

**Georgia Comprehensive State-wide Water Management Plan
Statewide Advisory Committee**

DISCUSSION PACKET: PROTECTING WATER QUALITY

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PROTECTING WATER QUALITY Introduction

Background

The fourth management objective of the Statewide Comprehensive Water Management Plan, meeting assimilative capacity needs while protecting water quality, plays an important part in achieving the vision of the Plan. This objective is designed to protect water quality by reducing pollutant loadings from runoff from land and from treated wastewater discharges. Accomplishing this objective will ensure we do not demand that our streams do more to dilute and absorb pollutants than they are capable of doing (assimilative capacity).

The policy options presented here are designed to help meet this management objective. EPD prepared the material in this packet after reviewing and synthesizing input from the Basin Advisory Committees. The packet has two major sections that lay out policy options for discussion by the Statewide Advisory Committee: 1) an overview of policy options and 2) focused discussion papers on six specific topics (listed in the Table of Contents). An overview of policy options was presented to the Water Council in December; the version included here has been adapted slightly to reflect discussion at that meeting.

Input from the Basin Advisory Committees pointed toward an articulation of a guiding policy for water quality management. The following guiding policy statement is proposed for SAC review:

The State of Georgia manages point and nonpoint source loading to Georgia's waters on a watershed basis to ensure the physical, chemical and biological integrity of those waters, now and in the future. This requires protecting waters that currently attain water quality standards and restoring waters whose physical, chemical or biological integrity are impaired.

Water and its assimilative capacity provide values and opportunities to current and future Georgians. To protect and preserve those values and opportunities, we must identify and implement management practices that successfully limit the types and amounts of pollutants we ask our streams to assimilate. In addition, to successfully manage water resources, we must employ appropriate standards and benchmarks to assess water quality. Finally, we must devote adequate human and financial resources to measuring the quality and quantity of the waters of the State so that our future water management decisions are based upon sound scientific data and information.

Like the framework proposed for water quantity management, the guiding policy proposed here directs water quality management toward efforts to maintain the capacity of the state's water resources and toward use of tools to ensure future availability of that capacity.

Watershed Protection Challenges

The focus on managing point and nonpoint source loading on a watershed basis is a critical element of the proposed guiding policy for water quality management. Managing water quality on a watershed basis means assessing the cumulative effects of different sources of pollution on individual waterbodies and addressing those different sources in concert to protect waters that meet water quality standards and restore those that are impaired.

As our population grows over the next several decades, our production of wastewater will increase in direct proportion to our increased demand for water supplies. The capacity of our waters to assimilate pollutants from treated wastewaters is finite, and may be exhausted in some regions in the future, even if we require our wastewater treatment plants to remove higher levels of pollutant before discharging to our waters. Our first challenge is therefore to enact policies that will fairly and effectively limit the amount of pollutants entering our waters from industries and municipalities while supporting a growing population and economy.

Another challenge we face as the State's population continues to grow is how to most effectively control a significant increase in the types and amounts of pollutants flowing into our waters from land surfaces due to conversion of pervious land cover (e.g., agricultural and forested land) to impervious land cover (e.g., concrete surfaces). With this conversion comes both a larger volume of water running off of these surfaces during rain events, and an increased amount of nonpoint source pollutants associated with the runoff. This increase in the volume of water and amount of nonpoint source pollutants entering our waters during storm events represents the most significant challenge to protecting the quality of Georgia's waters. Until we become more sophisticated and effective in guiding stormwater and nonpoint source management, the growth/development and nonpoint source pollution cycle will continue to compound the challenges we currently face.

As a nation, we were successful in applying a command and control regulatory approach to address point sources of pollution in the 1970s and 1980s. And while we should continue to expect point source control successes through the use of centralized regulatory approaches, these may not work as well with the nonpoint source issues we face today, such as urban development, erosion/sedimentation, storm water runoff, and aquatic habitat destruction. Across the nation, we are realizing that we must adopt an integrated non-centralized watershed approach to make further strides to improve and protect water quality. We have also come to realize that many of the water quality problems we see today result from how we use the land and what we put on the land. Thus, to achieve success in controlling non-point source pollution, local citizens and local governments will have to play the champion's role in many instances.

Overview of Policy Options

Georgia's continued growth and development will be accompanied by significant increases in the volume and character of pollutants discharged to our waters from both point and nonpoint sources. These increases, if not managed appropriately, will compromise our ability to beneficially use these waters for a variety of instream and offstream purposes. Georgia currently manages point source pollution through a regulatory framework, and nonpoint source pollution with regulatory and non-regulatory methods. To address the future water quality challenges associated with growth and development, the following is proposed as guiding policy for water quality management:

The State of Georgia manages point and nonpoint source loading to Georgia's waters on a watershed basis to ensure the physical, chemical and biological integrity of those waters, now and in the future. This requires protecting waters that currently attain water quality standards and restoring waters whose physical, chemical or biological integrity are impaired.

