Statewide Advisory Committee
Georgia Comprehensive Water Management Planning

Alcovy Conservation Center
Covington, GA

November 6, 2006
10:00 – 4:00

DRAFT AGENDA

I. Welcome and introductions

II. Questions from 8/31 SAC meeting and preliminary EPD responses

III. Planning tool to help apply CUB concept: Exploration of scenarios

IV. Lunch

V. Planning tool to help apply CUB concept: Exploration of scenarios (continued)

VI. Surface storage and water quantity management via CUBs

VII. Follow-up and Next steps

   a. Plan for sub-group work

   b. January meeting

Statewide Advisory Committee
Georgia Comprehensive Water Management Planning

SURFACE WATER STORAGE TO MEET WATER SUPPLY NEEDS DISCUSSION PAPER

The Role of Water Supply Reservoirs

We rely on the waters in our streams and aquifers to meet our water-related needs under all climatic conditions throughout the year. In turn, the amount of water in these bodies is driven by the vicissitudes of the hydrologic cycle. Statewide, this hydrologic cycle generally produces an average close to 50 inches of precipitation each year. Unfortunately there can be – and are – large variations in the amounts of precipitation we receive both year-to-year and within any given year. Under low precipitation/flow circumstances, there is the very real prospect that, without sufficient volumes of stored water, the supply to populations dependent on surface water flows will be interrupted. Water supply reservoirs have therefore been an essential element in ensuring a dependable supply of water for domestic uses during periods of low rainfall and streamflow.

As a general rule, the volume of storage necessary to provide protection during low flow periods is directly proportional to the population served. As this service population increases over time, the required storage increases in direct proportion, if a constant level of protection is to be provided. Hence, as population increases in the parts of Georgia that are served by surface water bodies, it is prudent to consider what amounts of stored water might be necessary to provide protection to this larger population during extended dry periods. Questions about optimal locations of stored water, maximizing use of existing storage, and other factors also relate to this discussion.

Current Status

Development of new water supply reservoirs is generally initiated as a result of local water supply planning. In some cases, these planning efforts may result in proposals for reservoirs to meet water supply needs of multiple jurisdictions. The most common situation, however, is for single jurisdictions (governmental entity or water authority) to develop water supply reservoirs independently to meet local needs.

Proposed water supply reservoirs are subject to review and oversight by GAEPD and the US Army Corps of Engineers. GAEPD's authority includes oversight of dam construction and maintenance under the Georgia Safe Dams Act as well as review of withdrawal permits under the 1977 amendments to the Georgia Water Quality Control Act. GAEPD also has oversight responsibility under Section 401 of the federal Clean Water Act, which provides for state consultation with the Corps of Engineers in its Section 404 permit process.

In this consultation and in review of withdrawal permits associated with reservoirs, the state primarily focuses on demand projections, service area definitions, yield analysis, protection of water quality standards, watershed protection, and provision of minimum instream flows. The Corps' process addresses the alternatives analysis, impact assessment, and mitigation proposed by the applicant.

Water Supply Reservoirs and Water Management via CUBs

Surface storage is a valuable water management tool, and one that is likely to be critical to meeting future water supply needs in certain parts of the state. Surface storage can help meet water needs by storing water in times of excess for use in times of scarcity. In order to store significant volumes of surface water, it generally necessary to construct a dam across a flowing body of water, impounding waters upstream and creating a reservoir. By doing so, reservoirs directly affect stream flow regimes and affect the availability of water for downstream users and instream uses.

This suggests that the 2008 Statewide Comprehensive Water Management Plan should include policy guidance regarding surface water storage to meet water supply needs as a tool within an integrated framework for water quantity management. More specifically, the plan should provide for reservoir planning and oversight of reservoir development in the context of consumptive use budgets, relying on sub-state planning as an opportunity for more comprehensive assessment of water needs and supply alternatives.

In this context, practices to minimize water withdrawals and maximize water returns are the first priority as tools to meet the consumptive use budgets for specific sources. Implementation of conservation and reuse practices and use of alternative water sources, including existing surface storage, should be evaluated before new water supply reservoirs are proposed. Consideration and review of potential new water supply reservoirs, then, should be guided by explicit policy considerations and decision criteria; a strawman for discussion is presented in the following section.

Proposed policy statement

Water supply reservoirs are an important part of Georgia's water resource infrastructure and additional surface water storage may be critical in reliably meeting water supply needs in certain parts of the state. Development and operation of water supply reservoirs, however, can have a variety of impacts and the viability of available reservoir sites is limited by a number of factors.

