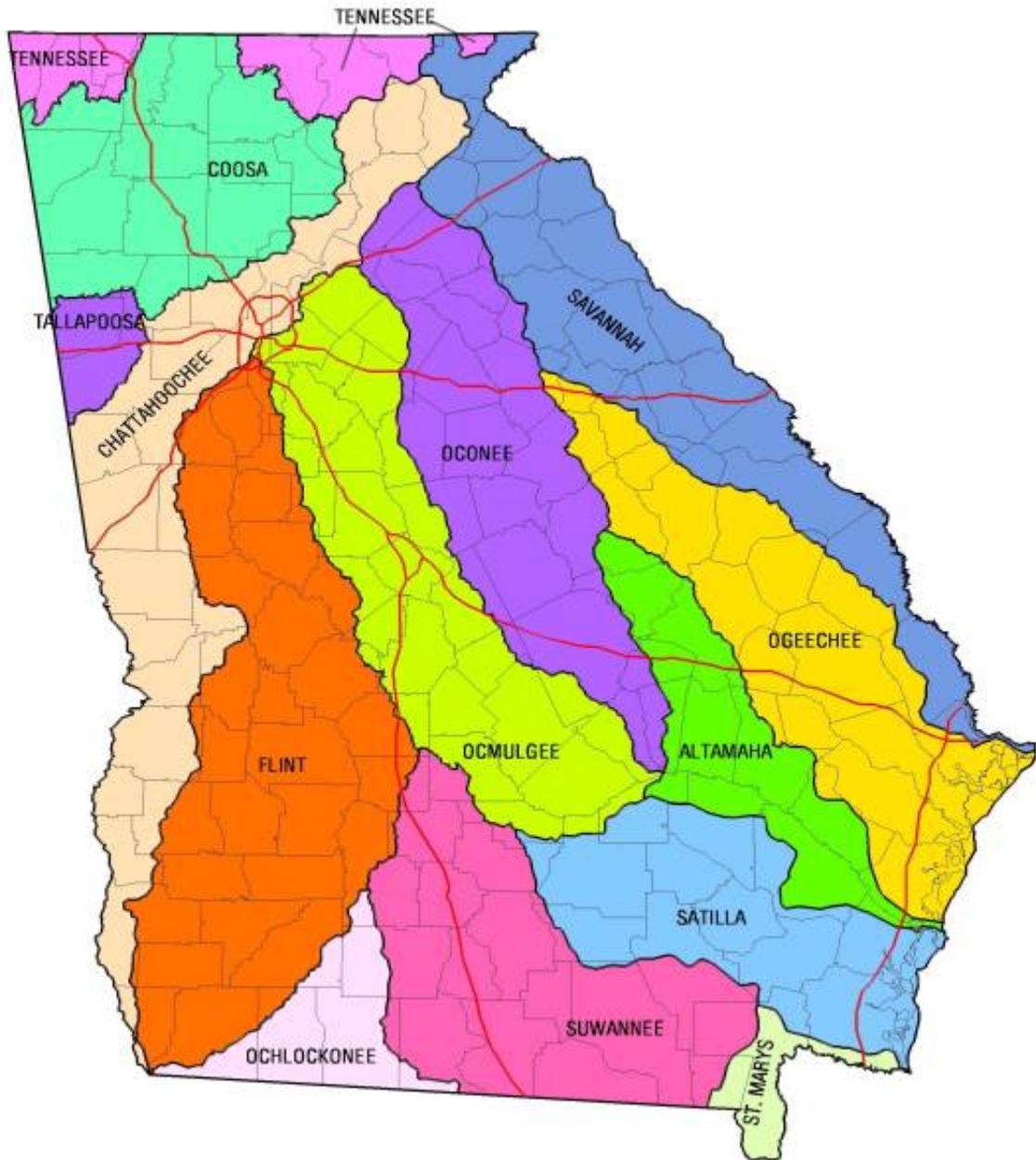


WATER QUALITY IN GEORGIA 2008-2009



**Georgia Department of Natural Resources
Environmental Protection Division**

WATER QUALITY IN GEORGIA 2008-2009

Preface

This report was prepared by the Georgia Environmental Protection Division GAEPD, Department of Natural Resources, as required by Section 305(b) of Public Law 92-500 (the Clean Water Act) and as a public information document. It represents a synoptic extraction of the EPD files and, in certain cases, information has been presented in summary form from those files. The reader is therefore advised to use this condensed information with the knowledge that it is a summary document and more detailed information is available in the EPD files.

