address nonpoint source pollution in the unique coastal ecosystem. In particular, projects that implement BMPs listed in the GSMM and CSS and track their performance in the unique coastal ecosystem are of particular importance.

Activity: Prioritize BMP implementation and demonstration projects located in the 24 coastal counties in the competitive 319(h) grant application review process.

Timeframe: Through 2024.

Funding: 319 funds and match.

Performance measure: Track the number of submitted and funded applications for BMP

implementation and demonstration projects in the 24 coastal counties.

Results: Understanding the effectiveness and feasibility of nonpoint source BMPs on the coast is necessary for the development of better coastal projects. Without coastal-specific information, practitioners may hesitate to implement BMPs or may install or maintain BMPs in a manner not best suited for the coast.

Deliverables: Quarterly and annual grant reports, including any information about BMP installation, maintenance, and function.

Long Term Goal 4: Manage coastal nonpoint source pollution through the continued implementation of the Coastal Nonpoint Program.

A Coastal Stakeholder Group is meeting regularly to prioritize BMPs identified in the Georgia Coastal Nonpoint Program. This Group will provide recommendations to GAEPD for incorporation in this Plan. To participate in that stakeholder, please contact Veronica Crow of GAEPD at veronica.craw@dnr.ga.gov or 404-651-8532 for additional details.

Surface Mining

Surface mining is a billion dollar industry in Georgia. As of January 1, 2014, the Surface Mining Unit regulated approximately 820 surface mines including quarries, clay mines, dredging operations, and borrow pits. Mining in Georgia is concentrated primarily in granite, limestone, slate or shale, clays, sand, gravel, and other construction and industrial materials. Surface mining in Georgia encompasses a variety of activities ranging from sand dredging to open pit clay mining to a hard rock aggregate quarry. Occurring mostly in rural areas, surface mining, relatively speaking, directly affects very little of Georgia's land area.

Surface mining involves two categories of potential threat to surface waters. One type is related to the actual removal of mined materials and concerns the releases of pump-out water from the mining pit and discharges from mineral processing. Both of these releases are processed through either sedimentation basins or detention ponds prior to discharge into streams. This type of threat, therefore, is considered a point source and is regulated by the issuance of an NPDES permit. The Surface Mining Unit also requires that sediment basins and detention ponds be included as part of an approvable Mining Land Use Plan (MLUP) and inspects these engineering controls to ensure they are functioning as designed.

The second type of threat of potential pollution related to surface mining is soil erosion and sedimentation due to runoff from exposed, disturbed surfaces of the mine. Removal of vegetation, displacement of soils and other land disturbing activities are commonly associated with surface mining. These operations could result in adverse effects such as accelerated erosion, sterile soils, and sedimentation to surface waters. However, until the mine is revegetated during reclamation, BMPs, such as silt fence, the establishment of buffers and berms, and the construction of sediment ponds, keep sediment within the mining footprint and away from surface waters.

The Georgia Surface Mining Act provides for the issuance of a mining permit at the discretion of the Director of GAEPD. The issuance of a surface mining permit regulates pollution threats from nonpoint sources. The application for this permit includes a MLUP, reclamation strategies, and surety bond requirements to guarantee proper management and reclamation of surface mined areas. It includes information on the property to be mined, number of acres, length of time of mining operation, extent of reserves, and reclamation of the affected land. A major part of the Mining Land Use Plan includes a detailed Soil and Erosion Control Plan. This plan includes engineering features and operational BMPs such as sedimentation ponds, erosion and sedimentation provisions, and construction controls.

Long Term Goals and Strategic Plan

Long Term Goal 1: Reduce sediment loads coming from mining activities.

Activity: Conduct compliance inspections and speak directly to the mining community through industry group events and conferences about the requirements of the Surface Mining Act, Rules, MLUPs, and guidance on BMPs.

Timeframe: Ongoing.

Funding: Staff time.

Performance measure: Conduct 120 inspections annually. Attending industry group

events and conferences as opportunities arise.

Results: E&S controls are a required part of the MLUP, which is made enforceable via the Surface Mining Permit. As such, E&S controls are inspected during routine compliance inspections. E&S controls are critical for reducing sediment loads from mining activities.

Deliverables: Inspection reports, presentations.

Groundwater

Georgia has a groundwater protection program that includes wellhead protection planning, dedicated groundwater monitoring staff, Geographical Information System (GIS) technology related to groundwater, and a State Geologist. GAEPD also manages the legacy publications of the Georgia Geologic Survey group and makes these documents available for purchase. Some groundwater effects are addressed in other sections of this plan, including Urban (specifically OSDS and Stormwater), and Agriculture (CAFOs).

GAEPD maintains a trend monitoring network for groundwater quality, and the overall groundwater quality in Georgia is good. However, there are areas with existing or potential challenges. Poorly designed, implemented, or maintained LASs and CAFOs could potentially affect groundwater quality. Furthermore, these facilities, if improperly permitted or sited, may also directly affect surface water quality through spills, releases, or other unpermitted discharges. For more information about CAFOs, see the Agriculture chapter of this Plan.

Long Term Goals and Strategic Plan

Long Term Goal 1: Maintain up-to-date design guidelines for the application of treated wastewater to Land Disposal/Treatment Systems.

Activity: Hold a public participation process to revise the engineering design guidelines for the application of treated waste water to Land Disposal/Treatment Systems via spray and drip irrigation.

Timeframe: Through FY 2020.

Funding: Staff time.

Performance measure: GAEPD will complete the evaluation of comments received during workshops held in June and August 2018. GAEPD will host at least one additional public meeting.

Results: Currently, the spray and drip design guidelines have been presented in two separate documents under the titles of “Guidelines For Slow-Rate Land Treatment of Wastewater Via Spray Irrigation” (July 2010), and “Guidelines for Land Treatment of Municipal Wastewater by Drip Irrigation” (February 1996). By combing the spray and drip irrigation guidelines into a single updated document, GAEPD ensures consistency in the design assumptions, including requirements for assessing potential groundwater mounding risks to new and expanding LAS sites, defining “limiting design parameter,” and discussing consistent strategies to address aged and/or failing systems.

Deliverables: Updated guidelines.

For additional goals related to groundwater, please see the Agriculture (CAFOs) and Urban (specifically, OSDS and Stormwater) chapters of this plan.

Implementation of Statewide Programs

Going beyond the land use specific goals and recommendations, Georgia has a number of programmatic statewide efforts implemented through policies, ordinances, educational programs, cost-share programs and regulations. These programs are administered by federal and state agencies that have authority and responsibilities to partner with private landowners or local governments. Through statewide programs, BMPs are concurrently implemented in all parts of the State rather than only in specific watersheds or land uses. This part of the Plan will focus on the following programs: Water Quality Monitoring Data, 319 Grants, Education and Outreach, Statewide Water Planning, and Land Acquisition and Green Space.

