

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.