This report covers a two-year period, January 1, 2008 through December 31, 2009. Comments or questions related to the content of this report are invited and should be addressed to:

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CHAPTER 1

Executive Summary

Purpose

This report, *Water Quality in Georgia, 2008-2009*, was prepared by the Georgia Environmental Protection Division (GAEPD) of the Department of Natural Resources (DNR). The DNR Coastal Resources (CRD) and Wildlife Resources Divisions (WRD), the Georgia Forestry Commission, and the Georgia Soil and Water Conservation Commission also contributed portions of the report. In addition, water quality data was provided by a number of governmental agencies, environmental groups and universities.

This report is often referred to as the Georgia 305(b) Report as portions of the report are prepared to comply with this section of the Federal Clean Water Act. The report describes water quality conditions of navigable waters across the State. The USEPA uses the individual State reports to develop a national water quality inventory report, which is transmitted to the Congress of the United States.

This report provides an assessment of the water quality conditions of surface and groundwater in Georgia and includes a description of the nature, extent and causes of documented water quality problems. This assessment of water quality problem areas serves as the basis for lists required by Sections 303(d), 314, and 319 of the Clean Water Act. The report also 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.

In addition to complying with the Federal Clean Water Act, the major objective of this report is to provide Georgians a broad summary of information on water quality and the programs being implemented by the GAEPD and its partners to protect water resources across the State.

Watershed Protection In Georgia

The GAEPD is a comprehensive environmental agency responsible for environmental protection, management, regulation, permitting, and enforcement in Georgia. The GAEPD has for many years aggressively sought most available program delegations from the USEPA in order to achieve and maintain a coordinated, integrated approach to environmental management. Today the GAEPD administers regulatory programs for water planning, water pollution control, water supply and groundwater management, surface water allocation, hazardous waste management, air quality control, solid waste management, strip mining, soil erosion control, geologic survey activities, radiation control, underground storage tanks, and safe dams.

The Watershed Protection Branch of the GAEPD, in cooperation with many local, state, and federal agencies, coordinates programs to address most aspects of drinking water supply and water pollution control including, comprehensive statewide water planning; monitoring; water quality modeling to develop wasteload allocations and total maximum daily loads (TMDLs); TMDL implementation through watershed improvement plans; the continuing planning process; water quality standards; local watershed assessment and watershed protection plans; nonpoint source management; erosion and sedimentation; stormwater management; the State revolving loan process for funding drinking water facilities and municipal water pollution control plant construction; the NPDES permit and enforcement program for municipal and industrial point sources; water withdrawal and drinking water permits; water conservation; source water protection; industrial pretreatment; land application of treated wastewater and regulation of concentrated animal feedlot operations (CAFOs).

The GAEPD has designated the Georgia Soil and Water Conservation Commission as the lead agency for dealing with water quality problems caused by agriculture. The Georgia Forestry Commission has been designated by the GAEPD as the lead agency to deal with water quality problems due to commercial forestry operations.

Watershed Protection Programs

Background. Georgia is rich in water resources. The State has 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 (9% tidally affected), 425,582 acres of public lakes and reservoirs, 854 square miles of estuaries, and 100 miles of coastline. This rich water heritage is often taken for granted. However, unusual events such as the flood in the summer of 1994 and drought conditions experienced throughout Georgia in 1986, 1988, 1999-2002, and 2007-2008 serve as reminders that water resources cannot be taken for granted and sound regulatory programs are necessary to protect the resources.

In 2008-2009, the GAEPD placed emphasis on comprehensive statewide water management planning, monitoring and assessment, water quality modeling and TMDLs, TMDL implementation plan development, State revolving loan programs, NPDES permitting and enforcement, nonpoint source pollution abatement, stormwater management, erosion and sediment control and public participation projects.

Comprehensive Statewide Water

Management Planning. In 2004 the Georgia General Assembly passed new water planning legislation to take the place of river basin planning. The 2004 Comprehensive State-wide Water Management Planning Act calls for the preparation of a comprehensive statewide water plan and provides fundamental goals and guiding principles for the development of the plan. This work is discussed in Chapter 2.

Watershed Projects. The GAEPD is working with the United States Environmental Protection Agency (USEPA) and South Carolina on several Savannah River projects; with the USEPA and the Alabama Department of Environmental Management (ADEM) on water quality issues in the Coosa River and Lake Weiss; and with the Florida Department of Environmental Protection and the Suwannee River Water Management District to coordinate water protection efforts in the Suwannee River Basin.

Monitoring and Assessment. Georgia's waters are currently classified as one of the following water use classifications: drinking water, recreation, fishing, coastal fishing, wild river, or scenic river. Specific water quality standards are assigned to support each water use classification. The quality of Georgia's waters is judged by the extent to which the waters support the uses (comply with standards set for the water use classification or designations) for which they have been designated. Water quality standards, monitoring programs, and information on assessments of Georgia's waters are discussed in Chapter 3.