To fully implement this policy, it will be necessary to accomplish the following:

1. Understanding the status and condition of Georgia's waters;
2. Managing land use impacts on water quality by implementing practices that protect and restore physical, chemical and biological integrity; and
3. Ensuring assimilative capacity for current and future users while protecting water quality.

Understanding the status and condition of Georgia's waters

Improving our understanding of the status and condition of our water resources will require that we devise comprehensive monitoring programs to collect the necessary data and information. This is a critical aspect of statewide comprehensive water management. Setting appropriate water quality standards and monitoring to ensure the standards are being met is also a fundamental part of protecting water quality.

Georgia is the largest state east of the Mississippi River, and has more than 70,000 miles of streams, 400,000 acres of lakes, 4,500,000 acres of freshwater wetlands, 384,000 acres of tidal wetlands, 854 square miles of estuaries, and 100 miles of coastline. To date, less than 20% of the waters in Georgia have been monitored.

Georgians will need adequate water quantity and quality data and information to make the difficult water resource decisions in the future. How much water do we

have? How much water do we need to assure biological integrity? How much water is available for economic development? How clean is the water? How clean should the water be? Are our water quality standards adequate and appropriate? Where are the problem waters? Are our water protection and restoration programs working? To answer these and other questions, the following actions are proposed:

1. *Water quality standards*

- Ensure designated uses and criteria are adequate for protection of public health and the physical, chemical and biological integrity of Georgia's waters

2. *Water quality monitoring*

- Review monitoring program to determine levels needed to make good decisions
- Expand existing monitoring programs with a variety of creative sources and tools

These two action areas are discussed in greater detail in focused discussion papers starting on p. 6 and p. 10 respectively.

Managing land use impacts on water quality

Managing land use impacts on water quality through implementation of practices to protect and restore the physical, chemical and biological integrity of Georgia's waters is critical to accomplishing this management objective.

The conversion of pervious land cover (e.g., forests and other natural areas) to impervious land cover (e.g., concrete surfaces) is one of the largest impacts of land use changes on water quality. The conversion to impervious cover causes both a larger volume of water running off of these surfaces during rain events and an increased amount of nonpoint source pollutants associated with the runoff. Wet-weather flows are increased, often beyond the capacity for our streams to assimilate, creating eroding and unstable systems. Conversion to impervious surfaces also reduces the amount of infiltration, which would treat nonpoint source pollutants, recharge groundwater, and maintain the baseflows needed in our streams to protect physical, biological and chemical integrity. This link between land use and water quality is a critical one that needs to be recognized at all levels of government, agencies, organizations, industry, and right down to the individual citizens of Georgia.

How can we grow and develop and at the same time protect water quality? How can we mitigate nonpoint source impacts? Are additional regulatory programs needed to address nonpoint sources? Are our watershed protection and restoration programs working? What tools are available to support the

restoration of impaired waters? To answer these and other questions, the following actions are proposed:

1. *Minimize future and existing land-use impacts on water quality by addressing potential sources*
 - Manage pervious and impervious surfaces watershed-wide (i.e., across political boundaries) in an integrated fashion to reduce or eliminate the undesirable characteristics and adverse impacts of stormwater, including rate, volume and pollutant loading. In addition, managed pervious and impervious cover to increase groundwater recharge and infiltration (linked to baseflow and assimilative capacity). This action area is addressed in greater detail in a focused discussion paper starting on p. 12.
 - Establish an effective combination of compliance/enforcement, education, voluntary pro-active opportunities, incentives, regulation and self-regulation. Self-regulation and incentives are addressed in greater detail in a focused discussion paper starting on p. 15.
2. *Increase coordination of environmental planning and management between State agencies (e.g., Environmental Protection Division, Department of Community Affairs) and those local governmental entities responsible for land use planning and management*
 - Enhanced Comprehensive Planning process: Establish a link between DCA's Comprehensive Plans and EPD's permitting process
3. *Consistent enforcement and implementation of existing laws and regulations and increase enforcement and compliance*
 - Ensure that on-site sewage management systems are properly sited, designed, installed, and maintained to provide for long-term performance to minimize negative impacts on water quality.

Ensuring assimilative capacity for current and future users

Ensuring assimilative capacity for current and future users while protecting water quality will be a major challenge in the future in parts of Georgia. Streams and other waterbodies have a natural capacity to assimilate pollutants to prevent harmful effects, such as damage to aquatic life or to humans who consume or use the water. This assimilative capacity, however, is finite.

