Water Issues White Paper

Board of Natural Resources
State of Georgia
May 2001

INTRODUCTION

The State of Georgia is embarking on the preparation of a Comprehensive Water Plan through the passage of SR 142 which creates a Joint House/Senate Study Committee with the following responsibilities:

- Study water resources issues, both quality and quantity.
- Consider existing policy, laws, rules and programs.
- Recommend a process and schedule for preparation of a comprehensive water plan.
- Develop the principles for the plan.
- Recommend any other action or legislation.

These are extremely important responsibilities.

The priorities of water use constitute the most sensitive and important political and environmental water issue. Among important priorities, meeting human needs is first. By law, farm irrigation is second, a priority that protects the food supply. Other high priority uses are industrial and recreational uses. The maintenance of streams and rivers in which aquatic life can be sustained is of paramount importance.

If stream flows adequate to support aquatic life are not preserved, the ability of the State to meet its other priorities is in jeopardy. The duty of the Board of Natural Resources, as well as the duty of all elected leaders, is to have a vision for preserving our water resources for future generations. Any statewide water plan must be based on that vision.

The Board of Natural Resources has the authority to manage water resources in Georgia. This is performed primarily by the various divisions of the Department of Natural Resources (Environmental Protection Division, Coastal Resources Division, Wildlife Resources Division and Pollution Prevention Assistance Division). The Board sets policy, adopts rules and basically governs the activities of the Divisions pursuant to State law.

The Board of Natural Resources wishes to be an active and helpful partner to the Joint Study Committee. To start this partnership, the Board has prepared this water issues white paper to present to the Committee. The purpose of this white paper is to (1) suggest a framework for a Comprehensive Water Plan, (2) provide an outline of water funding needs, (3) suggest three law amendments, and (4) brief the Committee on key water issues which should be incorporated into the Comprehensive Water Plan.

Although there are major water issues to be considered and solved, the Board of Natural Resources strongly encourages the Committee to recognize the strength of the existing laws, rules and policies of the State of Georgia and to recognize the valuable work being performed by State and local governments in managing water resources. The Board of Natural Resources has not studied options for the restructuring of the administrative structure for water management programs in Georgia. The system is not

broken, but it does need some improvements and it does need to be reinforced by preparation of a Comprehensive Water Plan.

Finally, the Board realizes that the Joint Committee will be studying water issues over the next two years and that additional information and input from the Board during this time may be helpful. The Board would be pleased to work with the Committee as it continues its work and pleased to provide additional information in the future.

PLAN FRAMEWORK

The Board of Natural Resources suggests that the framework of the Comprehensive Water Plan begins with existing laws, rules, and policies followed by recognition of current and future stresses on the water resources and concluding with recommendations for strengthening Georgia's water resources programs. Significantly enhanced funding must be an important part of the Comprehensive Water Plan.

Existing Laws

The water laws of the State of Georgia focus on the protection of both water quality and water quantity, primarily through the regulatory responsibilities of the Georgia Department of Natural Resources and the Environmental Protection Division (EPD). Through these statutes, EPD regulates (1) the withdrawal of surface water from streams, rivers and lakes, (2) the withdrawal of groundwater from wells, (3) treated wastewater disposal or reuse (4) drinking water systems (5) stormwater runoff from many land clearing sites (6) stormwater runoff from some industries and cities (7) installation of some wells (8) underground injection of wastes, and (9) some land uses in significant aquifer recharge areas and in water supply watersheds.

These laws and the subsequent regulatory programs should remain intact, but be strengthened in certain areas.

The Board of Natural Resources strongly supports Senate Bill 130 which establishes the North Georgia Metropolitan Water Planning District. The district has direct responsibility for regional water planning subject to the approval of EPD. This district does not supersede authorities assigned to Board of Natural Resources or to the Environmental Protection Division.

The Joint Study Committee should also be mindful that the Federal Clean Water Act, the Federal Safe Drinking Water Act and the Federal Endangered Species Act must be honored and any new or revised State laws or rules must not contradict Federal law.

Existing Programs

The Environmental Protection Division has extensive programs in water resources management. These are briefly summarized below. The Board of Natural Resources recommends these EPD programs continue and be enhanced with additional funding:

Geologic Survey

- Enforce assessment of and corrective action for releases from petroleum pipelines and above-ground storage tanks.
- Investigate sources of pollution to municipal ground water supplies.
- Drill exploratory borings and construct ground water monitoring wells.
- Maintain and operate geophysical logging equipment.

- Prepare Wellhead Protection Plans for municipal water supply systems.
- Collect samples from Georgia's ground water monitoring network.
- Collect samples for pesticide analysis from monitoring wells.
- Permit and enforce Underground Injection Control (UIC) rules.
- License well drillers and enforce the Water Well Standards Act.
- Map the geology of recharge areas of major aquifers in Central/Southwest Georgia.

Drinking Water

- Establish bacteriological sampling schedule and track sampling results to ensure public water system compliance with the Safe Drinking Water Act.
- Enforce State and Federal drinking water regulations concerning: lead and copper, surface water treatment, consumer confidence, and microbiological, chemical, and radiological contaminants in public water systems.
- Inspect and certify public water system laboratories and commercial laboratories that analyze drinking water samples.
- Provide technical assistance to operators and administrators of public water systems.
- Perform public water system vulnerability assessments.
- Implement Georgia's source water assessment and protection program.
- Issue and enforce permits to operate public water systems.
- Review and approve water conservation and cross-connection control plans from public water systems.
- Approve plans and specifications, engineering reports, design development reports and business plans for the construction of new public water systems (including source, treatment, storage and distribution system), and approve the expansion/modification of existing public water systems.
- Rank, review and approve projects (including environmental review) for funding under the Drinking Water State Revolving Fund (DWSRF).
- Inspect public water systems to ensure that the water plan, distribution system and water storage facilities are properly operated and maintained.

Water Allocation

- Issue and enforce water withdrawal permits for non-agricultural and agricultural surface water and groundwater users.
- Provide all technical support for Georgia on the Apalachicola, Chattahoochee, Flint and Alabama, Coosa, Tallapoosa Interstate Compact issues.
- Assist local governments in understanding, implementing and maintaining compliance with criteria of the National Flood Insurance Program.
- Develop river basin management plans (quality and quantity) in Georgia.
- Develop short-term and long-term water management policies and strategies.

Safe Dams

- Inventory all existing and proposed dams 25 feet tall and with 100 acre-feet of storage at top of dam.
- Reinventory existing Category II (low hazard) dams at least every five years.
- Classify dams based on development within the dam failure flood zone downstream.
- Approve plans and specifications for construction and repair of all Category I (high hazard) dams.
- Continuously monitor Category I dams for safety.

Water Quality

- Issue and enforce wastewater permits to municipal, industrial, federal water pollution control plants, and privately owned water pollution control plants.
- Conduct monitoring of Georgia streams, rivers, lakes, and estuaries for use with waste load allocations and to determine compliance with water quality standards.
- Conduct water quality modeling for waste load allocations, water use classifications, and water quality standards.
- Collect samples of facility discharges and conduct laboratory testing of samples.
- Manage a statewide soil erosion and sedimentation control program.
- Issue Land Disturbing Activity Permits within jurisdictions which do not have issuing authority.
- Review local erosion and sedimentation control ordinances, and delegate authority to local governments for their erosion and sedimentation control programs.
- Review and approve or disapprove stream buffer variances.
- Implement municipal and industrial storm water permitting programs through National Pollutant Discharge Elimination System (NPDES) permits.
- Issue 401 Water Quality Certifications.
- Administer grant program under Section 319 of the Federal Clean Water Act for non-point source pollution abatement projects.
- Administer Project WET (Water Education for Teachers).
- Administer Adopt-A-Stream Program
- Review and approve engineering reports, plans and specifications for wastewater treatment facilities and sewer system extensions.
- Provide technical support to the Georgia Environmental Facilities Authority (GEFA) in the administration of the State Revolving Loan Program (SRF) and other GEFA loan programs.
- Review and approve Sludge management plans for municipal and industrial wastewater treatment plants.
- Provide technical assistance to communities in the area of operation and maintenance of wastewater treatment facilities.
- On-the-job operator training.

- Issue and enforce industrial pretreatment permits.
- Inspect, sample, and evaluate operations and permittee self-monitoring program.
- Review engineering reports and technical documents for industrial facilities.
- Review and audit local pretreatment programs.
- Respond to citizen complaints regarding water quality problems.
- Prepare and implement Total Maximum Daily Loads (TMDLs) for streams and lakes.

The aforementioned programs are carried out in EPD by three branches: Water Protection Branch, Water Resources Branch, and Geologic Survey Branch. These programs directly deal with water issues. However, other EPD programs are also indirectly involved in the protection of Georgia's water resources. These programs are (1) landfill permitting, enforcement, remediation; (2) hazardous waste/spill sites remediation; (3) underground storage tank enforcement and remediation and (4) emergency spill responses activities.

The Coastal Resources Division (CRD) is responsible for conducting water quality assessments along the coast of Georgia. CRD monitors a variety of water quality parameters throughout coastal Georgia. These parameters include monitoring Georgia's public swimming beaches for the presence of fecal coliform bacteria; monitoring fecal coliform bacteria in shellfish (oyster and clam) harvesting areas; monitoring for nutrients that may cause harmful algal blooms; monitoring specifically for presence of Pfisteria; and monitoring for a large suite of contaminants in water, sediment, and biota under EPA's Coastal 2000 Program. In addition to direct water quality monitoring, CRD is responsible for administering the Coastal Marshlands Protection Act. Effective administration of this law has a direct bearing on water quality in coastal Georgia.

Water Stresses

In basic terms, the rapid population growth of Georgia and the increased water use for agricultural irrigation over the last 30 years are stressing Georgia's water resources. The major water stresses are summarized as follows:

- Growth in North Georgia. The northern part of the state must meet the water supply needs of a rapidly growing population in an area with relatively low stream flow rates and very limited groundwater reserves. Also, this growth has increased the amount of treated wastewater entering rivers and increased the amount of non-point source pollution.
- Growth in Coastal Georgia. Rapid growth in coastal Georgia has increased the amount of treated wastewater and non-point sources pollution entering Georgia's estuaries. Over time, this growth has also reduced pressure and increased the potential for saltwater intrusion into the Floridan Aquifer. As a result, saltwater contamination threatens groundwater supplies in southeast Georgia, portions of Florida and South Carolina. Water users in 24 southeast Georgia counties obtain most of their water from the Upper Floridan Aquifer.

- Agricultural water use in the Flint River Basin in southwest Georgia. This water use has the potential to harmfully deplete the flow of the Flint River in drought years. Weather, economics, and risk management have caused farmers to depend more heavily on irrigation, which places greater demand on the River and its tributaries in dry years. Continued evaluation of the impact of ground water and surface water withdrawals and refinement of procedures for implementing Flint River Drought Protection Act are critical to protecting stream flow levels during drought.
- Interstate conflicts among the States of Georgia, Alabama, and Florida over water management in the Coosa, Tallapoosa, Flint and Chattahoochee River Basins. These river basins make up 38% of Georgia's total land area, provide drinking water to over 60% of Georgia's population, and supply water for more than 35% of Georgia's irrigated agriculture.
- The drought of 1998-2001. This drought is having profound negative impacts on agricultural and municipal water systems. During the summer of 2000, 23 cities and five counties faced critical water shortages; U. S. Department of Agriculture Secretary declared all of Georgia's 159 counties disaster areas due to drought. Significant environmental and economic impacts have been documented. Drought planning as a component of a comprehensive water management strategy is necessary to minimize those impacts and reduce the need for emergency relief.
- Old water and wastewater infrastructure in many communities. Leaking or overflowing sewer lines and inadequate wastewater treatment facilities can cause water quality problems. The Comprehensive Water Plan must contemplate upgrading this infrastructure, which will be very expensive for local governments and their ratepayers.
- The loss of healthy aquatic habitat and reduction in water quality through land development impacts. Land development impacts include increased wastewater discharges and nonpoint source pollution. Determination of total maximum daily loads of pollutants and new water management practices (such as land use management by local governments and developers to reduce nonpoint sources of pollution) will be required to sustain water quality and protect aquatic habitat.

Solutions

The Board of Natural Resources recognizes the need for improvement in water resources planning both at the regional/basin level and at the statewide level to address and solve the water stresses. The Board believes the Comprehensive Water Plan should build upon the existing programs, strengthen some of the programs, and identify future funding sources and mechanisms.

The Board has identified fifteen specific water issues and solutions which are recommended for consideration by the Joint Study Committee for inclusion in the Comprehensive Water Plan.

Three of these issues have recommended solutions which involve amendments to existing Georgia water statutes. These are as follows:

- Interbasin Water Transfers
- Allocation of State Water to Private Entities for Resale.
- Improve Allocation of Water for Agricultural Use.

Briefing papers on these issues are contained in Appendix A.

Twelve of these issues do not require legislation but do need additional attention from EPD or new rules by the Board of Natural Resources. These are as follows:

- Statewide Water Conservation
- Interim Instream Flow Protection Strategy
- Priorities for Water Use During Drought
- Privately Owned Public Water Systems
- Assure a Reliable and Adequate Water Supply in Growth Areas with Water Supply Reservoirs
- Real-time Water Management
- Water Quality Monitoring
- Attain Water Quality Standards
- Assure Wastewater Capacity in Growth Areas
- Develop and Implement Erosion and Sedimentation Control Improvements
- Public Information and Involvement
- Improve old Water and Sewer Infrastructure

Briefing papers on these issues are contained in Appendix B.