Water Quality Modeling/Wasteload

Allocation/TMDL Development. The GAEPD conducted a significant amount of modeling in 2008-2009 in support of the development of wasteload allocations and total maximum daily loads (TMDLs). In 2007, TMDLs were developed for segments on the Georgia 2006 303(d) list for the Chattahoochee and Flint River Basins and these TMDLs were finalized and submitted to EPA and approved in early 2008. In 2008, TMDLs were developed for segments on the Georgia 2008 303(d) list for the Coosa, Tallapoosa, and Tennessee River Basins. These TMDLs were finalized and submitted to EPA and approved in early 2009. In 2009, TMDLs were developed for segments on the 2008 303(d) list for the Savannah and Ogeechee River Basins. Over the 2008-2009 period, more than 133 TMDLs were developed. To date more than 1400 TMDLs have been developed for 303(d) listed waters in Georgia. This work is discussed in Chapter 7.

TMDL Implementation Plan Development.

As TMDLs are developed, plans are needed to guide implementation of pollution reduction strategies. TMDLs are implemented through changes in NPDES permits to address needed point source improvements and/or implementation of best management practices to address nonpoint sources of pollution. The following number of TMDL implementation plans were developed during 2008-2009 for specific river basin groups. For the St. Mary's, Ochlockonee, Satilla and Suwannee River Basins, a total of 92 new TMDL implementation plans, revisions, water quality

monitoring reports, and watershed improvement plans were completed. For the Oconee, Ocmulgee and Altamaha River Basins, a total of 260 new TMDL implementation plans, status reports and monitoring reports were completed while eight watershed improvement plans were initiated. For the Chattahoochee-Flint River Basins, a total of 135 TMDL implementation plans and status reports were completed while five watershed improvement plans were initiated. For the Coosa, Tallapoosa and Tennessee River Basins, a total of 103 TMDL implementation plans were completed, with two watershed improvement plans initiated. To date a total of 590 new plans, revisions, monitoring reports, status reports and improvement plans have been prepared to implement TMDLs in Georgia. TMDL implementation is discussed in Chapter 7.

State Revolving Loan Fund and Georgia Loan Fund. In 2008-2009 more than 476 million dollars were obligated to communities for wastewater system improvements through the Georgia Environmental Facilities Authority (GEFA) in the form of low-interest, SRF and Georgia Fund loans. The loan programs are discussed in Chapter 7.

GEFA Implementation Unit. The Metropolitan North Georgia Water Planning District (District) was created on April 5, 2001 (2001 S.B. 130) as a planning entity dedicated to developing comprehensive regional and watershed-specific plans to be implemented by local governments in the District. The enabling legislation required the District to develop plans for watershed management, wastewater treatment, and water supply and conservation in its 15-county area that includes Bartow, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Fulton, Forsyth, Gwinnett, Hall, Henry, Paulding, and Rockdale Counties and all the municipalities within the District. These plans are designed to protect water quality and public water supplies, protect recreational values of the waters, and to minimize potential adverse impacts of development on waters in and downstream of the region. These plans were updated in May, 2009.

Limited water resources combined with the region's growth places the District in a unique

position relative to other areas in Georgia. With a finite water resource and a population of nearly 4 million and growing, the need to carefully and cooperatively manage and protect Metropolitan Atlanta's rivers and streams has become a priority.

The EPD was charged with the enforcement of these plans. SB 130 states that the EPD Director shall not approve any application by a local government in the District to issue, modify, or renew a permit, if such permit would allow an increase in the permitted water withdrawal, public water system capacity, or waste-water treatment system capacity of such local government, or any NPDES Phase I or Phase II General Stormwater permit; unless such local government is in compliance with the applicable provisions of the plan, or the Director certifies that such local government is making good faith efforts to come into compliance.

EPD, upon application for a permit for an increase in the water withdrawal, public water system capacity, or wastewater treatment system capacity, or renewal of any NPDES Phase I or Phase II General Stormwater permit, will conduct an audit to determine whether the local government is in compliance with the District Plans. This audit process was initiated in the fall of 2005.

NPDES Permitting and Enforcement. A considerable amount of time was allocated to treated wastewater discharge permit reissuance activities in 2008-2009. NPDES permits were modified or reissued to 287 municipal/private dischargers and to 86 industrial dischargers.

Compliance and enforcement activities continued to receive significant attention in 2008-2009. By the end of 2009, of 144 major municipal discharges, 141 facilities were in general compliance with final limitations. The remaining 3 facilities are under compliance schedules to resolve the noncompliance or implementing infiltration/ inflow strategies. Enforcement action has been taken by the GAEPD to insure problems are alleviated. Of 37 major industrial discharges, all facilities were achieving permit compliance at the end of 2009.

