

The Water Council

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Why Georgia Needs a Comprehensive Water Plan (June, 2005)

Georgia is a complex state when it comes to water resources. Couple this natural water complexity with increasing water demands, and it becomes apparent that Georgia must approach water management in a thoughtful, comprehensive and coordinated manner based on the best science we have. To meet the challenges before us, we will need to adopt new approaches or mechanisms to conserve water, return more water to the streams, help us balance off stream and instream water needs, and protect water quality. The following factors, taken together, underscore the need for such a comprehensive approach to water management.

1. **Geology/Hydrology:** Georgia encompasses portions of five physiographic provinces that vary in bedrock, soil, and topography - which result in an uneven distribution of water resources. North Georgia generally has more limited surface and ground water resources than south Georgia, which has larger rivers and one of the most prolific aquifer systems in the world. Even with the abundant water resources of south Georgia, pumping too much water from any one place at any one time can result in salt water intrusion or lowering of ground and surface water levels. These problems now face coastal Georgia - an area of high industrial and municipal withdrawals, and southwest Georgia - the agricultural irrigation center of Georgia.
2. **Weather/Climate:** Although Georgia is located in the humid southeastern United States and receives an average of 50 inches of annual precipitation, floods and drought are common and can significantly affect our water resources and how we use them. In fact, in the past two decades, Georgia has experienced the two worst droughts on record and a 100 and a 500-year flood.
3. **Demographics:** Between 1990 and 2000, the population of Georgia grew by 26.4 percent. This growth is projected to continue so that in the next 25 years, the state's population is expected to approach 12 million people. Population growth is not evenly distributed across the state, exacerbating resource stress caused by greater water demands. Most of the growth in population is expected to occur in the northern part of the state, which has more limited water resources than south Georgia. The second fastest growing region of the state is along the coast, an area faced with salt water intrusion in the Floridan Aquifer, the major water resource of the region.
4. **Economic Growth:** Although Georgia, like the rest of the nation, has been in an economic recession for the past few years, indicators suggest that economic activity is increasing. As our economy has grown, trends indicate that demands for water increase to support our expanding industrial and commercial activities.
5. **Federal Laws:** Federal laws, such as the Clean Water Act and the Safe Drinking Water Act, set national requirements for water resources. In addition, several federal laws affect water resources including the Resource Conservation and Recovery Act, Endangered

Species Act, National Environmental Policy Act, and others. Collectively these federal laws set parameters within which Georgia must operate.

6. **Neighboring States:** All of Georgia's major rivers, except those of the Altamaha, Satilla and Ogeechee basins, are shared with neighboring states. The Floridan Aquifer, the major aquifer in south Georgia, is also shared with Alabama, Florida, and South Carolina. Since 1990, Georgia has been in a dispute with Florida and Alabama regarding the management of the waters of two river systems. In addition, Tennessee and South Carolina have voiced concerns over shared water resources. Georgia and neighboring states must work together to avoid continued conflicts and costly litigation relating to these shared water bodies.
7. **The Courts:** Increasingly, decisions about water resources are being taken to court. Georgia has been in litigation over ground water use in coastal Georgia, water quality protection, and various other issues. The U.S. Constitution provides the federal courts with a role in resolving interstate disputes, including conflicts over shared water resources. Courts at all levels are becoming increasingly involved in determining how water will be managed in Georgia.
8. **Technology:** Advances in technology have affected how we get water, transport water, treat water, use water, conserve water, and treat wastewater. In fact, technological changes are evident in every aspect of water management. Generally, technology helps us use water more efficiently, but in some cases, it can increase the stress we place on the water system.
9. **Knowledge:** We know a great deal more about our water resources today than we did in past eras. Research has improved our knowledge of how water resources systems work, and what is necessary to have healthy, functioning aquatic systems. Not only have we generated new water-related knowledge and insights, but our ability to communicate this new information has expanded greatly through formal and informal educational programs, media, and the Internet.
10. **Value of Water:** Water is a valuable resource in many ways. It supports our economy and thus has value in the production of agricultural and industrial products. It has environmental value in that all life is dependent upon water. In addition to water needed to support human functions, water provides habitat, nurseries, and refuge for aquatic and terrestrial plants and animals. It has social and cultural value in that our lives are intertwined with water in countless ways. Water provides recreational and aesthetic values. Water not only supports life but it improves the quality of life in myriad ways. Further, growing scarcity of water, whether real or perceived, increases its value.

These factors support the need for a comprehensive approach to managing water resources. The question is whether we have such a water management program in place and, if not, what will it take to create one. To answer these questions, we have to review our current water management efforts and how they have developed over the years.