Development and urbanization impact assimilative capacity as well as stream hydrology and water quality. Adding impervious surfaces increases stormwater runoff, reduces groundwater storage and release, lowers base flow conditions, increases sedimentation and bank and channel erosion, increases water temperature, and provides a pathway for delivery of accumulated land surface contaminants to streams and rivers. As we grow, we require increases in wastewater treatment capacity and receiving waters capable of assimilating the treated wastewaters.

How much assimilative capacity is available in Georgia waters? How much assimilative capacity will be needed by Georgia's industries and municipalities? How should assimilative capacity be allocated to industries and/or municipalities? How can the assimilative capacity in a given watershed be allocated among potential users based on future projections? Can assimilative capacity be traded? To answer these and other questions, the following actions are proposed:

1. *Review and update wasteload allocation procedures*
 - Establish procedures for issuance of wasteload allocations on a watershed basis
 - Coordinate requests for water withdrawal permits and requests for wasteload allocations
 - Consider circumstances and procedures for possible watershed permits

2. *Establish sub-state planning guidelines for assessment of wastewater treatment plant needs*
 - Establish guidelines for projections of needs on a five year basis for a twenty year planning horizon
 - Establish guidelines to provide for integration and coordination of water supply and treated wastewater discharge needs

3. *Consider circumstances and procedures for pollutant allocation trading to achieve compliance with water quality standards*
 - Establish guidelines for pollutant allocation trading between point sources and between point and nonpoint sources
 - Establish guidelines for monitoring to assess and verify the effectiveness of the potential pollutant allocation trade

The first and third of these action areas are addressed in greater detail in focused discussion papers starting on p. 18 and p. 20 respectively.

Focused Discussion Paper #1: Water Quality Standards

Background

Water quality standards form the backbone of the watershed protection program; standards are adopted to be protective of human health and the propagation of fish, shellfish, game and other aquatic life. Water quality standards are made up of four elements: 1) designated uses, 2) numeric criteria, 3) narrative criteria, and 4) antidegradation requirements.

Georgia's waters are currently designated for use as fishing, recreation, drinking water, wild river, scenic river, or coastal fishing. In addition, there are special designations for trout streams, waters generally supporting shellfishing, and outstanding national resource waters. The majority of waters in Georgia are designated as fishing, with all waters being protected for recreation during the swimming season. All major lakes, the Georgia coast and a portion of the Chattahoochee River are designated as recreation year around, while a number of waters are designated as drinking water.

Water quality criteria (both numeric and narrative) are put in place to protect each water body's designated use such that if the water quality criteria are being met, a water body should be able to meet its designated use. Antidegradation requirements also serve to protect water quality. The State's antidegradation policy prevents the State from allowing activities that would degrade the current quality of a body of water unless specific conditions are met.

Water quality standards are reviewed every three years in accordance with USEPA regulations. Georgia's last triennial review was completed in 2004. The comments received as a part of the 2004 triennial review were considered in developing the policy options presented in this packet.

Opportunities

It is important that Georgia continues to review standards to ensure we have the right standards and that the standards are appropriate for the areas of the state in which they are being applied. There are a number of water quality standards projects ongoing or planned by EPD that will be concurrent with development and implementation of the initial comprehensive water plan. These projects include work on a dissolved oxygen standard for Savannah Harbor and for streams in south Georgia where oxygen concentrations are naturally lower than concentrations in north Georgia. Work on nutrient criteria and biological criteria will also be done in a timeframe complementary to implementation of the comprehensive water plan. The process will also include development of criteria for emerging pollutants as needed. Work on these initiatives, concurrent with statewide water planning, provides an opportunity to ensure their alignment with

the initial comprehensive water plan, and implementation of policies in that plan may influence these water quality standards initiatives.

SAC Feedback and Input Requested

Water quality policy options considered by the BACs included two new initiatives regarding water quality standards: 1) additional protections for sensitive and/or environmentally sensitive waters and 2) a review of bacteria criteria, particularly criteria for urban streams. BAC feedback on these policy options is summarized in the next section. EPD is seeking additional input from the Statewide Advisory Committee (SAC) on these two policy options.

Sensitive and/or Environmentally Significant Waters. The first policy option highlighted for SAC consideration concerns additional protections for sensitive and/or environmentally significant waters. These protections would be beyond those accorded by the designated use of fishing, but would not be as stringent as a wild river, scenic river or an outstanding national resource designation. At the present time, it is difficult to designate waters as a wild river, scenic river, or outstanding national resource water, as implementation of these designations generally precludes any development in the watershed.