FUNDING

In 1999, (revised in 2000), the Board of Natural Resources adopted a five-year budget plan for the Environmental Protection Division. The conclusions in this plan are simple.

One, the environmental problems facing Georgia are real, serious, expensive to solve, and are made more difficult by Georgia's continuing rapid growth. They will not go away, and Georgians expect and deserve a good environment, (including clean water).

Two, EPD does not have sufficient staff to deal adequately with the existing environmental problems, much less with emerging environmental problems.

Three, a comprehensive permit fee (user) program is consistent with other states and would provide the needed environmental funding without affecting the State Treasury.

Four, legislation establishing the fee program should be passed. If the General Assembly funds EPD's needs through direct appropriations, new fees would not need to be implemented, but the authority to do so should still be established.

To verify these conclusions, EPD reviewed programs of other southeastern states. This review shows Georgia to be second to last in per capita staffing of environmental programs. A staffing chart of Southeast States is contained in Appendix C.

The most important issue the Joint House/Senate Committee needs to study thoroughly is the overwhelming need to fund water programs in Georgia. Simply and bluntly put, Georgia's water programs have traditionally been under funded and are still under funded. This is of special significance given the rulings of the Federal court establishing strict schedules for the preparation of total maximum daily loads and the need to fund this requirement. The Comprehensive Water Plan should identify the costs for implementation of the existing laws, rules and policies which will continue, as well as any new laws, rules and policies resulting from the plan. Second, the plan should identify funding mechanisms to meet these costs.

Enhanced <u>State funding</u> is needed for the following tasks:

1. Comprehensive Water Plan preparation.
2. Real-time water management (quantity and quality).
3. Enhanced water quality monitoring.
4. EPD's water regulatory responsibilities (including water allocation, wastewater management, total maximum daily load preparation, enforcement, planning, erosion and sedimentation control, technical assistance and many other tasks contained in state laws).
5. Promoting water conservation/reuse.
6. Increasing public involvement.

7. Financial support (grants/loans) to local governments.
8. Regional reservoirs.

Enhanced local funding is needed for the following tasks:

1. Non-point source pollution control (stormwater management, buffers, TMDL implementation, Best Management Practices, etc.)
2. Old water and wastewater infrastructure upgrading.
3. Provide new water and wastewater infrastructure, including improved wastewater treatment plants.
4. Water quality monitoring.
5. Public education.
6. Implementing water conservation/water reuse.
7. Providing adequate water supplies (reservoirs).
8. Enhanced low-flow stream protection.

The enhanced funding for DNR recommended in this White Paper is summarized below:

Staff – 14 new positions are needed to carry out the new duties recommended in the White Paper. (Note: This is in addition to the 58 water positions provided in FY 2001/2002 and the 64 new positions recommended in DNR's Five-Year Budget Plan as necessary to carry out existing programs). A Board resolution on funding is in Appendix D.

Study Costs - $3 million for instream flow studies over a four-year period and $750,000 for a study to develop new water quality standards.

One-Time Equipment Costs - $1.1 million for real-time water quantity management; $6.9 million over four years for Chattahoochee River water quality monitoring.

Annual Costs - $6.6 million for water quantity and water quality monitoring.

APPENDIX A

These items will require legislative action

NOTE: Legislative action will also be required to establish fee authority for a permit fee program. This concept is discussed in the "Funding" section on pages 9-10.

INTERBASIN WATER TRANSFERS

Applicable Law or Regulation

Georgia's existing laws and policies do not prevent (with one exception) interbasin transfers and a number of them have existed for many years. Appropriate environmental requirements must be met in both the basin losing water and the basin gaining water. O.C.G.A. 12-5-23 authorizes the Georgia Department of Natural Resources to manage surface water use in the State. O.C.G.A. 12-5-29 and 30 establish requirements for any discharges of water to the receiving surface waters of the basin. The returned water must meet acceptable limits that protect water quality standards, as well as other environmental criteria. O.C.G.A. 12-5-31 establishes the requirements for any withdrawal of surface water of 100,000 gallons per day (gpd) or more on an average monthly basis. Also SB 130, passed in 2001, (O.C.G.A. 12-5-570) does not allow for the planning of any interbasin transfer of water into the eighteen county North Georgia Metropolitan Planning District.

Additional requirements for the withdrawal of surface waters that may result in an out of basin transfer of water are included in the Georgia Rules for Water Quality Control 391-3-6-.07(14). EPD must consider reasonable uses of the giving and receiving basins. The existing users of water in the basin must be allocated sufficient water for reasonable growth and expansion. Public notification requirements include a press release and a public advisory issued at least seven days prior to the issuance of any permit for interbasin transfers. If there is sufficient interest, a public hearing may also be held by EPD prior to issuance of any withdrawal permit for an interbasin transfer.

Discussion

Interbasin transfers of water are defined as a withdrawal or diversion in which water used is diverted to a different river basin from which it is withdrawn. The river basin is the area of natural surface water drainage associated with any river and stream, or combination of them.

Interbasin transfers can occur from the direct diversion of water via a dug canal or pipeline of water from one river basin to another. These types of diversion projects are very common in western United States. These types of interbasin transfers do not exist anywhere in Georgia.

Many cities and counties in Georgia were developed on high ground, and often the high ground is a ridgeline that separates two river basins. Such communities typically obtain their water from one river basin, and pipe it to their citizens whose homes and businesses lie in either of the river basins. As population growth occurred in these same areas over the past decades, communities have developed water and sewer systems that create interbasin transfers. There are currently numerous existing and proposed transfers of water of this type involving six of the state's fourteen river basins.

Some of the first interbasin transfers in Georgia are documented to have existed in the early 1900's. The Atlanta Entrenchment Creek Water Pollution Control Plant (WPCP) and South River Water Pollution Control Plant were both built in 1937 to treat sewage. This sewage originated as drinking water from the Chattahoochee River, was discharged to the Ocmulgee River Basin.

Most of the interbasin transfers in Georgia currently occur in the metro Atlanta area, where there is a large population (almost 4 million people) in about 20 counties, with five river basins either passing through or starting their headwaters in those counties. Table 1 lists the interbasin transfers and Figure 1 shows where they occur.

Information on Specific Transfers

There are several existing interbasin transfers of water from the Chattahoochee River Basin to the Ocmulgee River Basin. Gwinnett County and DeKalb County lie in both basins. Because the Ocmulgee River tributaries in these counties are small and not reliable for water supply, relative to the size and reliability of the Chattahoochee River, both counties receive all of their water supply from the Chattahoochee Basin. Significant parts of the populations of DeKalb and Gwinnett Counties live and work in the Ocmulgee River Basin; so some of the water is treated and discharged to the Ocmulgee River Basin by sewage treatment plants. Rockdale County and other adjacent communities receive water supply from DeKalb and Gwinnett that is then used, treated, and discharged to basins outside of the Chattahoochee Basin. Up to 21.5 million gallons per day (mgd) is permitted to be transferred out of the Chattahoochee Basin by Gwinnett County, 56 mgd by DeKalb County, and 5 mgd by Rockdale County. Currently, there is about a 45 mgd net annual average transfer out of the Chattahoochee River Basin.

Clayton County lies within both the Flint River Basin and the Ocmulgee River Basin, and transfers about 9 mgd out of the Flint to the Ocmulgee River Basin.

In conjunction with the Georgia and Alabama Interstate Water Compact allocation negotiations, there will most likely be a cap on transfers out of the Coosa River Basin of 100 million gallons per day (mgd) on an annual average basis. These transfers will be allowed to increase from existing levels to 100 mgd by 2030. Currently, the Coosa River Basin has less water supply demands on it than the Chattahoochee River Basin, and the basin transfers help out the Chattahoochee River. The interbasin transfers that exist now are made by the Cobb County-Marietta Water Authority. Approximately 38 mgd on an annual average is transferred out of the Coosa Basin by the Cobb County-Marietta Water Authority. The Authority serves the local government water systems of Paulding County, Douglas County, Powder Springs, City of Woodstock, Southern Cherokee County, and portions of Cobb County lying in the Chattahoochee River Basin. This entire area is dependent upon this source of water supply for current and projected needs. Cobb County lies in both the Coosa and Chattahoochee River Basins.

The Savannah River Basin Comprehensive Study is underway between South Carolina and Georgia. Interbasin transfers will be evaluated as part of this study.

Currently, no interbasin transfers out of the Savannah Basin occur in Georgia but large ones occur in South Carolina. The City of Greenville, S.C. has a 54 mgd transfer out of the Savannah River, and plans to eventually increase this to 150 mgd. The Beaufort-Jasper Water Authority has an existing 27 mgd transfer out of the Savannah River Basin, and has a permit to expand this to 100 mgd.

Habersham County Georgia lies within both the Chattahoochee and Savannah River Basins, and has proposed an interbasin transfer from the Savannah River Basin to serve its citizens and businesses in the Chattahoochee River Basin. This transfer would reach 12.5 mgd in the year 2050. In evaluating water supply alternatives, Habersham County has selected Tugaloo Lake in the Savannah River Basin as its most cost-effective option. Although most of the county's water customers lie within the Chattahoochee Basin portion of the county, the area is limited in terms of feasible water supply options. Trout streams and headwater creeks requiring reservoir water supply storage would have to be used if the water was to be provided from Chattahoochee Basin portion of the county.

Concerns

There is one major concern expressed about interbasin transfers in Georgia. This is the perception that metro Atlanta will take water from far away in Georgia, harming some other part of the state while helping itself. Or if not metro Atlanta, the concern is that some other large user will transport water over a large distance.

To address this concern, the Board of Natural Resources recommends that a rule and/or legislation be passed which basically prohibits the long-distance interbasin transfer of water while allowing existing transfers and short-distance transfers with restrictions (within a county and to an adjacent county). This could be passed in the Year 2002 and should be based on the following principles:

a. Long-distance interbasin transfer of water is prohibited except in cases of emergency as specified in paragraph d. In this context, long-distance means an interbasin transfer that crosses more than two counties.

b. All existing permitted interbasin transfers should be grandfathered. It would cost Georgia's cities and communities billions of dollars to change their existing water and sewer infrastructure to eliminate the existing permitted interbasin transfers.

c. Allow for additional new transfers or expansion of existing interbasin transfers as long as all of the following conditions are met:
    1. Meet instream flow requirements in giving basin
    2. Meet water quality requirements in receiving and giving basins
    3. Subject to c. 1 and c. 2, additional or new interbasin transfers are allowed intra-city or intra-county.
    4. Subject to c. 1 and c. 2 new or additional interbasin transfers are allowed from one county to an immediate neighboring county --- for intergovernmental cooperation, water security and reliability, and economy.

5. Regional reservoirs developed by the state, or by multi-jurisdictional water authorities, can serve water to all member jurisdictions and to any county adjacent to a county in which a regional reservoir exists or is constructed, even if such involves an interbasin transfer. This is also subject to c. 1 and c. 2.
6. Meet all other statutory and rule requirements including, justification of the need for water, documentation of water conservation, and a comprehensive analysis of all water supply alternatives, and a 30-day public notice period.

d. In emergency (high probability of water not being available for critical needs) situations and periods of extended multi-year droughts, the Director may allow temporary interbasin transfers regardless of the conditions in a and c above, if water conservation fails to alleviate the emergency. For safety purposes and in extended drought periods, interconnections with systems may be the only available option on a temporary basis for water supply.

Additional State Funding Needed to Implement

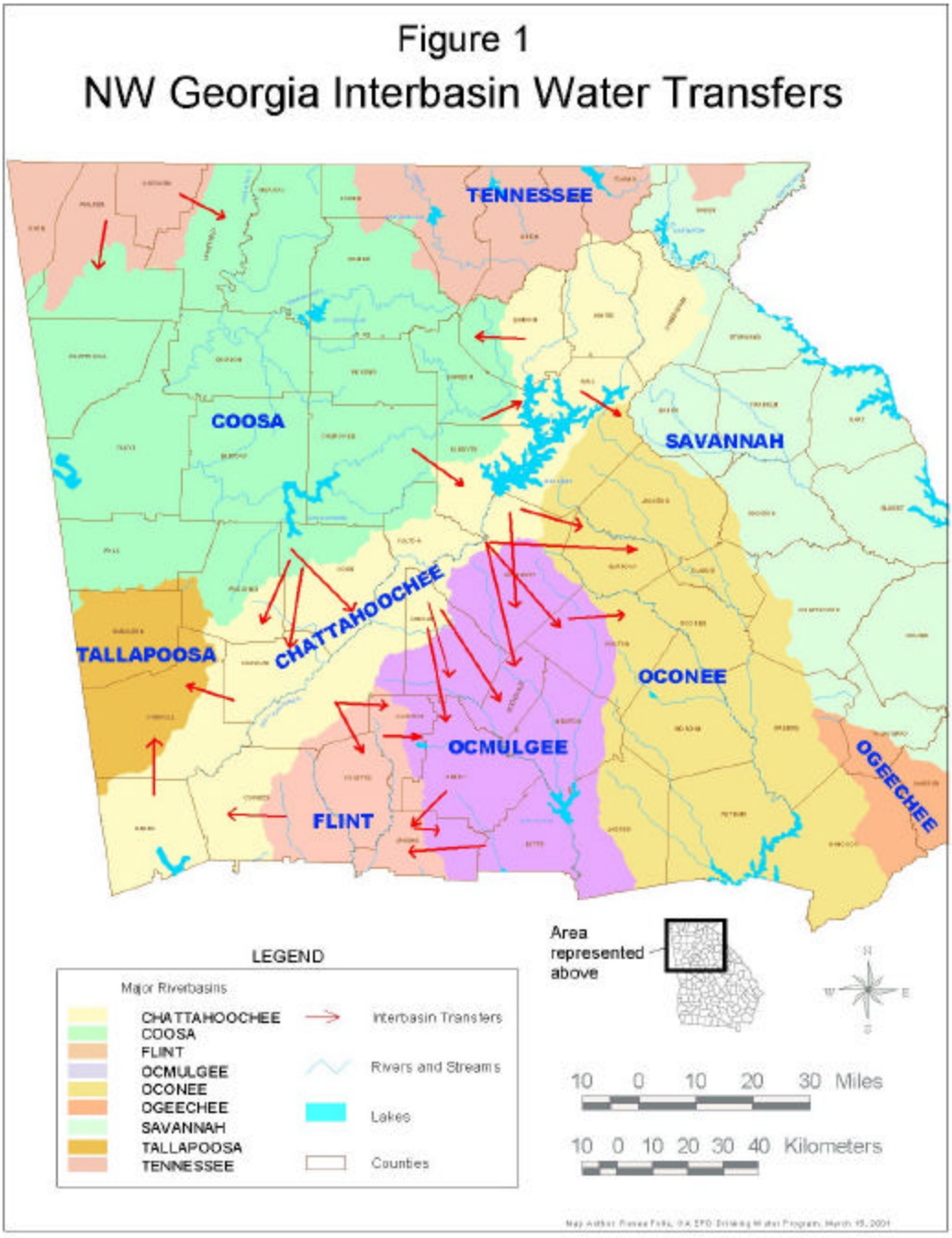
DNR does not need additional funding to implement this recommendation.