Monitoring Data

Georgia initiated water quality monitoring in the late 1960s to assess the impact of pollutants on the State's water resources. Today, water quality monitoring is the foundation for measuring success of various water protection programs. The information gained from monitoring also supports the development of long-range planning strategies designed to safeguard water quality and quantity.

GAEPD conducts long-term and targeted monitoring programs to establish baseline and trend data, document existing conditions, establish wasteload allocations for new and existing facilities, study impacts of specific discharges, verify wastewater treatment plant compliance, support enforcement actions, document water use impairment, develop TMDLs, and assess functionality of BMPs. GAEPD provides monitoring data that helps track water quality improvements as a result of voluntary implementation of management and conservation practices over time as part of the NWQI partnership between NRCS, state water quality agencies, and USEPA. GAEPD performs targeted monitoring in watersheds across the State every year, collecting monthly samples to assess field and chemical parameters. These efforts are guided by the agency's *Georgia Surface Water and Groundwater Quality Monitoring and Assessment Strategy* (Monitoring Strategy). This plan is intended to supplement, not replace, the Monitoring Strategy. Of Georgia's 44,056 miles of perennial streams, approximately 14,835 have been assessed as of 2017.

In addition to long-term monitoring conducted by GAEPD, Federal, State and local agencies, along with local watershed groups, through cooperative agreements with GAEPD, collect samples from stations at specific, fixed locations throughout the year. All samples collected by GAEPD and its cooperators, as part of the Surface Water Quality Monitoring Program, are sent to laboratories operating under formalized Quality Assurance Programs (QAP) that are reviewed by GAEPD prior to sample submission.

Final sample results from each laboratory are maintained in validated database systems. These results are reported to GAEPD via hardcopy paper reports and electronic data transfer files. This data is ultimately combined and stored in GAEPD's Georgia environmental Monitoring and Assessment System (GOMAS) database and the USEPA Water Quality Exchange (WQX) database. A review and feedback system between GAEPD and the laboratories is maintained to ensure that data quality is maintained.

Georgia's monitoring work is conducted in accordance with an approved strategy and

documented in the Georgia Surface Water and Groundwater Quality Monitoring and Assessment Strategy. The monitoring strategy provides the details of the quality assurance procedures employed by GAEPD. Enforcement activities by GAEPD require full documentation on particulars of data collection and the equipment used to collect it. All GAEPD field personnel who collect samples or field data are trained to implement the procedures.

Resources Available

- **Monitoring Strategy.** The Monitoring Strategy encompasses: (1) monitoring objectives; (2) multiple monitoring designs for selecting sampling sites; (3) core and supplemental water quality indicators used to assess compliance with water quality standards; (4) Quality Assurance protocols and procedures; (5) data management and reporting procedures; (6) assessment tools for attainment of water quality standards; (6) programmatic evaluation measures; and, (7) measures to support other water management programs. The Monitoring Strategy, along with the *Water Quality in Georgia* report and annual State/USEPA Performance Partnership Agreements, provide the current process for communicating monitoring priorities to other State and Federal organizations and the public.

GAEPD uses many monitoring approaches to collect information for water quality assessments to meet the objectives of the Monitoring Strategy. A brief description of each is below.

Monitoring Approach	Description
Statewide Trend Monitoring	Long-term sampling at fixed stations that provide a historic record of water quality. Sampling at these stations is repeated annually.
Assessment Monitoring	Focused sampling of a select group of sites. Monitoring statewide over a long-term period allows for comparison of similar sites within basins during different hydrologic and climatological conditions.
TMDL Monitoring	Targeted sampling of water bodies on the 303(d) list.
Intensive Survey Monitoring	Special sampling to assist with model development, in support of enforcement actions, impact studies, TMDL development, and/or monitoring in response to citizen input.
Probabilistic Monitoring	Randomized sampling to make a statistically valid inference about the condition of various water types. Sites are selected annually and samples are collected monthly.
Lake/Reservoir Monitoring	Fixed station sampling conducted during the growing season in major lakes, April through October.
Biological Monitoring	Targeted sampling to assist with 305(b)/303(d) assessment of biological impairment, documentation for 319 grant funded restoration success, joint comparability studies for method analysis, support of standards development, and in support of NPDES compliance.
Coastal Monitoring	Targeted and random sampling of beaches, estuarine, and

	coastal waters.
Fish Tissue Monitoring	Contaminant monitoring to support <i>Georgia's Guidelines for Eating Fish from Georgia Waters</i> , assist with 305(b)/303(d) listing assessment, and GAEPD's mercury in fish trend network program.
Toxic Substance Monitoring	Special sampling to assist with 305(b)/303(d) assessment, TMDL development, and evaluation of point and nonpoint source impacts.
Facilities Compliance Monitoring	Sampling of major and minor municipal and industrial NPDES permitted facilities, industrial pretreatment systems, and land application systems for compliance with respective permits.

- Data Management. GAEPD uses several databases for housing water quality information gathered by the agency and other entities. A brief description of each is below.

Database	Description
Georgia environmental Monitoring and Assessment System (GOMAS)	GOMAS is an online database that serves four purposes: (1) provides a repository for data and site-specific information collected by GAEPD and data collected by local governments pursuant to requirements in their NPDES permits to develop Watershed Protection Plans; (2) provides a conduit for uploading data into the USEPA databases; (3) allows for intra-agency and public access to data; and (4) provides a mechanism for editing and maintaining 305(b)/303(d) lists.
USEPA Water Quality Exchange (WQX) Database	GAEPD uploads trend and other data into USEPA's WQX Database. Because WQX provides public access to data from all U.S. States, GAEPD can also use this database to assess waters beyond State boundaries (upstream and downstream). This information can inform planning, management decisions, and cooperative efforts with neighboring States to address water resource issues.
USEPA Assessment, TMDL Tracking and Implementation System (ATTAINS)	GAEPD uploads the assessment and listing data into USEPA's ATTAINS Database, which is an online system for accessing information about the conditions in the Nation's surface waters.
Georgia Adopt-a-Stream Database	Georgia Adopt-A-Stream (AAS) created and hosts a website that makes available all AAS data the public. Data can be viewed through interactive graphs and matrixes, and downloaded for further analysis. Basic GIS is used to display certain parameters for easy assessment of water quality conditions. The database incorporates numerous quality assurance checks. Forms with errors (missing dates,

	missing a certified volunteer) cannot be entered. Forms with warnings (incubation times outside of the 24 +/- 1 hour QA/QC plan, dissolved levels above 14.6 mg/L) are accepted but flagged as being out of compliance with our quality assurance plan.
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- Citizen Science and Volunteer Water Quality Monitoring. Established in 1992, Georgia Adopt-A-Stream (AAS) is a citizen-based monitoring and stream protection program, targeting all waters in the State. The program encourages local governments, universities, and not-for-profit organizations to serve as coordinators and trainers of local AAS Programs. Following the Quality Assured Project Plan, these local coordinators and trainers ensure that volunteers are trained and quality monitoring data is collected.