The GAEPD utilizes all reasonable means to attain compliance, including technical assistance, noncompliance notification letters, conferences, consent orders, and civil penalties. Emphasis is placed on achieving compliance through cooperative action. However, compliance cannot always be achieved in a cooperative manner. The Director of the GAEPD has the authority to negotiate consent orders or issue administrative orders. In 2008-2009, 672 Orders were issued and a total of \$2,787,318 in negotiated settlements was collected. This includes enforcement actions for all aspects of the water protection program including violations of the Georgia Water Quality Control Act, the Federal Clean Water Act and NPDES permits, excluding stormwater. In 2008-2009 a total of 346 stormwater Orders were issued and a total of \$1,579,147 in negotiated settlements was collected. Permitting, compliance and enforcement work is discussed in Chapter 7.

Concentrated Animal Feeding Operations.

Georgia adopted rules for swine feeding operations in 1999. Rules were adopted for animal (non-swine) feeding operations in 2001. During 2002 and 2003, rules were developed and implemented for large chicken feeding operations. Work was continued in 2008-2009 to implement this program. This process is discussed in Chapter 7.

Zero Tolerance. In response to a resolution adopted in 1998 by Georgia Department of Natural Resources that directed EPD to provide the “best quality of effort possible enforcing Georgia’s environmental laws”, a “zero tolerance” strategy was adopted for certain high growth areas of the state requiring enforcement action on any and all noncompliance issues. Significant work was conducted in 2008-2009 to implement this strategy. This process is discussed in Chapter 7.

Nonpoint Source Management Program.

Nonpoint source management programs have allowed the GAEPD to place increasing emphasis on the prevention, control and abatement of nonpoint sources of pollution. The GAEPD is responsible for administering and enforcing laws to protect the waters of the State, defined to include surface and ground

water and has been designated as the lead agency for implementing the State’s Nonpoint Source Management Program. This program combines regulatory and non-regulatory approaches, in cooperation with other State and Federal agencies, local and regional governments, State colleges and universities, businesses and industries, non-governmental organizations and individual citizens.

Georgia’s nonpoint source goals and implementation strategies are delineated in the State’s Nonpoint Source Management Program. The Program is an inventory of the full breadth of current nonpoint source management activities (regulatory and non-regulatory) in Georgia.

The State’s Nonpoint Source Management Program focuses on the comprehensive categories of nonpoint sources of pollution identified by the USEPA: Agriculture, Silviculture, Construction, Urban Runoff, Hydrologic/Habitat Modification, Land Disposal, Resource Extraction and Other Nonpoint Sources.

Under Section 319(h) of the Federal Clean Water Act, the USEPA awards a Nonpoint Source Implementation Grant to the GAEPD to fund eligible projects, which support the implementation of the State’s Nonpoint Source Management Program. Section 319(h) Grant funds for the prevention, control and/or abatement of nonpoint sources of pollution of are made available annually to public agencies in Georgia. In FY08 – FY09, Georgia’s Section 319(h) grant project funded 32 new projects for over \$9.3 million. The nonpoint source programs are described in Chapter 7.

Stormwater Management. The GAEPD developed its Storm Water Permitting Strategy in February 1991, and revised it in February 1997. Georgia’s Phase II Storm Water Permitting Strategy was approved by USEPA in May 2000, and Phase II designation criteria was developed by GAEPD in July 2002. In 1994-1995 a total of 58 NPDES permits were issued to large and medium municipal separate storm sewer systems (MS4s). The 45 NPDES permits covering the Atlanta metro area were reissued in 2009. The 13 NPDES permits for medium MS4s were reissued in 2000 and 2005. In December 2007, GAEPD

reissued the NPDES General Permit for Phase II MS4s, and this permit currently regulates 87 cities and counties. In 2009, a General NPDES Permit was issued to seven Department of Defense facilities.

In 1993, a general NPDES permit for storm water associated with industrial activity was issued. This permit was most recently reissued in 2006, with approximately 2600 facilities retaining coverage. In addition, 500 industrial activity facilities have submitted an Industrial No Exposure Exclusion Certification Form.

Erosion and Sediment Control. The Georgia Erosion and Sedimentation Act was signed into law in 1975, and has been amended several times. The legislative intent of the Act was to establish a comprehensive and statewide soil, erosion and sedimentation control program to protect and conserve air, land and water resources through the adoption and implementation of local ordinances and programs which regulate certain land disturbing activities generally associated with urban development. EPD implements the program where there is no local ordinance.

The Act requires an erosion and sedimentation control plan and a land disturbing activity permit for sites 1 acre and greater. Erosion, Sedimentation & Pollution Control Plans must be reviewed and approved by the Soil and Water Conservation District or by the local issuing authority before the land disturbing activity permit can be issued. Buffers of 25 feet for warm water streams and 50 feet for trout streams are required by the Act for the protection of water quality. The Act provides for a variance from these buffers under certain circumstances. Variances can only be issued by EPD. Procedures and criteria for obtaining a stream buffer variance are outlined in DNR's Erosion and Sedimentation Control Rules and Regulations and become part of the Land Disturbing Activity Permit. The Act provides for monetary penalties of up to \$2,500 per day, enforced by EPD or by the local issuing authority.