TABLE 1
GEORGIA INTERBASIN TRANSFERS

County	Basin Transfer	Existing Transfers (MGD)	Water Systems Transferring	1999 Population 1000's
Barrow	Chattahoochee to Oconee	3.3	Gwinnett Co. to Barrow Co. & Braselton	42
Butts	Ocmulgee to Flint	0.2	Butts Co. to Griffin	18
Carroll	Chattahoochee to Tallapoosa	2.0	Douglas Co. to Carroll Co.	85
Clayton	Flint to Ocmulgee	9.0	Clayton Co. western portion of county to eastern portion	214
Cobb	Coosa to Chattahoochee	37.6	Cobb Co.-Marietta to Southeastern Cobb, Douglas & Paulding Co.	584
Coweta	Flint to Chattahoochee	7.5	North Newnan to Newnan & west Coweta Co.	89
Dawson	Coosa to Chattahoochee	0.3	Etowah Water Auth to East Dawson Co.	16
DeKalb	Chattahoochee to Ocmulgee	56.0	DeKalb Co. North to South plus Rockdale Co, Henry Co.	597
Douglas	Coosa to Chattahoochee	1.9	Cobb Co. – Marietta to Douglas Co.	94
Fayette	Chattahoochee to Flint	2.0	Atlanta to Fayette Co.	92
Forsyth	Coosa to Chattahoochee	0.0	Cherokee Co. to Forsyth Co – emergency only	97
Fulton	Chattahoochee to Flint	2.7	Atlanta-Fulton Co. to Clayton Co. and Fayette Co.	745
Gwinnett	Chattahoochee to Ocmulgee	21.5	Gwinnett north to south and Rockdale Co., Walton & Barrow Co.	546
Hall	Chattahoochee to Oconee	5.0	Gainesville to East Hall Co.	123
Heard	Chattahoochee to Tallapoosa	0.5	Heard Co. to Carroll Co.	10
Henry	Chattahoochee to Ocmulgee	1.0	DeKalb Co. to Henry Co.	113
Lumpkin	Chattahoochee to Coosa	0.0	Dahlonega to Lumpkin Co. – none to date to Coosa Basin	20
Paulding	Coosa to Chattahoochee	6.4	Cobb Co. – Marietta to Paulding Co.	80
Rockdale	Chattahoochee to Ocmulgee	5.0	DeKalb Co. & Gwinnett Co. to Rockdale Co.	69
Spalding	Ocmulgee to Flint	0.8	Henry Co. to Griffin	58
Spalding	Flint to Ocmulgee	2.0	Griffin to East Spalding Co.	
Walker	Tennessee to Coosa	1.0	Walker Co. to Lafayette	63
Walton	Ocmulgee to Oconee	3.0	Monroe to east Monroe and east Walton Co.	58
Walton	Chattahoochee to Ocmulgee	0.3	Gwinnett Co. to Loganville & Walton Co.	
Whitfield	Tennessee to Coosa	2.0	Tenn. – American to Dalton Utilities	83
			Total	3896

Figure 1

NW Georgia Interbasin Water Transfers



ALLOCATION OF STATE WATERS TO PRIVATE ENTITIES FOR RESALE

Applicable Law or Regulation

- O.C.G.A. 12-5-23 provides the Board of Natural Resources the authority to manage water in Georgia.
- O.C.G.A. 12-5-31 provides general surface water withdrawal permitting authority and 2-5-90 general groundwater withdrawal authority
- DNR Rule 319-3-6-.07 for surface water withdrawals and 319-3-2 for groundwater withdrawals.

Discussion

There are private owners and companies that obtain permits to withdraw or to operate privately owned water systems serving the public. Georgia currently has almost 1700 of these types of systems such as developers of subdivisions and mobile home parks. These private entities obtain permits for the direct water use of their development and usually have to because local government supplied water is not available. Many of these systems do an outstanding job and about fifteen percent do not. EPD will take water samples and move forward with compliance and enforcement, including more media exposure of those privately owned systems not meeting their obligations to the public.

The other type of request for privately owned water supply are requests by companies and other entities to secure an allocation of water supply for future resale to anyone who wants it. DNR is very concerned about these types of entrepreneur proposals because such proposals may not safeguard the state's waters as a public trust. There are none of these types of resales in Georgia now.

A major concern is that local government may not concur with a private company's request for allocation of water for resale because that company will be in direct competition with the public utility in the area. While competition for the utility's customer base may be healthy, the public utility's water resources for existing and future needs must be accommodated. Also, a local government may not currently be in the water supply business. Adequate water resources should be reserved for this purpose and for protection of the environment.

Another concern is that Georgia water could be resold out of state and not preserved for Georgia citizens.

The Board of Natural Resources recommends the Georgia Safe Drinking Water Act be amended to prohibit the resale of water by a private entity for use in a local government's drinking water system unless the following conditions in addition to all other legal requirements are met:

1. A Georgia local government purchases the water pursuant to a contract approved by EPD which assures a reliable supply of water and controls on the cost of water.

2. The local government holds the water withdrawal and drinking water system permit and is responsible for permit compliance. The permits shall have the same time term as the approved contract.
3. The local government has an effective water conservation program.

Additional State Funding Needed to Implement

No additional funding is needed to implement this recommendation.

IMPROVE ALLOCATION OF WATER FOR AGRICULTURE

Applicable Law or Regulation

- O.C.G.A. 12-5-23 provides the Board of Natural Resources authority to manage water in Georgia.
- O.C.G.A. 12-5-31 and 12-5-105 which provide for the permitting of agriculture water withdrawals.
- 12-5-540 Flint River Drought Protection Act
- DNR Rule 391-3-28 pertaining to the Flint River Drought Protection Act

Discussion

The 1988 Amendments to both the Ground Water Use Act and the Water Quality Control Act require all agricultural ground water and surface water users of more than 100,000 gpd on a monthly average to obtain an Agricultural Water Use Permit. "Agriculture Use" is specifically defined as the processing of perishable agricultural products and the irrigation of recreational turf (e.g., golf courses) except in certain areas of the state where recreational turf is considered an industrial use. These areas are defined for surface water withdrawals as the Chattahoochee River watershed upstream from Peachtree Creek (North Georgia), and for ground water withdrawals in the coastal counties of Chatham, Effingham, Bryan and Glynn.

Applicants for Agricultural Water Use Permits who were able to establish that their use existed prior to July 1, 1988 and whose applications were received prior to July 1, 1991, are "grandfathered" for the operating capacity in place prior to July 1, 1988. Other applications are reviewed and granted with consideration for protecting the integrity of the resource and the water rights of permitted, grandfathered users. Currently, agricultural users are not required to submit any water use reports.

EPD issues agricultural irrigation water withdrawal permits on the basis of requested pump capacity. There are approximately 21,200 farm use permits issued throughout Georgia for the withdrawal of water for irrigation and other farm use purposes. In the Flint River basin alone, there are 6000 farm use permits, with 1600 of them for surface water use and 4400 for ground water use. The Suwannee River Basin and Coastal Georgia have the next largest number of farm use permits at 4400 and 3350, respectively. Statewide, farm use allocation permits issued are about 50 percent from groundwater and 50 percent from surface water.

Recommendation

1. The law now allows revocation of agricultural permits for which irrigation has never occurred. The law does not allow revocation of agricultural permits for which irrigation occurred in the past but has not occurred for an extended period of time. The water withdrawal statutes need to be amended to allow EPD to revoke unused agricultural permits for which irrigation has not occurred over an extended period of time. These permits account for tens of thousands of acres in the Flint River basin alone which are not being irrigated, but which appear as irrigated land in EPD's various water use estimates. These permits must be treated as if they are actually being used, when EPD makes water allocation

decisions regarding future users. Therefore these permits restrict the ability of EPD to issue new permits to farmers who legitimately want to irrigate because of the appearance of competing water use.

2. All farm ponds are currently exempt from permitting, including the ones created by damming a stream. The surface water withdrawal statute should be amended to clearly require permitting for any surface water withdrawal from a live stream or associated pond or impoundment provided that the stream either originates off the property and/or flows off the property.

3. The water withdrawal statutes should be amended to require agricultural metering and reporting of the amounts of water used. Also, permit requirements should encourage more efficient use of irrigation water.

4. The 1988 Amendments to both the Ground Water Act and the Water Quality Control Act are vague in defining the manner in which a permit is tied to the land on which it sits. These statutes should be modified so that they clearly and unequivocally state that a permit is tied to the land on which the well is drilled or on which the pump is installed. Additionally, the statutes should clearly state that, for withdrawal permits, the landowner, and not the renter, must be the permittee. The statute should also designate the owner and/or the operator (if not the owner) as responsible for permit compliance.

Additional State Funding Needed to Implement.

EPD currently is grossly understaffed to deal with the 900 permit applications each year for new agricultural water withdrawals and to conduct field verifications and information handling on the 21,200 existing permits. To resolve those problems, and to implement the four recommendations for law amendments, would require an EPD staff increase of eight persons.

APPENDIX B
These items will require Board of Natural Resources action

STATEWIDE WATER CONSERVATION

Applicable Law or Regulation

- The Georgia Water Supply Act (O.C.G.A. 12-5-96) requires permits for withdrawals of groundwater in excess of 100,000 gallons per day. Water conservation plans are required of applicants for permits (or permit modifications) except for permits for solely agricultural usage
- The Water Quality Control Act requires permits for withdrawals of surface water in excess of 100,000 gallons per day (O.C.G.A. 12-5-31). Water conservation plans are required of applicants for permits (or permit modifications) except for permits for solely agricultural usage
- Rules for Groundwater Use (Chapter 391-3-2-.04) and Water Quality Control, Chapter 391-3-6-.07) contain guidelines for the content of water conservation plans.

Discussion

Water conservation has tremendous potential as a water resource management tool. Aggressive programs can significantly ease the burden on supply and wastewater treatment. As Georgia faces increasing, and often competing, demands for a limited water supply, water conservation must become an integral component of overall water resource management. For example, water conservation is included in twelve of the fifteen issue briefing papers contained in this white paper.

The City of Los Angeles is a notable success story, having maintained water demand at a constant level despite continued growth and development. The Los Angeles water management plan as well as the state program were examined to determine what contributed to significant reductions in demand. The findings of a study by the American Water Works Association of state water conservation programs provided additional insight.

Georgia‘s authority to allocate groundwater and surface water withdrawals is a commonly used and effective mechanism for requiring water conservation plans. Plans do not reduce demand unless they are fully implemented, however. What distinguishes successful programs are requirements for implementation, and the provision of necessary funding sources. Broad based public-private partnerships contributed significantly to successful programs in California. A number of practices were found to be effective conservation measures; toilet retrofit programs and conservation pricing resulted in significant water savings.

Recommendations

1. Take immediate steps to strengthen existing regulatory programs.
    - Reorient EPD’s Water Resources Management Program to integrate water conservation activities including development of updated guidance on water conservation plans, review and approval of plans and associated reports.
    - Aggressive enforcement of planning requirements under current rules.
    - Provide incentives for development, updating and/or implementation of water conservation plans through permit, grant and State Revolving Fund (water and wastewater) loan conditions.

2. Take immediate steps to expand and strengthen existing technical assistance/outreach programs.
    - Expand use of DNR website to convey information on water conservation including the provision of useful links
    - Encourage water conservation through publicized state agency initiatives (state parks).
    - Continue the Pollution Prevention Assistance Division water conservation programs.

3. Water conservation planning for the Metropolitan North Georgia Water Planning District should include a broad based public-private partnership similar to the California Urban Water Conservation Council (CUWCC). Representatives of local governments, public interest organizations and others should be convened. This group could facilitate public education/outreach efforts on water conservation (as the Clean Air Campaign has for ozone). It could also identify and expedite implementation of effective water conservation measures, including conservation pricing and toilet retrofit programs. If successful, the group could be expanded outside the District.

4. Facilitate the integration of water conservation into <u>all</u> water resource planning initiatives, especially regional reservoir planning, drought planning, agricultural water allocation and water supply planning for local governments (this is especially important considering that 65 percent of permitted municipal surface water withdrawal capacity is in the Metropolitan North Georgia Water Planning District).