Currently, more than 10,000 volunteers are involved in monitoring 700 individual sites coordinated by 200 AAS groups. Volunteers conduct cleanups, stabilize stream banks, monitor streams using biological and chemical methods, and evaluate habitats and watersheds. These activities lead to a greater awareness of water quality and nonpoint source pollution, active cooperation between the public and local governments in protecting water resources, and the collection of basic water quality data.

Although AAS primarily focuses on engaging volunteers through trend monitoring activities, the program also assists with one-time, snap-shot monitoring activities such as watershed assessments, one day clean-up events, or multiday paddling events. These synoptic and longitudinal monitoring activities usually involve teams of 15 to 100 volunteers spending one day to a week, taking multiple one time samples from 30 to 100 plus sites, conducting in situ and lab analysis to make a holistic assessment of water conditions within a watershed or river reach. The goal of these large scale monitoring events is to bolster the trend sampling data, helping set priorities and goals to assure the most effective monitoring strategies for each program.

Long Term Goals and Strategic Plans

Long Term Goal 1: Expand water quality datasets through cost-effective coordination and collection strategies. Use this data to track water quality trends in impaired waters and target streams for delisting.

Activity: Improve data coordination within GAEPD.

Timeframe: Ongoing.

Funding: Staff time, 319 funds.

Performance measure: Reach out to GAEPD staff to request input on watershed monitoring locations and priority watersheds annually. Identify methods for compiling data from multiple internal sources.

Results: Reliable data is necessary for the NPS Program to track successes, identify issues, and efficiently focus efforts. Cost-effective strategies to collect, store, and use water quality data can result in more usable data without a significant expenditure of additional funds. By amassing data from various internal programs, GAEPD can assess water quality trends, identify problem areas, prioritize monitoring and abatement efforts,

and track the success of specific management practices.

Deliverables: Data from a number of GAEPD programs, recommendations for watershed monitoring.

Activity: Improve data coordination with external partners, such as other agencies, universities, local governments, utilities/authorities, and regional commissions. Encourage 319(h) grant recipients to enter their monitoring data into the appropriate database, such as the AAS database.

Timeframe: Ongoing.

Funding: Staff time.

Performance measure: Reach out to external partners, encourage the development of SQAPs. Identify methods for compiling data from multiple sources.

Results: Amassing data from various entities across the State can help GAEPD assess water quality trends, identify problem areas, prioritize monitoring and abatement efforts, and track the success of specific management practices. Innovative funding sources, new partnerships, and internal audits can increase the amount of data usable for regulatory and other purposes, as can encouraging the use of the SQAP and economical sampling methodologies.

Deliverables: Data from a number of GAEPD partners, recommendations for watershed monitoring.

Activity: Encourage new trainers and AAS programs, resulting in more AAS data submitted to GAEPD.

Timeframe: Ongoing.

Funding: Staff time, 319 funds.

Performance measure: Track the number of certified AAS coordinators and volunteers. Identify and implement strategies to increase AAS participation.

Results: AAS is an important citizen science resource that provides GAEPD and the public with reliable water quality monitoring information at locations across Georgia.

Deliverables: AAS data.

Long Term Goal 2: Utilize new data to update prioritization models to ensure that priority issues and watersheds are identified and addressed.

Activity: Routinely evaluate the list of priority watersheds, and the methods of assessing priority watersheds, and update with new information.

Timeframe: Ongoing.

Funding: Staff time.

Performance measure: Routine meetings to discuss prioritization schema; updates to the schema as appropriate.

Results: Nonpoint source pollution is the leading cause of water quality impairments in Georgia, so monitoring efforts should be strategically focused. Prioritizing watersheds can help identify pollutant sources and remediation strategies. Targeting priority waters for delisting monitoring can help focus GAEPD efforts.

Deliverables: Meeting notes and agendas, updated schema.

Long Term Goal 3: Improve data accessibility to support NPS activities and inform citizens.

Activity: Maintain GOMAS and the AAS database and ensure accessibility to the public.

Timeframe: Ongoing.

Funding: Staff time, 319 funds

Performance measure: Regularly updated and maintained databases.

Results: A comprehensive water quality database will help GAEPD efficiently assess water quality trends related to nonpoint source pollutants and develop nonpoint source pollutant abatement strategies. Providing the general public with easily accessible data will increase citizen awareness of nonpoint source pollution issues, spur involvement in protection and remediation activities, and help prevent inappropriate uses of impaired waters.

Deliverables: Update and maintenance log, active websites.

319 Grants

Since 1990, Congress has annually appropriated grant funds to states under Section 319 of the Clean Water Act to implement their approved *Nonpoint Source Management Program*. GAEPD uses the grant funds to administer the program and make awards available to public agencies in Georgia. Since 2012, Georgia has received approximately \$3.6 million each year to address nonpoint source pollution. Local governments, project partners and citizens have annually contributed approximately \$3.9 million in matching funds to these efforts.

Georgia implements the *Statewide Nonpoint Source Management Plan* by providing resources for staff to successfully carry out the milestones and goals. Remaining funds are awarded through a competitive process based on priorities determined by GAEPD in conjunction with USEPA. These priorities are updated annually and are designed to ensure that future funding is targeted to the watersheds at greatest risk of impairment due to nonpoint source pollution, have the greatest possibility of being removed from the 303(d)/305(b) list, and meet Georgia's overall goals of reducing nonpoint source pollution in priority watersheds.

Priorities will continue to evolve; however, the following general priorities will remain for the foreseeable future: small watersheds (HUC 10 and smaller); restoration of impaired waters; protection of quality waters; implementation of TMDLs, WIPs, and WMPs; leveraging other resources to address nonpoint source pollution; and achieving multiple benefits beyond water quality restoration/protection, such as recreation, air pollution reduction, or improved community health. In addition, priority is given to project proposals which encompass or support a watershed management approach and result in measurable improvements in water quality.

Regulatory and non-regulatory programs have focused on improving impaired water bodies, without addressing the benefits of protecting currently healthy watersheds. The Healthy Watershed Initiative (HWI) was introduced by USEPA in 2011 as an important approach to protecting the nation's remaining healthy watersheds through conservation, preventing water quality impairments, and accelerating restoration successes through proactive implementation programs. The HWI encourages States, local governments, watershed organizations, and others to take a holistic approach to protecting healthy watersheds by recognizing that preserved, undisturbed aquatic ecosystems promote healthy components of watersheds and help prevent additional water quality impairments in the future.

Long Term Goals and Strategic Plan

Long Term Goal 1: Keep GAEPD's competitive 319(h) grant process current to reflect new information gathered from BMP implementation, watershed monitoring, and watershed prioritization efforts.

Activity: Update GAEPD's internal Section 319(h) Grant Unit's standard operating procedures to reflect streamlined operations, new priorities, new scoring methodology, watershed prioritization, and other new methods of application.

Timeframe: Ongoing, with at least an annual review.

Funding: Staff time.

Performance measure: GAEPD will revise a comprehensive internal guidance document that contains these new procedures and matches internal understanding with

applicant instructions. The information will be made available to grant applicants.