Given the importance of surface water storage in meeting water supply needs, the potential impacts of reservoir development and operations, and the limitations on viable reservoir sites, it is the policy of the State of Georgia to ensure that new water supply reservoirs are planned, designed, sited, and operated in order to optimize use of the

state's water resources and minimize harm to the environment and current and future water users.

Consistency with this policy shall be evaluated through consideration of water supply alternatives prior to reservoir planning as well as site election to minimize environmental impacts, impacts on water available for consumptive use in the affected sub-basin, and impacts on flows in downstream sub-basins.

To fully implement this policy, sub-state planning should be undertaken to assess water supply needs, evaluate water supply alternatives, and identify areas where additional storage may be a reasonable alternative to meet water supply needs. In addition, a process should be established for state-level screening of the feasibility of potential projects identified through sub-state planning. Feasibility screening should include consideration of benefits and impacts from a sub-basin perspective as well as the more localized evaluation that is currently in place. Specifically, potential projects should be evaluated in the context of the overall projected demand for the sub-basin, potential service areas, and the total storage potential available in the sub-basin.

Identification of potential projects through sub-state planning, followed by state-level feasibility screening prior to design of specific local or multi-jurisdictional reservoirs, can improve the design of individual projects and potentially expedite reservoir development.

Finally, individual reservoirs should be designed and operated to ensure that the volume and timing of flows are provided as necessary to meet instream flow needs in segments immediately downstream of the water supply reservoir. However, the information needed to define instream flow requirements for specific segments or sub-basins is not available at this time. Given this, the current instream flow criteria should continue to be applied to support instream uses at or just below individual reservoirs and withdrawal points, while continuing to build the information base required to adapt these requirements to specific instream flow needs in different regions of the state. The criteria in place at a given time should always be subject to modification in light of additional information.

Proposed considerations and decision criteria to be used in evaluating feasibility of potential projects and/or permit applications for specific reservoir projects:

Demonstration of need

- Water demand projections following sub-state planning guidance
- Assessment of water supply alternatives following sub-state planning guidance:
    - Implementation of water conservation and reuse practices
    - Utilization of alternate sources, including purchase of water from adjacent utilities or water providers, use of groundwater (including excess capacity in existing wells), and use of existing surface storage, among others

Localized considerations

- Site selection to minimize environmental impacts
    - Avoidance of streams or sites that currently provide high quality habitat for aquatic biota
    - Siting on tributaries or smaller streams (with use of pumped storage as needed)
    - Minimal contribution to fragmentation of the stream system
- Provision of flows to meet instream needs immediately downstream
- Water quality protection
- Impacts on critical species or habitats in the reservoir pool area and immediately downstream

Sub-basin wide considerations

- Impacts on desired flows at downstream node(s) (i.e., the nodes for which CUBs are defined)
- Impacts on water available for consumptive use:
    - The extent to which the project contributes to increasing the consumptive use budget for the affected sub-basin (i.e., contribution of the project to optimization of storage for the sub-basin)
    - The extent to which the project is expected to contribute to future increases in consumptive use
- Service to multiple jurisdictions or source replacement for jurisdictions that rely on sources that are approaching their CUB

Georgia's Comprehensive Statewide Water Planning

Questions/comments presented at the August 31, 2006 Statewide Advisory Committee Meeting

Held at the UGA Fanning Institute – Athens, GA

Responses drafted by GA Environmental Protection Division
October 19, 2006

At the August 31, 2006 meeting of the Statewide Advisory Committee (SAC), members were asked to submit concerns and questions about the consumptive use budget (CUB) concept for water quantity management and the model presented to them at the July 27, 2006 SAC meeting. The following questions and comments were received. The GA Environmental Protection Division's preliminary responses follow each question or comment.

Several questions raise issues and concerns for which EPD and Water Council members are seeking advice. As noted below, EPD recommends that the UGA Fanning Institute work with SAC members to convene sub-groups to address those specific issues and provide information back to EPD for full SAC deliberation. Like other issues discussed by the SAC, sub-groups are not expected to build consensus, but to provide insight and ideas on specific issues.

1. How was the state advisory group formed? What is it charged to do?

   When the advisory committees were formed, the major purposes of the Statewide Advisory Committee (SAC) were identified as follows:

   1. Provide early input to EPD and the Water Council on the description of Georgia's over-arching goals for water management, water management objectives, and the array of new policy tools identified for development in the first water plan;
   2. Screen draft policy tool recommendations, for statewide applicability, before EPD submits them to the Water Council.