5. Prohibit a local government's use of water from a regional reservoir until the local government has demonstrated an effective water conservation program, including water conservation pricing.

6. Incorporate water reuse options into water conservation and water supply planning.

<u>Additional Funding Needed to Implement</u>

Significant funding will be required. Possible funding mechanisms for water conservation activities including State Revolving Loan funds and amendment of the Water Supply Act to make water conservation projects eligible for funding. The provision of tax incentives should also be investigated.

INTERIM INSTREAM FLOW PROTECTION STRATEGY

Applicable Law or Regulation

- Public Law 92-500, Federal Clean Water Act, Section 303
- No specific State statute, however O.C.G.A. 12-5-31(g) states that the granting of a withdrawal permit shall not have unreasonably adverse effects upon other water uses in the area, also O.C.G.A. 12-5-23 authorizes DNR to manage water uses in the State.
- DNR Rule 391-3-6-.07(4) requires persons withdrawing surface water to allow specified flows to remain in the river or to release specified flows from reservoirs. This flow is typically the seven-day, ten-year low flow.

Discussion

Georgia has a centralized permitting process under Environmental Protection Division (EPD). It also is where the headwaters of most of the surface water streams through the state originate, and thus Georgia has the capability to manage both water quality and quantity. The Georgia legislature has passed laws that provide the regulatory tools necessary to allow the Environmental Protection Division to issue surface water and groundwater withdrawal permits for any use greater than 100,000 gallons of water per day (whether the user is municipal, industrial, agricultural or private). In carrying out its water management responsibility, it is incumbent upon EPD to protect adequate stream flows for aquatic habitat needs in the issuance of surface water withdrawal permits, and to prevent excessive draw down of aquifers in the issuance of groundwater withdrawal permits.

EPD implements its instream flow protection policy through provisions inserted in surface water withdrawal permits. For more than 20 years the minimum stream flows protected within the provision of withdrawal permits have been coordinated with water quality loading limits established for wastewater dischargers under the National Pollutant Discharge Elimination System (NPDES) permits. The 1977 water allocation amendment to the Georgia Water Quality Control Act “grandfathered” those entities with pre-1977 surface water withdrawals. Thus, EPD has not placed minimum flow requirements on the quantities of water these entities were withdrawing prior to 1977. With some limited exceptions, applications for post-1977 withdrawals (whether new applications or modifications of permits already in-place) have been required by DNR Rule to allow a certain minimum flow to remain in the stream at the point where a permitted withdrawal of water occurs. This minimum flow requirement stipulates that when upstream flows drop below the required minimum instream flow at the point of withdrawal, the upstream flow is to be passed. Without a minimum instream flow requirement, municipalities and industries could withdraw all of a stream’s water during low flow periods (up to the withdrawal limits of the permit).

Throughout the past 20-plus years a stream’s seven-day, ten-year minimum flow or “7Q10” was the basis of DNR’s instream flow protection Rule. A stream’s 7Q10 is a statistical figure that reflects the lowest seven-day running average of a stream’s flow with a recurrence frequency of once in ten years. There are several permutations of DNR’s minimum flow Rule as reflected in the bullets shown below.

- Provide 7Q10 flow, if no unreasonable adverse effects to the stream or other water users will occur from the withdrawal.

- Provide the "non-depletable flow" (NDF) if probable impacts of the withdrawal, diversion or impoundment would occur to other water users. The NDF is the instream flow consisting of the 7Q10 flow plus an additional flow needed to ensure the availability of water to downstream users. Non-depletable flow is normally calculated by adding the 7Q10 flow to the prorata share of the downstream withdrawal or discharge needs, using the drainage area ratio method.

- Provide some other appropriate instream flow limit, as established by the Director of EPD, or as established from site-specific studies and approved by the Director of EPD.

The major exception to these permutations has been during periods of emergency water shortage when the health or safety of the citizens of an area are jeopardized or serious harm to the area water resources is threatened. In these extreme multi-year drought or emergency situations, EPD has reserved the option of allocating the remaining surface waters 50% to the environment and 50% to public health and safety. Water conservation is extremely important (supported with public awareness) during these drought periods.

This practice of protecting 7Q10 flows assists in ensuring adequate water for waste assimilation and meeting water quality standards. It also is the flow at which EPD develops mathematical water quality models used to set NPDES permit limits. In the absence of detailed site-specific studies to establish whether aquatic communities (fish and other creatures that live in the streams) were harmed by such a policy, EPD has continued to employ this approach to reserve minimum stream flows below new or expanding water withdrawals.

With a compilation of national instream flow research as its basis, in the mid-1990's the Wildlife Resources Division (WRD) of DNR requested that DNR's 7Q10 Rule be critically reviewed to determine if it was adequate to protect aquatic communities. Since that time several other parties have expressed similar concerns regarding the adequacy of the 7Q10 Rule. One common thread that exists among interests, regardless of whether they support the continued use of the 7Q10 or some higher level of minimum flow, is that there has not been sufficient site-specific instream flow work done in Georgia to establish a firm and permanent minimum stream flow policy.

In other words, although DNR's 7Q10 rule is designed to protect water quality, it is NOT based on the science of how much water should remain in a stream to maintain a healthy aquatic community.

Georgia's population continues to increase at a fast pace, and with this growth comes a corresponding increase in demands for water for consumption and wastewater assimilation. This phenomenon brings more stress on streams, particularly in north Georgia (where communities must mostly use surface water rather than groundwater), as we collectively attempt to meet these increased water demands. Georgia's rapid human population growth in the last 30 years is also contributing to stress experienced

by aquatic communities through such conditions as storm water runoff from impervious surfaces, sedimentation from land disturbing activities, displacement of natural streams by reservoirs, and depletion of groundwater.

Extended periods of abnormally low rainfall also exacerbate the stress that increased demands place on the streams. Paradoxically, extended periods of abnormally low rainfall bring increases in water demands by some sectors (particularly agriculture). This too contributes greatly to the stress experienced by streams (particularly in the heavy agricultural regions of south Georgia). Low stream flows may occur over extended periods of time, jeopardizing the seasonal variation in flows that is so important to aquatic life. The diversity and proliferation of fish and other aquatic resources in some streams may be endangered during an extended drought. As these stream stresses have grown, so has the cry for revisiting of the 7Q10 minimum stream flow rule.

A key question is, "How well are streams in Georgia doing and is there documented stress on Georgia streams necessitating a re-examination of the 7Q10 flow rule?" The answer to this question is that many of Georgia's streams are stressed and this could continue if a better low flow protection policy is not put in place.

The Wildlife Resources Division completed a study in early 2001 of the fisheries in 181 stream segments in the Piedmont (north of the Fall Line). Prior to the study, these segments were believed to be indicative of good streams (no known pollution sources). The study found only 9 segments have an excellent fishery, 24 are good, 62 are fair, 40 are poor and 46 are very poor. There were various factors causing these impacts, but land development causing loss of habitat was the main cause. Low flow protection is an important mechanism in maintaining habitat.

Georgia is one of the richest states in the country in terms of its aquatic diversity. Over 250 species of fishes, 100 species of mussels, 70 species of crayfishes, and 250 species of snails are found in Georgia's stream and rivers. Many of these species are considered imperiled because of restricted range or habitat, and more will likely become imperiled in the near future unless special efforts are made to protect their habitat.

Although the current minimum stream flow requirement has served an important role over the past two decades, DNR's current understanding of the stresses described above clearly conclude that it is time to revise the 7Q10 Rule.

Recommendation

The Board of Natural Resources has adopted the following interim minimum stream flow protection policy effective April 1, 2001. It is largely based on the 1997 recommendations of a work group of broad-based stakeholders and representatives of WRD and EPD concerning minimum stream flow requirements. It is applicable for all new surface water allocation water requests for all locations statewide, but allows flexibility to select among options due to differences in geography and hydrology within the regions of the state. An example is the Alabama-Coosa-Tallapoosa (ACT) Basin, which has a tentative agreement already identified for low flow protection for the Tallapoosa and Coosa Basin of Georgia. It is applicable for all requests for non-farm surface water allocations of water within the state. It is applicable for any non-federal

reservoir or storage impoundment. Current water withdrawal permit holders, as well as those entities that have applied for new or modified permits, would not be required to retroactively implement these recommendations.

In addition to adopting the recommendations described below, the Board will actively support efforts to identify and secure the financial resources required to conduct in-state site-specific studies. These studies will be the basis upon which a final modified minimum flow policy is formed. If such studies have not been funded and conducted within the July 1, 2001 to June 30, 2006, then the interim modified policy (as described within) would continue to be employed.

The interim minimum stream flow policy described herein will not apply to prospective withdrawal permit applicants who have filed plans with EPD (as of March 30, 2001) to expand existing withdrawals. The interim policy will also not apply to proposed projects that have (by March 30, 2001) applied for a Clean Water Act (CWA) Section 404 dredge and fill permit. Additionally the interim policy will not apply to those who have (by March 30, 2001) applied for a Section 401 water quality certification, or surface water supply allocations of water from non-federally owned and operated reservoirs. All of the aforementioned applicants will be required, at a minimum, to meet assigned minimum instream flow requirements in existence prior to April 1, 2001. A list of known water supply reservoir projects which are exempt from the interim minimum instream flow policy is shown in Table 1. All of these proposed and pending projects have the flexibility to do more than the existing assigned levels of minimum instream flow protection.

Effective on April 1, 2001 all new applications for non-farm water withdrawals from new sources, or expanded use of existing surface water sources, will be required to meet new interim minimum flow protection requirements that allow the applicants the flexibility to select from one of the ensuing three (3) minimum stream flow options. The one exception to this policy is withdrawals from highly regulated streams (i.e., streams whose flows are significantly determined by the operation of federal reservoirs) such as the Chattahoochee, Savannah, and Coosa rivers. EPD and WRD will continue to work to identify a consensus approach to address minimum flow requirements for those seeking to withdraw water from these highly regulated streams.

Monthly 7Q10 Minimum Flow Option

For a water supply reservoir, the applicant is at all times required to release (at the reservoir's release point) the lesser of the monthly 7Q10 or the inflow to the reservoir. For off stream reservoirs, the flows must be protected at the intake location as well as at the reservoir outlet. For an instream withdrawal, the applicant is at all times required to pass the lesser of the monthly 7Q10 or the inflow at the withdrawal point. Monthly 7Q10 is a statistical figure that reflects the lowest seven-day running average of a stream's flow for each calendar month with a recurrence frequency of once in ten years.

Site-Specific Instream Flow Study Option

The applicant may perform a site-specific instream flow study to determine what minimum flow conditions must be maintained for protection of aquatic habitat. Prior to commencing such an instream flow study, the applicant must receive prior approval of the study design from DNR. Upon the applicant's completion of the instream flow study, the Department of Natural Resources will evaluate the study results and recommendations for the minimum flows that must be preserved by the applicant. The DNR acting through the EPD Director must concur or recommend an acceptable minimum flow.

Mean Annual Flow Options

A. 30% Mean Annual Average Flow (Direct Withdrawal)

For direct water withdrawals (no on-stream impoundment) the applicant is at all times required to allow the lesser of 30% of the mean annual flow of the stream, or the inflow, to pass the instream withdrawal point.

B. 30/60/40% Mean Annual Flow (Water Supply Reservoir)

For applicants proposing a reservoir, the applicant is at all times required to release from the reservoir, the lesser of 30% of the mean annual flow or inflow during the months of July through November; 60% of the mean annual flow or inflow during the months of January through April; and 40% of the mean annual flow or inflow during the months of May, June, and December.

General Notes

The following general notes are to provide additional clarification regarding this interim strategy.

Existing reservoirs and intakes and those for which a Clean Water Act Section 404 permit have been issued as of April 1, 2001 are exempt from the modifications described herein. Reservoirs covered under this proviso will operate under DNR's pre-existing minimum flow Rule throughout the useful life of the reservoir.

Reservoirs and intakes for which the U.S. Army Corps of Engineers or Environmental Protection Division has applications as of April 1, 2001 (or such other date as determined by the Board) are exempt from the modifications described herein. Reservoirs covered under this proviso shall be allowed to operate under DNR's pre-existing minimum flow Rule throughout the useful life of the reservoir (reference Table 1 for such proposed reservoirs).

Current withdrawal permit holders seeking increases in withdrawal permit quantities on or after April 1, 2001 will be required to comply with the interim minimum instream flow requirements for the increased allocation only, not for the previous permitted withdrawal amount. Low flow protection for the previous permitted withdrawal amount will be governed by the 7Q10 policy or the pre-1977 water usage policy.

Permit applicants for new or expanded surface water allocations in the ACT Basin, including the Tallapoosa River Basin and Coosa River Basin of Georgia, must comply with terms of the ACT Compact draft water allocation agreement dated December 13, 2000, or as finally approved. Alternatively, these permit applicants may

elect to adopt one of the three options cited above if the selected option results in a higher minimum release requirement.

Withdrawals from highly regulated streams (those whose flows are significantly determined by the operation of Federal reservoirs) are not covered by this interim instream flow policy.

If an existing water supply reservoir is being converted from industrial use or private ownership to state or local government ownership for public water supply purposes, the permits will include the same existing minimum release requirements assigned to the original owner by permit.

Strong water conservation programs will also serve to help meet instream flow requirements.

Additional State Funding Needed to Implement

The Georgia Department of Natural Resources can implement this interim policy without additional funding. However, $3 million are needed for additional Georgia-specific scientific studies over the next four years on which a final policy will be based.

These studies should include a thorough evaluation of the impacts of possible reduced flows into Georgia's coastal waters as a result of consumptive water uses upstream. Changes in the salinity regime may have impacts on the species composition of plants, animals, and fish in Georgia's estuaries.