Results: To be maximally effective, the 319 grant program must reflect new information and updated priorities.

Deliverables: Updated SOPs.

Long Term Goal 2: Continue restoring impaired waters and protecting healthy waters through supporting BMP implementation in priority, impaired, and healthy watersheds.

Activity: Continue to prioritize competitive 319(h) grants for projects located in priority, impaired, and healthy watersheds.

Timeframe: Ongoing.

Funding: Staff time.

Performance measure: Submit at least one success story annually to USEPA.

Results: With limited resources, implementing BMPs in priority, impaired, and healthy watersheds will be most cost-effective and most likely to lead to delisting or prevent listing.

Deliverables: Annual success story, list of funded projects.

Long Term Goal 3: Reduce barriers to 319(h) grant application submission, and implement strategies to increase the number of complete submissions.

Activity: Identify opportunities for increasing grant applications, such as webinars, outreach, and working with partners to disseminate grant application information.

Timeframe: Ongoing.

Funding: Staff time.

Performance measure: Track the number of webinars hosted and presentations given. Track the number of complete applications.

Results: To ensure that GAEPD receives the broadest possible range of applications for diverse projects across Georgia, GAEPD must make the application process clear and easy to navigate. The more applications submitted, the better the applicant pool that GAEPD will have to draw from.

Deliverables: Webinar slides, presentation slides, application lists.

Education and Outreach

Education on nonpoint source pollution, its causes, and its impacts is critical at all age levels if water quality is to improve. GAEPD reaches a Statewide audience through a variety of programs and media ranging from classroom curriculum, to waterway cleanup activities, to a robust online presence. Each program serves its targeted stakeholders; yet all programs work collaboratively to better meet the needs of Georgia residents.

In October 1996, GAEPD selected the Project WET (Water Education for Teachers) curriculum as the most appropriate water science and nonpoint source education curriculum for the State. Recognized internationally and nationally, the Project WET curriculum is an interdisciplinary hands-on water science curriculum that can be integrated into the existing curriculum and programming of a school, museum, informal science education facility, university pre-service class, or a community organization. Project WET has a mission to reach children, parents, teachers and communities around the world with water education through published curricula, training workshops, community water events, and a worldwide network of educators, water resource professionals and scientists. As part of this larger program, the goals of Georgia Project WET are to facilitate and to promote awareness, appreciation, knowledge and stewardship of water resources through the development and dissemination of classroom-ready teaching aids aligned to State classroom standards.

Since 1997, Georgia Project WET coordinators have certified over 850 facilitators who have in turn held workshops for approximately 15,000 educators across the State. In just the past 4 years, Georgia facilitators have conducted 166 Project WET workshops, certifying 3,754 educators with the water education curricula and hands-on, classroom-ready techniques.

The Georgia Project WET Program in conjunction with Georgia River of Words offers educators in Georgia the opportunity to participate in the International Rivers Network's *River of Words*, an international poetry and art contest for K-12 students focused on the theme of watersheds. After exploring their own watersheds, students describe their experiences through art and poetry, and then enter their pieces in the national contest. Georgia boasts one of the top participation rates in the nation and in the last 5 years, the State has had 8,131 poetry and art submissions, 223 State award winners, 41 national finalists and 6 national grand prize winners. Each year, all winning art and poetry pieces from Georgia are placed on an exhibit that travels throughout the State library system and to various conferences, schools, museums and non-profit organizations.

Rivers Alive is an annual volunteer waterway cleanup, with over 25,000 volunteers cleaning up rivers, creeks, lakes and beaches in nearly 300 locations statewide. The Rivers Alive program is a partnership between GAEPD, the 20-member Rivers Alive board, over 150 local cleanup organizers and a fiscal partner to process corporate funding in support of program activities. The partnership has proved successful, producing the third largest cleanup of its kind in the nation, and engaging nearly half a million volunteers in removing 10.8 million pounds of trash from 32,000 miles of Georgia waters since its inception in 1999.

While stream monitoring and education workshops (see Citizen Science section in the Water Quality Monitoring chapter) will continue to be the backbone of outreach activities, the program has engaged in other watershed stewardship activities, such as stream stabilization workshops,

rain garden projects, and publications. Offering community based stream and water stewardship activities like stream stabilization or rain barrel installation provides another level to the multi-tier approach of reducing nonpoint source pollution and improving water quality.

Long Term Goals and Strategic Plan

Long Term Goal 1: Encourage additional engagement within watersheds by offering additional large-scale monitoring events with partners.

Activity: Offer additional large-scale monitoring events, such as our partnership with Paddle Georgia, as resources permit.

Timeframe: Ongoing, monitoring events to occur annually

Funding: Staff time, 319 funds

Performance measure: Track the number of large-scale monitoring events and the number of participants.

Results: One important method for getting the public involved and engaged in nonpoint source pollution reduction is by understanding the sources and effects of nonpoint source pollution on waterbodies. Large-scale monitoring events allow the community to experience their watershed hands-on and participate in the watershed protection process.

Deliverables: Event descriptions, participant counts

Long Term Goal 2: Better convey the message that a holistic approach to stream protection is needed by further developing the Rivers Alive Program to better encompass watershed protection activities.

Activity: Build engagement in Rivers Alive and include additional watershed protection activities, as identified by volunteer interested and Rivers Alive Board suggestions.

Timeframe: By 2024.

Funding: Staff time, 319 funds

Performance measure: Track Rivers Alive activities and outreach materials. If appropriate, develop an outreach video to promote the Rivers Alive Program and post it to the website.

Results: Rivers Alive allows the community to take an active role in watershed protection by removing litter and trash from their local waterbodies. This event is an ideal time to provide additional watershed protection information to an engaged and interested group of stakeholders.

Deliverables: Outreach materials, logs of Rivers Alive activities

Statewide Water Planning

In 2004, the Georgia General Assembly passed the Comprehensive State-wide Water Management Planning Act, which was signed into law by then-Governor Sonny Perdue. The Act required GAEPD to develop a State Water Plan that would call for regional water planning to provide the local and regional perspectives necessary to ensure that Georgia's water resources are sustainably managed through at least 2050.

The State Water Plan delineated the guiding policies and implementation actions by which Georgia's water resources should be managed. A key element of the State Water Plan was the creation of ten new water-planning regions, with borders approximating river basin boundaries or aquifer boundaries. In each planning region, a regional water council of 25 local residents was appointed by the Governor, Lieutenant Governor, and Speaker of the House. Council members typically were local government officials, industry representatives, farmers, and engaged citizens.

Each water-planning region was provided with assessments of surface water, groundwater availability, and surface water quality (or assimilative capacity). Additionally, each council was provided with forecasts of municipal, industrial, agricultural, and energy-generation water demand. The water demand forecasts incorporated population and economic projections developed by the Governor's Office of Planning and Budget. Water quality models were used to evaluate impacts of wastewater and industrial discharges and withdrawals, land use, and meteorological conditions on the assimilative capacity of lakes, streams, and some coastal waters. The models focused on dissolved oxygen, nutrients (specifically nitrogen and phosphorus), and chlorophyll-a (a proxy for nutrient levels). In this way, regional water planning councils were able to identify water quality and quantity issues specific to the basin and identify an appropriate series of strategies to address these issues. As per the 2004 Comprehensive State-wide Water Management Planning Act, regional water plans must be updated every five years. The Regional Water Plans were first adopted in 2011 and updated in 2017.

