From: "Les Ager" <lager@dishmail.net>
To: <"'EPDComments@dnr.state.ga.us.">, "'Kevin Farrell'" <Kevin.Farrell@dnr...
CC: <lager969@gmail.com>
Date: 6/23/2011 4:48 PM
Subject: Comments on Middle Ocmulgee Water Plan

Below are my comments regarding the Initial Middle Ocmulgee Water Plan available for review. While I have directed these comments at this plan, many of them are applicable to all plans and should be applied as such. Please acknowledge receipt.

Comments on the Middle Ocmulgee Regional Water Plan

Les Ager

6/22/11

Page 1-3

The report indicates that the Technical Subcommittee consisted of 11 members when in fact only 7 council members served on the committee. The other 4 members of the subcommittee were not members of the water council and were representatives of specific water users within the region. Their participation in the preparation of the plan was clearly outside the bylaws adopted by the Middle Ocmulgee Council which indicated that only council members could be appointed to subcommittees. I believe this introduced a serious bias to the plan that was counterproductive. In particular the subcommittee was largely responsible for the development of management practices, a process that would have certainly benefited from a more objective and unbiased approach.

I commend the council for their inclusion of the protection of natural resources in their goals 2 and 7. However I find goal 1 ambiguous and vague. A definition of the term "water supply sources" is not provided and I would take it to mean surface and groundwater. As such, they are resources fixed in time that can be neither increased nor decreased. I suggest that this goal be reconsidered and stated more plainly. I am concerned that the word "maximize" in this context is synonymous with "utilize" and that, if that is the case, this goal is inconsistent with the many of the other goals listed.

Goal 5 seems to contradict itself. On one hand it indicates that discharges of wastewater are to be promoted while on the other it promotes beneficial reuse. I suspect that the council meant to say that they promote the proper treatment of wastewater before discharge. At any rate, this goal should be reworded to indicate the intended meaning.

Page 2-3

The report indicates that the regulation of the Ocmulgee River by Lloyd Shoals Dam influences the flow regime well past Macon without giving references for this assertion. Based on the relicensing application filed by Georgia Power Company to the FERC during the most recent relicensing of the facility, the significant flow alteration extended to Macon but not below. This is an important point when you consider that significant physiographic changes occur to the river in the Macon area as well and that the river essentially functions as an unregulated river from this point downstream.

"Juliette" is used on this page as a reference to both Lake Juliette, an impoundment of Rum Creek, and Juliette Dam which is located on the Ocmulgee River. This should be clarified and care should be taken to avoid this confusion throughout the report.

The report indicates that Juliette Dam isolates 17 miles of the Ocmulgee River. It is not clear what is meant by this statement. Perhaps what is meant is that Juliette Dam prevents the upstream migration of anadromous fish species and degrades the biologic integrity of the river. In any case this should be reword so that the meaning is clear.

Page 3-1

The report indicates that 58% of the 59 MGD withdrawn from the Ocmulgee River is evaporated during the cooling process and is considered consumptive. However, the disposition of the other 42% is not mentioned. I do not believe it is returned to the Ocmulgee River and is not available for instream or downstream uses and therefore this withdrawal should be considered 100% consumptive.

Page 3-3

The report indicates that EPD developed three Resource Assessments for use by the councils in developing their water plans. However, the Resource Assessments were not made available in final form to the councils until very late in the process after the plans were largely developed. The unavailability of such critical information seriously flawed the planning process and as a result the plan is lacking in many respects.

The description of the surface water assessment only provides discussion of the surface waters as they relate to chemical standards. The region's water resources contain a significant proportion of surface waters that fail to meet their classified use for reasons other than chemical. This should have been discussed in this section.

Page 3-4

In describing the Surface Water Availability Assessment the plan indicates that minimum instream flows are based on EPD policy. The assessment failed to consider that the DNR board, when they established the existing policy in 2001, recognized that it was flawed and did not provide the protection to instream natural resources that was needed. Thus they recommended then that additional research be funded to refine and improve the policy. While this additional funding and research has not occurred, that does not make the current policy any less flawed than when it was passed by the Board in 2001. I believe that the council should have been presented with alternatives to the current instream flow policy within the surface water assessment. Not presenting this information to the council implied that current policy is adequately protective of instream natural resources, an assertion that has been rejected by the DNR Board in 2001 and by the scientific community in general in the time interval since.

It would seem appropriate in this section to mention that the vast majority of water withdrawal permits within the region currently do not comply with the current instream flow policy. Furthermore there is no existing plan to bring existing permits into compliance with current policy in the future. The use of withdrawals that are not compliant with existing instream flow policy without noting such in the Surface Water Assessments invalidates the assumptions of the model (if you assume that the compliance with the current policy is necessary to protect aquatic life). When you consider that the majority of permit holders have no imimum downstream flow requirements at all, this situation seems to clearly indicate that management action is needed if water council goals are to be met. How these water withdrawals were treated in the models is unclear. For example, on the Ocmulgee River both the Plant Scherer withdrawal permit and the Macon Water Authority Permit have annual 7Q10 protective flow measures for the Ocmulgee River. If these values were used in modeling it would present an overly optimistic prediction of water availability in the river for much of the region. It would obviously mask the low flows that would degrade aquatic habitat in the river as well. Statewide, approximately 57% of permits have no minimum flow requirement, 33% require protection of annual 7Q10 flow only, and 10% comply with the current policy. These numbers, nor numbers specific to their region, were not presented to the council for their consideration despite their critical relevance to council goals.

Page 3-6

The use of only two planning nodes within the Ocmulgee River Study Basin introduced a clear and important bias. The area between the two planning nodes was approximately dissected by the region's greatest water demand (Macon) and the border between two physiographic regions (the Coastal Plain and Piedmont). Because of this marked disparity within such a long river reach, it masked the scarcity of water available in the Piedmont portion of the region. This discrepancy was noted early in the planning process by various council members and others yet persisted throughout. The result is that the availability of surface water in the region is not clearly characterized in necessary detail.

It would be appropriate to mention in this section that both planning nodes used in assessing surface water availability in this region were considered regulated nodes, despite the distance between the point of regulation (Lloyd Shoals Dam) and Lumber City.

Page 3-8

The plan indicates that fish and wildlife are abundant and diverse in the region. The presence of endangered wildife within the region is not an indication of good fish and wildlife abundance and diversity, rather it indicates the opposite. While it is true that the region provides important habitat for anadromous species, all these species are seriously threatened in large measure by the loss of available habitat within the region. The plan correctly indicates that DNR characterized "nearly the entire Ocmulgee Watershed was identified as a high priority watershed". This clearly contradicts the characterization of the area by the plan as supporting abundant and diverse wildlife and fish. Data collected by the Wildlife Resources Division of DNR indicate that approximately 50% of the streams sampled in the region ranked as either Very Poor or Poor as measured by an Index of Biotic Integrity. This measure takes into account both abundance and diversity. In addition, only approximately 47% of the regions streams meet their designated aquatic use. These facts should be included in the plan rather than using subjective mischaracterization. Considering these facts, I believe the plan has mischaracterized the aquatic resources within the region. I would suggest that characterizing wildlife and fish abundance and diversity as diminished and threatened would be more accurate.

It is disappointing that the council did not place more emphasis on the goals relating to protection and improvement of aquatic natural resources despite the characterization of the region as being a high priority conservation area. I am concerned that the bias introduced by council appointments and particularly subcommittee appointments may have resulted in a lack of adequate consideration of ecosystem concerns as relates to water supply and instream flow needs for wildlife protection.

Most river basins in Georgia currently harbors diadromous fish species including striped bass, American shad, Atlantic sturgeon (currently proposed by the National Marine Fisheries Service (NMFS) as federally endangered), and American eel. Diadromous fish populations have been reduced or imperiled as a result of dams, overfishing, and water quality degradation. A restoration and management plan for American shad in the Altamaha River Basin has recently been developed by the Georgia Department of Natural Resources (GADNR), the Service, and NMFS to facilitate restoration of the species throughout the Basin. In addition, many other native fish aquatic species, many of them listed in some manner by the State of Georgia and/or the U.S. Fish and Wildlife Service, are highly migratory species that regularly migrate in our rivers at a variety of life stages. It is essential to protect these aquatic species and keep their native ranges in the river systems accessible. Because of this need to protect migratory aquatic species, I am concerned about the potential effects of projects and management

actions proposed by these regional plans on not only diadromous fishes, but also many sensitive migratory aquatic species.

My main concerns are the impacts of potential entrainment and impingement of all life stages of the native fish communities, including eggs and larvae. The limited information provided in the plans give no indications that this issue is an important consideration in the design and operation of water projects and the lack of consideration given this issue in the planning of facilities in use today suggests that this issue needs emphasis in the current planning documents. I am also concerned about the impacts of future water withdrawals on instream flows, particularly during natural low flow conditions.

Page 3-11

The plan indicates that there are over 120,000 acres of protected land managed by federal and state governments. While this land is managed by government agencies, a significant portion of it is leased to the state by other landowners and is therefore afforded no long term protection. This statement should be revised to provide a more accurate characterization of the amount of protected land management by government agencies.

Ocmulgee Public Fishing Area in Pulaski County is omitted from the list of sport fisheries in the region.

The sentence "The Ocmulgee River offers excellent sport fishing at a number of lakes in the region" is both confusing and contradictory. If the contention is that the river provides excellent sport fishing, I believe citation of an appropriate reference is necessary.

The reference to Lake Juliette in describing the reintroduction of robust redhorse is incorrect. Lake Juliette is an impoundment of Rum Creek. While it is appropriate to characterize the stocking area as limited in an upstream direction, there is no downstream limitation on fish distribution and characterizing the reintroduction to only a portion or the river downstream of Lake Jackson is incorrect.

The characterization of anadromous species as having "experienced declines in the past" while accurate is misleading. Declines can only occur in the past. It is noteworthy that declines of all three species have occurred in the recent past and are all indications are that those declines are continuing. It would be approrpirate to include a broader discussion of the details of these declines and their reasons considering that the attainment of the council's stated goals could reasonably be measured by the trends experienced by these species in the future.

Given the importance of sport fishing in the region and in particular in the Ocmulgee River, it would have been desirable to provide more discussion of the sport fisheries of the region that the single sentence on this page. For example, how many fishermen fish in the region? How many fish do they catch? Is fish consumption an important facet of sport fishing in the region? How is the sport fishery distributed between different resources in the region? Are some water bodies more important for sport fishing than others? How much economic impact does sport fishing have in the region?

Characterization of commercial fishing and commercial fish farming would have been appropriate.

Page 4-8

The plan indicates that Plant Scherer withdraws 59 MGD and returns 25 MGD. However, I believe the majority of water returned does not return to the same body of water where the intake is located. Most of the water returned either enters Lake Juliette or the ash detention impoundments. In both cases, the storage capacity of the impoundments is great enough that little of the returns ever reach the Ocmulgee River. Therefore the effect is that virtually 100% of the withdrawal is consumed. The results to the plan is that it underestimates water demand.

Page 5-3

The plan indicates that there are no projected gaps in meeting projected future surface water needs and required flow regimes for either nodes in the region. However in Table 5-1, one-third of the counties listed are not projected to meet their water demands in the year 2050. This inconsistency should be explained. If the energy water demands in Monroe County are expressed realistically, this increase the water demands in that county quite significantly and they will not meet projected demand forecasts in 2050 either.

The plan indicates that any future use of Lake Jackson's storage capacity for water supply would have to be approved by Georgia Power and EPD. However, the Federal Energy Regulatory Commission would also be required to approve any such change to the use of the project. This should be reflected in the plan.

The lack of gaps in water supply in the region is largely reflective of the masking of the effects of water demand centers and the variability of surface water availability across the region by the nodes used in the model. A node located near Macon along the fall line would have far more accurately characterized the availability of surface water resources and would have likely

resulted in a very significant gap in the counties in the northern portion of the region, and perhaps in Bibb County as well. Generally water is in greater demand in the piedmont portion of the region but is shorter in supply but this effect is masked by the surface water assessment modeling methodology.

The plan seems to emphasize the important of the Bear Creek reservoir project for meeting the future water supply needs of Newton County. However, the projected water supply gap for Newton County does not occur until 2040. Given the uncertainty of projected water demands associated with population projections, energy needs, and industrial growth it seems somewhat premature to proceed with such a costly and environmentally sensitive project based on such uncertain projections.

Page 5-13

The future conditions assessment evaluated assimilative capacity based solely on modeling of DO conditions and nutrient loading. However the water quality problems in the region are not typically related to these chemical parameters but to other degredations to water quality. Recognition that the TMDL planning process is an essential one to improved water quality is important and an important assertion of the plan. However, as the plan indicates, this process of watershed protection and improvement plans has been in use by EPD for more than 10 years yet the plan does not acknowledge the progress, or lack thereof, to date. Ineffectual management of the TMDL program has resulted in little improvement to degraded streams within the region. It is important that the plan accentuate these facts to illustrate the need for improved management of water quality at all levels. The last sentence of Section 5.3.3 emphasizes the need for coordinated monitoring, development of TMDL and watershed improvement plans, and strong local actions to improve the health of streams. I believe that we have documented and monitored enough problems in our streams that further planning and monitoring should take a lower priority and that strong local actions should be given more prominence in this section.

While the listing of 5 major water quality issues for the region is accurate it might be appropriate to list them in the order in which they are common across the region. For example, the need to do additional watershed protection and management is common to all counties and should perhaps be listed first. The statement that "strong local actions are needed" is apparently related to the high proportion of streams with documented water quality problems in the region and implies that action is necessary and appropriate beyond planning and monitoring. I would suggest that a more proactive approach to addressing these issues should be suggested here.

Page 5-15

The fact that the Surface Water Resource Assessments analyzed conditions based on the current minimum instream flow policy and did not consider nor provide analysis on any other alternatives is a serious deficiency in the plan. The

majority of the scientific community regard the current EPD policy as antiquated and inadequately protective of aquatic communities. However, the exclusion of the analysis of any other alternatives implied to the council that the current policy is adequate for this purpose. Protective instream flows are essential to achievement of council goals and this subject was clearly not considered fully in the planning process.

Page 6-1

The report indicates that it utilized extensive coordination with stakeholders in selecting management practices. Perhaps the list of stakeholders utilized is much broader than those mentioned in the text but if not, it appears that their contact was with only a select few stakeholders that would largely be responsible for implementing management practices. Not mentioned as being contacted, but certainly stakeholders, were recreational interests, environmental groups, fishermen, and others whose interests in water resources are not solely consumptive or economic in nature. I believe this may have introduced a bias in the identification of water management practices that may favor economic and consumptive interests at the expense of the integrity of natural resources.

The report correctly points out that the needs and interests of stakeholders in the region are diverse. However, their concept that the management practices should be presented as a menu for selection based on local needs is flawed. Because water flows downstream, local water quality and quantity are often not dictated by local conditions but rather by condition upstream and often quite removed from the local area. A prioritization of management practices aligned with priority problems and goals would have been perhaps more appropriate, albeit let palatable to local interests. An example of this concept is presented on page 6-4 of the plan. In discussing the existing nitrogen loading problem on Lake Jackson, the council concedes that the causes of the problem lie upstream and not locally and are therefore not addressable in this plan.

Page 6-2

The plan groups management practices into 4 groups. However, the distinction between "enhanced water quality standards and monitoring" and "enhanced pollution management" is not clear and I would suggest combining the two groups for clarity.

Page 6-5

The abbreviations used in table 6-1 should be defined (for example WD1, WS1, etc.).

Page 6-10

The first two priority management practices for the improvement of water quality (WQ1 and WQ2) are planning and monitoring activities that do nothing to address the improvement of water quality. While planning and monitoring are both important activities, it does not seemp appropriate given the pressing nature of water quality problems identified in the region, that they would be priority needs. I suggest that planning and monitoring either be moved to a lower priority or combined with other management practices. Section 5.3.3 indicated that "strong local actions are needed to improve the health of the streams in the Middle Ocmulgee Region," This statement implies that action is needed to correct problems. In this table, only WQ3, WQ4, WQ7, and WQ11 actually do anything to improve water quality. We already know of many significant problems with impaired streams so the priority should be in attacking those known problems.

Page 7-13

I commend the council for recommending that the state study and evaluate the current instream flow policy. In fact this was a DNR Board recommendation a decade ago. This should be a common thread across all water plans. However, I recommend that language be added that addresses the issue of withdrawal permits that are "grandfathered" and are out of compliance with even the current policy. Wording should be added that the state should re-evaluate the necessity of "grandfathered" withdrawal permits with inadequate protective instream flow limitations.

Les Ager

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June 23, 2011

Mr. Allen Barnes
Director, Georgia Environmental Protection Division
Georgia Department of Natural Resources
2 Martin Luther King Jr., Drive
Suite 1152
Atlanta, Georgia 30334

RE: Initial Recommended Regional Water Plans

Dear Director Barnes:

The Association County Commissioners of Georgia (ACCG), representing all 159 Georgia counties, commends the dedication and work of EPD, all of the regional councils and others involved in developing the draft recommended regional water plans for Georgia's State Water Plan. Since its inception ACCG has fully supported the water planning process, believing it essential in order to guide Georgia in managing our water resources both now and into the future. These regional water councils have provided an invaluable service to the state of Georgia and are to be commended for their tireless hours and efforts that went into the development of these regional plans.

We do not believe it is the role of ACCG to comment on the regional water plans as they were developed by the respective water planning regions and county commissioners throughout the state played a pivotal role in this process. We do, however, wish to take this opportunity to briefly comment on our concerns with how these initial plans may be used in EPD permitting decisions and on next steps with ensuring the current and future success of the State Water Plan.

1. Implementation of Regional Water Plans

The State Water Plan states in Section 14 that "upon adoption, the [EPD] Director shall use the water development and conservation plans (WDCP) to guide decisions regarding permitting." However, the background of said section reads the following: "Once adopted by EPD, the regional WDCPs will be used by EPD as a basis for making permitting decisions." Furthermore, O.C.G.A. §12-5-522(e) states "the Division shall make all water withdrawal permitting decisions in accordance with this chapter, the comprehensive statewide water management plan that has been approved or enacted by the General Assembly as provided by this article, and any applicable regional water development and conservation plan."

These statements are seemingly contradictory and do not provide clarity in how EPD will weigh the suggested water management practices of respective regional water plans when making water permitting decisions. One point that was echoed by many of the regional water councils in developing their plans was that they felt that

the lack of adequate water monitoring, data collection and modeling constrained their planning decisions. While ACCG recognizes that, due to limited resources, these initial regional plans are based on the best data available, we are concerned with the reliability of the flow data used to model current and future water availability. Accordingly, ACCG would urge caution in basing water permitting decisions solely on these recommended regional water plans.

Recommendation:
Regional WDCPs should be used to guide permitting decisions by EPD, but should not be considered as legally binding when considering and issuing water withdrawal and discharge permits. The EPD should retain its authority to issue permits that are consistent with state law and should consider respective regional plans, not use these plans as the sole basis upon which permitting decisions are made.

2. Use of Unimpaired Flows
ACCG is concerned that there will be pressure to use unimpaired flows in the water resource assessments as an EPD permitting requirement, replacing the 2001 Board of Natural Resources policy on instream flow protection which utilizes real stream flow data. Encouragingly, EPD staff has explained that the intent of the water resource assessment is to provide general guidance on the future availability of water and that the specific gap numbers generated are not intended for current or future water withdrawal permitting decisions; however, the connection between this planning and actual permitting remains unclear.

ACCG believes that it would be detrimental to require the use of virtual unimpaired flows, rather than real stream flows, in making future water permitting decisions. The fact that the water resource assessment is part of the State Water Plan should not allow it to supersede current Board of Natural Resources policy in this area.

Recommendation:
We recommend that EPD clarify that water resource assessments are for general planning purposes only and that they are not to be used in basing permitting decisions. The 2001 Board of Natural Resources instream flow policy should be used until such time as the Board revises it.

3. The Future Work of the Regional Councils and Statewide Water Planning
Again, multiple regional councils identified the need for additional data collection, modeling efforts, state action and future plan revisions in order for both the regional and state plans to succeed. While Georgia's State Water Plan calls for regional councils to review and amend their plans every five years at a minimum, it did not articulate on the future research and financial needs of these regional councils once their initial regional water plans are submitted.

Recommendation:
Each regional water council should be reconstituted. ACCG urges the Governor and General Assembly to establish a constitutionally-dedicated source of funding to not only help implement current water planning, but to also assess this round's performance; conduct further water quantity and quality assessments and data compilation; and to continue the regional water planning process. Without continued, comprehensive, frequently-updated and science-based data, and both state and local funding to support these endeavors, the state and regional water plans will be incomplete, become obsolete, and cannot succeed. The citizens of Georgia deserve no less than continued progress toward the vision and goals of the state and regional water plans.

Lastly, Georgia's counties, cities and water authorities are charged with implementing and funding the vast majority of recommended water management practices in these regional water plans. On this note, ACCG strongly commends Governor Nathan Deal for his re-investment in the Georgia Environmental Facilities Authority (GEFA) in the pledged amount of $300 million over the next four years. The low-interest loans under the Governor's Water Supply Program will go a long way toward helping meet many of the goals articulated in these regional plans. We urge this program's continued funding, as well as the continued ability for GEFA to remain the state partner with Georgia's local governments in helping implement other water management practices recommended in the plans.

Thank you for your consideration on this most important endeavor.

Sincerely,

Ross King
Executive Director

Alabama Rivers Alliance
Water Is Life

June 23, 2011

Arnettia Murphy
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, GA. 30334

Submitted via Electronic Mail

RE: **Comments on Georgia's Initial Draft Recommended Regional Water Plans affecting various rivers in Alabama**

Ms Murphy:

The Alabama Rivers Alliance is pleased to submit comments on various recommended regional water plans which will have significant impact on the rivers and streams of Alabama. The Alabama Rivers Alliance is a non-profit organization dedicated to the protection and restoration of the rivers of Alabama. We are grateful for the opportunity to provide input into Georgia's water planning process. Alabama and Georgia share an indivisible connection through our shared waters. Georgia contains the headwaters of the three of the great river of Alabama: the Coosa, Tallapoosa, and Chattahoochee. We are encouraged that the State of Georgia is proactively planning for the sustainable use of these vital resources. As part of this ongoing endeavor we encourage Georgia to continue reach beyond the political barriers to engage all people who share and depend on these waters for life, work, recreation, and a connection to our shared natural heritage.

REGIONAL PLANS IMPACTING ALABAMA

While any decision made by the State of Georgia has a potential to reverberate out to its neighboring states, three of the regional plans will have a direct result on Alabama. The Coosa-North Georgia region includes that portion of the Coosa River Watershed which lies in Georgia. The Coosa is a major component of the Alabama's Mobile Bay Watershed. This region also includes key Tributaries of the Tennesee River, which traverses the northern most counties of Alabama, as well as the head waters of the Chattahoochee River which ultimately flows south to form the shared border of our two states. The Middle Chattahoochee Region not only contains the section of the Chattahoochee River which Georgia shares with Alabama but, oddly, all of the head waters of the Tallapoosa River which flow westward into Alabama to join the Coosa as part of the Mobile Bay watershed. Additionally, the Metro-North Georgia Regions contains a hodge-podge of five rivers, including the Coosa and Chattahoochee, which ultimately flow in three separate directions into two different seas. While we appreciate that working within political boundaries is often easiest, this ad-hoc distribution demonstrates a willful disregard of the natural watersheds and therefore contains the underpinnings of future disputes over allocations of these shared resources. We encourage Georgia to take another look at these divisions and consider re-aligning the planning regions to better reflect the watersheds which they would purport to manage. In addition to the

shared river systems considered in this plan, Alabama and Georgia share the underground water over which they lie. This is of particular importance in the southwestern planning councils which are tasked with allocating water from the Floridian and Southeastern Coastal Plane Aquifers which are critical sources of drinking water in much of Alabama as well as the base flows to many of our rivers and streams. The dangers arising from a potential mis-allocation of these resources cannot be overstated as seen in the historic low water levels currently being seen in the Chattahoochee and Flint River basins due to dry conditions and unregulated withdrawals for irrigation.