After several years of legal challenges, the NPDES General Permit for storm water from construction activities was successfully issued on June 12, 2000 and became effective on August 1, 2000. The permit was reissued by

GAEPD on August 13, 2003. The permit was re-issued as three distinct permits; Stand alone, Infrastructure and Common Development, and required coverage for projects disturbing one acre or more. The permits were most recently reissued by GAEPD on August 1, 2008. The 2008 permits added additional requirements for projects that discharge to impaired stream segments and for projects that disturb 50 acres or more at one time. The three general permits expire on July 31, 2013.

The Act was amended by House Bill 285 in 2003 to create an integrated permitting program for erosion and sedimentation control for land disturbing activities of one acre or greater, thereby standardizing the requirements for local Land Disturbing Activity Permits and the NPDES Construction Storm Water Permits. HB 285 also established a new, mandatory training and certification program for all individuals involved with erosion and sediment control. This new program, which is being administered by the Georgia Soil and Water Conservation Commission, required those individuals to obtain the applicable certification by December 31, 2006. The third major component of HB 285 was to authorize the first NPDES permit fee program in Georgia. The bill authorized a fee of up to \$80 per disturbed acre, with half of that amount to go to the local issuing authority. Local issuing authorities were required to amend their local ordinances to implement the changes in the Act by July 1, 2004. The Act was amended by Senate Bill 460 in 2004 to add three new criteria under which the EPD director can consider stream buffer variances. The legislation also required the Georgia Board of Natural Resources to adopt amendments to the Erosion and Sedimentation Control Rules to implement the new criteria. These amendments were effective on January 10, 2005. The Act was again amended in 2007 to give subcontractors an additional year to become certified under the mandatory training and certification program. Storm water management and erosion and sediment control are discussed in Chapter 7.

Major Issues and Challenges

Georgia is one of the fastest growing states in the nation. The burgeoning population places considerable demands on Georgia's ground

and surface water resources in terms of water supply, water quality and assimilative capacity. The problems and issues are further complicated by the fact that surface water resources are limited in South Georgia and groundwater resources are limited in North Georgia. In some locations, the freshwater resources are approaching their sustainable limits. Thus, several key issues and challenges to be addressed now and in the future years include (1) minimizing withdrawals of water by increasing conservation, efficiency and reuse, (2) maximizing returns to the basin through reducing interbasin transfers and limiting use of septic tanks and land application of treated wastewater where water is limited, (3) meeting instream and offstream water demands through storage, aquifer management and reducing water demands, (4) protecting water quality by reducing wastewater discharges and runoff from land to below the assimilative capacity of the streams. The implementation of the Comprehensive Statewide Water Management Planning process in Georgia provides a framework for addressing each of the key issues.

The pollution impact on Georgia streams has radically shifted over the last several decades. Streams are no longer dominated by untreated or partially treated sewage discharges which resulted in little or no oxygen and little or no aquatic life. The sewage is now treated, oxygen levels have returned and fish have followed. However, another source of pollution is now affecting Georgia streams. That source is referred to as nonpoint and consists of mud, litter, bacteria, pesticides, fertilizers, metals, oils, detergents and a variety of other pollutants being washed into rivers and lakes by stormwater. Even stormwater runoff itself, if rate and volume is unmitigated, can be extremely detrimental to aquatic habitat and hydrologic systems. Nonpoint source pollution, although somewhat less dramatic than raw sewage, must be reduced and controlled to fully protect Georgia's streams. Structural and nonstructural techniques such as green infrastructure, pollution prevention and best management practices must be significantly expanded to minimize nonpoint source pollution. These include both watershed protection through planning, zoning, buffer zones, and appropriate building densities as well as increased use of stormwater structural

practices, low impact development, street cleaning and perhaps eventual limitations on pesticide and fertilizer usage.

Another issue of importance, the reduction of toxic substances in rivers, lakes, sediment and fish tissue. This is extremely important in protecting both human health and aquatic life. The sources are widespread. The most effective method to reduce releases of toxic substances into rivers is pollution prevention, which consists primarily of eliminating or reducing the use of toxic materials or at least reducing the exposure of toxic materials to drinking water, wastewater and stormwater. It is very expensive and difficult to reduce low concentrations of toxic substances in wastewaters by treatment technologies. It is virtually impossible to treat large quantities of stormwater and reduce toxic substances. Therefore, toxic substances must be controlled at the source.