The Regional Water Plans include a suite of BMPs intended to reduce nonpoint source pollution. These nonpoint source BMPs include: nutrient management programs on farms; implementing silviculture BMPs; encouraging the use of the Better Back Roads Manual; floodplain management to prohibit or minimize development in the floodplain; using environmental planning criteria to protect open space along riparian corridors, wetlands, and groundwater recharge areas; increased monitoring and sampling of surface water quality; promotion and implementation of GI and LID; retrofitting of old or outdated stormwater management structures; mandating or enforcing setbacks of septic systems from surface waters; and point to nonpoint water quality credit trading.

In 2014, from funds appropriated by the Georgia General Assembly for Regional Water Planning, GAEPD established the Regional Water Plan Seed Grant program. The Regional Water Plan Seed Grants are provided annually to support and incentivize local governments and other water users as they implement management practices or recommendations identified in the Regional Water Plans.

Long Term Goals and Strategic Plan

Long Term Goal 1: Track the implementation and effect of nonpoint source BMPs identified in the Regional Water Plans.

Activity: Use 319(h) and Seed Grant report information to determine how many of the proposed nonpoint source pollution management practices identified in Regional Water Plans have been implemented.

Timeframe: Database creation by 2020, with annual updates as new projects are funded.

Funding: Staff time.

Performance measure: Generate a database of implemented management practices and identify the funding source for each.

Results: Understanding patterns of implementation is important for targeting resources where they are most needed and will be most effectively utilized.

Deliverables: Project database.

Activity: Identify which water planning regions have had several BMPs implemented and which water planning regions have not have BMPs implemented. Work with those water planning regions to identify barriers to BMP implementation.

Timeframe: Ongoing, starting with the database creation in 2020. Targeted efforts with the water planning regions to begin in 2021.

Funding: Staff time.

Performance measure: A comprehensive list of the water planning regions, the number and type of BMPs implemented, and a ranking of water planning regions based on BMP counts. Development of a summary document identifying reasons why BMPs are not implemented in some regions.

Results: Identifying barriers to implementation is the first step to removing those barriers. Now that the Seed Grant program is five years old, GAEPD has sufficient data to identify successes and opportunities for growth.

Deliverables: Ranking of water planning regions by BMP implementation, summary document describing barriers to BMP implementation.

Activity: Reduce barriers to BMP implementation as identified in the previous activity.

Timeframe: From 2022 through 2024.

Funding: Staff time.

Performance measure: Using the information developed in the previous activity, target efforts to water planning regions with few BMPs implemented and develop and implement a strategy to reduce barriers to implementation. Track the number of BMPs implemented after the initiation of the strategy.

Results: Identifying barriers is not enough to improve water quality outcomes. Those barriers must be addressed, and actions must be connected to real-world impacts. An iterative, adaptive approach to the barrier reduction strategy can lead to better water quality outcomes in all water planning regions.

Deliverables: Barrier reduction strategy, updated BMP implementation map.

Long Term Goal 2: Encourage Seed Grant applications and see an increase in the number of applications for seed grants from qualifying organizations within each Regional Water Planning Council.

Activity: Promote Seed Grant opportunities through multiple channels, including the GAEPD website, Regional Water Planning Council Meetings, and other meetings.

Timeframe: Ongoing, with annual evaluation of efforts.

Funding: Staff time.

Performance measure: Track the number of Seed Grant applications submitted each year. Track the number of outreach opportunities.

Results: As with the 319(h) grants, to ensure that GAEPD receives the broadest possible range of applications for diverse projects across Georgia, GAEPD must make the application process clear and easy to navigate. The more applications submitted, the better the applicant pool that GAEPD will have to draw from.

Deliverables: Log of Seed Grant Applications, presentation lists and slides.

Land Acquisition and Green Space

Georgia contains a diverse geology and geography: a small portion of the Cumberland Plateau in the northwestern corner of the State; the southern end of the Blue Ridge Mountains which extend across much of north Georgia; the Ridge and Valley province which includes the wide Cartersville Valley and the long parallel ridges in northwest Georgia; the rolling hills, granite outcrops, and red clay of the Piedmont; the Coastal Plain of South Georgia with its expanse of forests and farmlands; and the Coast, with its wide marshes, tidewaters, and barrier islands.

Land challenges of today are different from those of the past, and they vary across Georgia. In rapidly growing areas, urban and suburban growth is converting land from biologically productive forests and farms to urban uses. Rural Georgia faces a different and complex set of land conservation issues: many rural landowners have historically practiced conservation on their own lands, but economic pressures are causing some landowners to fragment and sell off parts or all of their land. This is particularly true where there is a strong market for residential and commercial development, such as in the 11 coastal counties or in the north Georgia mountains where many people are building second homes for retirement or vacation.

Recognizing this growing and urgent need for land conservation, then-Governor Sonny Perdue created the Advisory Council for the Georgia Land Conservation Partnership (the Advisory Council) in 2003. Governor Perdue charged the Advisory Council to oversee the development of the State's first comprehensive, State-wide land conservation plan, ensure that all interested parties have full opportunity for involvement and input into the Plan; and advise the Governor concerning implementation of the plan.

After the Advisory Council submitted their final report in 2004, in 2005 the Land Conservation Act (O.C.G.A. §12-6A) was passed by the General Assembly and signed into law. The Land Conservation Act created and charged the Georgia Land Conservation Council to protect and conserve Georgia's natural resources with staff support from the Georgia Environmental Finance Authority (GEFA). The Land Conservation Council consists of nine members: the State Property Officer, the Commissioner of GADNR, the director of the GFC, the Executive Director of the GSWCC, the Commissioner of the Department of Community Affairs, and four members to be appointed by and serve at the pleasure of the Governor.

Additionally, the Act established the Georgia Land Conservation Trust Fund and the Georgia Land Conservation Revolving Loan Fund, and declared that cities, counties, State agencies, State authorities, and nongovernmental organizations are eligible to submit a land conservation project for approval, and that funds for the preservation of land or conservation easements on land shall be made available to those entities.

The Georgia Land Conservation Program (GLCP) was created to implement the Act. The primary function of the GLCP is to provide flexible financing to local governments, State agencies and conservation organizations for permanent land conservation projects that advance at least one of ten conservation purposes listed in the Land Conservation Act. The GLCP works to permanently protect Georgia's valuable land and water resources through administration of the Georgia Conservation Tax Credit Program, which offers tax incentives for eligible donations of conservation lands and easements. Since the Georgia Land Conservation Act was passed in

2005, the GLCP has played a role in permanently protecting 389,281 acres of land (GLCP Annual Report, 2018). The GLCP promotes permanent land conservation by offering flexible and cost-effective financing options to local governments, State agencies and conservation organizations.