The legal foundation upon which water management in Georgia rests is the set of statutes enacted by Congress and the Georgia General Assembly. These statutes relate both directly and indirectly to our water resources. Statutes are implemented through a series of rules, policies, and programs by various departments of federal and state governments. One must look to the statutes themselves for either explicit or implicit expression of our goals for managing water resources. These “goals” (i.e., the outcomes we seek to achieve) reflect best how we collectively, as citizens of the United States and of Georgia, value the attributes of our water resources.

The laws that express our goals vary. Some laws reflect the broader goals of Americans and were passed by Congress. The federal statutes, such as the Clean Water Act, Safe Drinking Water Act, Endangered Species Act, Coastal Zone Management Act, and others, identify overarching goals that have been embraced, to varying degrees, by Georgia statutes. By enacting state laws that are at least as stringent as the federal laws, the state is able to receive primacy, or the responsibility to implement the federal policies and programs in Georgia. The primacy mechanism applies to environmental laws administered by the U.S. Environmental Protection Agency (USEPA), such as the Clean Water Act and the Safe Drinking Water Act. Primacy, however, does not apply to all laws. For example, the Endangered Species Act is administered exclusively by the U.S. Fish and Wildlife Service. If there is sufficient change in collective American values or goals relating to water resources management, Congress adds to or amends federal laws to reflect this change; the State of Georgia alone cannot alter the federal requirements.

Some state statutes are Georgia specific and not driven by federal directives. State statutes include the Erosion and Sedimentation Control Act, Safe Dams Act, Georgia Planning Act, the Coastal Marshlands Protection Act, laws enacted to provide for allocation of water quantities, and others. These laws were enacted by the Georgia General Assembly and reflect goals and values of Georgians. Together, the federal and state statutes serve as the foundation for our water management programs.

Collectively, this body of law has set two general water-related goals for us to meet.

- Protect public health and environmental quality; and
- Meet future needs while protecting aquifers, instream uses and downstream users.

We face significant challenges, however, in meeting these goals. First, inconsistencies and lack of coordination can hamper meeting at least some of our goals. Laws are passed by different legislative bodies at different times, with different motivations, and for different purposes. They are implemented by federal and state agencies with varying degrees of financial, technical, and managerial capacity. Specific water-related decisions reflecting policies and programs are made by local government officials, private sector institutions, and the general public. Assuring coordination and avoiding inconsistencies in such a situation may be desirable but rarely occurs, at least to the extent necessary to fully meet the goals of the statutes.

A second challenge in meeting our water goals is that laws are not static. They reflect the values we attribute to water resources at a particular point in time. These laws also reflect the

world as we know it—or can reasonably expect it to become—at the point in time when we conceive them. Congress and the General Assembly can amend these statutes, but they do not always change in lock step with a shift in citizens’ goals, aspirations, perceptions, activities, and knowledge related to water resources.

Problems Resulting from Uncoordinated Water Management

Some examples of the need for a more comprehensive, thoughtful, and coordinated approach to water management may be instructive.

- **Protecting Water Quality:** Our efforts to meet water quality standards have focused primarily on reducing contamination through controlling discharges from industries and municipalities. We have accomplished a great deal nationally and in Georgia by reducing pollutants that enter our waterways through these industrial and municipal wastewater discharges. Streams, rivers, and lakes across the country are cleaner today than they were when the Clean Water Act was passed in 1972. However, as we reduced the contaminant load from these point sources, and as our knowledge of the impacts of nonpoint sources (e.g., runoff from land) increased, land use changes were outpacing our efforts to address resultant nonpoint sources.

Georgia’s Erosion and Sedimentation Control Act, passed in 1975, only addresses runoff from certain construction activities. It does not deal with the direct relationship between post-construction land use and nonpoint pollution; nor does it address the broad array of nonpoint pollutant types—such as nutrients, heavy metals, and synthetic organic compounds—that enter our waterways as a result of post-construction land-use practices. The Act also assigns responsibilities to multiple state agencies and to local governments who wish to implement the requirements within their jurisdiction.

In the effort to render our waters safe and healthy, the federal government, through its executive and judicial branches, recently has increased its focus on controlling nonpoint sources as a pollution management tool. Both the USEPA and the Georgia Environmental Protection Division (EPD) have worked to control stormwater discharges. Since the first flush of stormwater carries most of the nonpoint pollutants to streams, collecting and/or otherwise treating this stormwater can help improve water quality. Additionally, the federal court system has required USEPA, and by extension EPD, to develop total maximum daily loads (TMDLs) in order to bring those streams that do not meet water quality standards into compliance with the Clean Water Act.