INCLUDE NEIGHBORING STATES AND ALL STAKEHOLDERS IN THE PLANNING PROCESS

A glaring deficiency in each of the water plans is the lack of consideration of current and projected downstream uses. We appreciate the difficulty of establishing long term plans while engaged in ongoing legal disputes for the same resources. However, in order for these plans to have any validity they must include the current uses of the water once it crosses political boundaries as well as meaningful future projections of water uses throughout the watersheds. To this end, we encourage the State of Georgia to work together with the State of Alabama and our neighboring states to develop comprehensive and equitable basin wide water plans that transcend state lines and political boundaries. To this end, we will engage our political leaders in Alabama and encourage them to join Georgia in comprehensive water planning. Each state must cooperate openly and transparently to other in planning for our future needs.

Regardless of the role played by the states, each regional council has the responsibility to reach out to all stakeholders to identify and incorporate their needs into the regional plan. Using the Chattahoochee as an example, a plan that considers the needs of Columbus, Georgia without considering Phenix City, Alabama is no plan at all.[1] This is equally true for a plan which allocates water from the Coosa for Atlanta without considering the needs of Gadsden, Montgomery and Mobile. EPD should return these plans to the regional councils for further consideration of stakeholder needs throughout the watershed and actively engage the State of Alabama in basin level planning.

ADOPT A WATERSHED PLANNING APPROACH

River systems do not fit nicely into political boundaries. While it may be more expedient to divide the planning regions along county lines this is not a scientifically practical approach. From the outset, the regional plans are hamstrung because of the arbitrary assignment of rivers from unconnected watersheds. This is most apparent in the division of the rivers contributing to the Mobile Bay Watershed between the Coosa-North Georgia Region, the Metro-North Region, and the Middle Chattahoochee Region. As an example, the Tallapoosa, which was just designated as an Outstanding Alabama Water (the highest water use classification available in the State of Alabama), is disconnected from the Coosa, part of its natural watershed, and shoehorned into the Middle Chattahoochee region. From a planning perspective, this does a disservice to those living in the Tallapoosa watershed and it clearly obstructs consideration of its contribution to the Mobile Bay watershed. After reviewing each of the plans, the clear result of delinking the rivers from their larger basins is unnecessary confusion as to the ability of these waters to meet projected demands. Additionally, this decision lays a cornerstone for future conflicts over mis-allocation

[1] We understand the difficulty that the planning councils have had in obtaining information from the State of Alabama. While it is unfortunate that ADEM was unwilling to provide requested information, it seems more effort should have been made to include local governments and individual stakeholders regardless of state in the planning process.

of water resources and inter-basin transfers. ARA recommends reconsidering the regional boundaries to better reflect the natural watersheds of the States.

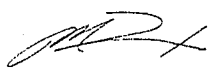
SET ENVIRONMENTAL FLOWS AS BASELINE PARAMETERS

On the whole, the regional plans do not adequately address environmental concerns. For instance, other than maintaining compliance with Georgia's 7Q10 guidelines, the Middle Chattahoochee plan is virtually devoid of natural aquatic protections. This plan considers hydropower, flood control, navigation, recreation, fish and wildlife protection, and sport fishing. However the only discussion of proactive protection for wildlife comes from the existence of federally managed wildlife management areas on a manmade reservoir. This provides little protection to the natural aquatic environment. Protecting the flows necessary for a sustainably healthy natural ecosystem should be a baseline consideration addressed as part of any discussion of instream flows. The goals of the Coosa-North Georgia plan reduces environmental protection even further by looking at environmental enhancement, "when possible" but only after minimizing "adverse effects to local communities and adjacent regions". To be fair, much of the measures called for in these plans will no-doubt prove beneficial to the aquatic environment including calls for best practices to control pollution and mandatory buffers to protect water quality, however, the greatest threat to the environment is a plan that over allocates the water in the system leaving nothing to sustain the natural environment. EPD should closely review each plan to ensure that adequate consideration is given to the protection of the natural aquatic environment and establish naturally variable adequate flow regimes to ensure the long term sustainability of the natural aquatic system.

CONCLUSION

We appreciate the opportunity to contribute to Georgia's efforts to plan for the long term sustainability of our shared water resources. This is a much needed step in the right direction. Thank you for your consideration of these comments. If there are any questions, please do not hesitate to contact us at 205.322.6395 or at mreid@alabamarivers.org.

Sincerely,



Mitch Reid, J.D.
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cc. Tom Littlepage, Alabama Office of Water Resources, 401 Adams Avenue, Suite 434, Montgomery, Alabama 36104

Altamaha
RIVERKEEPER®

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June 23, 2011

To Whom it May Concern:

Attached with this letter, please find the comments of Altamaha Riverkeeper's Oconee Project Director Ben Emanuel regarding the Draft Recommended Regional Water Plant for Georgia's Upper Oconee Region. Please contact our office if there are problems with this transmission.

Thank you

Deborah Sheppard

To Whom It May Concern:

Thank you for the opportunity to submit comments on the Initial Draft Recommended Regional Water Plan ("Plan") for Georgia's Upper Oconee Region. I submit these comments on behalf of the Altamaha Riverkeeper organization, whose mission is to protect and restore the habitat, water quality, and flow of the mighty Altamaha River from its headwaters in the Oconee, Ocmulgee and Ohoopee rivers to its terminus at the Atlantic Coast.

I have attended the great majority of the meetings of the Upper Oconee Regional Water Planning Council, and the plan's development has been part of a planning process that holds much potential for the wise and sustainable use of water resources in Georgia for the future. The Council members exhibited a high degree of interest in the planning process, and like many, I appreciate their individual dedication to a complex and difficult task.

There are areas in which I believe the plan reflects wise judgment on sustainable water resource planning, and other areas in which I take exception to its findings, its recommendations, and it presentation of such a rich complexity of significant material.

Perhaps the most important note that rises to the top in assessing the plan is its complexity in the face of a constantly changing environment. For example, from resources assessments to forecasting, the various factors influencing the Plan may change at any time due to the impacts of changing land use, economic patterns, water conservation, or a myriad of other factors. Thus, it is important that the plan be used with the proper frame of reference when it is called upon to inform regulatory and planning decisions by local and state government entities in the future.

In the comments that follow, I address several portions of the plan which I support or to which I take exception.

I. A. Forecasting and 2010 Population Projections Versus 2010 Census Data

Now that population data are available from the 2010 U.S. Census, it is worth comparing the population projections in Table 4-1 of the Upper Oconee Initial Recommended Regional Water Plan for the year 2010 to those numbers found by the Census for 2010. In every county in the Upper Oconee Council region with the lone exception of Putnam County, the Governor's Office of Planning and Budget (OPB) projected a 2010 population figure for the water planning process that is higher than the actual population recorded by the U.S. Census. While in many cases the discrepancy between projected and actual growth through 2010 is minor (less than 2,000 people in most cases), there are significant discrepancies in three upper-basin counties: Barrow, Jackson and Walton.

In Barrow County, the OPB projection is higher than the Census figure by 6,346, a difference of 9.2% over the Census figure of 69,367. In Jackson County, the projection is higher than the Census figure by 5,765, a difference of 9.5% over the Census figure of 60,485. In Walton County, the projection is higher than the Census figure by 7,300, a difference of 8.7% over the Census figure of 83,768.

Cumulatively, the discrepancies from Census figures in these three counties alone add nearly 20,000 "extra" people to the upper Oconee basin as of 2010. It goes without saying that inaccuracies in population projections can and will lead to skewed forecasting, which in turn influences the usefulness of the entire Regional Water Plan. This is especially important because so many of the gaps and shortages in the Initial Recommended Regional Water Plan for the Upper Oconee region revolve around forecasted water and wastewater demand, and are therefore essentially based on population projections. Before local governments in the Region expend resources to address future gaps noted in the Regional Water Plan, this forecasting should be re-examined; at the very least, local governments should be made fully aware of the potential shortcomings, limitations or inaccuracies of the forecasting around which the Plan revolves.

I. B. Forecasting and Population Projections Through 2050

Perhaps more important than the 2010 population projections are those for the years 2020, 2030, 2040 and 2050. Table 4-1 projects population increases in excess of 200% for Barrow, Jackson and Oconee counties from 2010 to 2050, contributing to projected upper-basin growth of more than 600,000 people by 2050. (Barrow, Jackson and Walton counties each will have populations greater than 200,000 by the year 2050, according to Table 4-1.) Given these counties' dependence for economic growth on the homebuilding industry and that industry's very weak status in the wake of the recession beginning in 2008, it would be wise – if not necessary – to revisit these population projections for planning purposes. Again, the accuracy of these population projections is fundamental to the usefulness of the Upper Oconee Regional Water Plan; any and all analyses of gaps and shortages, as well as the development of management practices, suffer if these projections do not closely reflect reality and the best available information.

II. Municipal Demand Forecasts

Table 4-2 shows a 2010 municipal demand forecast for Athens-Clarke County of 18.39 MGD (annual average). However, at an Athens-Clarke County (ACC) Mayor & Commission Work Session on April 12, 2011, ACC Public Utilities staff and contractors presented consumption data for Fiscal Year 2010 that conflicts with this forecast figure. The actual Annual Average Demand for FY 2010 in Athens-Clarke County was roughly 13 MGD – considerably less than the 18.39 MGD figure cited in Table 4-2. Monthly average demand in FY 2010 did not exceed 16 MGD.

Due to drought-related demand reductions beginning in 2007 and to demand reductions associated with the ongoing economic downturn, it is highly likely that actual demand numbers for most counties in the Region (especially in the upper basin) were lower than those forecasted in Table 4-2 for 2010. In fact, ACC Public Utilities staff and contractors attribute a majority of Athens-Clarke's roughly 4 MGD total peak month reduction (2010 versus 2006) to a combination of drought-response conservation and efficiency measures (i.e. mostly permanent reductions) by industrial and institutional water customers, to conservation outreach and awareness education to the public at large, and to the economic downturn. These factors will certainly also apply in other Region counties (especially in the upper basin), where the actual 2010 water demand is almost sure to have been less than the forecast figure, just as is the case in Athens-Clarke County.

III. Habitat Protection and Ecological Sustainability

It is very good that Section 3.3 of the Plan identifies impaired waters, conservation areas and high-priority waters, noting that Figure 3-7 identifies approximately half of the Oconee watershed as a high-priority watershed. One would hope that the import of the Plan as a whole reflects this fact, but this is not necessarily clear.

More to the point, Section 3.3.3 describes the Robust Redhorse (*Moxostoma Robustum*), noting that "The Oconee River contains a remnant gene pool that is considered indispensible to the recovery of this rare species." While it is very good that this critical information on the Robust Redhorse is noted in the plan, I remain concerned that the plan's outputs – gap analysis, management practices, implementation guidelines and recommendations – do not actually address the significance of this important (indispensible, in fact) piece of the Oconee River's ecology.

IV. A. Water Supply Management Practices and Implementation

The list of Water Supply Management Practices in Section 6 wisely lists the expansion of existing reservoirs ahead of the construction of new water supply reservoirs. Emphasizing the use of existing reservoirs for water supply is highly likely to minimize impacts on natural resources and save money for local governments and their ratepayers and taxpayers over the long term.

Water supply management practice #2 (construction of new water supply reservoirs) perhaps should receive a lower ranking in Table 6-1(b), since it is in fact dependent on accurate water demand forecasting which in turn depends on accurate population projections. Local governments in the region should be careful not to commit public funds to water supply reservoir projects when those reservoirs may not be needed to meet demand. In many cases, a thorough examination of the potential of water conservation and efficiency to reduce demand may circumvent the need for a new water supply reservoir at a fraction of the cost. (In 2010, EPA Region 4 issued guidance to assist with precisely this type of assessment.)

Moreover, the successful use of existing reservoirs for water supply (WS-1) in the Region may alleviate or eliminate the need for new water supply reservoirs.

IV. B. Water Conservation Management Practices and Implementation

The list of Water Conservation Management Practices in the Plan exhibits a wise approach to water resource planning and stewardship. The emphasis on conservation rate structures (WC-1) could go a long way toward encouraging sustainable use of water resources throughout the region while also sustaining utility revenues in a way that is fair to ratepayers. It is important that the term "conservation pricing" be defined as specifically as possible so that any new rate structures are in fact effective in bringing about conservation. In addition to eliminating declining block rate structures, utilities in the Region should implement increasing block rate structures.

Missing from the Water Conservation Management Practices are measures to encourage retrofits for water efficiency, especially in the residential and commercial sectors. The Council would do well to find ways for utilities in the Region to incentivize water efficiency retrofits, bringing about better stewardship of the resource while also helping ratepayers save both water and money. (If such a Management Practice were to be included in the plan, a useful recommendation to the state would be to identify grant funding for local utilities to increase their ability to provide incentives to customers, rather than just the loan funding sources such as exist currently through vehicles like the State Revolving Fund.)

IV. C. Water Re-Use

In several instances the plan exhibits a clear interest in water re-use. All Management Practices and recommendations related to water re-use in the plan should include a call for further study of the effects of pharmaceuticals, antibiotics, hormones (and hormone mimics), trihalomethanes and other disinfection byproducts on water supplies involving direct or indirect potable re-use. While re-use can reduce withdrawals from surface water bodies and is well worth assessing, it should only be done safely and strategically. As with other Water Supply Management Practices, water re-use may not needed to any great extent in the Region if demand reduction can be accomplished through cost-effective solutions grounded in water efficiency and conservation.

IV. D. Interplay Between Different Sets of Management Practices

Neither Section 6 nor Section 7 of the Initial Recommended Regional Water Plan prescribes the nature of the interaction between Water Conservation Management Practices and Water Supply Management Practices. If successful, the Water Conservation Management Practices could alleviate or eliminate the need for many of the Water Supply Management Practices – and in a very cost-effective fashion – yet the Plan gives little guidance to local utilities on this topic of interplay

between different sets of practices. The plan would almost certainly benefit from more explicit guidance on this matter.

Thank you again for the opportunity to comment on the Plan. I hope that these comments are helpful to the planning process now and in the future. Please don't hesitate to contact me if any of the items in these comments warrant further discussion.

Sincerely,

Ben Emanuel
Oconee River Project Director
Altamaha Riverkeeper, Inc.

American Rivers

June 23, 2011

Via E-mail (info@georgiawaterplanning.org) and Fax (404-651-5778)

Arnettia Murphy
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, GA. 30334

RE: Initial Draft Recommended Regional Water Plans for the Upper Flint, and the Lower Flint-Ochlockonee Planning Regions

Dear Ms. Murphy:

Flint Riverkeeper and American Rivers submit the following comments concerning the above-referenced plans. Flint Riverkeeper is a grassroots, membership-based organization representing families, farms, businesses, and other nonprofits, dedicated to the restoration of flow and quality in the Flint system from Metro North Georgia to the Florida line, including all of the Flint's tributaries. American Rivers is a leading national conservation organization fighting for healthy rivers so communities can thrive. American Rivers is headquartered in Washington D.C. with field offices across the country including the Metro North Georgia area.

We have been closely engaged in the water management planning process since its inception. We have worked closely with members of the Georgia Water Coalition (GWC) and have made general comments on the planning process that have been included in correspondence under GWC letterhead, submitted also this date. We agree with many, including the GWC, that the Regional Water Plans that were released for public comment on May 9, 2011, represent one of the most significant steps in the continuing evolution of water planning in this state. Particularly as Georgia slips back into drought conditions across parts of the state, and as uncertainty continues related to the ongoing Tri-State Water Wars, sound water management must remain a central priority for all decision-makers, as it will determine the future economic and ecological well-being in our state.

Our comments are made individually, as noted below, but are counter-endorsed by each organization.

Comments of American Rivers (Upper Flint Plan)

Population Forecasts Only high growth population projections were used as a basis for planning. These forecasts projected that population in the Upper Flint Region is expected to increase by 63.1% from 245,827 in 2010 to 401,059 in 2050. (p.34)

- Recommendation: Water use planning should be conducted for a range of growth scenarios not only the high growth scenario. The state should evaluate high,

medium and low growth scenarios in order to develop a range of projections for which to plan.

Demand Projections Aggressive water efficiency is not explored as a viable source of water supply."The municipal water forecasts were calculated by multiplying an estimate of per capita water use by the population to be served. Per capita use rates were adjusted to reflect expected water savings over time from the transition to ultra low flow toilets (1.6 gallons per flush maximum), required by federal and state laws. Without aggressive water efficiency, "between 2010 and 2050, water demands are forecasted to increase by 25%..." p.34

- Recommendation: Develop a plan to reduce water demand and implement the plan to secure water supply for new residents and to augment flows. Increase in population does not require an increase in water demand. If planned for and implemented, total water demand can actually go down while population increases. In 2001, Seattle, Washington committed to reducing demand from existing customers by 1% a year in order to provide water to new residents with the saved water. This has been a successful program and a model for growing communities across the country.

Section 6: Addressing Water Needs and Regional Goals

DM3: Implement Tier 1 and 2 non-farm water conservation practices in the region

- Recommendation: Conservation should be prioritized as a "high priority management practice" and an assessment should be conducted of the potential for water conservation and efficiency to cost-effectively fill the gap and secure new water for population growth and instream uses.

DM4: Implement Tier 3 and 4 non-farm water conservation practices with the support of incentive programs. Utilize incentive programs to support the use of these practices.

- Recommendation: The Draft Plan indicates that conservation is one of the top ways in which the projected gap in Upper Flint water supply is to be filled, however, there is little in the way of new policies or demand reduction targets included in the plan. The Council should recommend an assessment of water conservation and efficiency potential in the basin similar to the assessment recommended for increasing storage (A full range of storage and reservoir options should be evaluated p.52.) The assessment should include the potential for water conservation and efficiency to provide water savings and close the gap; a benefit-cost analysis as well as a side by side comparison of the costs and benefits of conservation/efficiency with other options for closing the gap such as reservoirs/storage.
- Recommendation: The Upper Flint Regional Water Plan should require water users to adopt the recommendations of Georgia's Conservation Implementation Plan. To the extent they are represented in the region, water users include water providers, industry, agriculture, golf courses, landscape irrigators and state agencies.
- Recommendation: In addition to this option, we recommend allocating state funding to facilitate the implementation of these programs. The Water Stewardship Bill included a

number of new code and water loss reporting requirements. There was no funding provided for the implementation of these new requirements. The state should provide technical assistance, loan and grant funding to communities in order to implement the new requirements including the water loss audit, leak detection and abatement programs.

SF1 -High Priority Management Practice: ***Evaluate storage options in the Upper Flint Region that can provide for supply and flow augmentation in dry periods (p.52)***

- Recommendation: The water loss related to reservoir development should be evaluated, quantified and taken into consideration. Additional storage is cited as the highest priority management practice in order to close the gap in water supply. However, additional storage can also have the unintended consequence of actually reducing the available water through evaporation. [i]
- Recommendation: Conduct a thorough triple-bottom line (economic, environmental, and social) benefit-cost analysis of reservoirs as compared to other supply options such as water conservation and efficiency to determine which option provides the most benefit at the least cost.

  As noted in the plan "The shortfall identified by the model at Bainbridge resulted from consumptive water use and the effect of model assumptions about withdrawals of water for storage above Montezuma." (p.25) This would seem to indicate that the diversion of water for reservoirs upstream does *not* augment water resources downstream, but instead the diversion consistently contributes to lower flows downstream in the Flint.

8. Monitoring and Reporting Progress: Regional Water Plan states that it will measure progress through "per capita water use" indicator.

- Recommendation: The State should adopt standardized methodology for computing "per capita water use" similar to New Mexico's methodology and calculator (http://www.ose.state.nm.us/wucp_gcpd.html).

Comments of Flint Riverkeeper (Upper Flint, & Lower Flint-Ochlockonee Plans)

- The representation on the two councils strongly white, and male, perhaps 100%; effort should be invested in diversifying the councils on a gender and racial basis, to more accurately reflect Georgia's diverse population. The boundaries for planning are drawn incorrectly, not properly capturing the Flint watershed, including significant areas of the upper Flint that are located in the Metro North Georgia district.
- The planning node is chosen incorrectly; they are not located such that they can capture the realities of what has happened and what may happen in the watershed, hydrologically. Flow issues in the Upper Flint cannot be captured at the Montezuma node and the totality of what is happening in the lower Flint and the entire watershed would be better understood by adding Newton as a planning node.

- The mission statement in the Upper Flint Plan is commendable; it places sustainability, public health, and support of natural ecosystems ahead of supporting the economy. "Quality of life" benefits are displayed as an integration of the preceding, a logical and laudable construct.
- Emphasis on capture and control is unbalanced, and does not square with goals of sustainability and support of natural ecosystems.
- The identification of no shortfall of flows at the upper Flint planning node (Montezuma gauge) is a misleading and erroneous conclusion, an artifact of node selection. The proper analytical gauge for the upper Flint is Carsonville (aka Culloden), which has a sufficient history (period of record) for squaring with other possible and actual nodes, and is located at an ecotone/ecoregion boundary (the fall line, transition from the piedmont/Pine Mountain region to the upper coastal plain).
    - Analysis of the Montezuma node is substantially biased/clouded by voluminous inputs from groundwater, supporting baseflows in a valuable and substantial way, but failing to elucidate very real issues in the upper Flint.
    - Flows at Carsonville have been radically altered by changes in climate, land cover, reservoir construction and operation, withdrawals (including IBTs), and returns (or lack thereof, e.g. but not limited to IBTs) since 1980 (a "natural" break in the dataset, statistically speaking). The data are quite clear. Minimum flows (1-day; 3-day; 7-day; 10-day) have demonstrated a 50 to 70% decrease in that time period, and an overall 17% decline since 1960 (an arbitrary break in the dataset, based upon know regional trends in human population). This is completely unaddressed in the present analysis.
    - Documented (EPD) IBTs alone are responsible for 7 to 17 percentage points of the documented declines (year- and flow-condition-dependent) at Carsonville, 10 to 35% of the problem. Returns of even half of the known IBTs could improve current, worst-case minimum-flow conditions between 25 and 60%, a significant benefit to riparian owners and other private and public interests in the upper Flint, as well has render benefits to the middle and lower Flint. This is unaddressed in the Flint plans.
    - Further, the analyses of the benefits of municipal, industrial and agricultural conservation efforts in the upper Flint are diminished/trivialized by the current construct of the plan. Even small improvements of returns of withdrawals/diminishment of consumptive use would yield significant improvements in flow conditions in the upper Flint system.
        - For example, a mere 1 mgd improvement in returns from M&I uses in the upper Flint, above Carsonville, which is less than 5% of total withdrawals for the analytical region (a mismatch, but the percentage is even less than that for the total withdrawals above Carsonville, including counties in the Metro District), would improve the new-era minimum flows at Carsonville

by 3%, a significant result for private property owners, public property uses, and ecological uses, and an imminently achievable goal given the known efficiencies in the upper Flint.