   To accomplish these purposes, the SAC includes organizations with statewide perspectives and water-related interests that reflect Georgia's geographic, economic, cultural, jurisdictional, and water resources realities. Governor Perdue and the Water Council identified such organizations and then, as Water Council Chair, the EPD Director formally asked each organization to name individuals from their ranks to represent the organization's views on the SAC. 'At-large' individuals were also identified for their broad knowledge or expertise concerning water issues statewide.

2. What is a "particular source"? How do you define a "particular water source" as used in descriptions of the CUB concept?

A ‘particular source’ is a water source within a watershed.

3. To what extent are CUBs a policy vehicle as opposed to a data vehicle?

   The Consumptive Use Budget (CUB) concept is a policy framework. That policy framework reflects and embraces the notion that water flows and water yields within watersheds have definable capabilities, and that these capabilities are affected by the water management practices that occur within the watershed. When accompanied by a planning tool, the CUB policy framework can therefore provide be a mechanism through which to organize and display data and information about the capability of the water resources within a watershed, and the water management practices within that watershed.

4. How should the sub-basin boundaries be determined? By whom? What ecological considerations should be considered in determining the boundaries?

   This is a subject that could certainly benefit from discussions at the sub-group level within the SAC, before broader discussion at a future SAC meeting.

5. Will 7Q10 or some other measure underpin CUBs?

   In 2001 the Board of Natural Resources adopted an interim instream flow policy. That interim policy describes several approaches that might be used to establish a flow regime to be maintained immediately downstream of withdrawal points and/or storage facilities under drought conditions. A monthly 7Q10 flow regime is one of the set of regimes described in the Board policy. The Board did not necessarily adopt this interim policy in anticipation of future discussions related to CUBs. Nonetheless, this interim policy can certainly be considered in discussions of how to arrive at targeted flow regimes at the discharge node of a watershed for which a CUB is to be developed.

   There is also the possibility that targeted flow regimes might be defined by federal courts or other entities not directly under the authority of the Board of Natural Resources or other State of Georgia authorities.

   It would be helpful to assemble a sub-group of the SAC to discuss the “7Q10 or other measure” question.

6. How should the margin of safety fit into CUBs? (Environmental concerns as opposed to a consumptive concern)

   This is a subject that could certainly benefit from discussions at the sub-group level, before broader discussion at a future SAC meeting.

7. As I understand CUBs, they are a characteristic of a location as if there were no human activity present. In this light, [current and projected water supply needs] are not of CUB development. Am I right?

   The assertion is not exactly correct. Determination of CUBs may (or may not) incorporate the impacts of human activities that influence water availability and water flows in a watershed. The extent to which a CUB for a watershed should or should not include a current level of human activity (such as existing septic systems and their impact on flows) is subject to discussion, rather than being etched in stone in the concept.

8. What about the interplay of groundwater and surface water? How will recharge of surface waters by groundwater be accounted for?

   In some watersheds, there are pronounced groundwater-surface water interactions; in other watersheds, these interactions are less pronounced. The lower Flint River basin, the Spring Creek, and Ichawaynochaway Creek watersheds are where we have the greatest amount of scientific knowledge of such interactions. Given the limitations on our knowledge for other areas of the state, it is unlikely that groundwater influences can be definitively assessed as CUBs are established for surface water sources. While we agree that ground water contributions need to be accounted for, much work needs to be done before we can quantify these relationships within any watershed.

9. When will we see some initial modeling results to be able to assess where the problems may be?

   EPD expects to share initial modeling scenarios at the November meeting of the Statewide Advisory Committee.

10. While the model appears to be functional, how will it be used?

    It has not yet been determined if the CUB policy framework will be recommended or adopted, so it's premature to speculate on exactly how a planning tool which supports the policy framework will be used. If the CUB policy framework is recommended and adopted, the planning mathematical model being developed would be a tool to assist with evaluating alternative water management scenarios at eh watershed scale.

11. How sensitive is the modeling to varied assumptions?

    The planning tool has not yet been tested for sensitivity to variations in assumptions. This step will follow construction of specific watershed scenarios.

12. How can the CUB modeling scheme be explained in simple terms to the general public and government officials to avoid mistrust on something that is difficult to understand?