The Georgia Outdoor Stewardship Act (GOSA), effective July 1, 2019, will create a dedicating funding source for projects consistent with the state's established goals for conservation, including the protection of lands critical to clean drinking water, support for the creation of parks and trails, and improvements to areas to hunt and fish. All projects will be reviewed by GADNR, legislative leadership, and a Board of Trustees consisting of state officials and appointed members of the public.

The goals for conservation established in the legislation include protection of water quality, wildlife habitat, cultural and heritage sites, and lands buffering Georgia's military installations. Additional goals include support for economic development and provision of recreation. Funds will come from the dedication of 40% of the existing state sales tax on outdoor sporting goods. Funds will be administered by GEFA in the form of grants or loans and used for the acquisition or stewardship of conservation lands. Only those projects approved by the Department of Natural Resources and consistent with established goals for land conservation would be eligible for consideration. The fiscal efficacy of each proposal would also be considered.

Long Term Goals and Strategic Plan

Long Term Goal 1: Identify high-value conservation lands, particularly those lands that if put into conservation would have the greatest impact on mitigating nonpoint source pollution.

Activity: Support the development of scoring criteria for applications submitted to GADNR under GOSA. Provide additional feedback as requested.

Timeframe: Ongoing, initial feedback provided in 2019.

Funding: Staff time.

Performance measure: Development of a robust scoring metric that takes watershed needs into account when weighing project proposals.

Results: Encouraging land conservation near waterbodies can provide water quality benefits by protecting stream buffers and ecosystem function. Incorporation of water quality criteria in land conservation grant programs allows nonpoint source pollution reduction to be one of many land conservation benefits, which also include recreation opportunities.

Deliverables: Scoring metrics, summary notes of additional feedback.

Long Term Goal 2: Support the creation of a network of linked landscape-scale green spaces throughout Georgia focused on ecosystem connectivity around waterbodies.

Activity: Collect data about the location and size of lands in conservation on multiple geographic scales, including statewide and basin-by-basin.

Timeframe: Through 2024.

Funding: Staff time.

Performance measure: The development of a map of public lands in conservation,

connected to priority, impaired, and healthy watersheds. Summary tables of acres of land in conservation by watershed.

Results: GAEPD does not have a current summary of land conservation information as related to waterbodies, let alone priority, impaired, and healthy watersheds. Building this data set is the first step to providing additional feedback and developing future strategies for effective land conservation.

Deliverables: GIS map, data tables.

TRACKING MILESTONES, BENCHMARKS, AND TIMELINE

GAEPD has three primary mechanisms for tracking the progress of the *Statewide Nonpoint Source Management Plan*. These are:

1. EPA Grant Reporting and Tracking System (GRTS). GAEPD uses GRTS to document 319 project information, including reductions of NPS pollutant loadings and water quality improvements.
2. Annual nonpoint source management program reports. Annual reports to USEPA concerning Georgia's *Nonpoint Source Management Program* summarize the State's annual progress in meeting the *Nonpoint Source Management Program's* milestones and goals. These reports contain information on the administration of 319 funds, project information, TMDLs, watershed planning, outreach and education, wetlands water quality certification, success stories, partners, and other topics.
3. Water Quality Integrated Report. This biennial report provides an assessment of the water quality conditions of surface water and groundwater in Georgia and includes a description of the nature, extent, and causes of documented water quality problems. This assessment serves as the basis for lists required by Sections 303(d), 314, and 319 of the Clean Water Act, and includes a review and summary of ongoing Statewide water planning efforts; wetland, estuary, and coastal public health/aquatic life issues; and water protection, groundwater, and drinking water program summaries.

Continuing Efforts

With the 2014 Plan, GAEPD introduced several new methods of measuring progress: Water Quality Tracking Tables and Programmatic Indicator Tracking Tables. The Water Quality Tracking Tables were designed to provide GAEPD, Federal and State agencies, local governments, nongovernmental organizations, and the general public with at-a-glance, basin-specific information on water quality improvements and related activities. With annual updates, these tracking tables provide easy way to track Plan implementation and Program success. The Programmatic Indicator Tracking Tables tracked programmatic activities that may not be directly connected to water quality monitoring outcomes.

These tracking tables will be combined into one Statewide Nonpoint Source Management Plan Implementation Table and updated annually to track progress under all components of this Plan.

Long Term Goals and Strategic Plan

Long Term Goal 1: Make Plan implementation progress easily available to stakeholders and the public to increase accountability and program transparency.

Activity: Create the Statewide Nonpoint Source Management Plan Implementation Table and update annually. Post the Table on GAEPD's website

Timeframe: Table completed by September 30, 2019. Updated annually.

Funding: Staff time.

Performance measure: Completed table, annual updates, website postings.

Results: This Plan is intended to be an active, implemented document. Maintaining and updating this Table will ensure that all of the many components are being implemented and showing progress.

Deliverables: Completed table, annual updates, website postings.

ASSESSMENT OF PLAN IMPLEMENTATION

Georgia's *Nonpoint Source Management Program* has been implemented through two *Statewide Nonpoint Source Management Plan* iterations (2000 and 2014). As GAEPD initiates implementation of the third iteration of this Plan, the need for a cohesive assessment strategy is apparent. While the Watershed Prioritization Tool and tracking tables provided necessary steps in not only targeting funds but also ensuring that short-term and long-term goals were achieved, Georgia has not consistently and comprehensively assessed the effect of Plan implementation on water quality. Furthermore, GAEPD and various stakeholders have collected a substantial amount of data, much of which is not being utilized to its maximum potential.

The intent of including an Assessment of Plan Implementation chapter to this *Statewide Nonpoint Source Management Plan* update is to provide a framework for addressing those gaps over the next five years. This will set the groundwork for an iterative assessment process, identifying new opportunities and data gaps as the Program and Plan continue to evolve.

Long Term Goals and Strategic Plan

Long Term Goal 1: Develop a model for connecting all relevant components of *Nonpoint Source Management Program* activities, as identified in the *Statewide Nonpoint Source Management Plan*, to water quality outcomes.

Activity: Brainstorm key questions that need to be answered to better address nonpoint sources of pollution. Some example questions include, "Which segments on the Georgia 303(d) list are impaired by nonpoint sources and what are the causes of those impairments" and "Where, by basin, have 319 and Seed Grant projects been implemented?"

Timeframe: By June 30, 2020.

Funding: Staff time.

Performance measure: Hold at least one internal meeting with Nonpoint Source Management Plan implementers. Independently and in group discussion, identify the questions that need to be answered.

Results: The Nonpoint Source Management Program has been focused on implementation of specific, piecemeal projects across Georgia. This third revision of the Plan is a good opportunity to take a step back and assess the big picture. In order to effectively conduct such an assessment, identifying key questions about nonpoint source effects is important.