- The plan suffers from a lack of analysis of the flow conditions in the major tributaries of the upper Flint (e.g. what is known as the "Flint" above its confluence with Line Creek, Line Creek proper, Elkins Creek, et cetera). There are major withdrawals, impoundments, and developmental patterns affecting flow on these systems. There are T & E species in these systems. There are significant cultural, recreational, and agricultural resources in these systems. Yet, they are not analyzed. Several of these systems actually go dry (zero base flows) during "regular" (average-flow) years in the modern hydrologic era (since 1980, defined by new low-flow conditions at Carsonville), yet are wholly unaddressed in the current analysis.
    - This fact points to several sub-issues in the analysis and conclusions, based upon scaling and attendant inputs/outputs. For example, conclusions concerning urbanization/suburbanization (conversions of farm and forestry lands to human habitation), while correct on the scale presented, obscure the results on the ground in counties such as (south) Fulton, Fayette, (eastern) Coweta, Clayton, Spalding). The percentages of ground cover converted from ag and forestry uses to impervious and channelized uses are much, much higher than presented in the plan (5% . . . . . these figures exceed 50% in some regions, and 20% in many), and therefore have much, much greater impacts on hydrology than discussed, or addressed.
    - Yes, several of the areas mentioned are NOT in the upper Flint planning district; however, this is related to one of the main failures of the plan and planning process,that of incorrectly drawn boundaries,and does NOT excuse the state or the council from incorporating the very real hydrologic realities of the historical facts and trends, and the uses in those areas, to the plan, because the council has a duty to provide accurate, meaningful data to EPD for planning purposes, and to the public for educational and future planning purposes.
- The criteria used in the model to assess sustainable groundwater resources are flawed. The drawdown figures are unreasonable from a reasonable-riparian-use viewpoint/doctrine. Drawdown figure of 40 feet in "known" adjacent wellheads/locations are not only arbitrary, but patently unfair and unsustainable, and are therefore in conflict with the vision and goals of the plan. They are also, at this writing, being revealed to be wholly unprotective of adjacent, and even far-placed wells, as many, many important wells in SOWEGA go dry, and have to be dropped to deeper depths.
- The mal-selection of surface water planning nodes has produced a concatenated error not only at Carsonville, but also at Montezuma and Bainbridge. "Gaps" are not calculated correctly, also not properly integrating groundwater interactions, and therefore do not reflect hydrologic, economic, or ecologic reality.

- "Energy" uses in the system are trivialized. There are uses in the system, outside of the planning region (e.g. Plant Mitchell, Miller-Coors, Weyerhauser, et cet) and even outside of the state (Gulf Power facility, downstream of Chattahoochee, FL) that are nevertheless supported by resources inside the planning region.
- Landscape changes, in addition to being trivialized (historically) due to improper boundary selection, are not accounted for going forward. If you are going to project population increases, you cannot fail to project hydrologic changes due to ground-cover changes due to very-well-known impervious-surface/surface-water interactions/relationships, and lack of regulatory framework in GA.
    - The population in the upper Flint region (not accounting for the ENTIRE upper Flint, just what is in the planning region) is projected to increase by 155,000 by 2050. This will not only increase M&I needs/uses, it will also increase impervious surfaces and channelization, for rooftops, driveways, roads, shopping-related uses (a multiplier effect), churches, schools, et cetera. The 60+ percent increase in population will yield a 60-or-more percent increase in impervious surfaces and impacted headwaters (channelization), if not regulated (a good bet in Georgia). This will have a profound effect on peaking flows, flow durations, water quality, and baseflows, and is not modeled in the flow or quality analyses for the upper Flint planning region or the lower Flint-Ochlockonee planning region.
- The plan is too quick to jump to the conclusion of "additional storage" as a solution to Flint issues en toto, in concert with Mid-Chatt and Lower Flint-Ochockonee plans
    - This is not consistent with less expensive, less consumptive (v. reservoirs at very high cost, high evaporation, strong pool-level constituencies) options e.g. returns of IBTs, 5 to 10% increases in efficiency/conservation, better control of existing reservoir releases.
    - This is highly notable in that it is a management practice that contemplates coordination in the ACF with other councils (Mid-Chatt, Metro, North GA), yet, in so many other areas there are so many missed opportunities for analysis and solution scenarios that cross planning boundaries, and that that are much, much less expensive and much, much more efficacious and sustainable than adding storage to the system.
- Water quality issues are poorly analyzed and therefore not addressed in the two plans. In particular, low flow issues in the upper Flint, lower Flint, and Ochlockonee systems are introducing (known) water quality issues to the systems that are not properly modeled in the present analyses. Also, known impairments in the systems are not addressed by anything more than an endorsement of the present regulatory and enforcement rubrics of Georgia . . . . . the status quo . . . . . a "plan" that insures present conditions continue without legal, outside intervention, a "plan" that is not consistent with the vision and goal of sustainability, public health, protection of natural systems, economic health, and quality of life.

- EPD continues to issue permits despite the facts that
    - Current lower-Flint permitting is 9x usage, and usage is now drying up Spring, Chickasawhatchee, Ichauway-Nochaway, Kinchafoonee/Muckalee/Muckafoonee, Muckaloochee, and related trib systems, ignoring T&E issues and riparian-rights issues
    - The Flint is setting May and June daily low-flow records
    - These new and record stats are occurring despite the fact we are not in a record-drought situation
    - There is ample opportunity for the Council to recommend incentives for conservation and other incentives in the ag-permitting-and-use system, but none are suggested.
    - Consumptive uses in ag are assumed at 100%, which is clearly in error, and variable across the landscape, a modeling error that has grave analytical consequences, and one we a agree with the Council on.
- Existing reservoirs are not viewed as sources, in any light, of low-flow supports, despite their existence. Altering release prescriptions on existing reservoirs could yield significant baseflow support.
- The plan indicates 100% returns of thermoelectric withdrawals; this is not possible with today's technology.
- Total average M&I withdrawals (ground and surface waters) in the lower Flint, on average, are stated at 165mgd. A 10% improvement in returns would yield 16mgd, 24cfs, yet this is poorly explored in the plan.
- Total ag withdrawals are shown based upon "averages", but with some more specific data available in the document; yet, we know that ag withdrawals in the lower Flint region/Dougherty Plain are circa 1 billion gpd during intense periods of irrigation. A 10% improvement in ag efficiency could yield 100mgd, or 150cfs.
- Total upper and lower Flint improvements in efficiency/returns, at the 10% level would yield well in excess of 200mgd (300cfs), a significant contribution to whatever size the issue really is at the FLA line (a highly debatable number, from any angle). By adding more efficient uses of existing reservoirs, additional baseflow could be supported.
- The Ochlockonee system is slated for perpetual degradation in the present plan. There are no measures slated in the plan that will improve already-too-low-flow conditions in the Ochlockonee, along with associated water-quality issues. There are also not measures slated that will address the massive E&S issues in the system (similar to the Ohoopee's plight, and the Ogeechee's plight, plus that of the upper Satilla and Little Satilla). This delicate blackwater system needs to be revisited by the responsible council and EPD, with true improvement the goal. The E&S and oxygen issues, the latter associated with low flow conditions, must be addressed.

- Farm-pond and wetlands-destruction effects/opportunities are not adequately addressed in the lower Flint-Ochlockonee plan; they are at least mentioned (also an issue in the upper Flint).
- More proper planning should:
    - use the Newton and Carsonville gauges
    - incorporate portions of the Flint that lie in the Metro District
    - combine Flint and Chattahoochee flow characteristics in a larger planning rubric (using the flow gauge at Chattahoochee, FL, in addition to others)
    - properly parameterize "sustainable" drawdowns of groundwater
    - incorporate tributary flow analyses
    - properly account for surface/groundwater interactions, variable over the landscape and highly interconnected in certain portions of the planning region
    - properly account for energy-related uses
    - properly account for landscape changes, including projections into the future
    - address quality issues head-on, including those "covered" by the (wholly inadequate) TMDL process in GA
    - not so strongly emphasize "additional storage" (reservoirs) as a go-to option made, separately, but nearly identically, in this commentary
    - Carefully examine all efficiency and conservation opportunities using existing, know technologies
    - Carefully examine opportunities associated with changes in the withdrawal permitting systems

Joint Conclusions

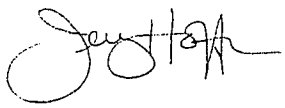
We echo the Upper Flint Regional Water Council: Georgia's elected leadership must resolve the Tri-State Water Wars and reach a settlement with Alabama and Florida (Upper Flint plan at 7-18). The GWC recommends taking the following actions: First, Georgians must make Congressional reauthorization and reallocation of the water from Lake Lanier a central component of future water supply plans. Second, Georgians must use water demand projections that realistically reflect metro Atlanta's and all of Georgia's future water needs. Third, Georgians must not develop or implement water management plans that deprive intrastate and interstate downstream communities of the chance for future economic growth, prosperity and ecological health. Finally, Georgians should focus on aggressive use of water conservation and efficiency measures which will reveal a "hidden reservoir" of water at a price per gallon significantly less than the expensive structural options and poor choices recommended by multiple councils, such as new reservoirs, new and expanded IBTs, desalinization, and aquifer storage and recovery.

We look forward to continued participation in the state and regional water planning and water management processes. The next round of regional water planning needs to be set in motion without delay, as the current proposed plans represent no more than a first step. We note

that most, if not all Councils, and high-level EPD staff, agree with us on this point, and we are prepared to help facilitate the next steps, politically and practically. The personnel on the regional councils have spent a significant amount of time and effort learning this material, and those personnel should be kept in place, provided they continue to be willing to serve. Appointments for vacancies, including those created by lack of attendance at council meetings, should be filled. Attention needs to be paid to increasing the diversity of the councils through the process of appointing new members or filling vacancies, wherever possible. Women and people of color are underrepresented in many council memberships. Most importantly, regional boundaries should be adjusted to more closely reflect the river basins with which the councils are concerned.

Thank you for your consideration of these comments.

Sincerely yours,



Jenny Hoffner for American Rivers

(signed)

Gordon Rogers, Flint Riverkeeper®

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June 16, 2011

Mr. Allen Barnes, Director
Georgia Environmental Protection Division
Allen.barnes@dnr.state.ga.us

Dear Allen:

This letter is in reply to your request for comments on the regional water plans. The following are my comments on the Lower Flint Ochlocknee Water Plan.

This plan clearly identified a big gap in resource availability in the event of a severe drought. What is missing is any indication of what the agriculture interests and the local water utilities are prepared to do to reduce the gap in order to help themselves. Therefore, the gap would presumably be met by drawing more water from the Chattahoochee basin in order to meet the minimum flow requirements at the Florida line. It seems to me at the bare minimum folks in the Flint River Basin need to implement conservation measures such as those that have been implemented in the Metro North Georgia Water Planning District to reduce demand. Those measures have made a significant dent in the per capita consumption in the Upper Chattahoochee Basin and an improvement in the quality of the returns.

The agriculture sector, as the largest user in the Flint basin, needs to refocus on all possible effective conservation measures in order to avoid "the tragedy of the commons," particularly because of the dire economic consequences to itself and for the economy of the state if they do not. Clearly, there do need to be efforts to develop water storage in the upper reaches of the Flint River, but there is much that could be done here and now. We all know that reservoir building will be slow and contentious and it does not seem to be prudent to wait on that.

The fundamental problem is that at the point when a drought would have gotten really severe, Lake Seminole, Lake Walter F. George, and West Point Lake will have been drawn down to the point where virtually 100% of the water supply will have to come out of Lake Lanier. That in itself is an unsustainable solution.

The bottom line is that we are going to need a State Water Plan that reconciles differences between and among the regional plans and sets standards to which the regional plans must comply in order to get water and wastewater permits. Given how long it will take to get additional reservoirs built and operating, conservation measures like tiered pricing, plugging leaks, appliance replacement, etc., etc. need to start now.

Thank you for considering these comments.

Sincerely yours,

Brad Currey

cc: Linda MacGregor, Watershed Protection Branch Chief

From: "David Kyler" <susdev@gate.net>
To: <info@georgiawaterplanning.org>
Date: 6/30/2011 5:06 PM
Subject: comments on the Coastal Regional Water Plan
Attachments: Spring 2011, with masthead format.doc

Based on my review of the current draft of the coastal regional water plan, I am concerned that the portrayal of water use for energy production is misleading due to distinctions between power plants in the coastal portion of the five watersheds involved (Savannah, Ogeechee, Altamaha, Satilla, and Saint Marys) and areas of the same watersheds further inland.

While it may be true that only 1.3% of water use in the coastal region of these watersheds is used for power production, demands for power generation in the interior ranges of some of the same watersheds is significantly higher. This is because cooling towers used in the larger plants convert enormous volumes of water into vapor, reducing the amount returned to the source of supply by 40% or more.

As competing demands for water in Georgia's watersheds require ever-improving standards of water-using efficiency, it is imperative that the state's energy policy is guided by responsible assessment of associated water demands. If regional water plans do not include a clear explanation of the true impacts of conventional forms of power production on the availability of water within the entire watershed for each river, Georgia runs the risk of propagating past mistakes by making unwise energy choices that squander water resources.

Even if some segments of watersheds feature relatively low use of water for power production, the regional plans must uniformly clarify the strong connection between energy use and water management. I urge you to adopt language to be used in each regional plan that clearly explains the importance of energy conservation and converting to sources of energy that use little if any water in daily operations.

Please refer to the document at the following link for more explanation, some of which could be excerpted to provide the explanation recommended.
http://www.ucsusa.org/assets/documents/clean_energy/10-Things.pdf

Please contact me if you need more information or have any questions about my comments and suggestions.

Thank you.

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Spring 2011

Urgently Needed: Fresh Approach to State Development Policy and the Environment

State officials have never been enthusiastic about regulation, but the dual impacts of DNR budget cutting and desperate preoccupation with economic development are now marginalizing Georgia's natural environment even further.

A persistent and troubling example is the near universal accord to build more reservoirs as the first-order solution to state water management problems. This foolhardy remedy neglects two fundamental realities:

1. As we pointed out in an AJC guest column a year ago, the state's two largest water users, power production and agriculture, face no rules for conserving the huge volumes of water they consume. Under the Water Stewardship Act, virtually all water to be conserved in Georgia will be done by those municipal, residential and commercial users who consume no more than one-third of the water being used. This means that the cheapest and easiest solution to water management – improving water-use efficiency at farms and power plants – is not being seriously considered. Water-wasting coal and nuclear power plants continue to be permitted as if they have nothing to do with water problems – a counter-productive delusion nurtured by fragmented state policy.
2. Reservoirs waste water by accelerating evaporation. When rivers are diverted into large holding areas, exposure of water to air is vastly increased. The amount of water lost to evaporation depends on both the area of the reservoir and the ambient temperature. In sultry summer months, these losses are especially wasteful – as much as 40% of water stored in reservoirs can be lost during heat waves.

Another example is the much debated attempt to control "inter-basin transfers" (IBTs) – when water taken from one river is pumped to users in the drainage areas of other rivers. The DNR board recently adopted rules that make it optional for those who regulate IBTs to consider the downstream implications. Such weak controls seem crafted to invite reckless disruption of river ecosystems while indulging fast-growing areas of the state at the expense of smaller communities with less political clout.

For several years now, the Center has promoted the most practical solutions to resolving these problems: (a) put primary emphasis on minimizing wasted water by implementing comprehensive water conservation programs among all user groups, especially the biggest users, and (b) to the maximum extent possible, guide growth to those areas naturally suited to supporting it.

Instead of intensifying wasteful urbanization in Atlanta, which creates a host of related problems – such as crime, traffic delays, air pollution, and related threats to public health – why not pursue a prudent pattern of growth that distributes economic opportunities more uniformly, while profoundly reducing environmental costs?

For decades urban planners have debated the optimum size for a modern, post-industrial city. Based on the criteria they considered, there is utterly no doubt that Atlanta has grown well beyond its optimum net benefit to Georgia's citizens. If state and federal funding is to be wisely invested in providing infrastructure for growth, surely such decisions should be guided by the goal of maximizing public advantages throughout Georgia, not just established power centers in Atlanta.

How state funds are spent on infrastructure – water and sewer systems, bridges and roads, etc. – is largely determined by two agencies: the Georgia Environmental Financing Authority, and Georgia DOT. The One Georgia Authority, devoted to advancing economic prospects in rural areas, should also be part of the discussion.

If the decisions made by these agencies were guided by well-reasoned review criteria that included environmental costs, comparing proposed projects on that basis, development activities minimizing disruption of natural resources would be favored over those that don't. Taking water from one river basin to another could be just one of many wasteful actions that would disqualify a project competing for limited public funds. Conversely, using natural resources responsibly to serve locally desired, sustainable business growth supporting the creation of fair-wage jobs and other community goals would be rewarded.

The One Georgia Authority, which seeks to bring economic prospects to rural areas of the state, should also be included in this effort.

The required shift in state policy would have to be coordinated with a reformed economic development strategy guided by similar criteria. Over time, using a coherent and enlightened set of guidelines, these measures would diversify the benefits of growth and geographically disperse the opportunities of stable development throughout Georgia, while greatly reducing environmental costs.

None of these steps would be easy, but they are essential if Georgians hope to retain environmental quality while advancing accessible, responisble economic opportunities for all.

Corps' Study Shows Deepening of Savannah Harbor Unneeded and Wasteful

Press release issued by Southern Environmental Law Center, January 25, 2011.

ATLANTA—The Corps' environmental analysis of the proposed deepening of the Savannah Harbor is either so fundamentally flawed that it must be redone, or it shows that the project is a colossal waste of valuable resources, according to comments submitted today to the U.S. Army Corps of Engineers by the Southern Environmental Law Center on behalf of the South Carolina Coastal Conservation League, the South Carolina Wildlife Federation, the Center for a Sustainable Coast, the National Wildlife Federation, and the Savannah Riverkeeper.

In its draft Environmental Impact Statement, the Corps asserts that the project has nothing to do with maintaining or increasing business for the Georgia Ports Authority at the Savannah terminal. If the terminal's business is unaffected by the proposed deepening and would continue to grow without it, the conservation groups point out that spending $600 million in taxpayer money to deepen the river and irreparably harm the river system is unnecessary and wasteful.

If economic studies should determine that the Corps' underlying assumption is incorrect, then the Corps' analysis must be redone as it fails to examine the environmental impact and risks of a busier port.

The conservation groups also highlight the need for a competitive comparison to other Atlantic ports to ensure the best, smartest investment of federal taxpayer money and to minimize damage to natural resources and unnecessary spending. Until the Corps analyzes regional alternatives for accommodating the larger class of container vessels, it should not propose to sink $600 million into deepening a 38 mile channel stretching from offshore of Tybee Island all the way to Garden City--a channel so deep it could swallow a four story building.

The proposed deepening of the river itself raises substantial concerns over harm to the river system and life dependent on the river's health. Among the major concerns of deepening are lower oxygen levels in the river that compromise river life and create complications for industrial dischargers upstream and seasonal dead zones compounded by salt water intrusion further into the river and the ground water supplies for local communities on both sides of the river.

Given the expected damage from lower oxygen levels after deepening, the Corps' plans to put the Savannah River on mechanical respirators that inject oxygen into the river. The EPA vetoed a similar attempted fix proposed for the compromised Mississippi River.

Additional comments from each group follow:

"The Corps asserts that the proposed deepening wouldn't affect the port's business, yet it would cost taxpayers hundreds of millions of dollars, and damage the Savannah River system which makes the proposed deepening a waste of public resources," said Chris DeScherer a senior attorney with Southern Environmental Law Center. "Until the Corps assesses the best regional location for federal taxpayer investment, moving forward with a $600 million deepening and accompanying damage would be irresponsible."

"We didn't find the reassurances we hoped to see in this study for the future integrity of the wildlife refuge, the continued safety of our drinking water, or the economic necessity of the project," said Andrea Malloy, interim director of the S.C. Coastal Conservation League's South Coast Office. "What this document asserts with certainty is that the salt water in the Savannah Harbor will definitely move further up river if the channel is dredged to 48 feet, cause "unfixable" damage to the refuge, and contaminate vital sources of drinking water. Our drinking water is not up for experimentation."

"We are very concerned that, contrary to the draft EIS findings, this project remains economically unjustified and fiscally irresponsible," said David Kyler, executive director of the Center for a Sustainable Coast. "If it is approved as the Corps recommends using the incomplete and faulty analysis in this draft EIS, valuable coastal resources will be degraded and the taxpayers' money will be squandered."

"If the deepening goes forward as proposed, salt water encroachment and lower oxygen levels would harm wildlife populations with a domino effect through the food chain and river system, even creating dead zones," said Jim Murphy, attorney for the National Wildlife Federation. "If underlying assumptions about port business and ship traffic change, the Corps' study would need to account for the threat to endangered right whales that give birth off the Georgia coast and are particularly vulnerable to ship strikes."

"The Savannah River provides over 1.4 million people with their fresh water daily and with 43 industrial outfalls serves as a major economic driver in Georgia," said Tonya Bonitatibus, Savannah RIVERKEEPER®. "The current Corps' study gives preferential treatment to downstream users over the remaining 375 miles of river and leaves those upstream on the hook for the potential negative impacts to the oxygen in the Savannah harbor."

The Southern Environmental Law Center is a regional nonprofit using the power of the law to protect the health and environment of the Southeast (Virginia, Tennessee, North and South Carolina, Georgia, and Alabama). Founded in 1986, SELC's team of more than 40 legal and policy experts represent more than 100 partner groups on issues of climate change and energy, air and water quality, forests, the coast and wetlands, transportation, and land use.

Responsible Water Management: The Energy-Water Collision

10 Things You Should Know

Energy and water are woven into our daily lives and strongly linked to one another. Producing energy uses water, and providing freshwater uses energy. Both these processes face growing limits and problems.[1] In most power plants, water cools the steam that spins the electricity-generating turbines. Refining transportation fuels requires water, as does producing fuels—for example, mining coal, extracting petroleum, or growing crops for biofuels. Using water in our homes and businesses requires getting it there, treating it, heating it, and more. Because of these links between energy and water, problems for one can create problems for the other. In places where using energy requires a large share of available water, or where water resources are scarce or stressed by competing pressures (such as the needs of farmers or of local ecosystems or, increasingly in many parts of the United States, by climate change), the energy-water connection can turn into a *collision*—with dangerous implications for both.

The 10 facts below summarize the water impacts of our energy choices—and ways to address them.

1 **THIRSTY FOR POWER**—Keeping U.S. power on each day requires more water than 140 New York Cities. The electric sector withdraws 143 billion gallons of freshwater per day.[2] More than half of the country's 104 nuclear power reactors use once-through cooling (see the text box on p. 4).[3] Each of these plants withdraws 25 to 60 gallons of water for each kilowatthour of electricity it generates.[4] Coal plants with similar cooling systems typically withdraw almost as much—20 to 50 gallons per kilowatt-hour—even without considering the water needed to mine coal or store coal waste from power plants (see the text box on p. 3). Those figures mean that for a nuclear or coal plant to generate the electricity for one load of hot-water laundry (using electric appliances), 3 to 10 times more water must be withdrawn at the plant than is used to wash the clothes.[5]

2 **WITHDRAWAL SYMPTOMS**—In the southeastern United States, power plants account for two-thirds of all withdrawals of freshwater. Nationally, the amount of freshwater withdrawn to cool power plants is roughly the same as that for crop irrigation.[6] In the Southeast, electricity's water withdrawals easily top agriculture's: power plants there withdraw an average of 40 billion gallons of freshwater every day, or 65 percent of the region's total.[7] Some plants lose or "consume" large amounts of the withdrawn water to evaporation (see the text box on p. 2): a typical 600-megawatt coal-fired power plant consumes more than 2 billion gallons of water per year from nearby lakes, rivers, aquifers, or oceans.[8,9]

3 **IN HOT WATER**—Water discharged from a coal or nuclear plant is hotter—by an average of 17°F in summer—than when it entered the plant.[10] Roughly onethird of all U.S. power plants use once-through cooling[11] and so return virtually all the water they withdraw. Still, these plants' significant water withdrawals can have a large impact on water quality, including temperature. Half of all coal plants report releasing water in the summer at peak temperatures of 100°F or more.[12] This thermal pollution can stress or kill fish and other wildlife. On Georgia's Chattahoochee River, for example,to several thousand fish perished each summer until Georgia Power retrofitted its coal-fired plants with cooling

A note from the Center...

For at least the past five years, the Center has been advising our members, the Georgia public, and state officials about profound conflicts between current state energy policy and wise water management. In legislative testimony and opinion columns published in the Atlanta Journal Constitution *and through other forums, we have urged the reform of Georgia's energy policy to reflect the simple truth that conventional forms of power production consume – and waste – enormous volumes of water, and thus they need to be held accountable to reliable conservation measures.*

Far more efficient sources of energy are available, yet Georgia continues to permit coal-burning power plants and the expansion of the Vogtle nuclear plant which, combined, will waste at least a hundred million gallons of water daily at a time when the state is struggling to find enough water to meet basic residential and commercial needs.