Table 1
Water Supply Reservoirs Pending Corps of Engineers or EPD Permit and which are exempt from the interim instream flow protection policy.

Reservoir Name	River Basin	County	EPD Permit Application Status	404 Permit
Hickory Log Creek	Coosa	Cherokee		Applied for permit
Lake Tugalo	Savannah	Habersham		Applied for permit
Off Stream Lake (Still Branch Creek)	Flint	Pike/Spalding/Coweta		Applied for permit
Tussahaw Creek	Ocmulgee	Butts		Applied for permit
Bear Creek	Ocmulgee	Newton		Applied for Permit
Hard Labor Creek	Ocmulgee	Walton		Applied for Permit
West Georgia*	Tallapoosa	Haralson		Applied for Permit
Snake Creek	Chattahoochee	Carroll	Applied for Permit	Permit Issued
Lake McIntosh	Flint	Fayette	Applied for Permit	
Hogansville Creek	Chattahoochee	Troup	Applied for Permit	
Line Creek	Flint	Fayette	Applied for Permit	
Off stream Lake (North Oconee River)	Oconee	Jackson	Applied for Permit	
High Shoals (on Apalachee River)	Oconee	Oconee	Applied for Permit	
Armuchee Creek	Coosa	Floyd	Applied for Permit	
Nancy Town Creek	Chattahoochee	Habersham	Applied for Permit	
Dog River Expansion	Chattahoochee	Douglas	Applied for Permit	

*This is the only regional reservoir funded through the 1989 Georgia Water Supply Act to date.

PRIORITIES FOR WATER USE DURING DROUGHT

Applicable Law or Regulation

- O.C.G.A. 12-5-23 provides the Board of Natural Resources authority to manage water in Georgia
- O.C.G.A. 12-5-31(l) provides for water allocation during emergency shortage periods.
- DNR Rule 391-3-6-.07(12) provides for water allocation during emergency shortage periods.

Discussion

The Environmental Protection Division and the Pollution Prevention Assistance Division are currently working on a joint effort to develop a Statewide Drought Management Plan. This plan will recommend a framework for regions of the state to follow for drought management. The Statewide Drought Management Plan will provide additional research requirements and details to modify or enhance the current EPD policies on priorities for water use during drought. A final report is scheduled for early Fall, 2001.

Currently, the emergency water shortage plan (modified for the initial plan contained in the 1986 Water Resources Management Strategy) is a phased process that manages water resources to become progressively more restrictive of non-essential outdoor water use, while providing water for essential purposes and maintaining some water for downstream uses. Under the Georgia Water Quality Control Act, and the Rules and Regulations for Water Quality Control, the Director of the Environmental Protection Division is authorized to issue emergency orders to protect public health and safety during emergency water shortage periods. EPD's regulations for competing water uses emergency situations for potable water use (391-3-6-.07(7)), give priority to emergency facilities for essential life support measures, then domestic drinking, cooking, washing and health related uses. Although not specified in the rules, the production of electricity is also considered important. Agricultural uses and industrial uses of water are next in priority, followed closely with in stream flows for water quality and environmental purposes. Recreational uses of water have lower priority during severe emergency situations.

The emergency water shortage plan consists of the following steps to be implemented along with vigorous water conservation and public education during emergency or drought periods:

EPD will request or, if necessary, order a community or region of the state to restrict outdoor water use to certain days or hours for all users. This will occur if a community exceeds 90% of its permitted water withdrawal amount or maximum safe production level for one day, if the water distribution system is experiencing low pressure (less than 20 PSI) or loss of service, or if the stream flow below the water withdrawal intake is less than 1.2 times the stream's 7 day-10 year minimum (7Q10) flow. In addition to outdoor watering restrictions, other water conservation measures specific to a community may be adopted by the community or ordered by EPD.

EPD can issue an emergency order to a community or region of the state (unless the community voluntarily adopts the ban) stopping all outdoor use of water including lawn and garden watering and car washing. Businesses using high volumes of water such as car washes and nurseries may be put on significant reductions. This step could be implemented earlier if measures are not effective and if a community has very low water pressure or loss of service.

EPD can also issue an emergency order to a community or region of the state (unless the community voluntarily adopts the rationing) prioritizing the use of water for essential purposes only. Essential services are health care, sanitation and cooking needs. Commercial and industrial uses will be restricted and outdoor water use will be banned. This will be implemented if earlier actions fail to prevent loss of user service.

During the multi-year drought of 1998-2000, the Environmental Protection Division notified communities in fifteen counties of the metro Atlanta area to restrict outdoor watering for a twelve hour period, with an odd and even watering schedule. The remaining 144 counties were also notified to restrict outdoor watering for a six hour period. These actions are considered the first phase of the emergency water shortage plan. In several instances, individual communities agreed by consent order to more restrictive measures including total outdoor watering bans.

EPD currently delegates the responsibilities for drought contingency and water conservation plans to local governments through permit conditions. The water conservation plans are intended to maintain reasonable and efficient levels of water consumption with measures to identify leaks and efforts to reduce overall water consumption. The drought contingency plans assist the local government with a structured process for prioritizing water use to help preserve the capacity of the water supply capacity or to manage the water supply infrastructure. The local government's flexibility to allocate its water allotment has enabled each jurisdiction to meet its site specific needs and preferences.

Recommendation

The Drought Management Plan will provide specific steps to assign priorities for water use during droughts. This will also include specific triggers (rainfall, groundwater levels, streamflows, etc.) to start water use restrictions according to established priorities. This will be based on existing law. Also water conservation and strong public awareness programs will be part of emergency water plans. Finally, the drought management plan should address the priority of water usage for the "green industry" during droughts.

The Board of Natural Resources will summarize this portion of the Drought Management Plan for the Joint House/Senate Study Committee and provide a briefing paper later in 2001.

The Board of Natural Resources strongly recommends that the Joint House/Senate Study Committee consider the passage of legislation which establishes the priorities governing allocation of water use:

1. Potable water for human consumption;
2. Sufficient streamflows to maintain and preserve Georgia's rivers and streams in order to serve the water needs of present Georgians and future generations.

Additional State Funding Needed to Implement

This will be identified in the upcoming briefing paper.

PRIVATELY OWNED PUBLIC WATER SYSTEMS

Applicable Law or Regulation

- Public Law 96-502, the Federal Safe Drinking Water Act
- O.C.G.A. 12-5-179 provides for permitting of public water systems
- DNR Rule 391-3-5-.05 and .17 provide for approvals of new public water systems.

Discussion

Approximately 65% of the 2,570 public drinking water systems (those serving 25 or more people at least 60 days of the year) in Georgia, that are permitted and regulated by EPD are privately owned. Approximately 1,050 of these privately owned systems are community systems (CWSs) serving about 188,000 of Georgia's residential population. In comparison, there are currently 620 permitted governmentally owned community water systems serving more than 6,370,000 persons. While many privately owned systems do a good job, a significant percentage of privately owned systems violate drinking water rules and regulations much more frequently than governmentally owned systems. Furthermore, too many customers receive poor service from private water system owners.

In response to this history of customer complaints from privately owned public water systems and the owners repeated failure to address the complaints in a timely and adequate manner, a Georgia Senate Study Committee was commissioned in 1996 to investigate and report on state-wide problems associated with small privately owned CWSs. The Committee's findings confirmed that:

1. Privately owned CWSs have more violations than governmentally owned CWSs.

2. A significant percentage of customers of privately owned CWSs receive poor service from system owners. Many owners respond poorly to customer complaints and requests for service. There is little or no accountability to the customer and owners can raise water rates at any time.

In order to address the problems, the Study Committee recommended that EPD adopt the necessary rules and regulations needed to ensure that all public water systems, including privately owned CWSs are designed, constructed, and operated in such a manner as to comply with all applicable drinking water regulations and provide an acceptable level of water service on a continuous basis.

At the same time Georgia was investigating the poor service provided by many private water systems, the 1996 Federal Safe Drinking Water Act (SDWA) Amendments were passed by Congress in part because of significant problems small public water systems (the majority of which are privately owned) across the nation were having providing safe and reliable drinking water to their customers. The 1996 SDWA Amendments emphasize prevention and assistance to resolve these problems and require States to develop and implement the following:

- A program to ensure that all new community water systems and non-transient non-community water systems commencing operation after October 1, 1999, demonstrate technical, managerial, and financial capacity to comply with all National Primary Drinking Water Regulations; and
- A strategy to assist all existing public water systems in acquiring and maintaining the capacity to comply with SDWA requirements.

EPD's plans to ensure that new water systems have adequate technical, managerial, and financial capacity and our strategy to assist all public water systems in acquiring and/or maintaining adequate capacity have been developed and approved by EPA. Also, water conservation, even for small systems, must be stressed.

Through the implementation of Georgia's Rules for Safe Drinking Water, the "Minimum Standards for Public Water Systems" and the new changes to the operator certification requirements for small public water systems, EPD is trying to ensure that new public water systems, whether publicly or privately owned, will be better constructed and operated to meet the requirements of the existing and future drinking water regulations.

With regards to the many poorly operated public water systems, EPD will continue to implement and/or support the many programs and activities, such as technical assistance, operator training and certification, peer review that help water systems improve their capacity to operate and comply with drinking water regulations. For the water system not willing to comply, EPD will move forward with more compliance and enforcement, including more media exposure of those privately owned systems not meeting their obligations to the public. EPD's enforcement includes orders, civil penalties under the Safe Drinking Water Act and such penalties can be increased for repeat violations. EPD will also look at other means, such as attractive funding through the Drinking Water State Revolving Fund or other programs, to encourage local government to provide water service.

Recommendation

To slow the proliferation of small privately owned drinking water systems (which have the higher incidence of inadequate service and non compliance with Safe Drinking Water Rules), a strong State policy that reduces the number of new privately owned water systems is needed. This policy could be achieved through rules or amendments to the Safe Drinking Water Act. The policy should:

1. Encourage, through incentives, local governments to expand existing or create new water systems to serve future water supply needs.
2. Encourage local governments, through incentives, to take over the operation of poorly operated privately owned systems.
3. Discourage new privately owned water systems where reasonably available local government alternative exist, and provide State oversight on the water fees charged to the customers of these privately owned systems and on the quality of service provided.

Additional State Funding Needed to Implement

DNR has received three additional staff positions in the FY 2002 budget and needs three more to carry out this additional work.

ASSURE A RELIABLE AND ADEQUATE WATER SUPPLY IN GROWTH AREAS WITH WATER SUPPLY RESERVOIRS

Applicable Law or Regulation

- O.C.G.A. 12-5-23 provides the Board of Natural Resources authority to manage water in Georgia.
- O.C.G.A. 12-5-470 The Georgia Water Supply Act provides the Department of Natural Resources the authority to design, construct, own and operate regional water supply reservoirs.

Discussion

The Piedmont region of the State is a plateau extending from the foothills of the Appalachian Mountains to the Coastal Plain. Precipitation varies throughout region, but is greatest in the north, with an annual average of almost 50 inches per year. The Piedmont region comprises nearly one-third of the total land area of the state. This region has a fractured rock geology, with relatively unreliable and unproductive groundwater aquifers.

The Piedmont region also has about 65% of Georgia's 8.2 million persons, and from 1990 to 2000, this region accounted for 1.46 million of Georgia's 1.71 million population growth.

River basins in the region include the Tallapoosa, Chattahoochee, Flint, Ocmulgee, Oconee, Ogeechee and Savannah. The region lies at the northern end of most of these river basins, so there is less water available for withdrawal and use than in areas further downstream. The same vulnerability exists with respect to reservoir storage as well – since the region lies at the upper end of river basins where drainage areas are relatively small, it takes a longer time to collect and accumulate water for storage.

Additional vulnerability includes major population centers – such as the metro Atlanta region – located toward the upper end of the Piedmont, where streams are relatively small. In addition, developed areas also pose increased risks for ground and surface water pollution, threatening the quality of water supplies in the region.

The most significant contribution to reducing drought vulnerability among surface water sources is the development of community and multi-jurisdictional reservoir projects in the Piedmont region of Georgia. The most positive impact of reservoirs is reducing drought vulnerability. The negative repercussions of insufficient water supply during dry weather are hard to ignore. The construction of reservoirs creates environmental impacts and is opposed by some citizen environmental groups. It is possible that these environmental impacts can include impacts on freshwater flows into coastal waters. These should be thoroughly evaluated prior to final decisions on construction of new reservoirs.

Where local reservoir projects have been completed, surrounding communities have been able to maintain adequate water supplies despite the prolonged drought. On the other hand, many communities with critical or threatened water supplies in the

current drought are located near pending reservoir sites. All twenty-four of the year 2000 critical and watch communities that attributed their water supply limitations to a lack of sufficient reservoir storage would benefit from new or improved reservoirs in their communities, or expanded interconnections to neighboring communities with reservoirs.

New or increased reservoir storage reinforced with effective water conservation would allow many of Georgia's communities, particularly those with critical or threatened water supplies, to prolong their water supplies during drought, which in turn offers improved protection and service to residents, better potential for economic growth and stability, and more effective management of water resources.

The State of Georgia has the ability to implement the Water Supply Act of 1989 by building regional reservoirs to effectively address the long-term water supply needs of Georgia's communities. At the same time the State can and should continue to support efforts by local government to obtain permits and funding sources for reservoirs in the Piedmont Region of the state.