Discussion question #1: What are the pros and cons of establishing additional protections for sensitive and/or environmentally significant waters?

Bacteria Criteria/Urban Streams. The second option highlighted for SAC consideration relates to water quality standards for bacteria. This issue has two parts, the first being the suggestion to change fecal standards for all streams and the second part concerns establishing new standards or designating a specific use for urban areas.

The presence of fecal coliform bacteria in a water body is used as an indicator that the water may contain untreated human or animal waste and may therefore cause illness to people swimming in the water. Numeric criteria for fecal coliform have been adopted to prevent this from occurring. However, for several decades, scientists have agreed that test results do not show linkages between high levels of fecal coliform bacteria and human illness. This calls the current fecal coliform criterion currently used to assess water quality into question.

Discussion question #2: What are your thoughts concerning the current bacteria standards for Georgia waters?

The second part of the bacteria issue concerns urban streams. In the early 1990s, USEPA required Georgia to apply stringent recreational fecal coliform criteria to all waters during the recreational season. Many streams in commercial and urban areas fail to meet the recreational criteria. Georgia has developed

TMDLs and TMDL implementation plans for these waters that include monitoring and implementation of best management practices to achieve compliance with the recreational criteria. For waters in commercial and urban areas, the likelihood of achieving compliance with the current fecal coliform criteria is low, primarily due to storm water discharges. However, significant public funds are being expended in these areas trying to make every stream safe for swimming. If the programs are unsuccessful, the public may lose confidence in watershed protection programs. In addition, this money is being spent to meet a criterion that is not directly correlated to human illness rates.

Discussion question #3: What are your thoughts on establishing a less stringent bacteria standard for urban streams?

Summary of BAC Feedback

With regards to the idea of additional protections for sensitive and/or environmentally significant waters, this idea received a mixed response from members of the Basin Advisory Committees. Some members responded positively to the idea and others suggested that the standards currently in place are adequate, while others felt that with incentives, communities might be more likely to work towards higher water quality designations. Others indicated a need for a definition of sensitive or environmentally significant waters and an idea of what the additional standards may be in order to make an informed response. There appeared to be agreement that any decision on designations should be made on sound science, and at a minimum, EPD should fully utilize the current suite of designations.

The ideas regarding a review of bacteria standards received a positive response from the Basin Advisory Committee members. Several members suggested immediate adoption of the *E. coli* criteria proposed by EPA. This is a possibility, however, EPA is still in the process of reviewing their work, developing test methods and implementation guidance. At such time as EPA completes this work, further consideration will be given to the use of *E. coli* as a bacteria standard in Georgia.

The idea regarding consideration of less stringent bacteria standards for urban areas was less well received. Some members recognized the difficulty in achieving recreational standards in urban and commercial streams and supported the idea, but in general there was concern regarding lowering the bacteria standards in these areas due to the cumulative impacts felt downstream and the potentially high level of human contact with urban streams.

Focused Discussion Paper #2: Water Quality Monitoring

Background

Georgia's water quality management programs are based on a watershed protection approach. This approach depends on having a sound knowledge of water quality status and trends. This knowledge can only be gained by implementing a water quality monitoring program that collects data sufficient to assess conditions on a watershed basis. To date, less than 20% of the streams and rivers in Georgia have been monitored.

EPD conducts monitoring of streams, rivers, lakes and estuaries across the state. This work is done by EPD staff and through cooperative agreements with federal, state and local agencies. At present, EPD uses water quality data in its efforts to protect public health, establish wasteload allocations for new and existing facilities, develop Total Maximum Daily Loads, collect baseline and trend data, assess the effectiveness of required and voluntary pollution control programs, document existing conditions, study impacts of specific discharges, determine improvements resulting from the upgrade of water pollution control plants, support enforcement actions, verify water pollution control plant compliance, document the effectiveness of the nonpoint source program and projects, and to support water quality standards development and water quality management programs.

EPD also uses water quality data to determine if waters are in compliance with water quality standards. Waters that are not in compliance are deemed impaired and are placed on the Georgia 303(d)/303(d) list, so named for the applicable sections of the Federal Clean Water Act. Waters stay on the list until new data shows compliance with water quality standards.

In addition to these many current uses, Georgia will need water quality data and information to evaluate the effectiveness of decisions made during implementation of the comprehensive water plan.

Opportunities

Historically, Georgia has allocated modest resources to water quality monitoring. The BACs were asked to help EPD assess the need for additional water quality monitoring to adequately assess the quality of Georgia waters and support watershed protection efforts.