Indeed, Georgia is spending millions of dollars in legal fees wrangling with Florida and Alabama over "water wars" conflicts, while our state officials continue their reckless 'free-pass' neglect that allows power companies to squander huge volumes of Georgia's limited water supplies.

Such blatantly irresponsible performance is simply unacceptable at this stage in our understanding about resource management. We now have the technology, urgent need, and abundant justification to support adoption of a new energy policy that will correct wasteful practices under the state's currently uncoordinated, politically compromised, and contradictory policies for water use and power production.

- David Kyler
Executive Director
Center for a Sustainable Coast

towers in 2002.[13] Coastal power plants discharging warmed seawater can similarly harm local marine ecosystems.[14]

4 **HIGH AND DRY**—Water troubles can shut down power plants. Just since 2004, water stress has led at least a dozen power plants to temporarily reduce their power output or shut down entirely, and prompted at least eight states to deny new plant proposals.[15] During prolonged heat in the summer of 2010, for example, water temperatures in the Tennessee River hit 90°F, forcing the Browns Ferry nuclear plant to significantly cut the power output of all three of its reactors for nearly five consecutive weeks—all while cities in the region were experiencing high power demands for air conditioning.[16]

5 **WHAT DOES CLEAN MEAN?**—Clean energy can mean low carbon *and* low-water—or not. Increasing energy efficiency will allow us to meet our energy needs with less electricity—and thus with less water use at power plants. Shifting to certain renewable energy technologies, such as wind turbines and solar photovoltaic modules, means generating electricity with essentially no water at all. But water usage by other renewable energy options varies widely. Technologies that can be particularly water-intensive include concentrating solar power (CSP), bioenergy, geothermal, and hydroelectric. Some CSP plants use far less water per unit of energy than a typical coal or nuclear plant to cool steam; other CSP facilities use more.[17]

6 **MPG OR GPM?**—Powering your car with ethanol may use dozens of gallons of water per mile. The "water footprint" of conventional biofuels, such as corn ethanol, can be very large. Creating a single gallon of ethanol consumes, on average, about 100 gallons of freshwater. In some regions, however, ethanol production can take three or more times that amount—mostly depending on water needs for irrigation.[19] Water requirements for some other forms of biofuel are lower. Estimates indicate that it will require only 2 to 10 gallons of water to produce each gallon of "cellulosic" biofuel from drought resistant grasses andwastewood.20

Unconventional fossil fuels—such as "liquid coal" or oil from tar sands or shale—can have serious water implications. A coal-to-liquids plant supplying 50,000 barrels of fuel per day would withdraw almost 5 billion gallons of water in a year[21]—a figure similar to the highest water use seen for gasoline—but does not account for the large volumes of water needed to mine and wash the coal before processing.

7 **THE FLIP SIDE**—California uses 19 percent of its electricity and 32 percent of its natural gas for water.[22] Just as energy production requires large amounts of water, the inverse is also true: substantial amounts of energy are used to pump, transport, treat, and heat the water we use every day. Nationwide, the EPA estimates, treating and distributing drinking water and wastewater together account for 3 percent of energy use. In some parts of the country, the energy toll is much higher. California's single biggest user of electricity is the State Water Project.[23] This system, serving 29 local water agencies, consumes enough to power more than 450,000 households[24]—or a city roughly the size of San Diego. Similarly, the Central Arizona Project, a 336-mile aqueduct delivering water to Phoenix and Tucson, is Arizona's largest electricity user.[25]

Power Plant Water Words

Thermoelectric: The conversion of thermal energy (heat) into electricity. Fossil fuel and nuclear power plants, as well as some forms of renewable electricity facilities, boil water to create steam that in turn spins electricity-generating turbines. These plants typically use water to cool the steam. In the United States, 90 percent of our electricity comes from thermoelectric power plants that require cooling.

Cooling technologies: The mechanisms used to cool steam in a power plant:

- **Once-through** systems withdraw water from nearby sources (e.g., rivers, lakes, underground aquifers, the ocean), circulate it through pipes to absorb heat from the steam, and discharge the warmer water back to the local source.[40]
- **Recirculating (closed-loop)** systems reuse cooling water rather than immediately releasing it back to the water source. Such systems withdraw comparatively small amounts of water but lose or "consume" most of it through evaporation.[41]
- **Dry-cooling** systems use air instead of water to cool the steam exiting a turbine. Dry-cooled systems can decrease total power plant water requirements by as much as 90 percent, though adding cost and decreasing efficiency.[42]
- **Hybrid cooling** systems use air for cooling most of the time, but can draw on water during particularly hot periods.

Electricity & Water Pollution

Thermal pollution is not the only way thermoelectric power plants affect water. The arsenic, mercury, lead, and other toxic substances contained in the 120 million tons of coal plant waste produced every year can severely contaminate drinking water supplies.35 Coal mining in the United States uses an estimated 80 million to 230 million gallons of water each day—the equivalent of 10 million to 20 million showers. The EPA estimates that strip mining of coal by mountaintop removal has buried almost 2,000 miles of Appalachian headwater streams—some of the most biologically diverse streams in the country.36 Natural gas-fired plants are less water-intensive than coal or nuclear plants. Still, extracting gas from shale deposits, such as those found in Texas, Pennsylvania, and New York, through a process known as hydraulic fracturing can potentially lower local water quality, as well as strain local water supplies.37

8 **WATER UNREST**—Water supply conflicts are growing across the United States. Particularly in the West, conflicts between competing water users—e.g., farmers, electric utilities, cities—are building. Such conflicts, many of which have an energy dimension, are expected to intensify, especially during periods of drought or other water stress.[26] Even without factoring in the exacerbating role of climate change, water supply conflicts involving several major Southwest cities—including Denver, Albuquerque, Las Vegas, and Salt Lake City—are considered highly likely by 2025.[27] Such tensions are not confined to arid regions. In the Southeast, for example, prolonged drought brought simmering disputes between Georgia, Tennessee, and other stakeholders over the rights to Tennessee River water to a boiling point in 2008.[28] By 2030, electric capacity is predicted to grow nearly 30 percent in the western United States and 10 percent in the Southeast,[29] a trend that would force the question: With what water?

9 **CLIMATE COMPLICATIONS**—As the climate changes, so does the water cycle. Increasing climate variability—extreme heat and extended drought, in particular—is already testing the resilience of energy and water systems in the Southwest and other regions. Further climate change will pose far-reaching challenges. The Northeast and Midwest can expect more spring flooding and extended summer drought.[30] In the Southeast, where both air and water temperatures are expected to rise,[31] instances where water is too warm to be used to cool power plants may become far more frequent. Other regions—notably the Southwest—can expect far less runoff and precipitation, especially in the warm months. Longer, more severe droughts will leave arid areas even drier.[32] With declining snowpack, for example, flows in the Colorado River are projected to decrease 20 percent below current averages by 2050.[33] The net effect nationally will be a more variable and unreliable water situation.[34]

10 **UNDOING THE ENERGY-WATER COLLISION**—We have many tools at hand. A number of technologies offer strong opportunities to address the energy-water collision.

No-water energy: Using technologies such as wind and photovoltaics means doing away entirely with water use for electricity production.[38] Reducing the need for generating the electricity or transportation fuels in the first place—through more-efficient appliances, buildings, and vehicles, for example—not only saves money and reduces heat-trapping gases and other pollutants, but also eliminates the corresponding water use.

Low-water energy: Shifting old coal or nuclear plants using once-through cooling to more-water-efficient closedloop cooling technologies would increase water *consumption*, potentially even doubling it, but would reduce water *withdrawals* by two orders of magnitude. Dry- and hybrid cooling Several steps can be taken to reduce the water demand of some renewable energy options. CSP plants, for example, which are ideally sited in some of the country's sunniest—and driest—locations, are increasingly turning to dry cooling, despite the higher costs. For biofuels, minimizing reliance on irrigation and switching to low-water perennial crops—or even to waste from cities, farms, and forests—could make it possible to lower the water requirements of

NOTE – For footnotes and original graphic materials related to this article, please go to: http://www.ucsusa.org/assets/documents/clean_energy/10-Things.pdf

biofuel production and reduce heattrapping emissions.

Given the many connections between energy and water, the choices we make in the near future about how we produce and use energy will determine not only the extent to which we mitigate the worst impacts of climate change, but also how resilient our energy system is to the variability of our water resources and the many competing demands for it. Smart choices now will mean lower risks, greater energy security, and strong environmental and economic benefits.

These options help address water consumption, and such technologies could be particularly important in water constrained regions. Such cooling technologies would, however, reduce power plant efficiency and increase their costs—and, in the case of fossil fuel-fired plants, do nothing to reduce emissions of heat-trapping gases.[3]

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THE NEW YORKER

Sputnikonomics

by James Surowiecki February 14, 2011

When President Obama, in his State of the Union address, laid out a plan for the U.S. to "win the future," there seemed to be some sleight of hand at work. He said that the government needed to cut "excessive" expenditures lest we be buried beneath "a mountain of debt," and called for a five-year freeze on domestic spending. But he also called for sharp increases in investments in infrastructure, education, and new technology, which will cost many billions of dollars. With no tax increases in the offing and the government running a $1.5-trillion deficit, a new "Sputnik moment" means adding to the mountain of debt.

Republicans were quick to attack Obama for proposing more spending on the heels of his 2009 stimulus plan. But *Sputnikonomics* involves something quite different. The stimulus was a Keynesian measure: spending by businesses and individuals had plummeted, so the government stepped in to plug a hole in demand. Obama's new plan may have some stimulus-like effects—creating new jobs, say—but the focus is entirely different. **Instead of trying to stimulate short-term demand, the plan seeks to improve our long-term growth rate by boosting supply: increasing the pace of innovation, and making workers more productive and commerce more efficient.** In that sense, it's a supply-side plan—a phrase we typically associate with Ronald Reagan—not a demand-side one.

Why do this when Washington is obsessed with tightening its belt? Because spending on infrastructure, R. & D., and education has the potential to create more value than it costs. **The return on investment from the building of the Interstate Highway System in the nineteen-fifties and sixties has been estimated at thirty-five per cent annually.** The economists Kevin Murphy and Robert Topel have suggested that the social benefits of medical research reach into the trillions of dollars. And investments in military technology during the original Sputnik moment gave us, among other things, satellites, the microchip, G.P.S., and the Internet, the cumulative benefits of which are incalculable.

Of course, when government is involved, there's a danger of political considerations trumping economic ones, but our track record of using public money to foster innovation is good. And **there's reason to think that of late we've been skimping on potentially valuable investments, which may help explain why our long-term growth rate has slowed. Infrastructure is decaying; our workforce is less educated, relative to the rest of the world, than it once was; and for most of the past decade federal funding of research and development grew barely at all**—as a percentage of G.D.P., it's now about sixty per cent of what it was during the sixties.

The private sector, meanwhile, now devotes most of its research & development (R&D) money to development, rather than to the kind of basic research that fuels breakthroughs. For much of the twentieth century, industrial labs at places like G.E., Xerox, I.B.M., and A.T. & T. were founts of innovation. (Bell Labs produced seven Nobel Prize winners in physics and a profusion of concrete inventions.) But that was in an era when such companies enjoyed near-monopolistic control of their markets and faced less short-term pressure from shareholders; they could invest heavily in work that didn't yield an immediate return. Those days are gone, and American companies now do less basic research.

Economists have long argued that companies will under-invest in R&D and infrastructure because so-called spillover benefits prevent their capturing all the value they produce. (Think of how much money companies other than Apple have made selling apps for the iPhone and the iPad.) And that's precisely what we're seeing now.

If spillover benefits are a drawback for corporations, they're a huge boon to society, which is why it makes sense for government to try to foster them. (***In 1998, the economists Charles Jones and John Williams showed that the socially optimal level of investment in R. & D. was two to four times its current rate.***) Historically, at least, this was a bipartisan position. Alexander Hamilton argued for the "encouragement of new inventions and discoveries" by government. In the nineteenth century, an era of limited government, one of the few things that people were willing to spend money on was "internal improvements"—canals, railroads, and the like—and Abraham Lincoln supported these as being of "general benefit." And Dwight Eisenhower created the Interstate Highway System and presided over the post-Sputnik boom in government-funded scientific research.

It's hard to make a case for investing more when everyone believes we should be spending less, but there's never been a better time. Interest rates are historically low, so borrowing is cheap. (Corporations have already realized this: they borrowed half a trillion dollars last year.) And the weak economy means that there's less competition for labor and resources. Yet, instead of taking advantage of this, we're too often doing the opposite.

Only recently, a plan for a new tunnel under the Hudson River was killed. The tunnel would have reduced congestion, expanded commerce between New Jersey ports and New York, and created enormous long-term value for the entire region. But short-term budget constraints doomed it. **This is a classic instance of eating your seed corn and of the way that fiscal "responsibility" can actually be irresponsible. At the moment, we're spending too much on things that consume resources—like the military and earmarks—and not enough on things that create them.**

Sea Level & Coastal Georgia: A clash between culture & harsh reality

Comments by Center Board President Steve Willis, who served as a panelist at the Red Clay Conference hosted by the Georgia Bar Association

The most important thing to understand about the impact of global warming and sea rise on the Coast of Georgia is that, even if the more moderate predictions of sea rise turn out to be true, much of the marshland and barrier island ecosystem will be destroyed and those homes and developed areas that are clustered around coastal waters -- worth billions of dollars -- will either be destroyed, placed in grave jeopardy, or protected at enormous and ever-greater public expense.

The timing of this inundation is expected to be so rapid relative to periods of natural adaptation (decades, not centuries) that it will take centuries or millennia for the process of "marsh succession" to reestablish a stable coastal ecology *if* physical barriers to it are removed.

The usual legal process of finding the culprits and making them pay for the disaster after the fact seems laughable – how can we determine the financial value of one of the most precious and incomparable areas in the world once we have lost it? One way is, in addition to the value of coastal development readily obtained from tax and insurance records, marshes produce ecosystem functions worth ~$15K an acre annually (the figure computed in a 1974 study by Eugene Odum, updated), meaning that Georgia's tidal marshes, collectively, produce some $6 Billion in services a year.

Who could pay? Who would be paid? In a democracy, aren't we all responsible? And in a global pathology such as man-induced climate destabilization, the culprits will be hard to round up – they are spread all over the world. The very survival of our cities and communities and the natural environment essential to their health and quality of life is truly priceless, and its destruction can never be settled in court.

The Center for a Sustainable Coast has been working for over a decade to advocate the creative development of a sustainable culture and economy on the Coast of Georgia. Although the Center has often focused on the protection and health of the coastal environment against more immediate threats, we have come to understand that most of the challenging issues affecting the coast, (sea rise, rampant development, inadequate regulation and enforcement, ocean acidification, diminishing and inadequate fresh water supply, poor economic choices, and irresponsible governance, for instance), cannot be successfully addressed without looking beyond the coast toward broad public policy at the state and national levels.

Thus, we have been a persistent voice in opinion columns and other venues by taking strong positions advocating reforms that address these massive problems. This often entails joining forces with national and global initiatives opposing counterproductive trends in biofuels, climate change, and coal and nuclear power.

The road to hell is paved with compartmentalized thinking – which almost always serves some mischief-maker's immediate profit-taking strategies, which have profoundly destructive consequences. The division of the American citizenry into groups such as "consumer", "environmentalist", "businessman", "politician", "bureaucrat", and so on ultimately is just an especially pernicious form of compartmentalization, as is the separation of energy policy from water management and other environmental objectives.

From its inception, by focusing our mission on 'sustainability', the Center has approached all problems from a 'systemic' perspective, which includes analysis of realistic projections of on-the-ground, cumulative, comprehensive impacts of present policies and actions, and exposing them as irresponsible if not fraudulent exploitation of public interest.

Both coastal Georgia Congressmen, Jack Kingston and John Barrow (a Republican and a Democrat) make no bones about their view of their job: they are not primarily educators, problem-solvers, or leaders, but rather loyal representatives of their constituents. As such, they believe they should listen, and, yes, carry forth their constituent's thoughts and claims in their name, no matter how misinformed. This obviously frees our Congressmen to tell people what they want to hear and perpetuate the status quo, regardless of how reckless that may be – a much less dicey political strategy than telling voters what they don't want to hear by tackling real problems with controversial solutions.

Unfortunately, it also frees politicians from the laborious task of thinking objectively for themselves, learning about issues that are important but not of present concern to their constituents, avoiding the challenge of serving their constituents with real leadership.

Voters think they are hearing their ideas and opinions confirmed by knowledgeable and thoughtful leaders when Kingston and Barrow speak, but, in truth, they are merely hearing their own often obsolete and uninformed predispositions echoed. It is like a reverberation chamber in which there is a lot of noise, created by the same tired words, bouncing back with ever-greater distortion, reducing the possibility of understanding vital threats and opportunities.

In a recent exchange with comedian-pundit Bill Maher, Jack Kingston clearly stated that he not only does not believe in global warming, but has no truck with evolution, either. Kingston has also proclaimed that he wants to get "science out of Washington." I'm sure this is what Kingston believes his constituents want to hear. Now they have their beliefs confirmed by a man who is not only an important national politician, but by appearing often on national television, Kingston influences millions of other voters who are predisposed to ignoring reality.

Above all else, the Center advocates making science the primary element in all decisions relative to the development of a sustainable coast. In a culture where self-serving manipulators are constantly attempting to, in the words of Rudyard Kipling, "hear the truths you have spoken twisted by knaves to make a trap for fools", we must, somewhat apologetically, explain what the word science means here. I mean it as fact and logic based, founded in careful analysis of empirical observations.

Science is thinking based on demonstrable and repeatable observations of physical reality, as well as universally accepted principles of logic and mathematics – which are themselves ultimately based on, and verified by, empirical observations of reality. We ignore reality at our own peril, thus by suppressing the use of science in public

policy, influential political forces are inviting disaster.

6/22/2011

To: GA EPD Public Comments

Chattahoochee RiverWarden is a non-profit river protection and stewardship organization that represents members in the Middle Chattahoochee Valley. We appreciate the opportunity to make comments to GA EPD regarding the plan submitted by the Middle Chattahoochee Water Planning Council. We feel that there are deficiencies that should be addressed by GA EPD and the council prior to the plan being adopted.

1-West Point Lake- The Middle Chattahoochee Water Plan, as written, contends the current Corps management of West Point Lake contradicts and compromises the authorized recreational purpose of West Point Lake thus causing social and economic gaps in the region. This statement is based on a non-peer reviewed lake level study by Basile, Baumann Prost Cole & Associates which was commissioned by a partisan group of interested parties. The lake was authorized by the US Congress to provide flood control, hydroelectric power, navigation, sport fishing, wildlife development, and general recreation for the region. However, the coalition of interested parties wants West Point Lake to be operated predominately as a recreational lake at an elevation of 632.5 feet or more to enhance business opportunities and real estate values. The study projects an economic gain of $556 million a year for the West Point/LaGrange area if the lake was operated at a constant pool of 632.5 or higher. The study in fact contains this exact quotation, "Do the economic benefits derived from higher lake water levels offset the costs of downstream flood measures, upstream uses and downstream demands, thereby making the case to incur these costs to realize the greater economic benefits of maintaining higher lake water levels?"

On page 3-14 of the plan, the Middle Chattahoochee Council states "Maintaining higher reservoir levels to achieve recreational, economic and water quality benefits must be analyzed critically against flood protection requirements for downstream communities. While desirable benefits for higher winter pool lake level elevations have been identified, specific operating targets will need to come from further study which includes risk/benefit analysis of economic versus flood control for West Point Lake." This section of the plan should be re-written completely to state that flood control is the most important function of West Point Lake as per the federal authorization not economics as some stakeholders believe or desire.

We strongly feel that economic gains and real estate values for a particular geographic area of Georgia should not be one of the primary considerations in developing a state water plan. Such emphasis is absolutely not in the best interest of the stakeholders in the balance of the region or the State of Georgia as a whole. All stakeholders need to be fairly represented in the final adopted plan. The proposed Middle Chattahoochee Regional Water Plan is not and should not become the "West Point Lake Plan for Economic Development."

2-USACE Water Control Plan-Throughout the entire Middle Chattahoochee Regional Plan, reference is made to an updated water control plan being developed for release this summer by the USACE. This updated water plan will be a minor revision to the current water control plan and will include specific drought management operations per the USACE. The new water plan will then supersede and replace the current RIOP plan. The USACE has no choice but to operate the ACF in compliance with the court ruling which dictates a minimum flow of 5000 cfs be

maintained at Woodruff Dam. The Council has advocated that the revised water control plan be based on the ACF hydrologic model developed by Dr. Georgakakos. This is a non-peer reviewed model commissioned by the same parties who commissioned the Basile economic study referenced above. The Georgakakos model is a lake optimization model, does not contain water quality modeling and no operational procedures required to achieve the court mandated flows. In developing the regional water plan, the council should have based the plan on the current RIOP from the USACE using the Hec-ResSim model due to the USACE stating that they will continue to use this hydrological model for the operations of the ACF. When the revised USACE Water Control Plan is released, the Middle Chattahoochee Water Plan should be amended to accommodate the actual facts and operating procedures. The Middle Chattahoochee Water Plan should not be based on or used as an advocacy tool for a revised water control plan with a non-peer reviewed hydrologic model that was commissioned by partisan stakeholders and has not been accepted by the USACE.

3-**Agriculture**-The Middle Chattahoochee Plan states that projected water use forecasts for livestock agricultural uses were not developed due to lack of available data. Data should be developed for this requirement.

The construction and use of farm ponds for agricultural irrigation should be given higher priority than currently given in the plan.

To get a realistic idea of future water needs, an educated assumption should be assumed for all agricultural forecasts instead of not making any projections.

Agriculture is currently exempt from establishing stream buffers. Establishing stream buffers should be made mandatory, monitored and enforced.

TMDL monitoring programs near animal husbandry operations should be given high priority.

Golf courses are currently considered agriculture by the council's plan. They are exempt from the Georgia Water Stewardship Act of 2010. This should be corrected in the state water plan. In addition, no golf courses are projected to be built in the next 40 years by the current plan. We feel that this assumption is incorrect.

4-Water Quality

Nutrients and phosphorus loads- the plan currently states that nutrients and phosphorus loads will increase over 200% in the next forty years in the Middle Chattahoochee region. If this is true, then we will begin to see the death of West Point Lake, Georgia Power Middle Chattahoochee Lakes, Lake George and Lake Seminole. For the Middle Chattahoochee River region, this is a totally unacceptable proposal for downstream stakeholders. The Metro area should either assume the cost and processes of improving the quality of their discharges (Point & Non-Point) or begin developing a method to mitigate the cost of downstream impacts for the economic losses caused by the North Metro District.

River return rates- The North Metro District Plan includes very lofty goals of return rate improvements to the Chattahoochee River from various treatment operations. If this is not achieved, there may be significant gaps in the Middle Chattahoochee region. Yearly data should

be made available on improvements in river return rates. Additional, conservation improvements should be mandated in the Metro region if return goals are not achieved

Sedimentation-The continuing sprawl of the Metro area will cause additional sedimentation loading for the Middle Chattahoochee region. Enhanced BMP's should be developed for sedimentation and erosion control to reduce the impact to downstream stakeholders.

5-Future Electrical Demands

All councils project water consumption for energy generation only through 2017. The energy task force has identified the need for about 330,000 additional gigawatt hours by 2050; however, no water consumption has been allocated to any water council past 2017. The generation of 330,000 gigawatt hours will consume an additional 1-2 billion gallons of water per day depending on the generation method. We believe that a proportional allocation of this consumption should be made between all councils solely for planning purposes and to help identify potential major shortfalls and gaps. Totally omitting the demand for this large quantity of water presents a distorted view of the entire state water availability position.