Deliverables: Meeting agenda, notes. List of key questions.

Activity: Summarize data available to GAEPD from all projects and programs included within the *Nonpoint Source Management Program* and subsequent *Statewide Nonpoint Source Management Plan*.

Timeframe: Initial summary by September 30, 2020. Full GIS map and database by September 30, 2022. Updates ongoing.

Funding: Staff time.

Performance measure: Create a summary spreadsheet listing types of data available (water quality monitoring, BMP implementation, TMDLs completed, grant funds expended, etc) for the various programs cited in the chapters and sections of the Plan.

Conduct an internal meeting to review the summary spreadsheet and identify any oversights. Build and maintain a map and database of collected data.

Results: Data can provide critical information about the efficacy of various programs and open up new avenues for implementation and collaboration. To use data effectively, GAEPD must be aware of the data available and summarize it into a useable and informative database.

Deliverables: Summary spreadsheet, meeting agenda, meeting notes, GIS map, database.

Activity: Compare the key questions with the summary spreadsheet, and identify outstanding data gaps.

Timeframe: By September 30, 2021.

Funding: Staff time.

Performance measure: List of data gaps, with information about whether the data is accessible.

Results: Data gaps serve as barriers to effective implementation. Identification of those data gaps is the first step to removing those barriers.

Deliverables: List of data gaps.

Activity: Develop a Strategic Action Plan to address data gaps.

Timeframe: By September 30, 2022.

Funding: Staff time.

Performance measure: Using the information developed in the first three activities, GAEPD will develop a Strategic Action Plan draft. This draft will be disseminated among internal stakeholders for review and comment. Comments will be incorporated into a final draft.

Results: By removing data gaps wherever possible, GAEPD could improve how BMP implementation and other program elements are targeted, potentially leading to stream delisting and water quality improvements.

Deliverables: Strategic Action Plan (draft and final), internal comments.

Nonpoint Source Management Program Requirements

Section 319 of the CWA (PL 100-4, February 4, 1987) directed the Governor of each State to prepare and submit a *Nonpoint Source Management Program* for the reduction and control of pollution from nonpoint sources to navigable waters in the State. USEPA provided national guidance documents to states since 1990, when Congress allocated Section 319 funds to implement Nonpoint Source Management Programs. These guidance documents have been updated, revised, and re-issued several times. The 2013 Nonpoint Source Guidance provided a set of key elements that all states should strive to incorporate into their updated Nonpoint Source Management Programs.

KEY COMPONENTS OF AN EFFECTIVE STATE NPS MANAGEMENT PROGRAM

1. The state program contains explicit short and long term goals, objectives and strategies to restore and protect surface water and ground water, as appropriate.

Each section of the Plan includes long term goals and strategic action plans, which include activities, performance measures, and anticipated results. Statewide Milestones are the implementation achievements of Georgia’s Nonpoint Source Management Program. These goals are tracked and reported to USEPA in *Georgia’s NPS Management Program Annual Report*. All sections of the revised *Statewide NPS Management Plan* will contribute to meeting these statewide milestones.

Statewide Milestones for Water Quality Improvement	2019	2020	2021	2022	2023
Water Quality Improvements From Nonpoint Source Controls					
<u>Number of stream segments supporting designated use on Georgia’s 305(b)/303(d) list of waters:</u> Identify the number of streams supporting designated use by meeting all water quality standards (List of waters published every two years).	-	1,000	-	1,030	-
<u>Number of stream segments on Georgia’s 305(b)/ 303(d) list of waters where one or more impairments have been restored to meet water quality standards:</u> Identify the number of stream segments where one or more impairments have been restored to meet water quality standards (List of waters published every two years).	-	30	-	40	-
Interim Progress Toward Restored Water Quality and Hydrology					
<u>Report on water bodies identified on Georgia’s 305(b)/303(d) list of impaired waters as being primarily NPS impaired that are partially or fully restored or show water quality improvement:</u> Submit NPS success story to USEPA.	1	1	1	1	1
<u>Tracking ambient water quality vs. stream water quality standards for Nitrogen, Phosphorus, Fecal Coliform, Dissolved Oxygen, and Biota:</u> Number of streams where water quality data was collected by Adopt-a-Stream or GAEPD for use in addressing water quality issues.	50	50	50	50	50
<u>Tracking target trophic status in lakes and estuaries:</u> Produce waterbody reports documenting trophic status in Georgia lakes and	On-going	Report; On-going	On-going	Report; On-going	On-going

estuaries.					
<u>Green infrastructure within watersheds:</u> Target number of 319 funded projects that are implementing green infrastructure BMPs.	1	2	2	3	3
Protection of High Quality Waters					
<u>Attain specific load reduction or maintenance goals in protection oriented plans covering healthy watersheds:</u> Attaining specific load reduction goals (Nitrogen, Phosphorus, Sediment, Fecal Coliform) for grant projects implementing Healthy Watershed Initiative WMPs that meet EPA's nine elements.	1	-	1	-	1
<u>Number of BMPs implemented at critical areas:</u> Track the number of BMPs grant projects implemented in concurrence with Healthy Watershed Initiative WMPs.	1	-	1	-	1
Nonpoint Source Pollutant Load Reduction					
<u>Estimated annual reductions in thousands of pounds of nitrogen to water bodies (from Section 319 funded projects):</u> Annually review information from NPS staff and project stakeholders for NPS load reductions of nitrogen; and include information in NPS annual report and GRTS.	60,000	60,000	60,000	60,000	60,000
<u>Estimated annual reductions in pounds of phosphorus to water bodies (from Section 319 funded projects):</u> Annually review information from NPS staff and project partners for NPS load reductions of phosphorus; and include information in NPS annual report and GRTS.	25,000	25,000	25,000	25,000	25,000
<u>Estimated annual reductions in tons of sediment to water bodies (from Section 319 funded projects):</u> Annually review information from NPS staff and project partners for NPS load reductions of sediment; and include information in NPS annual report and GRTS.	15,000	10,000	15,000	10,000	15,000
Implementation of Nonpoint Source Controls					
<u>Number of TMDLs or alternatives developed for impaired watersheds:</u> Develop TMDLs or alternatives for impaired waters.	5	5	5	5	5
<u>Statistically based survey of implementation rates:</u> Conduct the Biennial Silviculture implementation survey.	-	1	-	1	-
Public Education, Awareness, and Action					
<u>Participation rates in citizen monitoring activities:</u> Maintain a database of number of active Georgia Adopt-A-Stream monitoring sites annually	300	300	300	300	300
<u>Participation rates in public awareness and education efforts:</u> Maintain a database of Rivers Alive volunteers to determine number of active participants annually.	20,000	20,000	20,000	20,000	20,000
<u>Participation rates and activity of local watershed groups:</u> Maintain a database of Georgia Adopt-A-Stream participating volunteers to track productivity and diversity of local watershed groups. Track the number	150	150	150	150	150

of active watershed groups annually.					
Program Measures of Success					
Track number and diversity of partners in watershed project implementation: Use Grants Reporting and Tracking System to annually track the number and diversity of partners participating in watershed project implementation.	15	15	15	15	15
Number of nine element watershed based plans created or updated: Nine element watershed based plans developed by NPS plan.	1	-	1	-	1
Progress in reducing unliquidated obligations (ULO): Percentage of ULO funds anticipated yearly GAEPD (total remaining funds/total awarded = percentage ULO).	EPA R4 Target				

2. The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.

This revision of Georgia’s *Statewide Nonpoint Source Management Plan* was developed through a consultation process, incorporating input from a wide range of stakeholders involved in nonpoint source management activities throughout the State. Nonpoint source pollution management in Georgia has continued to evolve. In order to encourage and support these partnerships, the GAEPD maintains active partnerships with State, Federal, Regional, and local organizations, and the general public.