The State of Georgia has legislation in place to support the development of regional reservoir projects, but it has met with limited success for various complex reasons. The 1989 Georgia Water Supply Act authorized DNR to initiate water supply projects-such as regional reservoirs and secure funding for the acquisition of property, construction, reconstruction or improvement of regional reservoirs to meet the long term water supply needs of multiple jurisdictions. Thirteen regional reservoirs were originally proposed for funding. The original thirteen proposed reservoirs were reduced to six in January 1992.

To date, only one project – the West Georgia Regional Reservoir (WGRR) – has received funding through the General Assembly. The West Georgia Regional Water Authority submitted an application to the Corps of Engineers for the required federal permit in May 1999 to provide water supply for only the Tallapoosa River Basin. The review of this application is underway and more work is necessary to complete the application.

To date, the 1989 Georgia Water Supply Act authorizing funding for regional reservoirs has not resulted in the construction of any new reservoir projects. As a result, many communities have taken it upon themselves to move forward with independent and multi-jurisdictional reservoir projects without the benefits of funding support from the state.

Unfortunately, many more communities have limited capabilities to coordinate and fund their own reservoir projects. For many regions in the state, reservoir projects facilitated by the Georgia Water Supply Act and designed to meet water demand with minimum impact to the environment may be the most cost effective option for reducing drought vulnerability and water pressures produced by population growth. The DNR budget does not include funds appropriated for this purpose, but new regional reservoir applicants can request funding directly from the General Assembly for projects meeting criteria set forth in the Georgia Water Supply Act. The State can issue bonds for any regional reservoirs authorized by the General Assembly.

The concepts promoted by the 1990 regional reservoir plan are still good today. The regional reservoirs would be located throughout the Piedmont region of the State and would help to alleviate demands on the Chattahoochee/Lake Lanier system with the development of large storage impoundments in the adjacent river basins. The population projections and water demand projections will need to be updated. Additional drought proofing in the Flint River Basin needs to be incorporated.

Unfortunately, the current process of planning, obtaining required federal dredge and fill permits under Section 404 of the Federal Clean Water Act and constructing reservoir projects is arduous. Years of delays due to permitting processes and funding shortfalls have resulted in insufficient storage capacity for many communities in Georgia, despite major planning efforts. There are many new mitigation requirements, including wetlands, and archaeological and historical sites that make the process very costly. DNR is developing a Task Force to assist local governments in selection of reservoir sites and to lessen permit application review times.

Recommendation

The State of Georgia should fund implementation of the Water Supply Act of 1989 to build regional reservoirs to effectively address the long-term water supply needs of Georgia's communities. The funding should be distributed to cover several projects and not be tied up with the success or failure of one project. Funding support for environmental mitigation of water supply reservoirs should be extended to projects already being planned as an incentive to continue the efforts.

Funds have been provided to DNR in the State's FY 2002 budget to initiate work on a two-front, concurrent approach regarding water supply, and water conservation. Funds will be used to re-evaluate the 1990 Regional Reservoir Plan as the basis of determining where the State of Georgia might be able to consider constructing reservoirs in the areas of highest need. Concurrently, funds will be directed to an initiative to focus on water conservation in conjunction with reservoir development.

The Department of Natural Resources will establish criteria for local governments to be eligible for water from regional reservoirs. An important criterion will be documentation of an effective water conservation program (including conservation pricing) by a local government prior to its use of regional reservoir water.

DNR should also use broadbased stakeholder groups to help locate reservoirs to minimize negative environmental impacts.

Additional State Funding Needed to Implement.

The cost for the regional reservoir and water conservation initiative in FY 2002 totals $650,000 for DNR. This money is available. Such funding will establish a program which will be assigned to the Commissioner's Office of DNR and consist of one or two staff persons and contractors to assist in regional reservoir planning and water conservation.

During the second year, DNR would likely get more into environmental assessment work along with engineering and design that would lead up to land

acquisition as plans are made to begin the process of actually developing the reservoirs. Obviously, a big step will be the process of securing the 404 permits, and that will require a great deal of planning and coordination.

REAL-TIME WATER MANAGEMENT

Applicable Law or Regulation

- O.C.G.A. 12-5-23 provides the Board of Natural Resources authority to manage water in Georgia.

Discussion

Georgia is blessed with water resources: 70,150 miles of rivers and streams, 425,382 acres of lakes, 854 square miles of estuaries, 100 miles of coastline, 4,500,000 acres of freshwater wetlands, 384,000 acres of tidal wetlands.

In terms of water quantity monitoring and real-time water management, the technology has now evolved (and Georgia Tech is a leader in this) to manage water resources on a real-time basis. This involves the use of sophisticated stream flow prediction computer modeling, stream flow gages, and weather stations providing continual information into a centralized computer system. With this tool, day-to-day water pumpage, reservoir releases and other water management decisions could be made to optimize water use. This tool could also be used to trigger water use restrictions developed as part of water conservation programs. It is also very useful for drought predictions.

Recommendation

At the present time the USGS conducts flow monitoring at a number of locations across Georgia. Georgia helps to support this work by providing contract funds as a part of a cooperative monitoring agreement between the USGS and the Georgia EPD. At the present time the USGS conducts flow monitoring work at approximately forty-two locations where the results are available via satellite telemetry. At another seventeen stations the results are available via phone telemetry. Flow monitoring is conducted at approximately eighty-nine locations where there is currently no telemetry. The USGS has assessed these stations and suggests upgrading fifty-four of the eighty-nine locations to provide for satellite telemetry.

Telemetering of river flow monitoring stations is the crucial first step in starting real time water management. If real-time water decisions are to be made, the decisions maker must know the river flows at the time of the decisions. Since 89 flow gauges have no telemetry, the flows of the rivers at these gauging points are unknown until a month later when after the gauge data is manually collected and analyzed. After the first step of telemetering is accomplished, EPD will work with Georgia Tech and others to carry out the next steps.

It should be noted that Federal funding from USGS may be reduced. Governor Barnes and the Board of Natural Resources have urged the Georgia Congressional delegation that USGS funds should be enhanced, not reduced.

Additional State Funding Needed to Implement.

USGS estimates the cost of upgrading five streamflow sites to satellite telemetry would cost approximately $55,000 with an additional allocation of $50,000 for spare parts. Using this as a basis, the costs associated with upgrading fifty-four stations would be approximately $1,094,000. This expenditure would cover the capital costs of installing flow measurement equipment compatible with satellite telemetry. Each year thereafter, the equipment would require operation and maintenance. In addition annual operating costs increase approximately 6% per year according to the USGS. Thus, the approximate second year operation and maintenance costs for the additional fifty-four stations (at $19,000 per location) would be $1,026,000. The total costs would be $2,120,000. These costs are a first step in real-time water management. The next steps are computer modeling and day-to-day operational systems. Funding for these steps is unknown at this time.

WATER QUALITY MONITORING

1. Statewide

Applicable Law or Regulation

- O.C.G.A. 12-5-23 (c) 4 – Survey the waters of the state to determine the extent, character and effects of existing conditions of pollution.
- O.C.G.A. 12-5-23 provides the Board of Natural Resources authority to manage water in Georgia.

Discussion

EPD or its predecessor (The Water Quality Control Board) has been monitoring water quality since the late 1960's. Today, EPD operates a monitoring program consisting of 145 monthly monitoring stations costing $1.9 million annually. Water quality monitoring is performed for a variety of reasons:

- Characterize the quality of Georgia's waters.
- Locate stream segments which have excessive pollutants so corrections can be initiated.
- Be vigilant for declining water quality and document improving water quality.
- Advise citizens on water quality.
- Make informed water decisions.

EPD water quality monitoring stations are spread throughout the State but more intensive monitoring is performed on the following waters:

- Each major basin once every five years.
- Heavily used streams and lakes.
- Streams and lakes subject to greater stress.
- Larger rivers and lakes.

The existing monitoring program must be enhanced since the current monitoring network covers only a small portion of Georgia's waters. In fact, Georgia compares poorly with other Southeastern states in terms of water quality monitoring expenditures.

Southeast States Estimated Annual Water Quality Monitoring Expenditures

State	**Cost**
Florida	$ 6,500,000
Kentucky	$ 4,400,000
North Carolina	$ 4,400,000
South Carolina	$ 3,600,000
Alabama	$ 3,600,000
Tennessee	$ 2,500,000
Georgia	**$ 1,900,000**

Recommendation

Although it might be advantageous to monitor each stream intensely, say once every five miles, this is not realistic since the annual cost would be around $200 million yearly. Also, many streams do not have water quality stresses to justify the intensive sampling.

Instead, the current monitoring program should be increased from 145 stations to 363 stations. This would provide much more data. At least half of the new monitoring stations should be located using a statistical sampling design called EMAP that uses randomly selected monitoring sites over a basin. The other half of the new sites would be located on heavily used streams and lakes.

Additional State Funding Needed to Implement

The additional water quality monitoring will cost $4 million yearly.

2. Chattahoochee River State-of-the-Art Water Quality Monitoring Network

Applicable Law or Regulation

- O.C.G.A. 12-5-23 provides the Board of Natural Resources authority to manage water in Georgia.
- O.C.G.A. 12-5-23 (c) 4 – Survey the waters of the state to determine the extent, character and effects of existing conditions of pollution.

Discussion

EPD currently conducts monthly monitoring at 13 locations in the Chattahoochee River watershed between its headwaters and Lake Lanier. Monthly monitoring (May-October) is conducted by the EPD at 11 locations in Lake Lanier. Between Lake Lanier and West Point Lake, EPD conducts monthly monitoring at 18 stations with 12 of the stations being on the Chattahoochee River and 6 stations on tributaries. Continuous automatic monitoring for flow, dissolved oxygen, temperature, conductivity and pH is conducted at one site (Chattahoochee River at Georgia Highway 92). Monthly monitoring (May-October) is conducted by the EPD at one location in West Point Lake. In the Chattahoochee River between West Point Lake and Columbus, EPD conducts monthly monitoring at 3 locations. In addition to this work the United States Geological Survey (USGS) conducts continuous streamflow measuring at 23 locations in the Chattahoochee Basin. Most of these streamflow-monitoring locations have modern telemetry.

In summary, on an annual basis, EPD provides for monthly monitoring at 46 locations in the Chattahoochee River basin between its headwaters and Columbus and the USGS provides for continuous streamflow measuring at 23 locations.

In 2000 when the Chattahoochee River was one of the basins for monitoring focus, the monitoring network between the headwaters and Lake Walter F. George was expanded to include monthly monitoring at a total of 77 locations. This additional level

of monitoring is conducted every five years as a part of the Georgia River Basin Management Planning Program.

The existing water quality monitoring in the Chattahoochee Basin is more intense than other parts of the State. This is necessary given the large population that depends on the river for drinking water and given the intensive recreation on the river and its reservoirs. Also, the river receives a large amount of treated wastewater.

This proposal is to expand this monitoring program to provide for a state-of-the-art water quality monitoring network by increasing and adding flow measurement (stage, streamflow) with real-time satellite telemetry, rainfall stations, additional continuous monitors augmented with discrete sampling, automated data delivery to the public, visual data displays, and post-collection data analysis and modeling. The proposal would be implemented in phases.

Phase 1 would include upgrading of existing stations to water quality continuous monitors with satellite telemetry and rainfall and install rainfall stations. Initial year one costs for Phase 1 are estimated to be $460,000 with continuing O&M costs of $368,000 for a total of $828,000.

Phase 2 would include synoptic sampling once in the winter season and once in the summer season with additional storm sampling. Costs for Phase 2 are estimated at $1,642,000 with continuing O&M costs for Phase 1 for a total of $2,030,000.

Phase 3 would include a basic data report and site analysis ($150,000), the addition of up to 20 sites with continuous monitors ($1,540,000), storm sampling ($74,840), in-depth analysis and reports (3) ($450,000), and continuing O&M costs for Phase 1 ($415,160) for a total of $2,630,000.

Phase 4 would include continuing O&M costs ($1,330,000) and storm sampling ($80,000) for a total of $1,410,000.

Phase 4 costs would then be annual costs to continue the program in future years.

Recommendation

It is recommended that Georgia support the USGS and provide funding to implement the Chattahoochee River State-of-the-Art Water Quality Monitoring Network.

Additional State Funding Needed to Implement

Costs are estimated in phases as noted above with a total estimated cost of $6,900,000 in the first four years and $1.4 million annually thereafter.

3. Coastal.

Applicable Law or Regulation

- O.C.G.A. 27-4-193 – Water quality under the National Shellfish Sanitation Program.
- O.C.G.A. 12-5-320 – 12-5-329 – Georgia Coastal Management Act

Discussion

Coastal Resources Division (CRD) of DNR monitors coastal water quality. In addition to monitoring water quality associated with shellfish (oyster and clam) harvesting as required by the National Shellfish Sanitation Program, CRD monitors coastal swimming beaches on Tybee, Sea, St. Simons, and Jekyll Islands. CRD also conducts assessments of nutrients and Pfisteria and monitors waters, sediments, and biota for a large suite of contaminants under EPA's Coastal 2000 Program. CRD spends $170,000 in state funds and another $150,000 in federal funds to conduct this monitoring ($100,000 in federal funds is short-term money.)

Recommendation

Coastal water quality monitoring should be increased to add additional stations for shellfish in order to open additional areas to shellfish harvesting. Monitoring for contaminants, nutrients, and Pfisteria will end when the federal programs that support this effort end. The state should continue and expand this monitoring effort on the coast.

Additional State Funding Needed to Implement

The additional water quality effort in coastal Georgia will cost $150,000 annually in contracts and require three additional staff persons. Partial funding for this effort could be obtained by charging a fee for construction and maintenance of private recreational docks in coastal Georgia. There is no cost at present for permitting or maintenance of private docks.