SAC Feedback and Input Requested

EPD seeks SAC input and feedback on this issue. BAC feedback is summarized in the next section.

Discussion Question #4: What are your thoughts with respect to the need for additional water quality monitoring?

A first step could be to discuss and determine what types and how much monitoring is needed to support watershed management decisions. This would include a discussion of parameters to be tested, frequency of sampling, locations of sampling, methods of sampling, quality assurance and quality control procedures, etc. A budget and action plan could then be developed to implement the plan.

Data will be needed to characterize trends in water availability (quantity) as well as quality. There will be additional discussion of data and information needs as a part of the next topic, “Integration of Management Objectives” to be discussed with the BACs in February and the SAC in March.

Summary of BAC Feedback

There was general consensus among the Basin Advisory Committees that water quality monitoring data and information will be critical to the success of the comprehensive water planning process and that additional data are needed. There was less consensus with respect to how the monitoring should be conducted or funded. BAC members were uniformly concerned that only 20% of Georgia’s 70,000 stream miles have been monitored. It is likely that the EPD along with sub-state planning groups, in concert with other federal, state and local governments and volunteer groups will all make significant contributions to water quality monitoring programs. There was also consensus among the Basin Advisory Committees that all data used in the process should be collected in a consistent manner with appropriate quality control procedures.

**Focused Discussion Paper #3:
Linking Land Use and Impervious Surface to Water Quality**

Background

Land use patterns are closely connected to water quality. Urbanization of a watershed has a profound impact on stream hydrology, mainly through an increase in impervious surface (e.g., paved streets, parking lots, roofs). The impacts of impervious surface directly affect the physical, chemical and biological integrity of a water body, and therefore the aquatic ecosystem and its designated uses.

Increasing the amount of impervious surface creates additional runoff and results in increased volumes, rates and peak flows of stormwater. Impervious surfaces also decrease soil infiltration rates, resulting in an increase in runoff volume in urban channels, a decrease in the baseflow (dry weather flow), and a decrease in the duration of high flows (wet weather flow). This potent combination of increased peak flow, increased runoff volumes, decreased durations, and decreased hydraulic efficiency results in more erosion of stream channels.

Run-off from impervious surfaces also carries all dissolvable and easily transported substances that may have collected on the surface, including such seemingly innocuous things like dirt and grass clippings, which cumulatively result in impaired streams, or more insidious substances like atmospheric depositions of mercury or other emissions. Oil and grease, bacteria from pet waste or other sources, and many other chemicals and pollutants find an easy path to surface water through our connected parking lots, driveways, roads, bridges, sidewalks, roofs and buildings, many of which have highly efficient drain systems. For more than 100 years, stormwater management in developed areas has focused on moving storm water runoff as quickly as possible. It has only been during the last two decades that the U.S. Environmental Protection Agency (USEPA) and States have recognized that stormwater management structures (including sewer curbs, gutters and pipes) have created a direct conduit for pollutants to enter our waterways.

Reduced base flow and increased rate and volume of stormwater both have immediate impacts on streams. Small to medium watersheds may show significant water quality impairments at 8-10% impervious surface cover. At 25-30%, watersheds are likely to become extremely impaired. Many residential developments are approximately 30% impervious, and industrial areas may approach 80-90% impervious.

Opportunities

The responsibility for protecting Georgia's water resources is shared between state and local governments with the help and support of all Georgians, and

decisions that affect water quality are made at multiple scales -- from state to local to individual. This shared responsibility is characterized in Table 1.

Land use decisions are and should be made at the local level. At the same time, the Georgia General Assembly has charged the EPD with the responsibility to protect and manage water resources in Georgia. The other state agencies represented on the Water Council have been given related responsibilities by the General Assembly. EPD and its sister agencies carry out these responsibilities through laws and regulations, statewide policies and statewide programs. Local governments act through comprehensive planning, land use management, and planning and operation of water, wastewater, and stormwater utilities. These differing responsibilities provide opportunities for additional state policies, guidance, and/or programs on management of land use and impervious surfaces to protect water quality.

TABLE 1. Shared Responsibilities for Water Quality Management

State Level	Local Level
<p>Existing Laws and Statutes</p> <ul style="list-style-type: none"> • Water Quality Control Act • E&S, Buffers • River, Mountain Corridor Protection Act • Environmental Planning Criteria (Part V) • Coastal Marshland Protection Act • On-Site Sewage Management Systems • Metropolitan North Georgia Water Planning District 	<p>Regional, County/City, Watershed</p> <ul style="list-style-type: none"> • Local ordinances, codes, and zoning • Quality growth/smart growth • Comprehensive planning and Growth Readiness • On-site septic vs. central wastewater • Green infrastructure (green and open space, habitat connectivity) • Water and wastewater utilities • Stormwater utilities, fees, or other nonpoint source revenue <p>Development, Site, Individual</p> <ul style="list-style-type: none"> • Neighborhood covenants • Quality growth • Better site design and low impact development • Stormwater treatment (rain barrels, cisterns, rain gardens, etc.) • Individual decision making

Opportunities also exist for communities to make the choices that work for their specific situations, within guidance to protect water quality. Different areas of the State may have additional or different constraints and drivers as well as variations in resource and economic concerns.