6-Gaps

Currently the Middle Chattahoochee Plan does not show any supply gaps prior to 2050. If no gaps exist, why are plans for additional reservoirs and inter-basin transfers being proposed? If gaps are identified in future plan revisions, then the best alternative of groundwater, surface water, inter-basin transfers or conservation methods should be proposed that best addresses the severity and location of the gap.

7-Conservation

The plan as currently written, proposed no improvements in conservation of water in the entire State of Georgia. While the GA Water Stewardship Act of 2010 has made some conservation improvements, additional mandatory conservation BMP's must be developed for the entire state. The plan should call for additional conservation methods to be implemented immediately when the NIDIS declares the beginning of a drought in the ACF basin. Waiting until reservoirs are low and ground water levels are greatly reduced is too late. We should have learned from the drought of 2006-2008. Currently the basin is in an extreme drought condition again; however the State of Georgia has not established new or additional conservation methods. Our lakes levels keep falling, several cities have run out of water (Doerun & Dawson), planted crops are not sprouting, numerous creeks are dry and groundwater is dropping. The State of Georgia should be proactive instead of reactive at the early stages of droughts.

8-Milestones and Measurements of Achievements

The plan as currently presented does not have any proposed measures of performance, success, failures or metrics. The plan only calls for a review in five years. For plans to be successful, they must be measured annually.

9-General Comments:

1-We recommend that the councils be realigned in the future to be watershed based versus geography based.

2-The Bluestripe Shiner in West Point Lake is rare but does not deserve special attention in the plan. No other plants, fishes, mammals or wildlife that are rare in the region are referenced in the plan.

3-The Regional Water Plan is set to be revised every five years but should be given annual reviews.

4-The Georgia Drought Management Plan of 2003 should be revised.

5-Adoption of the Georgia Stormwater Management manual should be mandatory and given high priority.

6-High priority should be given to implementing best management practices for major industries and sectors, including daily inspections of land development projects.

7-Establish baseline implementation data so that accurate results can be generated in the future regarding water conservation.

8-There is no need to re-evaluate the scientific justification for the minimum flow requirements at Woodruff Dam as the U.S. Fish and Wildlife Service has already done the work and provided the data to the USACE in the PAL letter. Currently, USFWS is studying the potential needs at Woodruff for flows above 5000 cfs to protect mussels that are protected under the Endangered Species Act.

9-The plan does not provide for effective policies and appropriate actions during periods of uncertainty.

10- There needs to be a greater understanding of the correlation of groundwater and surface water in the Lower Chattahoochee basin.

11-The council recognizes that better utilization of existing storage in the Chattahoochee is necessary. The State of Georgia should work with the USACE to develop an environmental impact study for the potential of raising the pool at Lake Lanier to 1073 feet.

Chattahoochee RiverWarden, Inc.

Roger Martin

Executive Director

BRASELTON
GEORGIA

June 13, 2011

Mr. F. Allen Barnes, Director
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive, SE
Suite 1152 East Floyd Tower
Atlanta, GA 30334-9000

Re: Town of Braselton- Regional Water Planning

Dear Mr. Barnes:

The Town has been involved in regional water planning for many years, and more recently has been actively involved in the foundational plans for the Upper Oconee Water Planning Region.

As you are aware, Braselton was initially involved in the Metropolitan North Georgia Water Planning District (the Metro District) and is currently activity engaged and supportive of the Metro District. However, with the formation of the Upper Oconee Water Planning Region, and our participation in that organization, it has become apparent to us that Braselton would be more suited to be officially recognized as a part of that region only. The Town's entire jurisdiction is within the Oconee basin, and all of our facilities are also within the Upper Oconee basin. None of the Braselton facilities are mentioned in the Metro District plan. The Town has recently developed substantial ground water resources and these have been permitted by EPD. The actual pumping and treatment facilities are being constructed at the present time, and will be on line before summer. We have essentially weaned ourselves off of the Gwinnett water system, and these are now emergency interconnections only. We currently have one water customer served by the Gwinnett system, which we plan to transfer to that system. We have partnered with Barrow and Jackson Counties for wholesale water purchase to augment or ground water supplies, and are actively involved with these adjacent counties in long term planning.

The Town does not have any HUC 12 watershed monitoring requirements in the Metro District since the majorities of those areas are located within and are the responsibility of other jurisdictions.

We believe that our experiences gained as a member of the Metro District has and will continue to provide valuable insights to the Upper Oconee Council. The Town respectfully requests that Braselton be removed from the Metro District and be assigned to the Upper Oconee Water Planning Region.

Very truly yours,

Jennifer Dees, Town Manager

C: Mr. Kevin Farrell, Assistant Branch Chief

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It's Better in Braselton

LaGRANGE georgia

SMART MOVE®

Mr. Tim Cash, Assistant Branch Manager
Georgia Department of Natural Resources
Environmental Protection Division
Watershed Protection Branch
4220 International Parkway, Suite 101
Atlanta, GA 30354

February 28, 2011

Dear Mr. Cash

On behalf of the City of LaGrange I am submitting the following comments on the draft Middle Chattahoochee Regional Water Plan. A critical element in the future growth and prosperity of the City of LaGrange and all of Troup County lies in the health and viability of the Chattahoochee River and West Point Lake. We understand the limited nature of the resource, and commend the efforts of the Council in preparing the plan for review.

We hope that you will carefully consider the comments and concerns listed below:

Section 3

- West Point Lake is identified as a "major recreational reservoir" in the recreation paragraph, however, it is not likewise recognized for the sport fishing authorization that it also retains.
- FERC guidelines should *require* the use of private reservoirs for drought contingency planning to augment flows of the ACF basin.
- The Plan states clearly that West Point Lake experiences significant economic and recreational impacts below the 632.5 feet NVGD level. Although mentioned again in Section 6, the Plan stops short of requesting a flood study from the US Army Corps of Engineers to raise the winter pool level at West Point Lake to protect the Congressionally Authorized uses.
- The Plan lists numerous stated purposes and or uses of the ACF System i.e. hydropower, water quality, water supply, recreation, and cooling water for nuclear and coal fired power plants, to name a few. It is critical to differentiate between stated purposes/uses and Congressional Authorized

uses. Uses are allowed and/or permitted; Congressional Authorizations are mandated and should be honored and/or prioritized.

- The Congressional Authorizations for Lanier are hydropower, flood mitigation, and navigation; the Congressional Authorizations for West Point Lake are hydropower, flood mitigation, navigation, recreation, and sport fishing/wildlife development; and the Congressional Authorizations for Walter F. George are hydropower and navigation.
- Congressional Authorizations should be met before other uses are prioritized.
- EPD developed water availability and water Resource Assessments for the State's river basins and aquifers; basis the RA's, EPD maintains there is no gap on the Chattahoochee. This statement seems absurd based on the fact that the State assumes draining all of the storage from Lanier and West Point ignoring the Congressional Authorizations in the process. There should be focus on the federal reservoirs equal to the focus on river basins and aquifers.

Section 5

- The RIOP needs to be re-visited by USFWS to examine the economic harm to upstream stakeholders. 5,000 CFS represents an artificial flow which does not mimic Mother Nature, nor does it account for Congressional Authorizations on West Point Lake. There needs to be a better balance which is fair to all stakeholders.
- USFWS should study the possible relocation of the endangered species to the Flint or to the Chattahoochee above West Point Lake, to name two possibilities. Additionally, USFWS needs to examine other alternatives such as weir dams, artificial habitat, etc.

Section 6

- The Chattahoochee and the Flint should share equally the burden of the 5,000 CFS at the Florida line, i.e. 2,500 CFS each.
- Please note that three separate Regional Planning Councils (the Middle Chattahoochee, the Upper Flint, and the Lower Flint-Ochlocknee) all question the need for 5,000 CFS flow requirement.
- EPD should require expansion of sewer systems as a requirement for building permits in urban areas, a reduction in septic systems, and mandatory tertiary treatment of waste water.
- During severe drought conditions, Bartlett's Ferry, a Georgia Power reservoir, has available storage; and that federal water should be utilized to meet water quality and downstream flow requirements.
- In the event the State of Georgia provides funding for a flood study of Lake Lanier, funds should likewise be allocated for a similar study on West Point Lake to determine increased, available storage above the current winter pool guide curve.

We hope that you will give these comments serious consideration. Thank you for the opportunity to comment on the draft Middle Chattahoochee Regional Water Plan.

Best Regards

Mike Criddle
Director, Economic Development
City of LaGrange

Cc: Randy Nix, State Representative
Jeff Lukken, Mayor
Tom Hall, City Manager
James Emery, Troup County Engineer
Dick Timmerberg, West Point Lake Coalition

MADISON
GEORGIA

COMMENTS ON THE UPPER OCONEE WATER PLAN
Prepared by Bryce Jaeck, Planner
Date: 6/29/2011

The City of Madison has four comments regarding the proposed Upper Oconee Water Regional Water Plan.

1. The support document Upper Oconee Supplemental Document: Comparison of Water and Wastewater Forecasts to Existing Permits and Planned Projects does not include water draws for Bostwick, Buckhead and Rutledge. These figures need to be included in the total available water supply for Morgan County to provide the most accurate estimates.

2. Estimates for the populations are very different from the 2010 US Census. In the case of Morgan County, the population listed on page 4-2 lists a 2010 population of 19,432. The US Census lists a population 17,868 – 8% lower. For the entire region, the data used in the Upper Oconee Water Regional Water Plan is roughly 9.5% higher than the 2010 US Census. A note explaining the choice of this data over the 2010 Census data would clarify the issue.

3. The City of Madison's Final Watershed Protection Plan adopted on October 25, 2010 is not included or referenced with other local water management documents and plans. Contact Bryce Jaeck at bjaeck@madisonga.com or 706-342-1251 ext. 226 for a copy of this document.

4. A link on the water plan website providing GIS information and copies of all GIS data would be invaluable for local governments to incorporate this data into their systems. This would greatly assist in proper water management planning. If this link was referenced in the Upper Oconee Water Regional Water Plan or included in a GIS methodology/metadata appendix it would also be very beneficial.

If there are any questions regarding these comments, please contact Bryce Jaeck.

COBB COUNTY WATER SYSTEM
Customer Services Facility
660 South Cobb Drive
Marietta, Georgia 30060-3105
(770) 423-1000
www.cobbwater.org

Stephen D. McCullers, P.E.
Director

Divisions
Business Services
Customer Services
Engineering & Records
Stormwater Management
System Maintenance
Water Protection

June 23, 2011

Ms. Arnettia Murphy
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, GA. 30334

Re: Comments on Initial Draft Recommended Regional Water Council Plans

Dear Ms. Murphy:

The Cobb County Water System would like to submit this letter of support for the comments submitted by the Metropolitan North Georgia Water Planning District in their letter of June 22, 2011 on the draft plans developed by the State's Water Planning Councils. We understand and appreciate how much work and effort these plans represent and commend all those who were involved in the development of these documents.

We agree that the state's water resources are a shared asset for all of the residents of Georgia and that all stakeholders should share in the protection and preservation of this vital resource. The Cobb County Water System is committed to work with the District, as well as working with the state's Water Planning Councils for the implementation of plans for the protection of water resources for all Georgia. As you know, the three District plans require much work on the part of its members to protect and preserve our water resources.

The charge to the District for these plans by the legislature is to:

1. Protect water quality and public water supplies in and downstream of the region,
2. Protect recreational values of the waters in and downstream of the region, and
3. To minimize potential adverse impacts of development on waters in and downstream of the region.

In that regard, we believe in a level playing field and would strongly recommend that the water conservation best management practices being implemented in the District be applied throughout the state. This includes the implementation of conservation oriented rate structures and the elimination of declining or fixed block rates.

Thank you for this opportunity to comment on the draft plans.

Sincerely,

Stephen D. McCullers, P.E.
Director

cc: Ernest U. Earn, CCWS
Kathy Nguyen, CCWS

From: "mk101@bellsouth.net" <mk101@bellsouth.net>
To: <info@georgiawaterplanning.org>
Date: 6/20/2011 7:46 PM
Subject: Comments on the SAVANNAH UPPER OGEECHEE RECOMMENDED WATER PLAN

The SAVANNAH UPPER OGEECHEE RECOMMENDED WATER PLAN is far too optimistic. The conclusions in section 3.2.3 that groundwater is adequate is wrong. Although the water withdrawal permit process claims to protect against 'negative impacts', the current level of ground water usage is already impacting stream flows. Five springs have dried up within a mile of my home in Burke county. As a result there is little or no flow into the Waynesboro lake other than stormwater. Further south, near Sardis, Beaver Dam creek, which use to flow continuously from springs, is essentially stagnant in dry months. Any plan which says current usage is not in violation of the requirements is a lie. The situation appears to be rapidly deteriorating. While the plan projects modest growth in irrigation usage, the number of center pivots I see from the road has doubling in the last year. Any plan built on these lies is doomed to failure. A halt to new irrigation
permits is needed and a phaseout begun to restore springs and stream flows.Edward Kozinsky156 Herndon RoadWaynesboro, GA 30830

Georgia Farm Bureau Federation
P.O. BOX 7068 • MACON, GEORGIA 31209-7068
478-474-8411
www.gfb.org

June 17, 2011

Arnettia Murphy
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, Ga. 30334

To Whom It May Concern:

Georgia Farm Bureau appreciates the opportunity to comment on the draft recommended regional water plans. With over 360,000 members, Georgia Farm Bureau is the largest general farm organization in the state. There are Farm Bureau chapters in every county in Georgia managed by volunteer, locally elected boards of directors.

For more than a decade, water has been an important issue for Georgia Farm Bureau. Our members have attended countless meetings and testified on behalf of farm water rights. An economically viable future in agriculture is dependent on farmers' access to water. While there is no substitute for rain, the severity of droughts can be managed through the use of irrigation. Irrigation can make the difference between a total crop loss and a farmer salvaging his crop.

Irrigation is an expensive proposition for farmers. Every time a farmer decides to irrigate a crop, the decision is reached only after a cost/benefit analysis to determine whether the benefit of additional water on the crop outweighs the additional cost of applying the water. As a result, farmers have a direct economic incentive to conserve water.

We were happy to see many of the regional water plans recognize agriculture's economic importance to our state. Agriculture is the state's largest industry and a large water user in a number of water regions. According to the University of Georgia, Center for Agribusiness and Economic Development, agriculture accounted for more than 380,000 jobs in 2009 and generated over $68.8 billion in total economic impact. In nearly two-thirds of Georgia's counties, food and fiber production and directly related businesses represent the largest or second largest segment of all the goods and services produced. Clearly, the agricultural economy is not only important to rural areas but urban areas as well.

Pursuant to the State Water Plan, the EPD Director shall use the adopted regional water plans to guide decisions regarding permitting. We acknowledge the importance of a permitting system for large users of water, and we support the use of permits to the extent necessary to protect downstream users. However, we believe there is a private property component to water use. Water resources add value to a tract of land which can be clearly demonstrated in land sales data. Landowners have a reasonable right, above the rights of other citizens, to use water located on their private property.

Farm Bureau is particularly concerned about a recommendation made by the Upper Flint Regional Water Council related to funding: "Revenue raising authority should be considered for these councils" (page 7-18). We oppose this concept. Water entities should not have the authority to levy taxes or fees. The state

should play the primary role in providing technical support, guidance, and funding to support locally focused water resource planning.

It has been stated in numerous meetings that Georgia does not have a water supply problem, but rather a water management problem. We were pleased that every regional water council understood the need to increase our state's water supply through reservoir improvements and construction. Additional reservoir capacity will increase our water supply and improve the economy.

In the 2012 state budget, Georgia appropriated $46 million in funding for reservoir development. This is a positive step but more funding will be needed. Supply augmentation and water conservation should be equal priorities and both should be sought with equal resolve.

Many regional councils recommended switching agricultural surface withdrawals systems over to ground water withdrawal systems. Many farmers would agree that ground water systems are optimum for irrigation. However, establishing a ground water system is a costly proposition. Depending on the depth and size of the well, some sites could cost as much as $100,000. Additionally, not all tracts of land are of appropriate size or shape to make the investment feasible. We would support incentives and cost-share opportunities to assist farmers with voluntary transitions.

We have similar concerns with the recommendation on page 6-9 in the Suwanee Satilla plan calling to "Minimize or eliminate the use of high-pressure spray guns on fixed and traveler systems where feasible." Traveler and reel-type irrigation systems do not exist in a low pressure system. The elimination of high-pressure spray guns would prevent some farmers from having the option to irrigate their crop if their fields do not have a convenient geographic configuration.

Farm Bureau is concerned about recommendations to require the use of variable rate irrigation: "Evaluate requiring variable rate irrigation systems in water-limited areas" (Coosa-North Georgia page 7-9 & Upper Oconee page 7-4). Variable rate irrigation can be beneficial, but it is costly and has its own problems related to maintenance and other issues. Mandating variable rate irrigation systems would be problematic for some farmers.

On page 7-5, the Coosa-North Georgia council recommends a long term action to "adopt new agricultural permit requirements." That general statement appears to be so vague as to be meaningless. We question its inclusion as a long term goal.

Farm Bureau members strongly support private property rights, and we are concerned with stream buffer recommendations offered by Upper Oconee and Coosa-North Georgia councils on pages 7-18 and 7-25 respectively: "Develop regional recommendations and model stream buffer protection ordinance that goes beyond current minimum State standards." Farm Bureau opposes measures that create additional restrictions on private property without compensation to the landowner.

The Coosa-North Georgia council recommends on page 7-19 to "Develop regional nutrient management guidelines addressing fertilizer/nutrient management, cropland management, and animal waste management for major agricultural sectors." It is important that farmers are consulted when guidelines are being developed, and we appreciate that the council recommends that agricultural water users be included in the implementation process.

On page 7-5, the Savannah-Upper Ogeechee recommends the council will look for ways to "Develop drought management plan and implement instream flow protection measures," and to "Incorporate drought management into new agricultural withdrawal permits." We wonder what is meant by these statements. Farm Bureau would applaud council support for a program similar to the Flint River Drought

Protection Act. Under this Act, landowners voluntarily submit bids to receive compensation from the state to forego their right to irrigate crops. Farm Bureau supports programs that provide incentives for farmers, who so choose, to temporarily suspend their rights in order to render a benefit to the general public.

We appreciate the councils' recognition of the positive relationship between agriculture, the National Resource Conservation Service (NRCS), and Georgia Soil and Water Conservation Commission (GSWCC). Farmers are grateful for cost-share assistance for end gun shutoffs, farm ponds, conservation tillage practices, and other water conserving tools and practices.

We have long supported the GSWCC's efforts in installing meters on all agriculture withdrawal sites in order to accurately calculate agriculture water use. Our organization believes the installation of meters will show that farmers are efficient in the ways they use water.

The Altamaha, Coastal, and Suwanee-Satilla regional water councils have requested that studies be done to determine whether agriculture water use is actually 100% consumptive. We are supportive of this type of consumptive use evaluation. Most studies assume that no farm irrigation water is available for reuse. We believe objective data will prove otherwise and give a more accurate picture of agricultural water use. That information would be useful in discussions regarding consumptive use budgets (CUB).

In closing, we express our sincere appreciation to the regional water council members for their hard work, commitment, and dedication. These citizens spent many long hours making difficult decisions for the future of their water regions. They diverted time away from their businesses, farms, or employment and were not compensated or reimbursed. We applaud their exemplary service.

Sincerely,

Zippy Duvall

Zippy Duvall, President
Georgia Farm Bureau

GIEC
Georgia Industry Environmental Coalition

June 23, 2011

Mr. Allen Barnes, Director
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152, East Floyd Tower
Atlanta, Georgia 30334

SUBJECT: Comments on Initial Draft Recommended Regional Water Plans

Dear Director Barnes:

We are writing on behalf of the Georgia Industry Environmental Coalition, Inc. (GIEC) regarding the ten Initial Draft Recommended Regional Water Plans that the Georgia Environmental Protection Division (EPD) released on May 9, 2011 for public review and comment.

GIEC has reviewed the initial draft plans and provides the following comments and concerns for consideration by EPD as the plans are undergoing further EPD review before consideration for adoption by the Director.

1. For unregulated streams, the draft plans assume daily instream "flow-regime criteria" determined by EPD as the monthly "unimpaired" 7Q10 low flow or the "natural inflow", whichever was lower for a 68-year period (1939-2007) of unimpaired daily flows that were synthesized by EPD. It is not clear from the plans if one year of the synthesized unimpaired record was used as a surrogate for the unimpaired daily "natural inflow" but the entire 68-year period of unimpaired record was apparently used for making the monthly 7Q10 determinations. Use of synthesized "unimpaired" flows for such a long historic period (i.e., 1939 – 2007) for current purposes of 7Q10 determinations can be a significant problem if the underlying historic flow regime has itself shifted over time in which case older record periods are not reliable indicators of current and probable future low-flow conditions. The reasons for shifting low-flow conditions over time can include reservoir construction and diversions in the upstream area of the basin, urban expansion with increasing impervious area and reduced stream base flow contribution, land use and land cover changes affecting evapotranspiration, increasing amounts of upstream consumptive use, lowered ground water tables resulting from increasing ground water withdrawals, and climatic shifts. The USGS Surface Water Branch Technical Memorandum 79.06 illustrates the variability of low-flow frequency curves based on different periods of historic record. (See http://water.usgs.gov/osw/pubs/memos/sw79.06.attachment.html.)

   To be certain, there have been significant on-the-ground changes across Georgia since 1940 that have undoubtedly influenced or impaired the instream flow regime in many, if not most, Georgia streams. For example, the population of Georgia has grown more than three fold since 1940, as illustrated by Figure 1 showing the magnitude and distribution of Georgia's population growth between 1940 and 2010. Further, today's use of agricultural irrigation, as illustrated by Figure 2 showing the inferred magnitude and distribution of

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permitted agricultural water use across Georgia in 2011, is very different than 1940 conditions when large-scale agricultural irrigation was virtually nonexistent in Georgia. The point is, there are real and permanent changes that are today's reality as the appropriate starting point for water planning using more realistic instream flow regime criteria. **We submit that to now essentially ignore today's reality by proposing post facto to use unimpaired flow regime criteria as the basis for water plans and water supply allocations would be a critical water supply policy mistake for water users in Georgia and we urge you to reconsider as follows.**

If contemporary estimates of low-flow statistics are needed for current forward-looking planning purposes, and we believe that is the case, then low-flow frequency analysis should be based on a period of actual streamflow record that is long enough to be statistically robust (e.g., at least 10 years of record for determination of 10-year-return low flows) but not so long as to reflect long past basin conditions that are no longer applicable today. With these considerations in mind, using the most recent 20 years of actual streamflow record (e.g., 1991 through 2010) would be an appropriate contemporary period of record for estimating monthly 7Q10 flows as they now actually exist. Of course, using the 7Q10 statistic as a basis for setting flow-regime criteria carries with it the inherent 1-in-10 risk, or 10-percent probability, that the actual 7-day low flow observed in any one month will be less than the 7Q10 flow for that month, and it carries an even greater risk that actual daily flows will be less than the 7Q10. This inherent risk of actual flows dropping below the 7Q10 level should be noted in the water quantity gap analysis of the plans in order to put the number and percentage of calculated shortfall days in better perspective.

2. The draft water plans cite use of the 2001 DNR Interim Instream Flow Policy as a rationale for setting monthly 7Q10 flow regime criteria for unregulated streamflows in each of the regional plans. The original context of the DNR Interim Instream Flow Policy is important to understand in considering the potential implications of now applying that DNR Policy for overall flow-regime criteria in the context of the draft regional water plans.

