

## SECTION 10: WATER SUPPLY MANAGEMENT PRACTICES

### Background

Practices that supplement water supply are an important part of addressing water supply and water quality needs and meeting Georgia's long-term water needs will require that these practices be properly planned and brought into service more quickly than in the past. Proper planning of these management practices, and implementation of them in a timeframe that meets the needs for additional water supply identified through regional water planning, will require identification of improvements in current planning and permitting processes. Necessary improvements include enhancements in provisions to ensure that potential adverse impacts on water resources and on opportunities for reasonable water use by other users are identified early and properly addressed or mitigated.

This plan addresses three water supply management practices and the improvements required for their timely implementation in those regions where regional planning identifies a need for practices to supplement water supply: surface water storage, interbasin transfers, and aquifer storage and recovery. It provides for action by EPD in its guidance of regional planning and plan implementation and action by the Board of Natural Resources to amend the rules and regulations that govern water withdrawal permitting.

### Surface Water Storage

Additional surface water storage will be important in meeting future water supply needs. In order to provide additional storage in areas identified through regional planning, improvements in reservoir planning are needed to identify feasible projects on water supply sources with sufficient sustainable yield and to provide early recognition of constraints that might limit feasibility, including changes in flow regimes, alteration of aquatic environments and free-flowing stream habitat, and other negative impacts on downstream water users and instream uses. State leadership on this, in partnership with those developing the specific projects identified in regional plans, will provide benefits through more expeditious federal permitting.

Federal permitting of new reservoirs requires a defensible projection of the long-term water need for a specified service area and a thorough evaluation of all supply alternatives. Assessing the capacity of individual water sources, forecasting long-term water demand, and inventorying alternative sources of supply are all essential steps in the development of new water supply reservoirs. These steps will be part of the regional planning to be undertaken following the provisions of this plan, and their completion will support applications for federal permitting of new water supply reservoirs.

### Policy: Surface Water Storage

(1) Water supply reservoirs are an important part of Georgia's water resource infrastructure, and additional surface water storage is likely to be a critical supplement to the natural

capacities of streams to meet water supply needs identified through regional planning. State leadership, in partnership with those implementing regional plans, can assist in planning for feasible projects, including early identification of constraints in feasibility due to impacts on downstream users and/or instream uses.

- (2) The State of Georgia will ensure that new water supply reservoirs are designed, sited, and operated in a sustainable manner to maximize opportunities for reasonable offstream water uses while minimizing harm to the environment.
- (3) The priority of the State of Georgia will be to provide regulatory and technical support in development of multi-jurisdictional projects to supplement water supply, including water supply reservoirs, identified in regional water development and conservation plans adopted by the Director.

### Implementation Actions

- (1) Regional water development and conservation plans, as further described in section 14, will identify areas where additional storage may be needed to meet water supply demands. This process should include:
  - a. Water demand forecasts.
  - b. The assessment of water supply alternatives, including implementation of water conservation and reuse practices, and the utilization of alternate sources, including purchasing water from adjacent utilities or water providers and the use of groundwater and existing surface storage.
- (2) The Division will establish a water supply technical assistance program in order to streamline the permitting process. This program will provide technical assistance to those developing multi-jurisdictional projects to supplement water supply, as identified in regional water development and conservation plans adopted by EPD. It will provide guidance on compliance with federal and state regulatory and technical requirements for water supply reservoirs. Guidance will address the following aspects of planning for water supply reservoirs:
  - a. Demonstration of need over a 50-year planning horizon
    - i. Demand forecasts should be based on populations that do not already have supply allocated from other existing or planned projects.
    - ii. Assessment of the project's capacity to serve a multi-jurisdictional area
    - iii. Use of full yield for water supply. Projects designed in a way that allows use of the full yield for water supply will be preferred, but public-private partnerships would not be precluded.
  - b. Full investigation of all reasonable water supply alternatives.