As with other activities, the Georgia’s *Statewide Nonpoint Source Management Plan* is implemented in conjunction with the State’s 2004 Comprehensive State-wide Water Management Planning Act. Each of the ten regional water planning council plans manage and protect the waters in their individual councils while coordinating with hydrologically connected neighboring councils. In 2017, each council updated their regional water plan in compliance with the schedule to review and revise plans every five years.

This revision of the State’s *Nonpoint Source Management Program* established new partnerships and strengthened existing partnerships in the development and implementation of nonpoint source strategies.

3. The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.

GAEPD applies an effective split of efforts between supporting statewide program-related activities and implementing on-the-ground projects directed by nine-element watershed-based plans. USEPA guidelines published in 2013 require a set aside of at least 50 percent of a state’s allocation for watershed projects to provide an appropriate balance between implementation of WBPs and other important planning, assessment, management, nonpoint source programs and projects.

Water quality impairments such as low DO, high turbidity and high bacterial counts are used as in-stream indicators to track progress in Plan implementation. GAEPD's ambient water monitoring staff and a contract with the USGS assist the TMDL program in identifying sources of nonpoint source pollution. Demonstration projects and educational programs are developed to address specific nonpoint source issues.

The results of these watershed activities are highlighted in the Nonpoint Source Annual Reports and other forms of documentation to USEPA. This process continues to be refined to target problem areas in statewide watersheds for BMP implementation. Georgia's biennial 305(b)/303(d) list of waters continues to document water quality improvement and delisting as a result of program implementation.

4. The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.

The majority of project funds are typically directed toward the restoration of impaired waters. GAEPD also seeks to fund a Healthy Watershed Initiative (HWI) every other year.

Georgia's *Statewide Nonpoint Source Management Plan* identifies seven statewide land use areas of nonpoint sources of pollution: silviculture, agriculture, urban, wetlands, coast, surface mining, and groundwater. Each land use area describes the strategic plan for employing effective BMPS and programs to control nonpoint source pollution statewide.

Although impaired waters still have a higher priority for resource allocations, the HWI provides additional guidance for protection of high quality waters. The intent of the HWI is to place equal emphasis on healthy waters as is placed on impaired waters to prevent impairment and encourage protective measures.

5. The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans and implementing the plans.

The biennial reports, *Water Quality in Georgia*, as required by Section 305(b) of the Federal Clean Water Act, serve as the current process for updating the *Nonpoint Source Assessment Report*. Current nonpoint source pollution impacts are presented in the most recent report.

In addition, special provisions have been established that require local governments to conduct watershed assessments prior to receiving an environmental permit from the State that facilitates growth and development, such as a wastewater permit or a water withdrawal permit. The watershed assessment must address the entire service area managed by the local authority and include the following information: identification of and relative contribution of point and nonpoint sources of pollution; identification of measurable environmental and programmatic goals; and identification of pollution controls and natural restoration measures required to achieve clean water and other natural resource goals.

Also, as part of the *2014 Statewide Nonpoint Source Management Plan* update, GAEPD developed a Watershed Prioritization Tool to prioritize and evaluate watersheds or sub-watersheds based on specific criteria. The list of prioritized watersheds and sub-watersheds is used to prioritize funding for BMPs, collect more data, or further evaluate the particular watersheds/sub-watershed for nonpoint source loading and impairment. 319(h) grant fund priority will be given to projects which implement a comprehensive watershed management plan in an identified priority watershed to alleviate the criterion violations identified in the Section 305(b) and Section 303(d) lists of waters which are not supporting designated or beneficial uses due to nonpoint sources of pollution.

During the implementation of the *2019 Statewide Nonpoint Source Management Plan*, GAEPD will evaluate strategies for updating the Watershed Prioritization Tool, as new data are available. This allows the Watershed Prioritization Tool to remain current and enables GAEPD to make the best decisions about funding priorities.

6) The state implements all program components required by section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, non-regulatory, financial and technical assistance, as needed.

Georgia's *Nonpoint Source Management Program* combines regulatory and non-regulatory approaches to achieve the short- and long-term goals and implementation strategies. Just as important, the *Statewide Nonpoint Source Management Plan* is designed to be a resource for the wide range of partner agencies, governments, organizations, institutions, corporations, and other stakeholders across the State involved in the prevention, control and abatement of nonpoint sources of pollution.

Traditional nonpoint source control mechanisms in Georgia include voluntary and technical assistance programs that emphasize voluntary BMPs, especially in agriculture and silviculture. Federal agencies and GAEPD continue to coordinate efforts through established partnerships, most frequently with the USDA, USACE, USFWS, USFS and the USGS.

Georgia, even though leading with non-regulatory strategies, has enforcement tools for some nonpoint source pollution problems, such as enforcing stream buffer protection and ensuring compliance with LAS permits. While enforcement mechanisms are not the primary instrument used to address nonpoint source pollution, they can be a useful complement to other mechanisms.

7. The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.

The 319 Grants chapter of Georgia's *Statewide Nonpoint Source Management Plan* details processes and strategic approaches to adapt the 319 grant program to meet Georgia's current NPS issues. Two approaches are to update the process for how GAEPD selects and awards

competitive grant projects to local stakeholders and focus projects on priority watersheds.

In accordance with 40 CFR Part 31, §31.50 Closeout, GAEPD will continue to submit all financial, performance and other reports required as a condition of each Section 319(h) grant within 90 days after the expiration of the grant.

In addition, GAEPD continues to implement several processes to maintain the Unliquidated Obligations (ULOs) for the Section 319(h) Grant program to USEPA's Region 4 goal.

8. The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.

The last revision of Georgia's *Statewide Nonpoint Source Management Plan* was completed in 2014. In subsequent years, GAEPD reviewed the document for consistency with current goals. This document is intended to be a new revision to the plan. Consistent with EPA Section 319 Guidance, GAEPD intends to review periodically and revise this document, as necessary, with the interval between revisions being a maximum of 5 years.

In accordance with Section 319(11), Reporting and Other Requirements, the GAEPD submits an annual report to the USEPA concerning its progress in meeting the *Nonpoint Source Management Program* milestones, reductions in nonpoint source pollution and improvements in water quality.