SAC Input Requested

We must work together to develop solutions on a local/watershed level that will protect the physical, chemical and biological integrity of our waters while

protecting the responsibilities of local entities to make land use planning decisions. Members of the BACs were asked to provide input on approaches to restore and protect Georgia waters from adverse impacts from existing and future development.

Discussion #5: Any additional Input from the SAC on this topic would be welcomed and appreciated.

Summary of BAC Feedback

One unifying theme from the BACs is that there is a critical connection between land use and water quality, and that the decisions we make related to our land use planning will directly affect the quality of our water bodies. The BACs also universally felt that there is no “one-size-fits-all” approach that will work to address this issue, and that the correct place for many of these decisions to be made was at the local level. The BACs also expressed interest in further linking the comprehensive planning process as managed by DCA to additional enforceable mechanisms such as EPD’s permitting process.

**Focused Discussion Paper #4:
Alternatives to Regulation:
Self-Regulation and Industry Recognition/Incentive-Based Programs**

Background

Many tools are available to address water quality in Georgia, only one of which is state-level regulation. Regulations may consist of a state law, statute or rule, a local ordinance required by the state, or partially regulated or flexible regulations, such as the urban stormwater regulations that have a strict structure, but allow much local flexibility for implementation within that structure. Other mechanisms range from a self-regulated, either economically or industrially regulated, approach, to incentive based and industry recognition programs, all the way down to a completely voluntary system.

Opportunities

There are opportunities to contribute to protection and restoration of Georgia's waters through industry self-regulation and/or incentive-based programs. Some examples of these programs are discussed below.

Self-regulation Approach. The forestry industry provides an example of an industry that has a self-management approach in place. The GFC conducts a forestry nonpoint management program that includes development and application of best management practices, education, compliance evolution, complaint investigation, and if necessary they can turn over compliance cases to EPD for enforcement through the Georgia Water Quality Control Act. GFC also supports complaint resolution with proactive education of foresters and loggers on the professional consequences of best management practice negligence. This is a self-management program, although a back-up mechanism exists under the Georgia Water Quality Control Act. This program is highly effective, and has a greater than 95% compliance rate for installation and implementation of industry and state standard best management practices.

Opportunities exist to expand this approach to other entities or industries in Georgia. Characteristics of the self-management that would increase success would include highly motivated, stewardship attitudes, high level of interest in self-rule and a certain level of internal organization. Possible candidates include agriculture, mining, and/or the development industry, among others.

Incentive-based Programs. Incentive based programs include provision of financial or other incentives, or industry recognition programs. Industry recognition programs provide signage, awards, and other recognition both inside and outside the industry. Recognition for efforts to protect water quality and/or quality of life is popular with consumers and customers. Financial or other incentives may be in the form of reduced interest rates, grant priorities,

decreased time or “front of the line” permitting, tax credits or breaks, expanded loan and grant application opportunities. Several examples of incentive-based programs are discussed below.

The *WaterFirst Community Program* is a technical assistance and recognition program that helps communities make the connection between land use and water quality and quantity. The program is a voluntary partnership between local governments, state and federal agencies and other organizations and focuses on eight water related components: watershed assessment and planning; stormwater management; water supply planning; water conservation; water supply protection; wastewater treatment and management; water reclamation and reuse; and residual biosolids management. The program recognizes those proactive and visionary communities that go above and beyond legal requirements related to water resources. *WaterFirst Communities* in Georgia are eligible for benefits from state agencies, including one point off the borrowing rate for state funded loans from the Georgia Environmental Facilities Authority, and they are eligible to receive Community Development Block Grants every year for water related improvements.

The *Green Subdivisions* program is an industry recognition program that recognizes developers who implement better site design and low-impact development. This project is currently underway for Coastal areas, where the primary tool the *Green Growth Guidelines*, a guidance document for quality growth, better site design, and low-impact development developed under Coastal Nonpoint Source Program and Coastal Resource Division. There is a current opportunity to expand this program statewide.