It is clear that local governments and industries, even with well-funded efforts, cannot fully address the challenges of toxic substances and nonpoint source pollution control. Citizens must individually and collectively be part of the solution to these challenges. The main focus is to achieve full public acceptance of the fact that what we do on the land has a direct impact on water quality. Adding more pavement and other impervious surfaces, littering, driving cars which drip oils and antifreeze, applying fertilizers and other activities and behaviors all contribute to toxic and nonpoint source pollution. If streams and lakes are to be pollutant free, then some of the everyday human practices must be modified. The GAEPD will be emphasizing public involvement; not only in decision-making but also in direct programs of stream improvement. The first steps are education and adopt-a-stream programs.

CHAPTER 2

Comprehensive State-wide Water Management Planning

Legislation

Background. Georgia's future relies on the protection and sustainable management of the state's water resources. In 2004 the Georgia General Assembly passed the "Comprehensive State-wide Water Management Planning Act", O.C.G.A. § 12-5-522, which called for the development of a statewide water management plan. The legislation created a framework for developing Georgia's first comprehensive statewide water management plan by providing a vision for water management in Georgia, guiding principles for plan development and the assignment of responsibility for developing the plan.

Responsibility. The legislation assigned the responsibility for developing the draft plan to the Georgia Environmental Protection (EPD) and established a planning oversight committee, the Georgia Water Council, composed of legislators, legislative appointees, and state agency heads with water related responsibilities. The EPD and the Georgia Water Council initiated work on the Comprehensive Management Plan shortly after the 2004 legislation was signed by Governor Perdue. The legislation called for the EPD to submit an initial draft plan to the Water Council for review no later than July 1, 2007 and for the Water Council to provide input and modify the draft plan as necessary and approve and recommend a final draft plan no later than the first day of the regular session of the 2008 General Assembly.

State Water Plan Development

Stakeholder Participation. The process used to develop the statewide plan provided for meaningful participation, coordination, and cooperation among interested and affected stakeholders and citizens as well as

all levels of governmental and other entities managing or utilizing water. A Statewide Advisory Committee (SAC) was convened to provide statewide perspectives on water policy options. Technical Advisory Committees (TACs) provided early input, when needed by answering specific technical questions needed to inform water policy options. Seven Basin Advisory Committees (BACs) were appointed to provide a regional perspective on proposed policy options and management practices.

Plan Development. The process of preparing the initial draft plan involved the preparation of draft policies for each of four management objectives: minimizing withdrawals, maximizing returns, meeting instream and offstream demands, and protecting water quality.

The policy options were drafted by the EPD, drawing on research from the Carl Vinson Institute of Government at the University of Georgia, and presented to each basin advisory committee for review and input. The input from the BACs was considered and appropriate changes were made in the policy options. The revised policy options were then presented to the State Advisory Committee for review and comment. The input from the SAC was considered and changes were made. Each of the policy option packages were then presented to the public for input at a series of Town Hall Meetings across the state hosted by the Water Council. Based on input from the Town Hall Meetings the policy option packages were revised once again and a final set of policy options emerged for each of the management planning priorities. The policy options packages served as the basis for the initial draft of the statewide water plan, "Georgia's Water Resources: A Blueprint for the Future" submitted to the Water Council by the EPD on June 28, 2007.

The Water Council approved the release of the initial draft and established a portal for public input at its website. EPD staff reviewed and summarized the initial input for the Water Council at its August, 2007 meeting. The Council discussed and

approved a number of revisions to the initial plan. A second draft of the plan was prepared and noticed for public input on September 13, 2007.

The Water Council hosted thirteen public hearings across Georgia in November 2007 to solicit public comment on the draft water plan. A working group of Water Council designees reviewed each comment submitted and made recommendations for revisions to the Water Council. The Water Council considered and acted on recommendations from the designees and deliberated on individual member suggestions. The Council voted on each proposed change and each change approved by the Council was made in the draft plan.

A third draft of the plan was completed and noticed for public comment on December 5, 2007. The Water Council hosted six public meetings to discuss the revised water plan and solicit public input. The Water Council designees reviewed comments received and provided recommendations for changes to the Water Council. The Council reviewed the designee recommendations, discussed individual member suggestions and a vote was taken regarding each proposed change. Changes approved by the Water Council were made and a final draft of the plan was prepared and approved by the Water Council on January 8, 2008. This proposed plan, "Georgia Comprehensive State-wide Water Management Plan", was transmitted to the Georgia General Assembly for consideration on January 14, the first day of the 2008 regular session.

The Georgia General Assembly debated the provisions of the January 8, 2008 Water Council draft of the statewide water plan. Both chambers approved the plan on February 5. Governor Perdue signed HR1022, the Statewide Water Plan, on February 6, 2008. In signing the resolution, one of the Governor's comments was as follows; "Water management is one of the most critical issues facing Georgia today. This plan was created by an inclusive process, allowing all parties to contribute. Georgia now has a comprehensive,

statewide plan for managing and conserving this precious resource." A copy of the plan is available at www.georgiawaterplanning.org.