   The DNR Interim Instream Flow Policy is applicable to new (after April 1, 2001) non-farm surface water withdrawal applications. It is not applicable to intermittent agricultural irrigation withdrawals that neither give nor receive instream flow protection under the DNR Interim Instream Flow Policy, and the policy is not applicable to ground water withdrawals. Municipal and industrial surface water withdrawals that are subject to the DNR Interim Instream Flow Policy are typically required to pass the lesser of the actual "inflow" at the point of withdrawal or the "non-depletable flow." The non-depletable flow consists of the monthly 7Q10 flow plus an additional flow amount specifically calculated to protect water availability for downstream permitted non-farm surface water withdrawals that typically have required low flow limits imposed on them by their withdrawal permits. In other words, for municipal and industrial permits that are subject to the DNR Interim Instream Flow Policy, if the stream reaches a certain low flow level, permittees may not withdraw any water from the

stream and must instead rely on off-stream stored water or other permitted water sources until suitable streamflow levels return that support resumption of permitted withdrawals. Importantly, the DNR Interim Instream Flow Policy is based on the use of actual flows for the stream inflow values and monthly 7Q10 determinations and is decidedly not based on the use of "unimpaired flows" as is proposed by EPD for flow-regime criteria in the draft regional plans. While we support the DNR Interim Instream Flow Policy as a reasonable basis for flow-regime targets in the draft plans, it must be based on the use of actual contemporary streamflow records and not based on the use of synthetic unimpaired flows.

In contrast to municipal and industrial permittees that are subject to the DNR Interim Instream Flow Policy, farm withdrawal permittees are typically authorized to withdraw at any streamflow level. We are concerned that the practical effect of now imposing unimpaired monthly 7Q10 criteria as flow-regime targets in the regional water plans is that all withdrawals (municipal, industrial and agricultural) would essentially be subjected to new unimpaired flow regime criteria. The enormity of adopting an "unimpaired flow-regime policy" is exemplified by the magnitude (>800 MGD) of the unimpaired streamflow "gap" as calculated by EPD for the Flint River at Bainbridge. EPD's unimpaired flow regime requirement tends to create higher minimum instream flows than the actual available low-flow regimes can support and still maintain existing uses in developed regions. This proposed unimpaired flow-regime approach increases instream flow protection levels but it reduces water available for consumptive use and, thereby, increases reservoir storage/yield requirements to meet water supply needs for everyone.

We think adoption of the "unimpaired flow-regime policy" is a major strategic mistake and urge EPD to instead apply the DNR Interim Instream Flow policy as originally intended using *actual contemporary streamflow* records rather than using *synthetic historic "unimpaired" flows* as the draft plans now propose.

3. There are a number of remaining technical uncertainties about the water quantity modeling and associated assumptions used in the draft plans. The sheer magnitude of the calculated streamflow shortfall in the Flint River at Bainbridge serves to highlight the interrelated nature of water management among planning regions. Any actual shortfall in streamflow contribution to the downstream Apalachicola River from the Flint River must necessarily be offset by the use of stored water from the large Federal reservoirs on the Chattahoochee River (in another planning region) in order to maintain minimum downstream flow criteria in the Apalachicola River at Jim Woodruff Dam. In effect, stored water from the Chattahoochee subsidizes or augments streamflow shortfalls from the Flint River because there are no large storage reservoirs on the Flint River and the majority of water used in the Flint Basin is through agricultural water withdrawal permits that do not include instream flow protection criteria as a condition of withdrawal.

On a shorter planning horizon, the conversion of Flint basin surface water withdrawals to ground water sources would seem logical in combination with a program to identify and convert to deeper aquifers those areas where current groundwater withdrawals from the Floridan aquifer are known to be highly connected to the surface water system. The selective use of groundwater pumping to seasonally augment instream low flows may also have merit in some areas. Whatever is used for instream flow regime criteria, verification of any "calculated gaps" should include a peer-reviewed surface water and groundwater hydrologic budget for the region that is based on a credible data base and reasonable assumptions. The current draft plans do not provide such a water-balance verification. (See attached "Water Balance Considerations".) **It seems reasonable for the State to insist that all regional plans include a commitment to begin closing whatever verified "streamflow gap" may exist at the downstream boundary of a water planning region.**

4. The draft plans assume septic tank systems and land application systems are 100-percent consumptive of water based on the unsupported assertion that the water they return to streams is not returned within a time frame that offsets the water withdrawal they represent. We believe this "time-frame rationale" fundamentally misrepresents the ongoing and continuous nature of the significant base flow returns to streams that septic tank systems and land application systems represent statewide. Our position is supported in recent reports, including *Onsite Wastewater and Land Application Systems: Consumptive Use and Water Supply* by D.E. Radcliffe, L.T. West, L.A. Morris, and T.C. Rasmussen (http://apps.caes.uga.edu/urbanag/WasteManagement/Consumptive_water_use.pdf) and *Influence of Septic Wastewater-Treatment Systems on Base Flow in Southeastern Gwinnett County, Georgia, October 2007*, by Mark N. Landers and Paul D. Ankcorn (http://www.gwri.gatech.edu/uploads/proceedings/2009/5.5.1_Landers.pdf.). Notably, some of the draft plans indicate that more than half of the municipal and industrial wastewater generated is treated in septic tank systems or land application systems. To ignore the base-flow returns from such a large proportion of generated wastewater overstates consumptive use amounts in those plans. And in some plans, the consumptive use assumption for septic tank systems and land application systems appears to have given rise to a wastewater management strategy favoring the use of point source discharges on the mistaken premise that septic tank systems and land application systems are harmful to streamflows. Such a point-source strategy for streamflow improvement would be very costly to implement in terms of additional sewer infrastructure and treatment capacity requirements and yet such a strategy would not yield proportionate streamflow benefits because septic tanks and land application systems already support base flow returns to streams.

   We suggest that the plans note that as a "simplifying and conservative assumption" stream base flow returns from septic tank systems and land application systems have not been accounted for in the initial plans and will be included in future plan updates. The "time-frame rationale" should not be included in any of the plans as it provides no substantive value and otherwise serves to hurt technical credibility of the plans.

The ten draft plans provide a great deal of basic descriptive information and analyses in one place and will serve as a useful reference source in that regard. However, much of the modeling and associated assumptions, along with the nagging lack of a credible data base in many settings, makes the plans generally unsuitable for specific permitting purposes.

The ten draft plans and the Metro plan will need to be integrated and optimized on a statewide scale to build a Statewide Water Plan that is not unduly constrained by regional boundaries or myopic views about the need for ample water supplies to meet all reasonable future water needs statewide. The Statewide Water Plan will need to be much more than just the sum of eleven different regional plans. We are concerned that without a well-integrated state water plan, some parts of the state may suffer recurrent water shortfalls causing economic stagnation or decline even as other regions enjoy a water surplus. The key to a successful Statewide Water Plan is to invent and optimize solutions at the right scale.

We appreciate your consideration of our comments. If there is any additional information that we can provide, please do not hesitate to contact the GIEC office at 770-421-3520.

Sincerely,

GEORGIA INDUSTRY ENVIRONMENTAL COALITION, INC.

Gregory L. Jones with permission
Vice Chair, Board of Directors
Chair, Water Resources Workgroup

Tammy R. Wyles with permission
Chair, Board of Directors

Attachment: Water Balance Considerations
Figure 1: 1940-2010 Population Percent Change
Figure 2: 2011 Inferred Annual Agricultural Use

ATTACHMENT – June 23, 2011

GIEC
Georgia Industry Environmental Coalition

WATER BALANCE CONSIDERATIONS

Water accounting
In the fields of hydrology and water-resources engineering, the terms "Hydrologic Balance", "Hydrologic Budget", "Water Balance", and "Water Budget" all mean essentially the same thing...an accounting of water inflows to, outflows from, and change in water storage within a prescribed hydrologic unit of interest over a given time period.

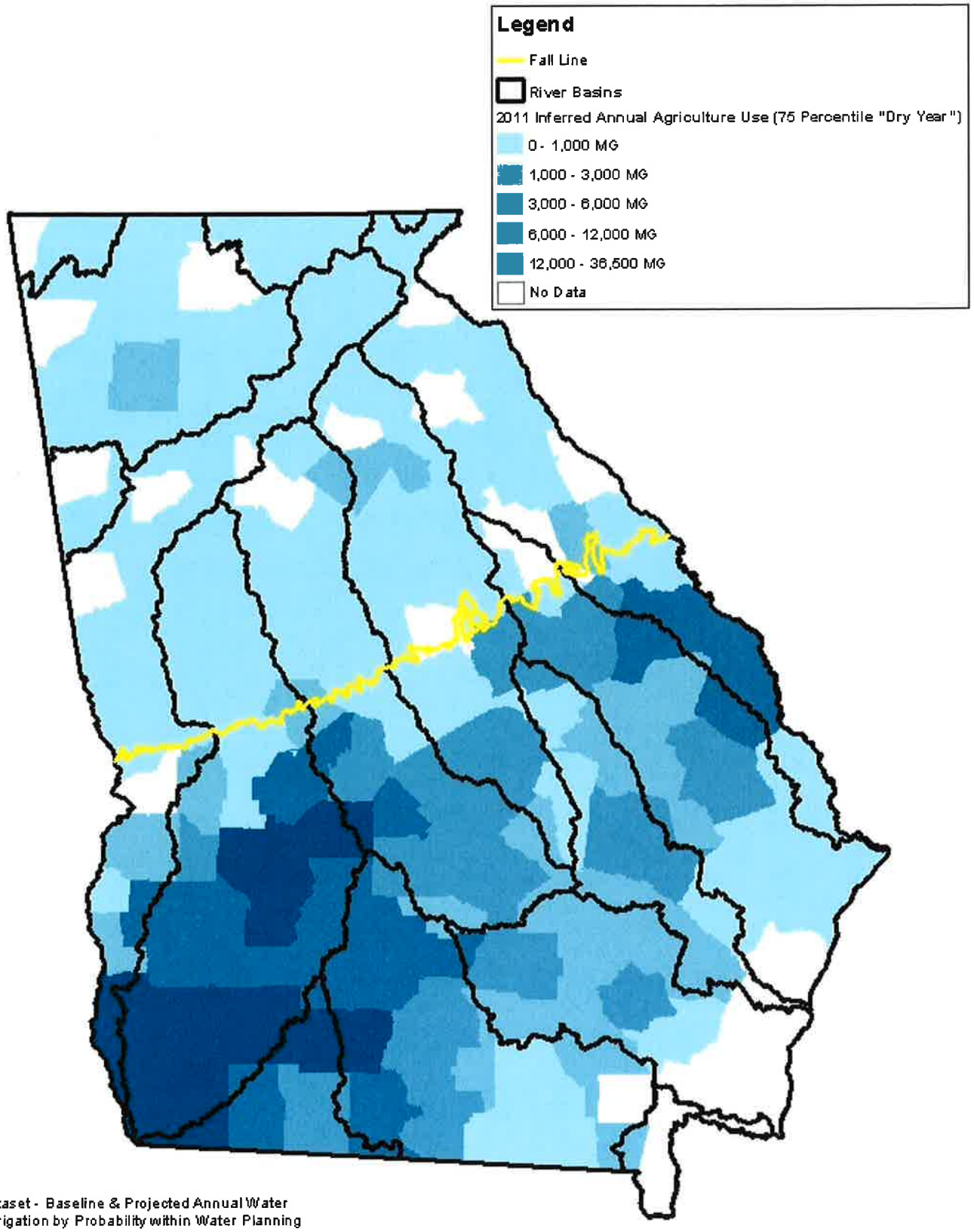
Inputs, outputs and storage
The so-called Hydrologic Equation or Water Balance Equation is the equation that balances the total water budget based on the principles of mass conservation and continuity. In simple form, all water inputs minus all outputs must equal the net change in internal water storage within the specified hydrologic unit over a given time interval.

Accounting complications
Although simple in concept, water balance accounting is not so easy in practice. The single largest inflow term, precipitation, is reasonably well defined from the network of statewide precipitation measurement stations. However, the single largest outflow term, evapotranspiration, is not amenable to direct measurement and is constantly changing in space and time as a function of prevailing wind, temperature, land cover, vegetation conditions, and soil moisture. Evapotranspiration is also subject to change as land use changes over time with development. Even USGS streamflow measurements, the gold-standard of water data, are only accurate to within plus-or-minus five percent. Water balance spreadsheets are not a precise accounting tool but they are the best fundamental starting point for sound water planning and future water use allocations.

Run the numbers and check the balance
Despite all the water-balance vagaries, it is still important to run the numbers with the best data available on a water-accounting spreadsheet so that the input and output terms involved and just how far off the water-balance may be in comparison to measured USGS streamflows can be clearly seen. A basic test of a water balance is how much water remains "unaccounted for" at the downstream outflow point. In water balance accounting, it is not uncommon for this unaccounted-for-water term to be very large (and either positive or negative) in comparison to the man-made upstream water diversions and water returns. Herein lies the problem of budgeting or allocating future water for particular uses without first knowing the total water balance situation for the whole hydrologic unit.

First allocated = best served
If the overall water budget is unknown or is found to be substantially out of balance, it is quite risky to prematurely start allocating water for particular uses. Moreover, the sequence in which water allocations are made without a reliable water balance becomes critical. The first water use allocated will be the best served water use because it is being allocated from an uncertain but typically large total amount of water. However, the second and successive uses allocated will be increasingly at risk of running out of water during future dry periods because the available amount in the overall water budget was unknown or substantially uncertain at the outset. As in financial banking, the first checks written on an account will clear the bank but the last checks written will bounce if the account is initially under funded and becomes overdrawn.

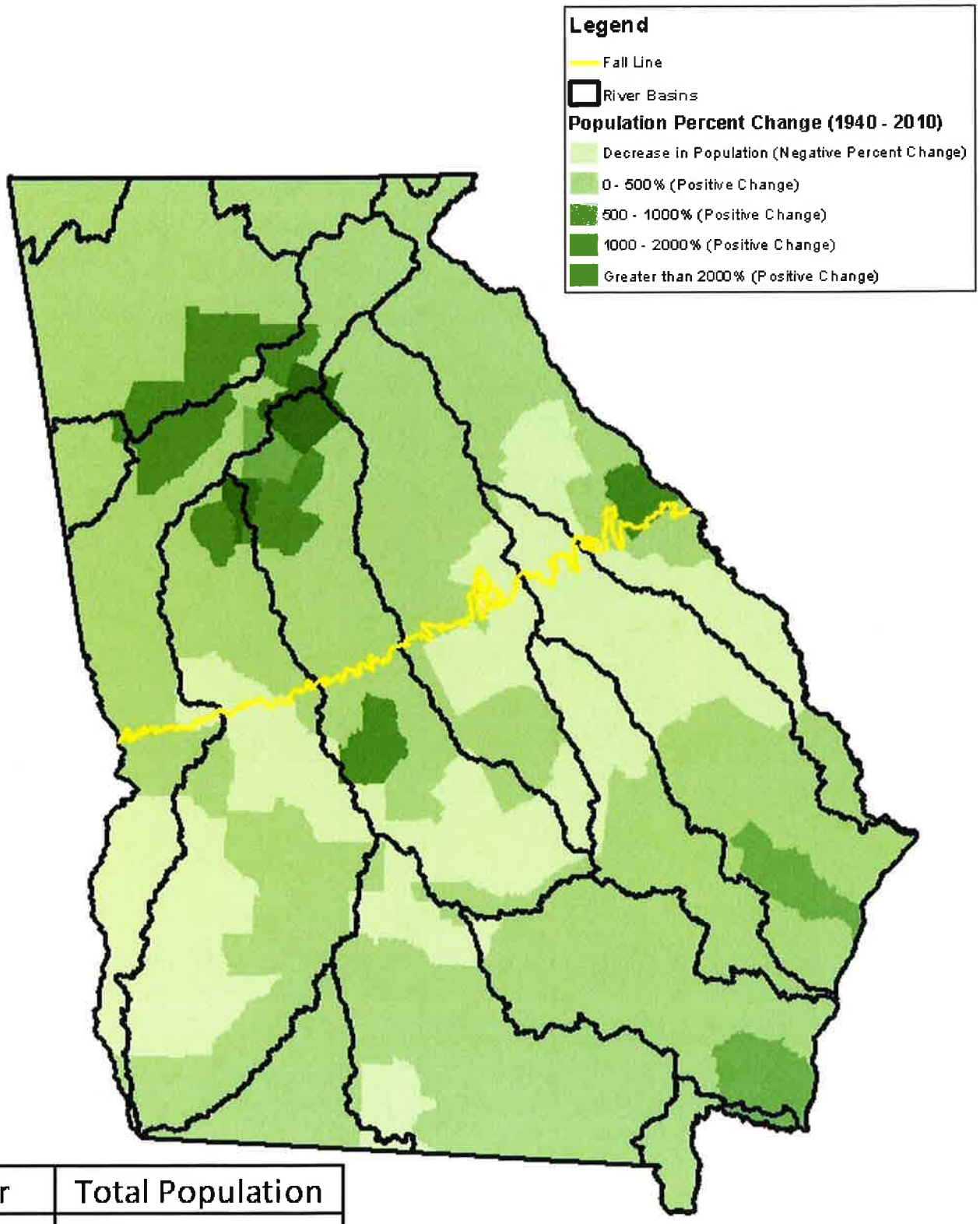
Remainder-term allocations = most at risk
If water use allocations are to be made without a reliable water balance at the outset, it seems only prudent that the most critical uses should be allocated first and not relegated to an uncertain "whatever-is-left" remainder term. As now proposed, EPD's unimpaired instream flow-regime policy puts instream flow requirements first in line for water allocations and leaves all other water uses, including municipal, industrial, and agricultural water supply, with whatever is left.



Data Source: "Dataset - Baseline & Projected Annual Water Withdrawals for Irrigation by Probability within Water Planning Regions and Counties." Dr. Jim Hook, NESPAL. Taken from http://www.nespal.org/sirp/waterinfo/State/awd/AgWaterDemand_By_WPR.htm

2011 Inferred Annual Agricultural Use (75 Percentile "Dry Year")

Figure 2



Year	Total Population
1940	3,123,723
2010	9,687,653

Data Source: U.S. Census Bureau Data

1940 - 2010 Population Percent Change
Figure 1

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GEORGIA POWER
A SOUTHERN COMPANY

June 23, 2011

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GEORGIA STATE-WIDE WATER MANAGEMENT PLAN, INITIAL RECOMMENDED REGIONAL WATER MANAGEMENT PLANS
Comments Submitted by Georgia Power Company

Dear Ms. Murphy:

As a vested stakeholder in sound long-term water resources management in the State of Georgia, Georgia Power Company (Georgia Power) appreciates the opportunity to submit these comments to the Georgia Environmental Protection Division (EPD) on the ten Initial Recommended Regional Water Plans (Plans or Regional Plans), as issued on May 9, 2011 for public review and comment. Georgia Power is an investor-owned utility that serves 2.35 million customers in all but four of Georgia's 159 counties. The largest of four electric utilities that make up Southern Company, Georgia Power has been providing electricity to Georgia for more than a century at rates well below the national average.

As EPD is aware, water resources are vital to Georgia Power's core business activities. Georgia Power would also like to point out that it has been helping companies locate or expand in Georgia for more than 80 years. Over the past two decades alone we have helped bring almost 200,000 new jobs and more than $24 billion in capital investment to the State. As such, Georgia Power, as a citizen wherever we serve, supports the development of the Regional Plans and believes they are a critical element of the state-wide water management planning effort, which will ultimately ensure that the State's water resources are managed in a sustainable manner to support the State's economy, to protect public health and natural systems, and to enhance the quality of life for all citizens.

Georgia Power believes the Regional Plans establish an excellent starting point for ongoing regional water planning. As drafted, the Plans provide a tremendous amount of information regarding the status of water usage across the State and the extent of the State's current water resources. However, there are opportunities to improve the Plans to ensure uniformity on those issues of state-wide significance and to ensure the Plans are administered in an efficient manner.

Accordingly, we offer the following comments for your consideration. Our general comments are included in Section A, and Plan-specific comments are provided in Section B.

SECTION A. GENERAL COMMENTS

1. Although the Plans recognize that statewide energy sector water use is projected to increase from current levels through 2050, the Plans do not consistently anticipate such need for water at the region level past 2020.

The Plans take differing approaches in considering future thermoelectric power water needs. For instance, the Altamaha Plan "acknowledges that some portion of the future additional generating capacity may be sited in the Altamaha Region in future years." The Plan then identifies potential water use by the energy sector in the region based on EPD's statewide energy sector demand forecast. The water use scenario supposes that 28% of the unassigned statewide consumptive use may occur in the region in 2030, and 20% in 2050. The Coastal Plan supposes that either 3.8% or 6.5% of the unassigned statewide energy sector demand may be sited in the region, depending on the hypothetical scenario relied upon for the projection.

In contrast, the Upper Flint and Suwannee-Satilla Plans state that there are no known plans for new thermoelectric power production facilities in the region through 2050, and that "therefore the forecast demand for this sector was zero." The Savannah-Upper Ogeechee Plan, states that "The Council believes that any planning for future growth of power generating facilities in Georgia should include this region."

Georgia Power appreciates the various efforts to anticipate future generation water demands beyond 2020 at the regional level. As explained in EPD's statewide energy sector water demand forecast, the amount and specific location of future generation water consumption and withdrawal needs beyond 2020 have not been determined. As such, we are pleased to see that all regions recognize future generation is needed at the state level to power the local growth in population and to support the 2050 municipal, industrial and agricultural forecasts.

The management of statewide energy sector water demand appropriately resides with the State. Georgia Power anticipates working closely with EPD at the State level to improve energy sector water demand forecasting. We are hopeful over time with refined forecasting EPD will be in the position to provide consistent guidance to the various regions of the State to appropriately plan for future water needs for energy.

2. The Plans anticipate future short-term energy production consumptive use declines due to more water efficient technology improvements, but do not recognize that competing regulatory and policy requirements may increase consumption over time.

In general, the Plans emphasize consumption decline and do not take into account the potential increased utilization of recirculating cooling water configurations (e.g. closed-loop cooling with evaporative cooling towers). This is contrary to EPD's statewide energy sector water demand forecast. The forecast provides that trends indicate future cooling water configurations will have less once-through technologies, which consume less water, and the forecast also provides that

trends indicate future cooling water configurations will have more re-circulating technologies, which consume more water.

For example, the Middle Ocmulgee Plan states that, "The overall water demand (withdrawal and consumption) for energy production in the region is projected to decrease slightly because newer facilities are expected to require less water for cooling, resulting in less consumptive water loss." It is important to bear in mind that while short-term consumptive use may decline as a result of existing and known planned facilities, the long-term outlook may be different. This is largely due to competing regulatory and policy schemes that address environmental preference issues in a manner that heightens water consumption.

3. The Plans have the potential to create varying standards across the State for water withdrawal permitting.

Upon review of the Regional Plans, there remains no clear indication from EPD or in the Plans of how the Plans will be used with regards to permitting. One result of this is that the Plans have the potential to create varying standards across the State for obtaining water withdrawal permits. For example, one of the management practices identified in the Altamaha Plan is to "[c]onsider low-flow conditions in future surface water permitting," and, if an applicant is seeking a new surface water permit in a gap area, that applicant should work with EPD and others "to promote surface water use patterns that will not significantly contribute to frequency or magnitude of 7Q10 low-flow conditions." Requiring what in essence is a "gap analysis" for each individual permit is a new concept in water withdrawal permitting, and one that may be overly burdensome for withdrawal permit applicants.

Other examples of Plans that could result in inconsistent permitting standards include the Upper Flint, Savannah-Ogeechee, and Middle Chattahoochee Plans. The Upper Flint Plan "recommends that as a part of water withdrawal permitting decision for new thermoelectric power production or any other water-intensive industry, a thorough evaluation should be conducted to determine if an adequate and sustainable water supply is available to meet the demands of the new permittee." The Savannah-Upper Ogeechee Plan states that siting of future facilities "is to be contingent on the availability of cooling water," and that "the Savannah River has available capacity that could be used for this purpose, provided that, prior to permitting, basin impacts of the additional consumptive use are evaluated." The Middle Chattahoochee Plan takes it a step further, recommending that "EPD review withdrawal and discharge permits for additional facilities in the region considering the limitations of the region's water resources to prevent exacerbation of instream water use impacts," which the Middle Chattahoochee Plan lists as economic and recreational; fish and wildlife conservation; critical habitat; reservoir drought operations; hydropower; water quality; flood control; river flow impacts; and reservoir operations and river flow.