Clean Marinas Program is a voluntary, incentive-based program that encourages marina operators and recreational boaters to protect coastal water quality by engaging in environmentally sound operating and maintenance procedures. The program offers information, guidance, and technical assistance to marina operators, local governments, and recreational boaters on Best Management Practices (BMPs) that can be used to prevent or reduce pollution. Marinas that participate in the Clean Marina Program are recognized for their environmental stewardship. There is an opportunity to enhance and expand this program on Georgia’s coast, and to extend it into other waterbodies upland.

SAC Feedback and Input Requested

Discussion Question #6: What are your thoughts on the use of self-regulatory and/or incentive based programs to achieve watershed protection goals?

Discussion Question #7: Are there other programs in place that you know of, or do you have new ideas to present for discussion?

Summary of BAC Feedback

Inputs from the BACs indicate that Georgia's existing laws are important, and consistent enforcement and compliance is critical to meet water quality goals. In some cases, however, existing regulation may not be sufficient to address water quality issues, or additional regulations may not be feasible. The BACs indicated that new regulations were not a favorable option at this time. Other existing tools available that may be highly effective are a self-regulated approach (economically or industry/organizationally regulated) and a voluntary, incentive or recognition based approach.

The BACs also discussed one situation in particular for a possible incentive-based program related to a use classification and potential designation of "higher-quality" waters. Currently, there are six designated uses of water in use in Georgia. The designated uses for wild river and scenic river, and the special designation of outstanding national resource water, are difficult to apply because implementation of these uses generally restrict or preclude development in the watershed. For the wild river and scenic river designated uses, Georgia's *Rules and Regulations for Water Quality Control* (Chapter 391-3-6) state that "there shall be no alternation of natural water quality from any source." These regulations also state that for outstanding national resource waters, "existing water quality shall be maintained and protected." The idea of additional protections for sensitive and/or environmentally significant waters, beyond those accorded by a fishing designated use, but not as stringent as the two most stringent designated uses was considered at the BAC meetings, and received a mixed response. It was suggested, however, that any such designation should have incentives associated with it to encourage successful implementation.

Focused Discussion Paper #5: Wasteload Allocations

Background

Streams and other water bodies have a natural capacity to assimilate pollutants to prevent harmful effects, such as damage to aquatic life or to humans who consume or use the water. Assimilative capacity studies are performed to determine the amount of pollution that a water body can receive without exceeding certain established limits for that water body (i.e., water quality criteria). If these limits are exceeded, the water body is said to have degraded water quality. Most exceedances occur when the circumstances in the stream (e.g., the amount of flow, temperature) are critical for a particular parameter (e.g., dissolved oxygen, phosphorus) or set of parameters. Critical conditions can be thought of as a “worst case” scenario of environmental conditions that can result in maximum exceedance of the stream’s assimilative capacity. Critical conditions for point sources typically occur during low flow, high temperature time periods. For nonpoint sources, critical conditions occur during storm events, when pollutants are carried into streams by storm water runoff. In addition, excessive storm flows can cause scouring of stream channels, bank erosion, and sediment build-up downstream.

Mathematical water quality models are used to determine the discharge limits to be listed in a municipal or industrial discharge permit. This is better known as a wasteload allocation. When a wasteload allocation is requested, EPD determines the amount of loading a water body can assimilate, and then allocates this loading to a permittee. The mathematical model determines the loading for a single permittee, while taking into account the present loading for other permittees in the watershed whose discharge would affect the one being considered.

Currently this process is implemented on a “first come, first served” basis. Historically there has been more assimilative capacity in streams than there were permittees, so there was usually loading available to allocate to newcomers or expanding permittees. As significant growth has occurred in Georgia, and TMDLs have appeared on the regulatory scene, the assimilative capacity of many stream segments has been reached. Thus, in those areas, new discharges (or additional loading for existing permittees) cannot be granted and wastewater treatment associated with growth will have to be handled through other means.

Opportunities

The BACs were asked to consider and provide input on developing wasteload allocations using a sub-basin or watershed approach. As proposed to the BACs, wasteload allocations would be based on water quality modeling that considers multiple discharges within a sub-basin or watershed. All potential discharges

(using 20 year projections) would be included in the watershed wasteload allocation process, to move the State away from the current “first come, first serves” process of developing wasteload allocations. In order for this option to be viable, wasteload allocation work would be done on a watershed basis. Each potential discharger in a watershed would be asked to provide wastewater flow projections (assimilative capacity needs) at five-year increments over a twenty-year planning period. The potential wastewater discharge needs would have to be supported by zoning, population, and land use data. Water quality modeling and wasteload allocations would be developed based on the twenty-year projections to determine if water quality standards could be met under the projected conditions. The allocations would be reviewed and updated regularly (every five years during the basin permit reissuance cycle).