Statewide Water Plan Implementation

Introduction. The State Water Plan ushered in a new era of comprehensive regional water planning for Georgia. Isolated regional water planning efforts aimed at addressing localized water challenges had been attempted in several regions in Georgia since the early 1970s, but not until the current directive from the Governor and Legislature has Georgia embarked upon statewide comprehensive regional water planning. Through the development of regional water plans, the regional water councils will determine the preferred water management practices to meet each region's future water resources needs. The recommended regional water plans, which will be submitted to the EPD in initial form by January 31, 2011 and final form by June 30, 2011, will identify a range of expected future water needs and management practices to meet those needs for each region.

Water Planning Councils. The water planning councils (Councils) represent regions in Georgia as designated in the water plan and adjusted by approved petition. Each Council consists of individuals appointed by the Governor, Lt. Governor, and Speaker of the House. The Metropolitan North Georgia Regional Water Planning District is a separate water planning entity created by the legislature in 2001 (O.C.G.A. §12-5-572), will participate in the planning process consistent with the State Water Plan and its enabling legislation.

The EPD supports the regional Councils, by providing guidance as well as contractors who specialize in water resource planning and working with public stakeholder groups.

The operation of each Council is defined in a Memorandum of Agreement (MOA) between the council, EPD, and the Georgia Department of Community Affairs (DCA). These agreements establish how each council conducts its affairs including the procedures for decision-making. Members of each of the state's ten regional water

planning councils met for a kick-off meeting on March 12, 2009 at the Georgia Aquarium in Atlanta where they were addressed by Governor Perdue and provided with a shared understanding of basic water resource issues, and the purposes and process for regional water planning council activities. Since that time, each regional council convened their first four meetings, taking place in May, June, September and November 2009 respectively. A map of the water planning regions is shown below.

Final Delineation of Water Planning Regions



The role of the Councils is to prepare recommended Water Development and Conservation Plans (Regional Water Plans). These long-term regional water resource management plans will include resource assessments, estimates of current and future water needs, and those management practices necessary to meet the region's needs within the capabilities of the resources.

Regional Water Plans must support the region's (and state's) economy, protect the public health and natural systems, and enhance the quality of life for all citizens. In order to do so the Regional Water Plans must promote sustainable use, conservation and reuse of water, guard against a shortage of water, and promote the efficient use of the water resource. They must also

be based upon detailed scientific analysis of the water resources, the projected future condition of the resources, current demand, and estimated future demands on the resource.

More detailed information on each individual regional water planning council can be found at www.georgiawaterplanning.org.

Resource Assessments

Introduction. The EPD with the assistance of other state agencies, the University System of Georgia and other research institutions, the U.S. Geological Survey and contractors is conducting water resource assessments to determine Surface Water Availability, Groundwater Availability, and Surface Water Quality. The assessments include modeling, monitoring, and the compilation and management of data. Assessments are being provided to each regional water planning council as a starting point for the development of a recommended Water Development and Conservation Plan (Regional Water Plan).

Groundwater Availability Assessment.

This assessment will provide information on the ability of water from aquifers in Georgia to meet current and future needs. Together with the Surface Water Availability Assessment, they form the "consumptive use assessment" described in the State Water Plan.

The EPD prioritizes the aquifers for Groundwater Availability assessment based on the current condition of an aquifer and expected future demands on that aquifer. For the prioritized aquifers, EPD, with contractor support, is developing groundwater hydrogeologic models to determine sustainable yields (the amount of water that can be withdrawn without creating an unacceptable impact such as dropping aquifer level, salt-water intrusion, or significantly lowered surface water).

For the other aquifers, groundwater budget models, essentially input and output balances, were used to help establish a planning level assessment of groundwater resource sustainability. Management of

these aquifers will focus on monitoring of aquifer response, and the response of other connected water resources, to future increases in withdrawal.

Surface Water Availability Assessment.

This assessment will measure the amount of water that can be used from the rivers and lakes of Georgia without substantially altering the desired hydrologic flow regime and the opportunities for both instream and offstream use of water supported by that flow regime.

EPD and its contractors are using the "River Basin Planning Tool," developed by the Georgia Water Resources Management Institute at Georgia Tech, to model flows in Georgia's river systems. The River Basin Planning Tool allows EPD to convert existing data on the 14 river basins in Georgia into smaller planning units or sub-basins, and measure the degree of deviation, if any, from the desired hydrologic flow regime with current and future water uses. Consumptive use refers to the amount of water used but not returned without undue delay from either surface water or groundwater.

Critical inputs for the model include: the desired flow of the river system, expected return of treated wastewater to the system, the desired water supply, and the amount of storage upstream.