In Georgia, there are over 6,000 miles of streams that have been assessed that do not meet water quality standards; most of these impairments are due to nonpoint source pollution. To improve coordination of the nonpoint source control efforts, the Georgia General Assembly enacted House Bill 285 in the 2003 legislative session. This statute better aligns erosion and sedimentation control requirements under state law with stormwater control requirements under the federal Clean Water Act. This legislation will result in better coordination, but to be truly effective, the efforts of federal, state, and local

governments, as well as private land owners, must work in concert to protect our waterways from nonpoint pollution.

- **Maintaining Healthy Aquatic Systems:** Achieving and maintaining healthy aquatic systems was built into our statutory foundation for water management in the 1970s when the Clean Water Act made it a national goal to have “fishable” and “swimmable” waters. The term “fishable” waters implies a healthy aquatic habitat that supports fish. Additionally, the Clean Water Act declares that “[t]he objective of this Act is to restore and maintain the chemical, physical and biological integrity of the Nation’s waters.” To restore and maintain the biological integrity of our waterways, Congress intended that this federal water quality law protect healthy aquatic communities. So too, the Endangered Species Act was designed to protect both terrestrial and aquatic species.

To obtain primacy for implementing the provisions of the Clean Water Act in Georgia, the Georgia Water Quality Control Act, first passed in the 1950s and amended in the 1960s, was again amended by the General Assembly to incorporate federal requirements for healthy aquatic systems. Thus maintaining the biological integrity of Georgia’s waters was incorporated as a goal for the state. Although the Georgia General Assembly enacted the Georgia Endangered Wildlife Act and the Wildflower Preservation Act in 1973, these laws are much narrower in scope than the federal Endangered Species Act that, as noted above, does not have a primacy provision. Consequently, the goal to have healthy aquatic systems has been in place at the federal level and, to a lesser extent at the state level, since the 1970s. That goal has not changed.

What has changed over the past few decades is our understanding of what is required to achieve that goal. In 1972, when the Clean Water Act was passed, it was anticipated that improving water quality would enable us to have healthy aquatic systems. Now, it is clear that we also must maintain sufficient stream flow—as well as flow patterns that mimic the natural flow regime—in order to maintain healthy communities of fish and other aquatic organisms.

The Supreme Court of the United States has determined that states have retained the authority to allocate water to users within their borders. The Georgia General Assembly enacted the Georgia Ground-water Use Act in 1972 and amended the Georgia Water Quality Control Act in 1977 to provide for a water allocation system that requires major water users to obtain water withdrawal permits from EPD. Before issuing a withdrawal permit EPD evaluates water withdrawal permit applications to determine if the withdrawal will have an unacceptable adverse impact on the water resource or other water users.

For surface water withdrawals, EPD formerly used annual 7Q10 (e.g., the annual average of a stream segment’s 7-day low flow, with a frequency of occurrence of once in ten years) as the standard with which to determine if, after a withdrawal, a sufficient amount of water would be left in the stream for instream uses. Through the 1990’s strong scientific evidence was developed that annual 7Q10 was not a sufficient amount of water to maintain a healthy aquatic system. In 2001, the Board of Natural Resources adopted an

interim instream flow policy designed to increase the amount of water remaining in streams – after withdrawals - for instream uses, but that change still may be insufficient. As our knowledge improves, new management actions may be necessary to meet our goals. We also may find it necessary to consider changing our goals to reflect our new knowledge.

- **Integrating Water Quality and Quantity Management:** As more water is withdrawn from streams and less is returned, the capacity of the streams to assimilate wastewater discharges decreases. There is simply less water available to dilute pollutants. Currently a number of streams and rivers in the state are approaching their limits for assimilating wastewater—not to mention limitations on their ability to meet off stream water demands for public supply, industrial uses, thermoelectric power production, and agricultural irrigation. Similarly, large withdrawals of ground water along the coast have allowed salt water to intrude and pollute the aquifer upon which most coastal residents depend. Meeting our demands for water while ensuring sufficient water is left in the stream to meet instream needs and in the aquifer to maintain hydrologic balance is a significant challenge that will require great coordination.

- **Integrating Surface and Ground Water Management:** Flow in streams during drought periods comes largely from ground water. This is true throughout the state, but it is even more significant in karst areas where dissolvable bedrock (i.e., limestone, dolomite) is at or near the surface. In Georgia, this includes both the southwest and northwest portions of the state. In the lower Flint River basin, it has been estimated that - over an extended dry period - every gallon of water withdrawn from the Floridan Aquifer decreases the amount of ground water that seeps into streams by 0.6 gallons. This is a high irrigation region of the state, therefore, large withdrawals of ground water during dry periods may have a significant impact on the amount of water in streams. Similarly, large withdrawals of ground water along the coast have resulted in decreases in artesian pressure that reduces ground water discharge to wetlands and streams in portions of this area. To avoid surface water problems relating to inadequate flows, it is increasingly necessary to consider the potential impacts of ground water withdrawals on streams, lakes, and estuaries.