If the CUB policy framework is to be a recommended element of the 2008 Comprehensive Statewide Water Management Plan, it will be important to develop a 'public-friendly' description of how this concept would be made operable. EPD has begun internal work on such a description. A greatly simplified overview of the model's core elements and details of the CUB concept are under development and will be circulated to the SAC for feedback on whether the simplified explanation will be understood by its intended audiences.

13. Where are the examples of CUBs from other states you promised to send us?

We expect to provide summaries of similar initiatives in Massachusetts and Florida at the November SAC meeting.

14. Where should gray water and rainwater harvesting fit into CUBs?

Gray water and rainwater harvesting are management practices that help users minimize water withdrawals and stay within an established CUB, as well as reduce peak runoff and waste flow. However, feedback that EPD received during the first round of advisory committee meetings indicates a great deal of education and outreach would be needed for rainwater and gray water harvesting to have a measurable impact on water supplies and to significantly contribute to a CUB at this time. Rainwater and gray water harvesting are viable water management practices and should be considered in future iterations of the plan.

15. How should septic systems be addressed within the context of this paper?

Septic systems discharge to groundwater and so might contribute to stream baseflow, however the timing and magnitude of returns to surface water in different areas of the state are open questions. Consequently, in the context of consumptive use budgets, EPD's current view is that septic tanks are potentially large avenues of consumptive use and that consumptive use may vary greatly based on regional characteristics and development patterns.

Further research and discussion of the extent to which these on-site sewage management systems prevent immediate return of treated wastewater to surface water systems is needed. If after further research and discussion the consumptive use characteristics of septic systems can be properly ascertained, then these consumptive use characteristics could presumably be more accurately incorporated in the consumptive use budgets for specific surface water sources.

16. How should uses be prioritized?

State law defines a priority scheme for water uses during drought periods, but does not go much beyond. It is not anticipated that the first edition of a statewide water plan will recommend priority schemes for future water uses across the watersheds in Georgia.

17. On what basis should the CUB be allocated? Who are the users (all) and how should we prioritize usage?

It is not anticipated that the first edition of a statewide water plan will quantify CUBs for watersheds across Georgia. If the CUB policy framework is recommended and adopted, quantification on consumptive use budgets is not expected to begin until sub-state planning commences. These budgets would then be subject to modification through consideration of a number of combinations of management practices applied to a host of different users and uses within the watershed. The CUB policy framework is not a means by which water is allocated to specific users within a watershed.

18. How should the "human element (politics)" be factored into the consumptive use budget (CUB) process?

Employing the CUB concept to define capabilities of water resources within watershed is intended to be independent of politics.

19. Should there be a statewide consumptive use budget and who should oversee the process?

Consumptive use budgets are by definition specific to watersheds. The State of Georgia is of course not a watershed, therefore it inappropriate to think of a state consumptive use budget. It is likely possible to aggregate consumptive use budgets across all watersheds in Georgia, but the utility of this number would be would be arguable.

20. How do you avoid the "Balkanization" of water policy if we rely only on inter-sub basin negotiations?

It can be reasonably argued that Georgia is already in a state of 'balkanization' with regard to regions positioning themselves one against the other - with regard to water issues – without the benefit of factual information and data on which to found discussions and debates.

EPD has not advanced the notion of interbasin negotiations being the foundation upon which interbasin transfers decisions are made.

21. What should be done to ensure that all the regions in the state work together in the development of the CUBs?

This question is germane to the future discussion of sub-state planning guidance; a discussion that EPD does not anticipate commencing until the 1st calendar quarter of 2007.

22. Why is Metro Atlanta always the focus of UGA examples about the rest of the state?

Because of the investments made during the Tri-State Comprehensive Water Study and development of plans by the Metropolitan North Georgia Water Planning District, more information is available for the Metro Atlanta area than for many other regions of the state. And, as noted in the following comments, Metro Atlanta faces some of the state's greatest water challenges. That said, however, this question highlights the need to be sure that the plan under development is truly a statewide plan that reflects the differing circumstances across the state and provides the flexibility to adapt management practices to fit regional differences.

23. Need a big picture look at the water problem not just solutions focused on sub-basins.

We accept this as a comment.

24. Big problems – the big picture: Atlanta will run out of water (greater than half the population; greater than 58% of the jobs; much of the economic growth; and large percentage of state revenue); Irrigation in Southwest Georgia (agriculture the base of the economy); and Coastal area (population growth; economic growth)

We accept this as a comment.