Surface Water Quality Assessment. This assessment will model the capacity of Georgia's surface waters to absorb pollutants without unacceptable degradation of water quality. This process includes basic modeling of all of Georgia's 52 watersheds. More complex models are being developed for watersheds where the assimilative capacity may not be adequate to support projected needs for wastewater discharge or assimilation of nonpoint source pollution. The water quality models are being used to evaluate the impacts of forecasted wastewater flows, proposed discharge locations, and future land use patterns.

In January and February 2010, EPD conducted Joint Meetings of the Regional

Water Planning Councils to present the preliminary results of the draft baseline resource assessments. In March 2010, EPD released for public review a synopsis of each of three draft water resource assessments. Refinements and adjustments to the draft water resource assessments are expected and will be based on input from regional water planning council members, interested groups, the general public and a scientific and engineering advisory panel.

Summaries of the Joint Meetings as well as the resource assessment synopsis are available at www.georgiawaterplanning.org.

Forecasting

Introduction. EPD is developing regional forecasts of water and wastewater demands. The four areas of major water use addressed in developing the required 10-, 20-, 30-, and 40-year forecasts of future regional water and wastewater demands are:

- Agricultural Water Use
- Municipal Water Use
- Energy Water Use
- Industrial Water Use

Because major land use changes can also affect the demands on water resources to assimilate pollutants, regional water councils will also be provided land use forecasts for these time frames.

Agricultural Water Use. Agricultural forecasts, by county, quantify the anticipated irrigation demand over the planning period for years 2011, 2020, 2030, 2040, and 2050. The University of Georgia, under contract to Georgia Environmental Protection Division, forecasted a range of irrigation demands.

Municipal Water Use. Experts under contract with EPD are producing the forecasts of municipal water and wastewater demand, which include residential, commercial, and light industrial water use. In the development of the municipal forecasting methodology, EPD and its contractors are consulting local governments, members of the regional

water planning councils and representatives of water and wastewater service providers.

One component of estimating future domestic water resource demand is population projections. Population projections for the counties in each water planning region will provide the basis for estimates of future growth. These projections are produced by the Governor's Office of Planning and Budget (OPB), the state agency charged with producing population projections. The municipal forecasting methodology also includes anticipated per capita water use rates for each county, the impact that transient populations may have on water and wastewater demands within the water planning region, and any necessary weather adjustments.

Energy Water Use. Experts under contract to EPD and with the input of a group of Georgia energy companies are forecasting the water needs for the States energy sector. Forecasts will be developed for expected state-wide power demand, likely fuel sources to meet the demand, the water needs of those fuel sources, and finally the likely locations where those water demands may be met.

Industrial Water Use. Experts under contract to EPD are producing water and wastewater demand forecasts for the largest industrial water users in Georgia. In the development of the industrial forecasting methodology, EPD and its contractors are consulting representatives of the largest industrial water users. Depending on the data available, two alternate methodologies are used to forecast industrial water and wastewater needs. One methodology uses consideration of future growth in workforce (employment projections) for each of the industrial sectors, as an estimate of expected growth in industrial water use. The other methodology uses the growth in industrial output for each sector (where data were available), as an estimate of expected growth in industrial water use.

Water Development and Conservation Plans

The Water Development and Conservation Plans (Regional Water Plans) will be drafted by the regional planning councils. EPD will provide technical assistance to the Councils in preparation of Water Development and Conservation Plans. EPD will also contract for services needed to support the preparation of the plans. Regional planning councils will direct contractors' activities, including identification of water quantity and water quality management objectives and recommendation of appropriate management practices to meet those objectives.

Regional Water Plans will include forecasts through 2050 of population, and domestic and commercial water use, as well as a comparison of these forecasts with the water resource assessments for each region. Based on these comparisons, the Regional Water Plans will recommend regionally appropriate management practices. The plans will also outline additional data and information needs and determine benchmarks for assessing the effectiveness of each plan.

All of the water planning regions border other regions or share surface or groundwater resources with other regions; therefore, each regional planning council will interact extensively with adjacent, upstream and/or downstream Councils to ensure that the recommended practices do not negatively impact water users in other regions. Through an iterative process of recommendation and testing through the resource assessment models, the Councils will arrive at a set of management practices that they understand to meet the region's future needs while supporting the region's (and state's) economy, protecting the public health and natural systems, and enhancing the quality of life for all citizens.

Each Council will submit a draft Regional Water Plan to the Director of EPD, who will adopt the plan or suggest changes so that it can be adopted. The Regional Water Plans are to be finalized and adopted by June 30, 2011.

After a Regional Water Plan is adopted for a region, all EPD permits and Georgia Environmental Facilities Authority (GEFA) grants and loans for water projects must be guided by the Plan.