When water management values, statutes, rules or programs change in an uncoordinated fashion, there is an inevitable conflict between our goals/aspirations and the rules/policies/programs that seek to achieve them. Here in Georgia, “new values” have largely grown out of lessons we have learned 1) by programmatically implementing “old” rules and policies and 2) from vast leaps forward in the state of our knowledge regarding the physical, chemical, and biological functions of our water systems. Generally, we have addressed these conflicts between “old” programs and “new” values in an issue-by-issue, piece-meal fashion through the legislative process, followed by “fixes” to individual rules and programs. A more comprehensive approach is rarely an option due to the cost in time and resources.

A New Opportunity

Occasionally, there exists a curious mix of circumstances that presents an opportunity. If the opportunity is recognized and properly embraced, we can comprehensively review where we

are, how we got here, and where we should be going. Such an opportunity is clearly provided in developing Georgia's first comprehensive state-wide water management plan. We now have a chance to revisit, in a comprehensive manner, our water management goals and to recommend a set of statutory, regulatory, and policy fixes designed to effectively meet our water management needs for the next few decades. Such an opportunity has not been available since our water management program first began to take shape over thirty years ago. An opportunity of this nature should not be squandered.

This opportunity to comprehensively address water management concerns began with the creation of the Joint Comprehensive Water Plan Study Committee and the Water Plan Advisory Committee during the 2001 legislative session of the Georgia General Assembly. Legislation, based on this effort, was passed in the 2004 legislative session and reflects the most recent articulation of a water vision and guiding principles for water planning in the state. The General Assembly incorporated the study committee's overall vision for Georgia's water resources, in the Comprehensive State-wide Water Management Planning Act:

Georgia manages water resources in a sustainable manner to support the state's economy, to protect public health and natural systems, and to enhance the quality of life for all citizens.

This vision encompasses the concept of sustainability that has never been articulated in earlier goals. It also recognizes the interrelationship of the economy, environmental quality, and quality of life.

Additionally, the study committee identified nine principles to guide the development of the state-wide comprehensive water management plan. These guiding principles were incorporated in the Act :

1. Effective water resources management protects public health, safety and welfare of Georgia's citizens.
2. Water resources are managed in a sustainable manner so that current and future generations have access to adequate supplies of quality water that supports both human needs and natural systems.
3. All citizens have a stewardship responsibility to conserve and protect the water resources of Georgia.
4. Water management efforts recognize that economic prosperity and environmental quality are interdependent.
5. Water quality and quantity and surface and ground water are interrelated and require integrated planning as well as reasonable and efficient use.
6. A comprehensive and accessible database is developed to provide sound scientific and economic information upon which effective water management decisions can be based.
7. Water resource management encourages local/regional innovation, implementation, adaptability and responsibility for watershed and river basin management.
8. Sound water resources management involves meaningful participation, coordination and cooperation among interested and affected stakeholders and citizens as well as all levels of governmental and other entities managing and/or utilizing water.

9. Periodic revisions of the plan are required to incorporate new scientific and policy insights, as well as changing social, economic, cultural, and environmental factors.

The General Assembly has thus created a framework for developing Georgia's first comprehensive state-wide water management plan by providing a vision for water management and guiding principles for developing the plan.

The planning process must 1) evaluate water trends and conditions to determine the types of challenges that we face now or will face in the future; 2) evaluate our legal/management structure (i.e., statutes, rules, programs, policies) to address those challenges; 3) identify gaps and other weaknesses in our water management approach; and 4) identify options for addressing these gaps and weaknesses and the benefits and drawbacks of each option.

The plan will initially focus on four interconnected water management objectives:

1. Minimize withdrawals of water by increasing water conservation and reuse;
2. Maximize returns to the basin of origin by managing interbasin transfers, the use of on-site sewage disposal systems, and land application of treated wastewater where water quantity is limited;
3. Meet instream and off stream demands for water through efficient surface storage, aquifer management and reducing water demands (see number 1); and
4. Protect water quality by reducing pollutant loadings from discharges and runoff from the land to ensure the assimilative capacity of the streams is not exceeded and aquatic life is not impaired.

Throughout this process, public input is needed to ensure that the plan reflects the goals and values of Georgia citizens. It is then the role of state policy makers to select the best set of policy tools and planning guidelines to manage Georgia's water resources and to enact necessary legislation or make appropriate changes in rules, policies and programs to achieve our water resources goal.