SAC Feedback and Input Requested

Implementing this option would require extensive discussions with elected officials and decision makers to explain the potential limitations of the resource and their need to plan for wastewater and water needs. Projections would be used in the watershed modeling so that capacity is available for those communities growing later than the one(s) currently asking for a discharge. All the communities involved would need to be re-permitted at the same time, so all would share in the reallocation process. If a new permittee (e.g., a new industry) wants a discharge permit prior to permit renewal time, they could possibly acquire loading credits from other communities/permittees in the watershed (see the following policy option).

Discussion question #8: What do you see as the pros and cons of a sub-basin or watershed approach to wasteload allocations?

Summary of BAC Feedback

Input from the Basin Advisory Committees regarding watershed wasteload allocations was mixed. The need for a planning approach to allocating assimilative capacity was recognized; however, there was some continued support for the first come, first served approach. In addition, there were concerns regarding how allocations will be made if another strategy is used. BAC members would like to see the scale of the watershed defined and include both upstream and downstream considerations when determining wasteload allocations. Members questioned what will happen when a stream’s assimilative capacity has been reached and there is nothing left to allocate. Finally, BAC members pointed out there must be a way to validate future projections if allocations are to be made using those projections.

Focused Discussion Paper #6: Pollutant Allocation Trading

Background

Currently in Georgia, more than 800 water bodies are listed as not meeting their water quality standards. EPD develops TMDLs for the water bodies that are on the State's 303(d) list. These TMDLs set the overall level or cap of a pollutant for a specific water body or watershed. Reduction responsibilities are divided among the potential sources, including both point sources and nonpoint sources. Allocations for point sources are given as wasteload allocations and for nonpoint sources as load allocations.

EPD can only regulate point sources and their wasteload allocations through the issuance of discharge permits. Nonpoint sources are typically unregulated. Any nonpoint source pollutant reduction is achieved through the implementation of best management practices, which is accomplished on a voluntary basis. Relying on voluntary actions alone to address nonpoint source pollutants is proving to be marginally effective in the efforts to bring waters into compliance with water quality standards.

Opportunities

The BACs were asked to consider and provide input on developing a pollutant allocation trading program. Pollutant allocation trading is a market-based approach to protecting water quality. It may allow pollutant sources to achieve water quality standards at lower costs than could be attained under a traditional regulatory approach. Pollutant trading programs can allow for the trading of pollutant allocations from point sources or load allocations from nonpoint sources. Experience elsewhere indicates that the following conditions are necessary for pollutant allocation trading to be viable:

1. A water quality standard that is not being achieved;
2. Sources within a watershed that have varying costs associated with meeting that water quality standard;
3. Baseline data that can provide information on water quality improvement; and
4. Active stakeholder and regulatory community involvement, with all parties agreeable to post-trading water quality monitoring.

A pilot trading study could be undertaken in for a watershed where a TMDL has been developed and there is sufficient data available that identifies the problem and the causes. For the pilot trading study to be implemented, appropriate trading credits would need to be determined based on the effectiveness of pollutant reductions. In addition, a long term monitoring program would need to be implemented to evaluate the effectiveness of trading in the pilot study.

SAC Feedback and Input Requested

The benefits of pollutant allocation trading include cost savings and flexibility for the regulated community, and the potential for innovative solutions to complex water quality problems. To achieve these benefits, tools for assessing trading scenarios would have to be developed and evaluated, and monitoring data for assessing and verifying the effectiveness of these trades would be needed. Public involvement would also be crucial to the success of any pollutant allocation trading program. Finally, watershed permitting may be the mechanism for implementation of negotiated pollutant allocation trades; if so, this approach to permitting would have to be developed and implemented as well.

Discussion Question #9: What do you see as the pros and cons of a pollutant allocation trading program?

Discussion Question #10: Are there any outcomes that a pollutant allocation trading program should be designed to either ensure or prevent?

Summary of BAC Feedback

The Basin Advisory Committees indicated concern over pollutant allocation trading and felt it should only be used as a last resort. Generally, there was consensus that point to point source trading would be easier to manage than trading between nonpoint and point sources. In fact, it was pointed out that point to point source trading is currently being used in some areas of Georgia. There was concern that nonpoint source loads are difficult to control and are dependent on the weather conditions, thus making it difficult to verify nonpoint to point source trades. Another concern was the potential that trading could create hot spots where none currently exist because unbalanced loading would be difficult to manage. Finally, there is concern that trading rules would need to be strictly enforced and that EPD currently is unable to implement the type of enforcement this program would require.