ATTAIN WATER QUALITY STANDARDS
(SPECIFIC STANDARD REVISIONS)

Applicable Law or Regulation

- Public Law 92-500 Federal Clean Water Act, Section 303 relating to water quality standards
- O.C.G.A. 12-5-23 provides the Board of Natural Resources authority to manage water in Georgia.
- O.C.G.A. 12-5-23 (c) Adopt rules and regulations governing water use and water quality standards.
- DNR Rule 391-3-6-.03 Water Use Classifications and Water Quality Standards.

This briefing paper is divided into three sections: Fecal Coliform Bacteria, Dissolved Oxygen, and Nutrients.

Fecal Coliform Bacteria

Discussion

In 1989, the United States Environmental Protection Agency (USEPA) changed its interpretation of the Clean Water Act goal to include the requirement that all waters in nation to have standards to protect the use of swimming or primary contact recreation. In order to comply with this change in Federal requirements, the Board of Natural Resources adopted in December, 1989, revised standards which established a fecal coliform standard of a geometric average (of four samples collected over a thirty day period) of 200 bacterial counts per 100 ml for all waters designated for fishing or drinking water to apply during the months of May-October (the recreation season). Fecal coliform bacteria counts are also important in evaluating waters for shellfish harvesting and standards for this have been established by the Interstate Shellfish Sanitation Conference.

Coliform bacteria live in the intestinal tracts of warm-blooded animals including humans. These organisms are excreted in extremely high numbers, averaging 1.5 billion coliform per ounce of human feces. Pathogenic bacteria also originate in the fecal material of diseased persons. Therefore, waters with high levels of fecal coliform bacteria represent potential problem areas for swimming. However, there is no positive scientific evidence correlating elevated fecal coliform count with transmission of enteric diseases. The fecal coliform bacteria test is only an indicator test, not a verification that harmful bacteria are present. In addition, these bacteria can originate from any warm-blooded animal or from the soil.

Monitoring programs have documented fecal coliform levels in excess of the recreation standard in many streams in urban areas, agricultural areas, and even in areas not extensively impacted by man such as national forest areas. This is not a unique situation to Georgia as similar levels of fecal coliform bacteria have been documented in streams across the nation.

Fecal coliform concentrations in most Georgia streams now reflect watershed conditions and will generally increase when stormwater runoff occurs. Many concentrations measured on these days while in excess of the standard are in the low hundreds or thousands contrasted with the concentrations measured in the past in the tens and hundreds of thousands. Historically, there have been few serious illnesses documented to be associated with swimming in Georgia waters. As the concentrations of coliform bacteria are generally less than in the past, and few illnesses documented, the problem or question of concern is what level of bacteria actually constitutes a health problem. Or, are there other indicators or tests that would better characterize the health issue and allow the question regarding swimming in a creek or river to be answered.

Recommendation

The current EPA criteria documents indicate that the numerical recommendations apply to steady state or non-rainy conditions. The solution may include a change in sampling procedures to provide for sampling only during steady state conditions. This procedure is allowed by EPD and is used in Alabama. This change in sampling procedure could be difficult, but doable to implement due to sampling and laboratory schedules. Fecal coliform sampling involves collecting four samples over a thirty-day period and the calculation of a geometric average for comparison to standards. Canceling and rescheduling sample collection would be a difficult task considering the statewide nature of the sampling program.

The second step following the development of an indicator, a test, or a procedure to assess a river or stream for suitability for swimming will be to develop and test best management practices to reduce and eliminate the sources of the problem. EPA and the States will need to invest massive resources to implement best management practices to insure that all streams and rivers across the nation are safe for swimming.

Dissolved Oxygen

Discussion

Dissolved oxygen concentrations are naturally low in many streams, rivers, and estuaries in South Georgia. A similar situation occurs in other states in the southeast. This natural condition is not reflected in Georgia water quality standards. South Georgia waters are expected to achieve the same dissolved oxygen levels as streams in other parts of the state. This situation resulted in 99 stream segments being listed for the Ochlockonee, Suwannee, Satilla, and St. Marys Rivers on the Georgia 2000 305(b)/303(d) lists of waters not fully meeting water quality standards. The result of the listing process was that a TMDL was proposed for each of these segments 2000. Each of the TMDLs when finalized in early 2001 will be implemented and significant resources will be required to achieve the current standards.

Recommendation

Studies must be conducted across South Georgia to establish site-specific criteria for individual streams, rivers, and estuaries. This will require extensive data collection and water quality modeling to document and establish natural conditions in these areas.

Nutrients and others

Discussion

Future issues on the horizon being investigated by EPD are nutrient standards, sediment standards, and biological standards or criteria. In some ways both the nutrient and sediment standards may be approached by developing biological criteria.

Nitrogen and phosphorus (nutrients) may have impacts on water quality and biological communities. The EPA will propose guidelines for nutrient standards for a number of areas in the United States in the near future. Parts of Georgia will be included in the proposal. These guidelines will be general in nature and will apply to ecoregions that may cross and be included in multiple states. The guidelines will require significant study on the part of the States to determine if the EPA default values are applicable across an entire ecoregion.

Sediment may have impacts on water quality and biological communities. Sediment in streams is a result of the movement of historic bed loads, bank subsidence and erosion and sedimentation from current land disturbing activities in the watershed. Historically, all across Georgia lands were cleared for cotton planting a generation ago. In addition, streams were channelized and bends and meanders were removed from streams. The impacts of these practices are still evident in the bed load in many streams across Georgia. These issues make the establishment and implementation of sediment standards a difficult task.

Recommendation

Georgia and other states will need to spend significant time and resources to review and assess nutrient guidelines proposed by the EPA. At the same time the States will need to assess the need for nutrient standards. In Georgia, nutrient issues have been addressed on a case-by-case basis. It may be more appropriate to use this approach rather than taking a one size fits all approach as will be proposed by the EPA.

Georgia needs to continue to assess the impacts of sediment on biological communities and be aggressive in implementing sediment control programs. In 2001 a number of TMDLs will be developed which will address sediment impacts on fish communities. Any TMDL or standard setting process must take into consideration historic bed load, shifting bed load and bank subsidence in addition to erosion and sedimentation issues caused by land disturbing issues.

Additional State Funding Needed to Implement

Additional funding is needed in two areas. First, scientific studies to perform fecal coliform research specific in Georgia, and second, continuing funds to sample, test and evaluate the new standards. The first cost would be a one-time amount of $750,000 and the second about $50,000 yearly.

ASSURE WASTEWATER CAPACITY IN GROWTH AREAS

Applicable Law or Regulation

- O.C.G.A. 12-5-23 (c) 5 – Prepare and develop a general comprehensive plan for the prevention of any further pollution and reduction of existing pollution after a thorough study of existing practices and available research.

Discussion

It is essential that sewage from growth areas be properly managed to avoid stream degradation and to avoid the need for EPD to impose sewer connection moratoria.

Minimizing the amount of sewage to be treated through the use of water conservation measures is one of the first steps that communities can take to provide themselves flexibility in managing their water and wastewater needs. Beyond conservation measures, the capacity for growth management can be categorized into four main elements: (1 is EPD's responsibility; 2-4 are local government's responsibilities)

1. Allocation of receiving stream assimilative capacities. EPD could require existing wastewater plant owners to meet state-of-the-art technology treatment limits, or develop treated wastewater reuse systems. Reuse systems would allow more efficient use of raw water withdrawn from state waters and reduce the amount of treated wastewater that would need to be discharged to those waters. As long as instream flow needs are met, reducing wastewater discharge will make it easier to maintain water quality during drought conditions.
2. Adequate long term planning for anticipated growth.
3. Wastewater collection and treatment infrastructure.
4. Establish local watershed protection plans to control non-point source pollution impacts resulting from growth. Key to any protection plan are the following elements:
    - an assessment of existing conditions,
    - an analysis of causes of any existing water quality violations,
    - an evaluation of alternatives available to maintain compliance with water quality standards during and after growth,
    - selection of specific alternatives to be implemented, and
    - on-going monitoring to verify that the alternatives are fulfilling the goal of maintaining compliance with water quality standards.

Recommendations

Consider pollutant trading as a mechanism to provide for new or additional stream assimilative capacity. Two levels of trading should be examined. The first, which EPD has been doing for several years, is to upgrade an existing facility that allows an increase of wastewater flow with no increase (or a reduction) in the amount of pollutant load being discharged. A second level of trading that should be evaluated

involves trading non-point reductions for increased treatment plant capacity in streams where no additional assimilative capacity is available.

Ways to encourage the reuse of highly treated wastewater should also be examined as the reuse of reclaimed water can provide wastewater capacity and alleviate some of the potable water demands. Potential ways to encourage such reuse could include:

- Require new large water use industries to use reclaimed water if available and compatible with their needs.
- Require new developments to install dual piping so that when/if reclaimed water becomes available, the irrigations systems can be connected to the reclaimed lines. Funding incentives would be helpful for this option.
- Revise the plumbing code (Department of Community Affairs) to allow use of reclaimed water for fire protection and/or toilet flushing.
- Allow cold season discharges for facilities providing reclaimed water since during those periods of time Georgia generally receives its greatest rainfalls and irrigation customers have much less need for the reclaimed water.
- Issue ground or surface water withdrawal permits only after the possibility of using reclaimed water, if it is reasonably available, has been considered.

Communities are already required to develop watershed protection plans for their service areas whenever there is an increase in wastewater treatment capacity. Because water resource issues such as water supply, water quality, fish habitat, etc. are closely linked within a watershed and are impacted by upstream activities and because watersheds generally do not follow political boundaries, it would be appropriate to look at ways for communities to deal with these issues on a watershed basis rather than a jurisdictional basis. This could possibly be handled by:

- Creation of water planning districts which would oversee and approve watershed planning activities, or
- Modify the growth strategies requirements to allow the Department of Community Affairs to require coordination of planning for everyone in the water or sewer business, or
- Have Regional Development Centers be responsible for getting the communities that support them to coordinate watershed protection plans across the watersheds.

Regardless of the method chosen to coordinate activities throughout a watershed, the point should be to bring the jurisdictions involved to the table to reach consensus on the protection plans chosen by each.

Additional State Funding Needed to Implement

GEFA now provides loans and this should continue. No additional State funding is needed immediately. However, funding for implementation of the wastewater plan for the North Georgia Metropolitan Water Planning District must be identified over the next two years.

DEVELOP AND IMPLEMENT EROSION AND SEDIMENTATION CONTROL IMPROVEMENTS

Applicable Law or Regulation

- Public Law 92-500 Federal Clean Water Act, Section 402 permit
- O.C.G.A. 12-7 – Georgia Erosion and Sedimentation Act of 1975, as amended
- O.C.G.A. 12-5-23(O) provides for stormwater permitting
- DNR Rule 391-3-7 – Erosion and Sedimentation Control Rules and Regulations
- DNR Rule 391-3-6-.16 – Storm Water Permit Requirements

Discussion

Two programs are in place to address erosion and sedimentation occurring from selected land disturbing activities. One program is based on the Georgia Erosion and Sedimentation Control Act (ESCA). The second program is based on the Federal Clean Water Act.

The Georgia Erosion and Sedimentation Act was signed into law in 1975 and has been amended several times since that date, most recently 2000. 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. The Act requires an erosion and sedimentation control plan and a land disturbing activity permit for sites greater than 1.1 acres. It provides for monetary penalties of up to $2500 per day, enforced by EPD or a local issuing authority.

In 1972, Congress passed The Clean Water Act, (CWA) which established the National Pollutant Discharge Elimination System (NPDES) for controlling the discharge of pollutants to U.S. waters. In 1974, the state of Georgia was delegated authority to issue NPDES permits. The USEPA Phase I Storm Water Rules under the CWA in 1990 required that storm water discharges from construction sites be controlled through a general NPDES permit by no later than November 1992. After eight years of legal challenges, EPD issued General NPDES Permit No. GAR100000 on June 12, 2000, with an effective date of August 1, 2000. This general permit regulates storm water discharges from construction sites which disturb 5 or more acres of land. The permit requires an erosion, sedimentation and pollution control plan and a comprehensive monitoring plan, and provides for maximum penalties of $50,000/$100,000 per day if enforced by EPD and $27,500 if enforced by EPA or a third party.

There is confusion surrounding the existing regulatory process for erosion and sedimentation control. This confusion is the result of the involvement of multiple agencies, some duplication of requirements and the overlapping of the program required by the ESCA with programs of the new NPDES Permit.

Agencies involved with the implementation of the Erosion and Sedimentation Act include the State Soil and Water Conservation Commission (SSWCC), local Soil and Water Conservation Districts (SWCD), Natural Resources Conservation Service

(NRCS) of the U. S. Department of Agriculture city and county governments, and EPD. All of these agencies have various roles for review and approval of erosion and sedimentation control plans, issuance of land disturbing activity permits, and enforcement. There are currently 231 cities and 132 counties who have been certified under the State ESCA as local issuing authorities. EPD is the issuing authority in 290 cities and 27 counties. The role of local governments in erosion and sedimentation control is very important and should not be diminished.

A complaint resolution procedure is in place to attempt to resolve erosion and sedimentation control problems. A complainant is referred to the local issuing authority if the project is in a jurisdiction, which has a local erosion and sedimentation control ordinance. If there is no ordinance then the complaint is referred to the appropriate EPD Regional Office. If the complainant is not satisfied with how the local issuing authority handles the situation, then they are referred to the SSWCC Regional Representative who has jurisdiction in that area. If the the SSWCC representative is unable to achieve compliance at the site by working with the complainant and the issuing authority, then a recommendation, with appropriate documentation is made by the SSWCC Executive Director to the EPD Director that the local issuing authority be considered for decertification. This is a slow and convoluted process and has resulted in continued sedimentation of State waters.