- i. Implementation of water conservation and reuse practices, to achieve efficient use of current supplies as defined in the water conservation implementation plan;
  - ii. Reduction in future demand anticipated from water conservation and/or reuse;
  - iii. Utilization of existing sources, including purchase of water from adjacent utilities or water providers, use of excess capacity in existing wells, and/or use of excess capacity in existing reservoirs; and
  - iv. Assessment of alternate sources.
- c. Site selection to minimize environmental impacts
- i. Avoidance of streams or sites that currently provide high quality habitat for aquatic biota
  - ii. Siting on tributaries or smaller streams or completely off of a streambed, utilizing pumped storage as needed
  - iii. Minimal contribution to fragmentation of the stream system
  - iv. Impacts on threatened and endangered species or their critical habitats in the reservoir pool area and immediately downstream
- d. Water supply watershed protection provisions, pursuant to DNR Rule 391-3-16-.01, including application of criteria by all jurisdictions in the watershed
- e. Design and operation to provide flows necessary to meet instream flow criteria and support flow regimes identified in the water quantity resource assessments described in Section 6 of this plan
- f. Water quality protection provisions
- (3) To be eligible for consideration for funding through state bonds or GEFA loans, water supply reservoirs should be consistent with the guidance developed pursuant to the preceding paragraph.
- a. Priorities for consideration for funding through state bonds or GEFA loans will be as follows:
    - i. Projects that enhance existing storage structures to meet water supply needs
    - ii. New reservoirs that provide water supply to multiple jurisdictions or source replacement for jurisdictions that face constraints on current water sources
    - iii. New reservoirs dedicated to water supply for a single jurisdiction as a sole purpose
  - b. All funding for multi-jurisdictional reservoir projects will be contingent upon all parties signing binding water-use agreements.
- (4) Reservoirs should be designed and operated to ensure that the volume and timing of flows are provided as necessary to meet instream flow needs, as determined by the Director, downstream of such reservoirs. The current instream flow strategy, adopted in a policy passed by the Department of Natural Resources Board on May 23, 2001, or any subsequent revisions, will continue to be applied to surface water

withdrawal permits. The Division and other agencies will continue to build the information base required to adapt these requirements to specific instream flow needs in different regions of the state.

- (5) The Board of Natural Resources will consider, upon adoption of this plan, amending its rules and regulations specified in DNR Rules 391-3-5, 391-3-6-.07, and 391-3-8 to improve alignment of state and federal permitting related to water supply reservoirs and to further support implementation of this section, including any amendments necessary to align state water withdrawal permitting and EPD concurrence with the demonstration of need required for a federal 404 permit.
- (6) The Division will make an annual report to the Board of Natural Resources and the General Assembly on the status and progress of proposed reservoir projects in Georgia.

### Interbasin Transfers

#### Policy: Interbasin Transfers

- (1) Interbasin transfer is a management practice that addresses water supply and/or water quality needs in some parts of the state. However, these transfers may have adverse impacts on water resources in the receiving and donor basins and on opportunities for reasonable water use in the donor basin.
- (2) The State of Georgia will protect the reasonable use of water in donor basins through the regulation of interbasin transfers.
- (3) Subject to the provisions of Chapter 5, Title 12 of O.C.G.A., interbasin transfers may be undertaken to meet water needs in areas facing limitations on their water sources, as indicated when the forecasted consumption of water from a specific source approaches the defined consumptive use assessment, as long as the transfer does not unreasonably foreclose opportunities for water use in the donor basin.
- (4) Interbasin transfers of water as might occur in connection with mining, conveying, processing, sale, or shipment of minerals (e.g. as in the kaolin industry), or other products transported for further processing or sale shall be exempt from the ensuing implementation actions.

#### Implementation Actions

- (1) Interbasin transfers of raw water will not be permitted until consumptive use assessments have been completed for the affected water sources, pursuant to section 6 of this plan, and water development and conservation plans, which identify the need for such transfers, have been completed for the affected water planning regions, pursuant to section 14.
- (2) The Board of Natural Resources will consider, upon adoption of this plan, amending its rules and regulations to provide that, in evaluating a permit application for a new interbasin transfer, the Director should consider the factors specified in DNR Rule 391-3-6-.07(14) as well as the following:
  - a. Donor basin considerations