It is unclear whether or how these provisions in the Regional Plans will be implemented in light of the existing statute and regulations that establish the standard for when a water withdrawal permit shall be issued. Under the Georgia Surface Water Withdrawal Act, any person wishing to withdraw over 100,000 gallons of water per day (on a monthly average) from any of the surface waters of the State must obtain a permit from the EPD Director. O.C.G.A. § 12-5-31(a); Ga.

Comp. R. & Regs. 391-3-6-.07(3). Assuming that the applicant has provided EPD with all the information the Act and its regulations require, the Act establishes the standard the Director must apply in issuing a permit:

> The division shall take into consideration the extent to which any withdrawals, diversions, or impoundments are reasonably necessary, in the judgment of the Director, to meet the applicant's needs and shall grant a permit which meets those reasonable needs; provided, however, that the granting of such permit shall not have unreasonably adverse effects upon other water uses in the area, including but not limited to public use, farm use, and potential as well as present use.

O.C.G.A. § 12-5-31(g) (emphasis added). Hence, while inherently recognizing the potential for "adverse effects," the standard allows the granting of the permit unless the adverse effects are unreasonable. The Regional Plans, as drafted, make no attempt to address how the new "recommendations" they add to the permitting process should be reconciled with the standard to which EPD must adhere. Thus, the Regional Plans have the potential to trigger a departure from the standard EPD currently applies.

Georgia Power respectfully recommends that each Plan include clear language that the Plans should not be used to alter the permitting standard. At a minimum, Georgia Power respectfully suggests that EPD revise these Plans to ensure uniform application of one standard for water withdrawal permit issuance across the regions. As the State agency responsible for issuing water withdrawal permits, EPD needs to establish a clear and consistent policy on this issue to avoid confusion throughout the regulated community.

4. The Regional Plans do not fully recognize the requirement that permittees follow the water conservation and drought contingency plans that permittees developed as part of the water withdrawal permitting process.

In a number of instances, the Regional Plans call for a variety of conservation measures and a demonstration of progress toward such measures. The Middle Chattahoochee Plan, for example, states that "the Council encourages the use of best management practices for cooling and water use, recommends that energy providers should continue to work with EPD in pursuing [state water conservation] goals...." Under the Georgia Surface Water Withdrawal Act (the "Act"), an applicant for a surface water withdrawal permit must submit an application to the Director in accordance with O.C.G.A. § 12-5-31(d) and Ga. Comp. R. and Regs. 391-3-6-.07(4), which set forth specific types of information that the applicant must include in the application. Two requirements of the application are particularly important: (1) the water conservation plan; and (2) the drought contingency plan.

The Regional Plans do not appear to take into full account existing requirements concerning the water conservation and drought contingency plans that permittees are required to develop and submit as part of the water withdrawal permitting process. As a result, the Regional Plans could be interpreted as duplicating regulatory requirements or adding a new layer of conservation plans that may not be properly coordinated with water conservation and drought contingency plans that

are already required. Georgia Power recommends that the regulated community be subject only to one layer of water conservation and drought contingency plans.

5. In assessing water resources, a departure from permitted use to actual use may result in unreliable results.

Several of the Plans recommend that actual water use rather than permitted amounts be used in future assessments. For example, the Upper Flint Plan "recommends that future modeling to assess surface water flows...be preceded by an evaluation of actual withdrawals." Both the Upper Flint Plan and the Lower Flint Ochlockonee Plan state "that water planning should be based on data reflecting actual water use and conditions as much as possible." Georgia Power believes there may be downsides to this approach. While the desire to have as accurate a picture of water use as possible is understandable, using actual amounts has a number of potential pitfalls. Water use activities vary among permittees in any given year, and certain events beyond the control of a permittee may constrain the permittee from using the full extent of its permitted water amount in a given year that may not exist in the next year.

Permittees rely on permitted amounts and plan their operations accordingly often over a multiple year planning period. As such, permittees may be disadvantaged in their operations by actual use assessments. Georgia Power is concerned that conducting assessments based on actual use may lead to the reduction of permitted withdrawal amounts from entities that may not be currently using the full extent of their permitted withdrawal at all times. In addition, using actual versus permitted amounts would minimize the permitting process that established the permitted withdrawal amounts in the first place. Finally, using actual water use may result in less efficient use of water by some permittees who are concerned that their permitted withdrawal may be reduced if the full amount is not used in any given period. Accordingly, Georgia Power respectfully suggests that the practice of using permitted amounts for assessment purposes continue, and this approach should continue to be applied uniformly throughout the regions.

6. Water resources are vital to Georgia Power's core business activities, including hydropower generation.

Three of the Regional Plans address water supply from Georgia Power's hydropower reservoirs. The Middle Ocmulgee Plan states that "[a]ny additional use of Lake Jackson's storage capacity for water supply purposes would have to be negotiated and approved by Georgia Power and permitted by EPD." The Upper Oconee Plan calls for "negotiat[ion] with Georgia Power on potential expansion of existing withdrawals." The Middle Chattahoochee Plan similarly calls for "coordinating with current reservoir owners," including Georgia Power, "to meet future water supply needs." These management practices stem at least in part from EPD's Surface Water Availability Assessment synopsis report, which stated that "[f]or regulated and semi regulated nodes, when upstream reservoir physical storage is sufficient to meet flow regimes as well as consumptive uses, shortfalls in availability are assumed to be zero, even if no storage is allocated in the reservoir for water supply." As Georgia Power has pointed out in the past, and as these three Regional Plans acknowledge, the synopsis report's assumption that certain water is available when for all practical purposes it is unavailable may result in underestimating a basin's potential shortfall and / or overestimating its readily available water supply.

Georgia Power wishes to emphasize that water resources are vital to hydropower generation, one of Georgia Power's core business activities. Georgia Power's hydropower reservoirs are non-federal projects developed with private funding, owned and operated by Georgia Power to provide a reliable, renewable and clean source of green energy for Georgia's citizens at a reasonable cost. They are regulated and licensed by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act and subject to a host of other statutory and regulatory requirements. Georgia Power's reservoirs generate steady base load or peaking power while also providing the following non-power benefits: recreation; fish, aquatic and wildlife resources and habitat; endangered species habitat; shoreline and land management; and cultural resource protection. It follows that, and as the Plans acknowledge to varying degrees, the hydropower reservoirs are an important part of economic development and well being within the State. Any change to a hydropower project to operate for water supply could interfere with federally licensed activities, negate Georgia Power's investment in storage capacity, require FERC authorization and impose upon consumers the cost of more expensive replacement sources of power.

7. EPD should require a flexible approach to implementing management practices, adopting the approach taken by some regions.

The Regional Plans embrace flexibility in several areas. For instance, the Plans show flexibility by providing a variety of management practices. The Plans also generally provide for flexibility in the implementation of the management practices. One such approach adopted by the Savannah-Upper Ogeechee is demonstrated by that region citing as "a major concern" that "the recommended management practices not dictate what each stakeholder group or entity should do. Rather, they are presented as a menu for selection by entities within the [region] based on local needs and conditions." Along the same lines, the Middle Ocmulgee Plan states that, "Total overall costs for the entire Plan were not specifically developed" because the recommended practices "are not intended to be mandated or prescriptive to the water and wastewater users and providers." The Suwannee-Satilla Plan similarly states that the "Council is sensitive to unintended consequences if Plan recommendations become mandates." Georgia Power supports the flexible approaches taken in these and other plans and respectfully suggests that EPD recognize that a variety of site-specific case-by-case measures will need to be undertaken to properly manage our water resources in a sustainable manner for the long term.

8. EPD should clarify the future role of regional water management councils, and how the regional councils' future Plans will be coordinated.

In outlining next steps for regional councils, several of the regions endorsed the continuation of councils past the expiration date of February 2012. The Middle Ocmulgee Plan, for instance, recommends that the council operate in a similar capacity after the expiration of its term, and that some portion of the existing members be re-appointed. The Savannah-Upper Ogeechee Plan calls for formation of "a permanent Savannah and Ogeechee water planning organization as the conduit for bringing together all stakeholders and assisting the State with implementation of water resource goals in the entire basin," and for a portion of the current council to sit on the permanent organization. Georgia Power is in favor of such notions, and wishes to voice support

for continued representation by a diverse group of regional stakeholders covering a wide range of interests, including the interests of the energy sector given the importance of water to its operations in providing electricity to the State. There does, however, need to be uniformity across the regions in continuing to manage water resources.

Georgia Power also believes the State should strive for uniformity as to how the Regional Plans are to be amended, and how they will be coordinated with future EPD resource assessments. The Middle Ocmulgee Plan, for instance, calls for amendment on a 5-year basis, "or as required as additional needs arise," including "proposal (or expansion) of a major water-using industry or development, including energy generation." If amendment can be triggered on this basis, the Plans should explain whether and how any amendments would impact permitting. EPD may wish to clarify that the issuance of permits is in no way tied to any Plan amendment process, and would not be delayed as a result of pending Plan amendment. Georgia Power believes that introducing this level of uncertainty into the permit planning process could be problematic for water users and may be onerous. Georgia Power also believes that amendment procedures should be consistent with the state-wide Water Plan's requirement that Regional Plans be updated every five years. EPD's clarification of how and on what basis amendment should occur, as well as how regional plan updates will be coordinated with future EPD resource assessments (slated to be updated every 10 years) would be very helpful to the regulated community.

9. As several of the Regional Plans emphasize, management of water resources should account for naturally occurring water quality conditions.

Several of the Plans emphasize the role of naturally occurring water quality conditions, and take the position that management of water resources should account for these parameters. For example, one of the management practices in the Upper Oconee Plan is to "revisit DO criteria for South Georgia, and the Region in particular, to consider naturally low background levels found in the Region." The Suwannee-Satilla Plan states that, "Low flow conditions have been and will continue to occur; and the Suwannee-Satilla Council's management practices are not utilized to address naturally occurring low flow conditions." Georgia Power believes that this is the correct approach, and that the management of water resources throughout the State should take into account naturally occurring conditions.

10. EPD should ensure that the Regional Plans use the same definitions of key terms.

Georgia Power is concerned about the lack of a consistent approach in using key terms in the Plans. For example, the term "gaps" as used in state-wide Water Planning documents, and many other Regional Plans, refers to potential shortfalls in the capacity of water resources to meet water supply and wastewater demands while also meeting criteria for flows and assimilative capacity defined by EPD. The Middle Chattahoochee Plan, however, expands the definition of gaps "to include gaps that are created by failure to meet *either* water withdrawal uses *or* instream water uses." Another example is assimilative capacity. Assimilative capacity is defined in the Surface Water Availability Assessment as "the amount of contaminant load that can be discharged to a specific water body without exceeding water quality standards or criteria." In the Upper Flint Plan, however, the term assimilative capacity refers to "the ability of a water body to naturally reduce pollutants to a level that does not exceed State water quality standards or harm

aquatic life." Finally, The Middle Ocmulgee Plan defines the term "consumptive use" as loss through evaporation, but not all Plans use this same definition. EPD should ensure that the Plans use the same definitions of key terms, and that those definitions are accurate.

11. The Regional Plans should acknowledge that only the Tier One water demand management practices are mandatory at this time.

EPD's Guidance for Evaluating Practices to Manage Demands is addressed in all of the Regional Plans and incorporated to varying degrees into each region's management practice selection. Several of the Plans acknowledge that only the Tier One water demand management practices are mandatory in nature at this time and that, in contrast, Tier Two, Tier Three and Tier Four measures are recommendations only. In the Savannah-Upper Ogeechee Plan, for instance, the water demand management practices include implementing Tier One measures, but the practices call for merely evaluating and encouraging Tier Two measures. Georgia Power believes that this is the appropriate position for the regions to take, and we respectfully request that EPD clarify and maintain throughout this effort that the Tier Two, Tier Three and Tier Four measures should not be rendered mandatory by virtue of incorporation into the Regional Plans.

SECTION B. PLAN SPECIFIC COMMENTS

1. Middle Chattahoochee Regional Water Plan

- Table 2-1 should be revised to include the following figures for Georgia Power reservoirs in the storage column. The numbers provided below are the conservation storage numbers, and should replace the total storage numbers in order to be consistent with the conservation storage numbers provided for the federal reservoirs.

Basin/River/Project Name	Storage (Ac.-Ft.)
Morgan Falls	2,240
Bartletts Ferry	57,000
Goat Rock	4,960
Oliver	6,080
North Highlands	139

  Additionally, we respectfully request that Table 2-1 include the non-power benefits of the Georgia Power reservoirs: fish & aquatic resources, water quality and quantity, wildlife and botanical resources, wetland, riparian and littoral habitats, rare, threatened & endangered species habitats, recreation (fishing, boating camping, etc.) and cultural and historic resource management.

- Dissolved oxygen modeling has not been conducted for the Chattahoochee River from West Point Lake to Columbus, and the region would benefit from more data from EPD on that segment of the river.

- On page 3-9, footnote 6 is inaccurate: "This project is currently in relicensing and potential drought contingency plans are being reviewed by FERC." Instead, Georgia Power suggests

that the Middle Chattahoochee Plan state that, "This project is currently in relicensing and operations data has been filed with FERC which will be used by FERC to evaluate the need for a Drought Management Plan."

- On page 3-6, Georgia Power respectfully requests that the bullet on wildlife management areas refer to areas "located along the shores of many federal **and non-federal** reservoirs, including...."

- On page 4-8, in Table 4-3, Georgia Power wishes to point out that Plant Yates is located in Coweta County, not Heard County. Coweta County is outside the Middle Chattahoochee region. The consumptive demand calculations in Section 4.4, and other portions of the Middle Chattahoochee Plan that refer to or incorporate Plant Yates, should be adjusted accordingly.

2. Upper Oconee

- The Upper Oconee Plan acknowledges that there are no lake-specific standards for Lakes Sinclair and Oconee. However, the results for chlorophyll-a, total nitrogen, and total phosphorus loadings for the lakes are compared to the standards for Lake Jackson. No specific explanation is provided for this comparison, which is misleading and should be scientifically justified. Other plans, such as the Lower Flint-Ochlockonee Plan, take the more appropriate approach of acknowledging that because nutrient standards have not been established for certain lakes in the region, EPD's lake model results should not be compared to nutrient standards.

- Several of the Regional Plans identify as a management practice improved enforcement of erosion and sedimentation controls. Georgia Power agrees that these are important measures, the implementation of which enhances State water quality conditions, and helps alleviate the impacts of nutrient loading and other parameters on our reservoirs, rivers and streams. However, one of the management practices in the Upper Oconee Plan is to "consider modifying (limiting) the extent of exemptions found in O.C.G.A. § 12-7-17 regarding the Erosion and Sedimentation Control Act." Georgia Power does not believe that this management practice, or any other management practice that calls for tightening of existing erosion and sedimentation requirements currently in effect, is necessary to meet regional water planning goals. The statutory and regulatory provisions currently in place have been developed over time, were subject to a rigorous promulgation and vetting process, and are reviewed and revised accordingly on an ongoing basis. In acknowledgement of these efforts, the focus going forward should be implementation of existing sedimentation and control measures.

- On page 4-9 and 4-10, Section Sec. 4.4 of this Plan, Georgia Power respectfully suggests the following revisions to the description of power plants that consume water and those that do not (see also the Coosa-North Georgia Plan, which includes the same description and perhaps others with differing descriptions):

  Once-through cooling systems use water to condense steam. River or lake water is pumped through a heat exchanger to condense steam, the condensed steam is pumped

back through the steam cycle, and the cooling water is returned to its source. Although the consumptive water use is minimal at a power plant, the amount of water withdrawn from the river or lake is significant. However, the once-through cooling water is immediately returned to the source.

Closed-loop cooling systems were designed to minimize the amount of water withdrawn and / or to minimize the heat rejected to the receiving river or lake. Closed-loop systems also use water for cooling to condense the steam, but the heat is rejected through evaporation in a cooling tower. The cooling water is pumped in a closed loop between the cooling tower and the condenser heat exchanger and makeup water is required to replace the water that is evaporated. This system consumes more water than once-through systems because the entire energy exchange is through evaporation of the water, but they withdraw less water because less water is needed as make up for the evaporated portion.

Also, on the fourth line of the second paragraph of page 4-9, please consider "utilize" instead of "consume."

- The Upper Oconee Plan's Executive Summary notes that "[w]ater quality gaps were predicted to occur in Lakes Oconee and Sinclair due to excess nutrients in the future due to a combination of point source and nonpoint source pollutant loads from anticipated wastewater discharges and land use changes." The Plan does not address what if any implications these water quality concerns would have on expanded water withdrawals from the lakes as contemplated in another recommended management practice.

- The total acreage of Lake Sinclair should be listed in the document as 15,330. The total acreage of Lake Oconee should be listed as 19,050.

Georgia Power appreciates our ongoing dialogue with the State Water Plan leadership and anticipates continued inclusive consultation at the regional council level to address future water resource planning at local, state and federal levels. If you have questions or comments please feel free to contact me directly at (404) 506-7026 or tdblaloc@southernco.com, or George Martin of my staff at (404) 506-1357 or gamartin@southernco.com.

Sincerely,

Tanya D. Blalock
Environmental Manager

GAM/

GEORGIA
WATER ALLIANCE

June 23, 2011

Mr. Allen Barnes
Director, Georgia Environmental Protection Division
2 Martin Luther King Jr., Drive
Suite 1152
Atlanta, GA 30334

RE: Draft Regional Water Plans
Comprehensive Statewide Water Management Plan

Dear Director Barnes:

The Georgia Water Alliance is a broad coalition of stakeholders representing business, local government, water service providers, utilities and agribusiness interests. The Georgia Water Alliance (Alliance) was formed in 2006 to provide a unified voice during the development and implementation of Georgia's Comprehensive Statewide Water Management Plan (State Water Plan). We fully support the legislature's water policy statement that *"Georgia manages water resources in a sustainable manner to support the state's economy, to protect public health and natural systems, and to enhance the quality of life for all citizens."*

Given our history with the development and implementation of the State Water Plan, we offer the following comments and recommendations on the content of the regional plans.

1. Implementation of Regional Water Plans

The State Water Plan states in Section 14 that "upon adoption, the Director shall use the water development and conservation plans to guide decisions regarding permitting." However, in the background contained in Section 14 the following statement is made: "Once adopted by EPD, the regional WDCPs will be used by EPD as a basis for making permitting decisions." Further, O.C.G.A. 12-5-522(e) states "the Division shall make all water withdrawal permitting decisions in accordance with this chapter, the comprehensive state-wide water management plan that has been approved or enacted by the General Assembly as provided by this article, and any applicable regional water development and conservation plan." (Emphasis added).

These statements contradict each other and do not provide clarity in how the Georgia Environmental Protection Division (GEPD) will implement the regional water plans with regard to permitting. This is especially troubling considering the iterative and adaptive nature of planning as well as numerous calls by regional councils for additional

monitoring, data collection and modeling needs. The Alliance recognizes that the initial plans are based on the best data available at the time of development. However, with overarching concerns about the flow data used to model current and future water availability, it is unwise to require permitting decisions to be made solely on the regional plans.

Recommendation: The Georgia Environmental Protection Division (GEPD) should clearly state in each regional plan the following:

This regional water development and conservation plan shall be used to guide permitting decisions by the Georgia Environmental Protection Division but should not be considered as legally binding when developing water withdrawal and discharge permits. The Division retains the legal authority to issue permits that are consistent with state law and that consider, but may not fully conform with, this regional plan.

2. Use of Unimpaired Flows

The Alliance remains very concerned that use of unimpaired flows in the water resource assessment will become an EPD permitting requirement replacing the 2001 DNR policy on instream flow protection which utilizes real streamflow data.

GEPD staff has explained that the intent of the water resource assessment is to provide general guidance on the future availability of water. GEPD also stated that the specific gap numbers generated are not intended for current or future water withdrawal permit decisions. However, GEPD stated that the connection between planning and permitting is unclear.

Future surface water withdrawal permitting decisions will be made by EPD staff and, if appealed, by administrative law judges. We can, unfortunately, foresee the possibility of future decisions requiring use of virtual unimpaired flows rather than real streamflows on the basis that the water resource assessment is part of the State Water Plan and that the Plan supersedes previous DNR policy.

Recommendation: Each water resource assessment and regional water plan should contain a clear discussion on the use of unimpaired flows and the use of the assessment. This discussion should definitively state that the assessment is for general planning purposes only and is not to be used for permitting decisions. Also, the discussion should verify that the 2001 DNR policy, using real streamflows, is operative until such time it is changed by the DNR Board.

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3. Future Work of Regional Councils

Multiple regional councils identified the need for additional data collection, modeling efforts, state action and plan revisions. Yet, the State Water Plan did not address future needs for regional planning upon completion of the first iteration. It is critical that each council and council member continue the work that has only just begun and that continuity is ensured. In addition, the regional councils have identified various practices and projects that require funding and technical expertise. The regional plans also contain recommendations that are similar in scope. Implementation of resources should be coordinated to prevent duplication across the regions. There remains no mechanism for this to occur. The regional planning effort has produced 10 regional planning documents with no implementation strategy.

Recommendation: Each regional water council should be reconstituted. Each regional water plan should include an implementation strategy with funding sources identified. These sources should not rely solely on local governments but a mix of local, state, federal and private dollars. Human capital must also be assessed and immediate action items should be included.

4. Measurement of Progress

Each regional council should be commended on their tremendous leadership and time expended in the development of each plan. With the scope and technical complexity related to water analysis, these plans are an extraordinary achievement for Georgia born out of countless volunteer hours. The plans have identified the potential gaps in water supply and assimilative capacity as required and proposed various management practices to close the gap. However, it appears that the practices have not been modeled to confirm their positive impact. Further, to fully understand our progress, each region must benchmark existing water conditions and define metrics by which to measure progress. The regional water plans do not consider or discuss how progress is reported and ensured.

In addition, the regional approach to water management maximizes local control over regional water resources. No region should be allowed to have conditions at an exit node below the flow guidance (the monthly 7Q10 or inflow, whichever is less) or below the assimilative capacity needed by downstream users.

Recommendation: Each regional plan should establish reasonable benchmarks by which progress can be measured. The basin plans should also offer a reasonable glide path to closing all modeled gaps, over time, to assure both water quantity and water quality for downstream users.

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5. One "State" Water Plan

At the end of this process, Georgia will have 11 regional water plans (10 regional water plans and 1 Metropolitan North Georgia Water Planning District plan). It was the intent of the State Water Plan to create one plan for Georgia through the efforts of regional planning. It is important to ask how will these 11 plans be integrated and, once combined, does the new State Water Plan address the top water issues for the State of Georgia. For example, collectively, do the plans address the ongoing dispute over the ACF and ACT river systems? Do the plans secure water supply for North Georgia? Do the plans address the agricultural water needs of Southwest Georgia?

Recommendation: The Georgia Environmental Protection Division should develop and publish a strategy for integrating the 11 regional water plans into one document. A rationale should also be developed demonstrating that the plans have met the long-term water needs of Georgia.

In conclusion, Georgia must remain a competitive state and remain open for business. Perception by our peers and critics is that Georgia is out of water. These plans are a critical link to demonstrating that Georgia is taking proactive steps to ensure adequate water resources for our water future.

Sincerely,

American Council of Engineering Companies of Georgia
Associated General Contractors, Georgia Branch
City of Austell – Public Works
Council for Quality Growth
Georgia Agribusiness Council
Georgia Association of Manufacturers
Georgia Association of Water Professionals
Georgia Beverage Association
Georgia Chamber of Commerce
Georgia Chemistry Council
Georgia EMC
Georgia Industry Environmental Coalition, Inc.
Georgia Mining Association
Georgia Paper and Forest Products Association
Georgia Power Company
Metro Atlanta Chamber
Oglethorpe Power Corporation
Regional Business Coalition of Metro Atlanta
The William L. Bonnell Co., Inc.
Urban Ag Council

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Please direct inquiries about the Georgia Water Alliance, c/o Ms. Katie Kirkpatrick, Vice President – Environmental Policy, Metro Atlanta Chamber of Commerce, 235 Andrew Young International Boulevard, NW, Atlanta, GA 30303 or kkirkpatrick@macoc.com.