The following corrective actions are ongoing or newly launched which are proposed to improve the erosion and sedimentation situation:

- The Dirt II Erosion and Sedimentation Control Technical Study Committee, which was formed in 1996 to identify cost-effective methods to control erosion and sedimentation, is nearing completion and will have final recommendations in the summer of 2001.
- The mandatory enforcement provisions of House Bill 1426, passed in 2000, are currently being adopted into local ordinances. EPD sent notices to the 363 local issuing authorities and to the 5 EPD Regional Offices explaining the requirements of HB 1426.
- On February 1, 2001 EPD requested that the Department of Audits conduct a performance audit of both the local issuing authority program under the Georgia Erosion and Sedimentation Control Act and the NPDES General Permit under the Georgia Water Quality Control Act. This audit is underway, and scheduled for completion no later than October 1, 2001.
- Education programs are already in place for the Erosion and Sedimentation Act in the form of quarterly training sessions offered through the University of Georgia's continuing education department. EPD staff provides in-house training for the EPD Regional Offices on an as needed basis. Through March 2001, EPD staff have participated in 26 outreach programs and have conducted several in-house training sessions on the NPDES General Permit.
- EPD is initiating an overview of one local erosion control program which has been determined to have sufficient shortcomings of such magnitude that the delegation of the local program may be rescinded and administration of the program returned to EPD. Administration of the program will include monetary penalties and stop work orders in

accordance with HB 1426, and will continue for at least 6 months or until the local erosion control program is improved and re-certified.

- New stream buffer variance rules were adopted by the Board of Natural Resources in October and December 2000 and are currently being implemented. These rules give specific criteria for the consideration and issuance of stream buffer variances. These rules were adopted as a result of changes made to the Erosion and Sedimentation Act in 2000 by HB 1426, and will make it more difficult for projects to encroach into the stream buffer.

Initially, the focus of EPD's implementation of the NPDES General Permit was on education and outreach. EPD is now implementing an aggressive enforcement effort focused primarily, but not exclusively, on the metro-Atlanta region. This effort will be complaint driven, usually investigating sites where the local erosion and sedimentation control issuing authority has been unsuccessful at ensuring the proper design, installation and maintenance of BMPs. Enforcement actions will include standardized monetary penalties for various violations of the NPDES General Permit. This enforcement effort under the NPDES General Permit will require six full-time inspector positions and a supervisor. EPD staff will be temporarily reassigned for this effort. The US EPA will also contribute personnel to this effort.

Recommendation

DNR will carefully evaluate for implementation all of the recommendations of the performance audit currently being conducted by the State Department of Audits. DNR will also carefully evaluate for implementation the recommendations from the Erosion and Sedimentation Control Overview Council.

Based on the above, the Board of Natural Resources will recommend specific programmatic, regulatory and legislative changes in order to reduce the amount of sediment being discharged into State waters and to have these governmental programs work more efficiently and effectively. The Board will provide a briefing paper to the joint Committee in late 2001 giving specific recommendations for improvement, some which may require amendments to the Erosion and Sedimentation Control Act.

Additional State Funding Needed to Implement

Unknown at this time. The amount of additional state funding will depend on the recommendations above. However, increased enforcement will take considerable new staff which will be included in the upcoming briefing paper.

IMPROVE OLD WASTEWATER INFRASTRUCTURE

Applicable Law or Regulation

- DNR Rule 391-3-6-.06 (3) (b) Any person discharging or proposing to discharge into the waters of the State any pollutant from a point source including those defined in Paragraph 391-3-6-.06(2) above, under any of the circumstances described.
- O.C.G.A. Section 12-5-30(a) provides for wastewater system permitting.

Discussion

Leaking or overflowing sewer lines and inadequate wastewater treatment facilities cause water quality problems. Improving water conservation measures can help reduce the flows through sewers resulting in fewer overflows. However, water conservation alone cannot eliminate overflowing sewer lines. Therefore, the Comprehensive Water Plan must contemplate the need for upgrading this infrastructure, Replacing antiquated facilities and sewer lines will be very expensive for local governments and their ratepayers.

Many local governments have not provided the funding to maintain and upgrade existing wastewater treatment and collection systems. The incentives for local governments to deal with the problem have historically been handled through regulatory enforcement and grants or low interest loans from the State and Federal governments.

Several options are available alone or in combination to deal with the problem.

- In the high growth areas around metro Atlanta, EPD has implemented the zero tolerance policy adopted by the DNR Board. Responding to every permit violation and sewer spill with a fine has acted as a catalyst to force local governments to provide more resources to improve treatment plant and collection system operations. This approach has been reasonably effective; but it takes a large amount of EPD resources to carry out and must be a continuing effort. In the metro Atlanta area it has taken about 8 EPD staff persons to implement the zero tolerance effort.

- A pilot of the self-audit system has been initiated by USEPA & EPD in several communities in Georgia. It is called the Management, Operations and Maintenance [MOM] program for sewerage infrastructure. This program requires local governments to honestly look at their systems using a checklist of items and provide a list of positive and negative areas. For the areas needing improvement local governments provide a voluntary approach to correct problems and a schedule for doing so. That information is then formalized in a document with the permitting authority. As long as the performance measures identified in the agreement are being met, additional regulatory actions are minimized.

- Based on work completed and/or planned by communities in the state, it is estimated that it will cost at least $500 million to upgrade or rehabilitate the existing infrastructure for the small communities Statewide. This is a one-

time cost estimate, but annual costs to continually maintain systems are also necessary.

Recommendations

In order to get sewerage systems and facilities to be brought into proper maintenance the following options should be considered in addition to the measures already in place:

- The DNR regulations can be amended to define the minimum criteria that must be included in a wastewater collection and treatment system. Items to be considered would include things like: maps of sewer system -updated every five years, hydraulic capacity on major interceptor lines measured on a regular basis, Operation and Maintenance costs set aside in the budget and a user charge system established to insure the system is fiscally sound.

- Funding for capital rehabilitation projects, especially for the communities with populations less than 10,000 people, could be provided in the form of low interest loans as well as grants through Georgia Environmental Facilities Authority. Communities with populations greater than 10,000 generally have sewage treatment plans with capacities larger than one million gallons per day. These plants are considered to be major facilities and often benefit from the economy of scale both in operation and maintenance expenses that the smaller communities don't. Regardless, decisions as to whether communities should receive a grant or a loan should include an evaluation of their financial capability. Guidance exists for this analysis that basically looks at the total annual cost of a system as a percentage of the median household income. Projects which would have a high impact on a community (considered in excess of 2% of the median household income) should be eligible for grants in addition to loans.

Additional State Funding Needed to Implement

There are three recommendations for funding:

1. The loan funds provided by the Georgia Environmental Facilities Authority (GEFA) need to be increased.
2. A grant program through GEFA should be established and funded.
3. Specific studies are needed to estimate the cost and funding sources for large metropolitan areas (such as the North Georgia Metropolitan Planning District).

PUBLIC INFORMATION AND INVOLVEMENT

Applicable Laws and Regulation

- The State statutes and DNR rules have numerous references to public involvement in the issuance of permits, approval of plans and issuance of enforcement orders.

Discussion

The word "public" can mean a number of people that share some degree of interest in a program or issue.

There are several principles that must be considered when dealing with public involvement:

- The definition of public changes with issues.
- Early public involvement is key to a successful project.
- The decision points where public involvement is needed must be identified up front.
- Timely and clear information must be available throughout the process.
- Public involvement plans should be reviewed frequently and modified as needed.

There are several types of public involvement that can range anywhere from **awareness, commenting** and evaluating proposals, actual **participation** in creating proposals, and assuming responsibility for **actions** that will achieve program goals.

The public involvement techniques are varied and must be tailored to specific projects, programs and goals. In some cases, the law or administrative procedures outline the procedures and methods. The common public involvement techniques include audiovisual presentations, citizen advisory committees, mailing lists, meetings with small or large groups, news media, publications, toll free numbers, Web sites. How the techniques are used is more important that which techniques are used.

Public participation in Georgia's water programs can result in a more informed public, improved government and good decisions. It can also be very time consuming and resource intensive, and may not achieve the desired results. Done right, it will enhance the program credibility; done poorly, it will cause damage.

Recommendation

The Comprehensive State Water Plan must include intensive and meaningful public involvement in both its preparation and implementation. Most of the implementation will be the responsibility of EPD and public involvement with EPD is critical. To that end, the Turner Environmental Law Clinic recently provided suggestions for enhanced public involvement. These are not inclusive of all valuable public involvement mechanisms but provide insight into various public involvement enhancements. The major (not all) suggestions are listed below:

- Identify appropriate stakeholders, who may be affected by an upcoming decision by nature of the group's location, purposes, or activities, allow members of the community to nominate stakeholder representatives to keep them updated and informed of all developments, and ensure that such representatives adequately reflect all aspects and diversity of affected community and individuals.
- Ensure adequate information regarding upcoming decisions reaches the public in ample time for the public to make informed and constructive contributions to the decision-making process.
- Provide accurate summaries of technical and complex documents in plain language so that the public can more fully understand the issues.
- Remove language barriers by providing translations of meetings and key documents, and advertising meetings/process in alternative languages.
- Expand outreach to include alternative media such as minority newspapers, local organizations, local radio, utility bills, fliers, religious centers, and libraries.
- Hold hearings at locations that are accessible to public transportation, local and convenient, and at appropriate times, such as evenings and weekends to avoid conflict with work hours, rush hours, and community or cultural commitments.
- Respond to all written comments submitted to EPD as well as comments made only orally at hearings on record in a timely manner.
- Publish notices and copies of the final decision and discuss the influence of the public's input in the final decisions. Use website and mailings.
- Notify the public of information and repositories and ensure they are in convenient locations for individuals dependent on public transportation.
- Provide free copies (fax, e-mail or mail) of EPD documents upon request to indigent citizens, educational institutions, and non-profit organizations.
- EPD's website should be improved so it is easier to navigate, and it should provide access to as many documents as possible, including permit public notice postings.
- Train EPD staff in the skills and techniques necessary to communicate effectively with individual, groups, and communities including cultural and community relations sensitization in order to establish and maintain trust and mutual respect between EPD and communities.
- Establish and maintain a hotline to a central contact person who can respond to questions, disseminate information, resolve problems, place individuals on mailing lists, direct citizens to the proper EPD staff member, and otherwise serve as an accessible resource.
- Create a complaint tracking system to be put on EPD's website.
- Either (1) modify Georgia's laws to allow grants to non-governmental entities to provide non-point source grants to non-profit organizations or (2) convert some local government non-point source grant funds to contract funds and allow non-profit organizations to compete for contracts to help reduce non-point source pollution.
- Involve citizens in local and statewide water conservation programs.

The Board of Natural Resources has directed DNR staff to assemble a stakeholders group to examine these and other potential ideas and to make recommendations for the entire Department. The Board will inform the Joint Committee of the results of this examination and the needed budget increases (if any) to implement any new procedures adopted by the Board.

APPENDIX C

STAFFING OF STATE ENVIRONMENTAL PROTECTION PROGRAMS SOUTHEAST UNITED STATES

STATE	POPULATION (MILLION)	STAFF	RATIO OF STAFF PER ONE MILLION PERSONS
Florida	15.11	3700*	245
Kentucky	3.96	758	191
South Carolina	3.89	640	165
Mississippi	2.77	412	149
Tennessee	5.48	805	147
North Carolina	7.65	916	120
Georgia (EPD)	**8.1**	**850**	**105**
Alabama	4.37	452	103

*Includes Florida's water management districts whose staff do work comparable to EPD (water allocation, water supply planning, water quality protection).

APPENDIX D

RESOLUTION

WHEREAS, at the August 22, 2000, meeting of the Environmental Protection Committee, a motion was made by Mr. Butler, seconded by Mr. Wheeler and carried unanimously that the Committee recommend that the Board adopt the following declarations; and

WHEREAS, the Board of Natural Resources has, together with the Director and staff of EPD concluded:

1. The environmental problems facing Georgia are real, serious, expensive to solve, and are made more difficult by Georgia's continuing rapid growth. They will not go away, and Georgians expect, deserve, and have a right to a good environment (clean air, clean water, healthy people, and productive land).

2. EPD does not have sufficient staff or funding to deal adequately with the existing environmental problems, much less with emerging environmental problems.

3. A comprehensive permit fee (user) program is consistent with other states and would provide the needed environmental funding without affecting the State Treasury.

4. Legislation establishing the fee program should be passed in 2001 allowing fees to be collected in Fiscal Year 2002. If the General Assembly funds EPD's needs through direct appropriations, new fees would not need to be implemented, but the authority to do so should nevertheless be established.

NOW, THEREFORE BE IT RESOLVED, that the Board of Natural Resources calls upon the Governor, the Lieutenant Governor, the members of the Georgia General Assembly to provide, at a minimum, authority to impose permit/user fees and funding to staff EPD in accordance with the revised Five Year Plan, if not more expeditiously; and

FURTHERMORE, the Director of EPD is directed to send a copy of this Resolution, properly attested, together with "The Second Year Update to the Five Year Budget Plan", to the Governor, Lieutenant Governor, all members of the General Assembly, and to leaders in business, industry, local governments and environmental advocacy groups designated to receive such materials by Commissioner Barrett, Director Reheis, and Chairman Clark.

Adopted this 23rd day of August, 2000.

*/s/ Sara S. Clark*_____
Sara Clark, Chairman

*/s/ Bill Gilbert*_____
Bill Gilbert, Secretary