- i. The quantity of the proposed withdrawal and the stream flow of the donor basin, with special consideration for dry years and low flow conditions.
  - ii. The current and reasonably foreseeable future water needs of the donor basin, with special consideration for dry years and low flow conditions.
  - iii. Protection of water quality in the donor basin, with special consideration for dry years and low flow conditions.
  - iv. Any offsetting increases in flow in the donor basin that may be arranged through permit conditions.
  - v. The number of downstream river miles from which water will be diverted as a result of the transfer.
  - vi. The connection between surface water and groundwater in the donor basin, and the effect of the proposed transfer on either or both.
- b. Receiving basin considerations
- i. Determination of whether or not the applicant's proposed use is reasonable, including consideration of whether the applicant has implemented water conservation practices and achieved reasonable water conservation goals.
  - ii. Assessment of the wastewater treatment capacity of the receiving basin.
  - iii. The supply of water presently available to the receiving basin, as well as the estimates of overall current water demand and the reasonable foreseeable future water needs of the receiving basin.
  - iv. The beneficial impact of any proposed transfer, and the demonstrated capability of the applicant to effectively implement its responsibilities under the requested permit.
  - v. The impact of the proposed transfer on water conservation.
  - vi. The applicant's efforts to explore all reasonable options for use of reclaimed water and recycling of available sources to meet the needs of the receiving basin.
  - vii. Assessment of the adequacy of treatment capacity and current water quality conditions.
- c. Considerations affecting both basins
- i. The economic feasibility, cost effectiveness, and environmental impacts of the proposed transfer in relation to alternative sources of water supply.
  - ii. The cumulative impacts of the current and proposed interbasin transfers in the basin.
  - iii. The requirements of the state and federal agencies with authority related to water resources.
  - iv. The availability of water for responding to emergencies, including drought, in the donor basin and the receiving basin.
  - v. The impact, whether beneficial or detrimental, on offstream and instream uses.
  - vi. The quantity, quality, location, and timing of water returned to the basin of donor basin, receiving basin, and basins downstream.
  - vii. Impact on interstate water use.
  - viii. The cumulative effect on the donor basin and the receiving basin of any water transfer or consumptive use that is authorized or forecasted.
  - ix. Such other factors as are reasonably necessary to carry out the purposes of Georgia law.
- (3) Use of interbasin transfers shall comply with the water quality policy specified in section 5 of this plan.

### **Intrabasin Transfers**

Intrabasin transfers are quite common in Georgia. Many water utilities and other water users withdraw water from a source within a particular sub-basin, and then provide water service to customers within a service area that spans multiple sub-basins. For many practical reasons much of the water distributed across the service area is not returned to the sub-basin of origin after use.

This practice of transferring water across sub-basin boundaries within a river basin generally occurs within a single county, as most water utilities operate within the confines of single counties. However, currently in some instances where a water service area spans portions of more than one county, intrabasin transfers may cross more than one county boundary.

### **Policy: Intrabasin Transfers**

- (1) Intrabasin transfer is a management practice that allows water users to address practical water distribution needs that span sub-basin boundaries. While water transferred across sub-basin boundaries may not return to the sub-basin of origin, the returned water is available for the subsequent uses in portions of the river basin downstream of the discharge point. The fact that this water is returned to the river basin minimizes otherwise potential adverse impacts on the water resources of the river basin.
- (2) Intrabasin transfers may continue to be undertaken to meet such practical water needs as are necessary for a water provider to meet the reasonable needs of users within its service area. If such a new intrabasin transfer is to cross the jurisdictional boundaries of more than four counties, it shall not be permitted until consumptive use assessments have been completed for the affected water sources pursuant to section 6 of the plan, and water development and conservation plans, which identify the need for such transfers, have been completed for the affected water planning regions pursuant to section 14 of the plan.
- (3) Intrabasin transfers of water as might occur in connection with mining, conveying, processing, sale, or shipment of minerals (e.g., as in the kaolin industry), or other products transported for further processing or sale will continue to be permitted.

## **Aquifer Storage and Recovery**

### **Policy: Aquifer Storage and Recovery**

(1) Aquifer Storage and Recovery (ASR), a process in which water is recharged through a well into an aquifer and later withdrawn, may prove to be a viable way to supplement water availability in some parts of the state. O.C.G.A. §12-5-135 prohibits the injection of surface water into the Floridan Aquifer in any county governed by the Georgia Coastal Zone Management program, created by O.C.G.A. § 12-5-327, until December 31, 2009.

### **Implementation Actions**

- (1) The Division may develop a protocol to assess the viability of ASR as a water management practice. Assessment of ASR would include:
- a. Identification of recharge water sources and aquifers that are potential candidates for ASR recharge.
  - b. Comparison of the potential cost of ASR to other management practices.
  - c. Study of the legal issues related to ASR.
  - d. Environmental assessment including the following:
    - i. Study of the subsurface geology and hydraulic properties of ASR target aquifers, adjacent aquifers, and confining units; mineralogy and chemistry of target aquifer matrices, and the chemistries of recharge water and target aquifer.
    - ii. Bench testing and chemical equilibrium modeling to determine how introduction of oxygenated surface water may cause leaching of trace metals and how such leaching could be detrimental to the ASR system.
    - iii. Pilot scale testing of an ASR well or wells, permitted according to DNR Rule 391-3-6-.13 (Underground Injection Control Class V well) to determine the feasibility of ASR and to provide information for the design and operation of an ASR system.
    - iv. Quantitative analysis and possibly computer modeling to predict how ASR could affect movement of recharge water within the target aquifer and how water could move between aquifers in complex hydrogeologic regimes.