GEORGIA WATER COALITION

June 23, 2011

Via E-mail (info@georgiawaterplanning.org) and Fax (404-651-5778)

Arnettia Murphy
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, GA 30334

RE: Initial Draft Recommended Regional Water Plans

Dear Ms. Murphy:

The Georgia Water Coalition ("GWC") submits the following comments concerning the above-referenced plans. The GWC includes 182 civic, environmental, evangelical, recreation, and business organizations throughout Georgia, representing thousands of Georgia citizens. A list of current GWC members is attached to this letter.

The GWC has been following the statewide water management planning process since the days of the Joint Comprehensive Water Study Committee that convened over 10 years ago. Our members have been deeply involved in the development of the statewide water plan that was adopted in 2008, and we have been advocating for improvements to that plan since its adoption. We have also followed the progress of the Regional Water Planning Councils that were set up pursuant to the statewide plan. The Regional Water Plans that were released for public comment on May 9, 2011, represent one of the most significant steps in the continuing evolution of water planning in this state. Particularly as Georgia slips back into drought conditions across parts of the state, and as uncertainty continues related to the ongoing Tri-State Water Wars, sound water management must remain a central priority for all decision-makers, as it will determine the future economic and ecological well-being in our state.

The following comprise the GWC's comments about the draft Regional Water Plans as a collective whole, using one or more specific Regional Water Plans as examples in some places. Individual GWC members will be submitting separate and more detailed comments on each of the draft Regional Water Plans.

Support for Studies and Recommendations Contained in One or More Draft Regional Water Plans

We strongly support several studies and/or management recommendations contained in one or more of the draft regional plans. These include modeling of the effect of the proliferation of farm and amenity ponds and reservoirs on river basin hydrology; studying the efficacy of wetlands restoration projects to support and improve base flows; investigating "restorative"

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interbasin transfers ("IBTs") to regain flows in river systems which have been depleted by IBTs; and re-examining groundwater modeling for the major aquifers of Georgia, with particular emphasis given to water supply and interaction with surface water. We also strongly support funding for and continuation of the water planning process. There is room for improvement, but this is a first and laudable effort for Georgia.

Public Involvement

The GWC recommends that future regional council meetings include one or more public meetings solely for the purpose of presenting information, soliciting and answering public queries, and accepting public comments. While past regional council meetings have set aside periods at the end of each day's meeting for public comment, the timing is not conducive to the actual solicitation and reception of such material. Detailed, technical input from citizens had to be made on a special-request basis for time on the agenda, which time was quite jealously guarded. In one instance, one GWC member requested time to present data on Gulf Power's Plant Scholz to the Flint River councils and was "granted" 3 minutes for such a presentation, a time that was extended only due to the informative nature of what he presented from the councilors' point of view. Other opportunities for such education were likely lost as a result of the format of reserving a short time for public comment at the end of often-lengthy meetings. We also observed many instances when the full council was no longer present by the end of the meeting to actually hear from the public.

In another manifestation of limiting public input, some councils selectively appointed non-council members representing major water users to technical committees whose feedback was then used to formulate significant portions of the draft regional plans. The result is that the plans are less reflective of public needs and wishes and more reflective of special interests. Any technical committees or other subcommittees convened by the councils must represent the spectrum of water interests that are present in the region.

Continuing Concerns with Inadequate Authority to Achieve Regional Goals

The water planning process in Georgia continues to be hampered by the fact that the statewide water plan lacks the force of a statute or regulation. The plan's legal effect should be clarified by future legislation that empowers regional councils to issue binding policies for water management.

Water conservation provides an example of this problem. The GWC appreciates that many – but not all – regional water councils have addressed water conservation actions in Section 6, "Addressing Water Needs and Regional Goals." Conservation pricing, sub-metering, public awareness programs, automated irrigation systems, and new plumbing codes for low-flow toilets are important water conservation and efficiency tools. We also appreciate that all Regional Water Councils incorporated plumbing codes into their water demand projections, and we were pleased that some councils went so far as to calculate "Estimated Demand Reductions from High Efficiency Plumbing Fixtures" (e.g. Middle Ocmulgee plan at 6-16). The Savannah-Upper Ogeechee council's plan specifically recommended implementation of "SB 370 requirements" as tools to close water supply and demand gaps identified by other councils

(Savannah-Upper Ogeechee plan at 6-13).[1] However, without statutory authority, the councils can issue no mandates or requirements for these actions; they must leave implementation to "local governments and utilities" (See Upper Oconee plan at 7-3). While some councils recognize that "water conservation remains a cost effective means to address future water supply needs" (e.g. Coastal plan at ES-12), and many recommend conservation education programs, these councils failed to include – and may lack the legal authority to include – serious water conservation and efficiency tools in their "Recommendations to the State."

Nearly every regional council recommends that the state institutionalize council functions or that the state secure funding for long term regional water plan implementation. The Georgia General Assembly must institute and fund professional council or water management district staff who can conduct "research, studies, assessments, measurements, monitoring, and reporting on the progress of goals and future updates to" Georgia's critical water planning (See Middle Chattahoochee plan at 7-19; Suwanee-Satilla plan at 7-30). The GWC supports both legislation empowering the regional councils and full funding of the councils. However, we also recommend that the membership of the councils be updated to include new representatives from the scientific, academic, and conservation communities who can analyze and interpret data, projections, and information independent of consultants and state agency staff.

Continuing Concerns with Regional Water Planning Boundaries

The GWC continues to advocate for water planning that follows river basin boundaries, not geopolitical boundaries. Politically-drawn boundary lines adversely affect the planning process by separating water resource and water quality problems from the sites of their solutions. Unfortunately, many of the regional planning boundaries contain pieces of multiple river basins, complicating the planning process. One of the most egregious examples of a planning unit that does not respect natural boundaries is the Coastal Region, which severs virtually all of Georgia's coastal rivers from their mouths. Indeed, the lower Savannah River and its estuaries are absent from consideration by any of the regional plans. Other examples of this breakdown in efficient planning because of geopolitical boundaries include:

a. Severe low flow conditions in the upper Flint River, partially caused by water withdrawal permits and reservoirs in the Metro District, but not accounted for in the upper Flint plan, and further clouded by wholly inappropriate planning data node selection.

b. Estuarine water inputs in the coastal plain that are unspecified in the coastal plan, unspecified but alluded to for the "named" rivers (Savannah, Ogeechee, Altamaha, Satilla, and St. Marys), and totally ignored for the "unnamed" rivers (coastal blackwater swamp drainages that include the Newport, Jerico, Sapelo, Buffalo, Turtle, and Crooked Rivers).

c. Chronic low-flow conditions in the Satilla River, profoundly affected by headwaters located in the Altamaha planning region.

[1] We note that many of the conservation-related recommendations are actual requirements, since the adoption of the Georgia Water Stewardship Act of 2010. Many councils are in essence recommending that they follow the law. We would like to see conservation-related recommendations go further, particularly in high-growth areas of Georgia.

The original separation of the Metropolitan North Georgia Water Planning District ("Metro District"), which includes key segments of five different river basins, continues to cripple basin planning throughout Georgia. The fact that the Metro District is a creation of statute, and can therefore require that remedies to problems be implemented, stands in stark contrast to the purely voluntary nature of the other 10 regional planning councils and their "recommendations." While many Metro District requirements have been quite efficacious from a water management standpoint, the other planning districts are ill-equipped to repeat the Metro District's performance of the last decade or so.

The Coastal Regional Council should be eliminated entirely, due to the great diversity of interests represented in that configuration, and its members distributed to the adjacent Councils for the streams crossing the old Coastal Council's planning region. The new configuration should be respectful of the complicated floodplain hydrology of the coast, making sure that the coastal swamps are linked with the appropriate river system. Likewise, the membership of the Metropolitan North Georgia Water Planning Council should be redistributed to the several river basins included in the Metro District. While there is some sense in having a separate water plan for metropolitan Atlanta, this should not operate exclusively of the rest of the state and should not undermine the efficacy of the regional water plans that must rely on river basins as a basis for planning.

Timing and Quality of Information Provided to Regional Water Councils

Information provided to the regional water councils was poorly organized, both as to the content of that information and the time at which it was shared with the councils. In several individual regional council meetings, very little substantive material was presented when discussion and opportunities for understanding were at a maximum, and conversely, voluminous quantities of information often were presented only at joint meetings with multiple regional councils, when many council members were not in attendance, and opportunities for discussion and comprehension were limited. The timing of vital information to the councils was also harmful to planning. The fact that information on water use by thermoelectric power plants, the largest single water users in Georgia, was delayed until less than 3 months before the first regional water plan drafts were initially due to the Georgia Environmental Protection Division ("EPD") is egregious, particularly in light of the paucity of the information that was ultimately provided. The lack of utility cooperation in providing projected water uses during the planning period was disrespectful of the councils' mission and was not well-justified. Water quality information was also late in arriving to the regional councils, resulting in hasty decision-making.

EPD Oversight of Regional Plans

The GWC is concerned that EPD, either directly or through its contractors, has inserted management option recommendations into regional plans that were never supported by members of those regions' council members. As an example, no person in the Altamaha region ever advocated any action beyond the study of aquifer storage and recovery ("ASR"), and in fact several members forthrightly and repeatedly opposed the practice, which is prohibited in the region by statute. However, ASR was recommended anyway as a potential water management practice for the region. In another example, IBTs were recommended in both the Altamaha and Coastal regions, despite the fact that IBTs may not even be feasible in such topography. Furthermore, discussion of IBTs in those councils was limited, if it occurred at all. EPD also has

rewritten and weakened certain council positions, such as those of the Upper Savannah-Ogeechee council on IBTs. EPD needs to be considerate of the regions' articulation of their own water needs and management preferences. While there is room for certain statewide ground rules governing various practices (such as uniform criteria for consideration of proposed IBTs), EPD should limit its role at this stage and allow for regions to set their own priorities.

Improper Assumptions Concerning Thermoelectric Power and Water Use

EPD's arbitrarily factored in only those projects that have actually applied for water withdrawal permits in the regional planning process. Yet notwithstanding this arbitrary criterion, EPD also assumed 1,000 megawatts of new electricity generation per year for the entire state after 2017. Some of this new power may come from thermoelectric plants, as evidenced by the proposal for Plant Ben Hill (which was not included in the regional plans), yet few of those plants exist beyond the conceptual stage, much less the water withdrawal permit application stage. In fact, EPD assumed that nearly all new power would be generated by coal, gas or nuclear power plants and only 1% of electricity would come from less water-intensive, non-biomass renewable energy sources. We are concerned that the regional water plans do not offer a full picture of future water consumption because of EPD's selective inclusion of only certain types of thermoelectric power plants, and its exclusion of potential new electricity sources such as energy efficiency.

EPD's statewide application of unrealistically high energy growth projections misleads the regional councils into accepting a worst-case scenario for energy growth. Because this assumption was applied statewide, it also defeats the purpose of regional planning to account for new energy sources and their potential water needs and impacts. There are significant portions of the state that will not become sites for new thermoelectric plants, yet that critical information is omitted from the planning process and denied the planners. By the same token, knowledge that some regions are far more likely to be the hosts of these projected water-intensive power plants than others would very likely change those regions' level of attention to this matter. EPD needs to more effectively explain to each regional council the possible implications of the high-growth energy scenarios put forth in terms of possible impacts to each river basin if electric utilities continue to promote water-intensive energy supply options such as coal and nuclear. Additionally, we recommend that EPD pursue development of a "Water Conserving Scenario" as suggested by Southern Alliance for Clean Energy, a member of the GWC, in its submitted comments.

Concerns with Forecast and Demand Considerations

Municipal water and wastewater forecasts were based on single high-growth population projections and do not account for lower-growth scenarios such as the growth Georgia has actually experienced over the past several years. In the case of the Upper Flint, for example, the regional water plan forecasts projected that population would increase by 63.1%, from 245,827 in 2010 to 401,059 in 2050. We recommend that regional water planning should include a range of growth contingencies, not just the high-growth scenario. The state should evaluate high-, medium-, and low-growth scenarios in order to develop a range of projections for which to plan and develop water-management solutions.

Municipal water forecasts also improperly assume that water consumption must increase as population increases. To the contrary, an increase in population does not require an increase in water demand. There are many examples across the country and the world in which communities have held water use constant, or even decreased total water consumption, while increasing population. While per-capita use rates were adjusted to reflect expected water savings over time due to plumbing code changes required by federal and state laws, the regional plans must go further to incorporate aggressive water efficiency as a means of maintaining or reducing levels of water use. We recommend that the regional water plans incorporate aggressive water efficiency in order to secure water supply for new residents, as well as to augment stream flows.

Concerns with Scientific Assumptions

EPD factored in a number of assumptions that fueled the generation of data that was then used by the regional councils for planning purposes. The GWC has concerns with several of these assumptions and recommends that they be eliminated or changed as the planning process moves forward.

The selection of the planning nodes from which stream flow data was then developed was arbitrary. Many of the data points that were selected seem to be less useful than other points would have been, and the quality of the modeling could easily have benefitted from the advice of the council members and other interested persons before EPD employed its data points for modeling purposes. In several cases, council members and members of the public pointed out these deficiencies early in the process but were met with objections from EPD that stonewalled any potential progress on the issue.[2] As a result, accurate knowledge of flow conditions is lacking and should be re-evaluated.

The surface water assessments were improperly based on the current minimum instream flow policy (monthly 7Q10) and provided no analysis of alternative minimum instream flow scenarios for consideration by the councils. The presentation of monthly 7Q10 as the only option available for planning purposes was arbitrary and irresponsible. The use of this single statistic does not accommodate local or regional instream flow needs and riparian rights. Furthermore, 7Q10 is a statistic that is trending downward in Georgia's rivers due to a host of factors, including increased impervious surface, channelization, and growing water withdrawals. 7Q10 is therefore wholly inappropriate for use as a "target" for regions as they plan future water needs and uses.

In addition to using only 7Q10 as the basis for evaluating flow conditions and needs, EPD indicated that 7Q10 was adequate for the protection of aquatic communities. On the contrary, sampling conducted by the Wildlife Resources Division indicates that the majority of fish communities in the surveyed streams are of poor quality. In addition, many existing water withdrawal permits in Georgia that predate the interim policy still do not contain a minimum flow requirement, even though they have been renewed since the policy's implementation . Indeed, a vast volume of literature now supports multiple flow regimes, not just "minimum" flows, in order to maximize the economic and ecological uses of water. The Department of

[2] One example of this occurred for the Middle Ocmulgee Region. Only one planning node (at Lake Jackson) was located within the region, with the next node being almost 100 miles downstream of the region, at Lumber City on the Altamaha River. Several additional data points were suggested, along major unregulated tributaries such as Echeconnee Creek, and in the main stem of the Ocmulgee below Macon. EPD did not act upon these suggestions.

Natural Resources should update its outmoded 2001 "interim" instream flow policy in favor of flow studies and adaptive management practices, and these improved policies should be employed in future water planning efforts.

EPD assumed that existing impoundments would prevent problems with adequate flows (or water quality) since a "regulated" stream can simply be adjusted to meet whatever target the models determine to be necessary. This assumption ignores the facts of actual reservoir management in favor of a presumption that all reservoirs are constantly managed for the benefit of downstream reaches, regardless of impoundment ownership or purpose. Many of these purposes are, in fact, determined by federal legislation, regulations, and/or license conditions. Both the Army Corps of Engineers' reservoirs on the Savannah, Chattahoochee, and Etowah systems, and the Georgia Power reservoirs on the Ocmulgee, Oconee, and Chattahoochee systems, are not always managed to meet downstream flow targets or projections.

In the case of groundwater, aquifer protection and management planning has been marked by inconsistency and questionable assumptions. Aquifer modeling assumes dramatic increases in withdrawal rates from water-supply aquifers before any management concern is warranted, with no explanation or even speculation as to the uses for such increased withdrawals. Further, the explicit modeling limit of "40 feet" of adjacent-well level depletion before modeled withdrawals were "stopped" does not accurately reflect reality, at least in west and southwest Georgia. Wells in those areas are currently going dry at drawdowns amounting to 25 and 50% less than the modeled numbers, due to over-pumping. The numbers should be revised to reflect this situation, and yields recalculated, with that information provided to the affected councils.

Interstate Considerations

The failure to include out-of-state water uses, both current and projected, that affect the waters of Georgia – and often waters spanning multiple regional planning boundaries within Georgia – is a critical omission that hamstrings regional planning efforts. As an example, the consumptive use of water by Alabama Power's Plant Farley in the Chattahoochee River watershed significantly affects the flow and supply in that river, yet that use is not found in the Middle Chattahoochee plan. Likewise, the cooling water withdrawal requirements of Gulf Power's Plant Scholz on the Apalachicola River are also omitted from both the Chattahoochee or Lower Flint/Ochlockonee plans. Political uncertainties and environmental conditions such as saltwater intrusion will further complicate future regional water plan implementation, particularly regions that include interstate waterways and shared aquifer systems.

The GWC echoes the Upper Flint Regional Water Council: Georgia's elected leadership must resolve the Tri-State Water Wars and reach a settlement with Alabama and Florida (Upper Flint plan at 7-18). The GWC recommends taking the following actions: First, Georgians must make Congressional reauthorization and reallocation of the water from Lake Lanier a central component of future water supply plans. Second, Georgians must use water demand projections that realistically reflect metro Atlanta's and all of Georgia's future water needs. Third, Georgians must not develop or implement water management plans that deprive intrastate and interstate downstream communities of the chance for future economic growth, prosperity and ecological health. Finally, Georgians should focus on aggressive use of water conservation and efficiency measures which will reveal a "hidden reservoir" of water at a price per gallon significantly less than the expensive structural options and poor choices recommended by

multiple councils, such as new reservoirs, new and expanded IBTs, desalinization, and aquifer storage and recovery.

Conclusion

The GWC looks forward to continued participation in the state and regional water planning and water management processes. The next round of regional water planning needs to be set in motion without delay, as the current proposed plans represent no more than a first step. We note that most if not all regional councils, as well as high-level EPD staff, agree with us on this point, and we are prepared to help facilitate the next steps, both politically and practically. The personnel on the regional councils have spent a significant amount of time and effort learning this material, and those personnel should be kept in place, provided they continue to be willing to serve. Appointments for vacancies, including those created by lack of attendance at council meetings, should be filled. Attention needs to be paid to increasing the diversity of the councils through the process of appointing new members or filling vacancies, wherever possible. Women and racial minorities are underrepresented in many council memberships. Most importantly, regional boundaries should be adjusted to more closely reflect the river basins with which the councils are concerned.

Thank you for your consideration of these comments.

Sincerely yours,

Georgia Water Coalition

GEORGIA WATER COALITION

Georgia Water Coalition Partners

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Broad River Watershed Association
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Camden County Land Trust
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Chattahoochee Hill Country Alliance
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Chattooga Conservancy
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Citizens for Environmental Justice
Clean Coast
Clear Rivers Chorus
Coastal Environmental Organization of Georgia
Coastal Estuary Protection Association
Cochran Mill Nature Center
Coosa River Basin Initiative
Coosawattee Watershed Alliance
Creative Earth
DeKalb County Soil & Water Conservation District
Earth Covenant Ministry
Earthkeepers & Company
East Atlanta Community Association
Eco-Scrub Carpet & Floor Care
Ens & Outs, Unitarian Universalist Congregation of Atlanta
Environment Georgia
Environmental Community Action Inc. (ECO-Action)
Environmental Defense Fund, Southeast Regional Office
Flint Riverkeeper
Foundation for Global Community, Atlanta Chapter
Friends of Barber Creek
Friends of Georgia, Inc
Friends of McIntosh Reserve
Friends of the Apalachee
Friends of the Chattahoochee
Friends of the Savannah River Basin
Garden Club of Georgia, Inc.
Garden*Hood
Georgia Bass Chapter Federation
Georgia Canoeing Association, Inc.
Georgia Coalition for the People's Agenda
Georgia Coalition of Black Women
Georgia Conservancy
Georgia Conservation Voters
Georgia Erosion Control Center (GECC)
Georgia Forest Watch
Georgia Interfaith Power and Light
Georgia Green Industry Association
Georgia Kayak Fishing
Georgia Kids Against Pollution
Georgia Lakes Society
Georgia Land Trust
Georgia Onsite Wastewater Association
Georgia Organics
Georgia Poultry Justice Alliance
Georgia River Fishing
Georgia River Network
Georgia River Survey
Georgia Rural Urban Summit
Georgia Wildlife Federation
Georgia Women's Action for New Direction
Glynn Environmental Coalition
GreenLaw
Graci's Garden Center
Hiwassee River Watershed Coalition
Hotlanta Adventures
Hydro Management Systems
IMPACT
Interface, Inc.
Intrenchment Creek Coalition
Izaak Walton League of America, Greater Atlanta Chapter
Jackson Lake Homeowners Association
Jett Ferry Manor Homeowners Association
Junior Bass Busters
Keller Williams Realty, Lanier Partners
Knottalotta Entertainment
Krull and Company
LaGrange Boaters, Anglers, Campers Association
Lake Allatoona Preservation Authority
Lake Blackshear Watershed Association
Lake Hartwell Association
Lake Homeowners Alliance
Lake Lanier Association
Lake Oconee Property Owners' Association
Lake Oconee Water Watch
Lake Yonah Association
League of Women Voters of Georgia
Litter Control, Inc
Little Tennessee Watershed Association
Lula Lake Land Trust
Lumpkin Coalition
MBD Water Solutions
Melaver McIntosh
Middle Chattahoochee River Stewards
Middle Georgia Advisory Group
Minds Eye Scenic Arts
Mountain Park Watershed Preservation Society, Inc.
National Wildlife Federation
The Nature Conservancy
Neighborhood Planning Unit - W, Atlanta
Netlink IP Communications
New Echota Rivers Alliance
Nickajack Watershed Alliance
Norris Lake Community Benefits Corporation
North Georgia Trout Online
Nuclear Watch South
Oceana
Oconee River Land Trust
Ogeechee Audubon Society
Ogeechee - Canoochee Riverkeeper
Peavine Watershed Alliance
Presbytery of Greater Atlanta
Pulaski County Ocmulgee Watershed Stewardship Partnership
Rain Harvest Company, Inc.
REP America- Georgia Group
Richmond Hill Garden Club
Ridgeview Neighborhood Civic Association
Satilla Riverwatch Alliance, Inc; & Satilla Riverkeeper
Sautee-Nacoochee Community Association
Savannah-Ogeechee Canal Society, Inc.
Savannah Riverkeeper
Savannah Tree Foundation
Save Lake Oconee's Waters (SLOW)
Save Our Rivers, Inc.
Scenic Georgia, Inc.
Sierra Club- Georgia Chapter
Small Carpenters at Large
Solomon's Minds
Soque River Watershed Association
South Atlantans for Neighborhood Development
Southeastern Natural Sciences Academy
Southern Alliance for Clean Energy
Southern Conservation Trust
Southern Environmental Law Center
Southface
SouthWings: Conservation through Aviation
Spring Creek Watershed Partnership
St. Marys EarthKeepers, Inc.
Sustainable Business Partners
Tallulah River Watershed Protection Committee
The Dolphin Project
The Wilderness Society
Trout Unlimited - Georgia Council
Turner Environmental Law Clinic
Unicoi Outfitters
United Nations Association - Atlanta Chapter
Upper Chattahoochee Riverkeeper
Upper Oconee Watershed Network
Upper Tallapoosa Watershed Group
US Green Building Council - Atlanta Chapter
US Green Building Council - Savannah Chapter
Vegetarian Solutions
Watershed Alliance of Sandy Springs
West Atlanta Watersheds Alliance
West Point Lake Advisory Council
West Point Lake Coalition
World Wildlife Fund

June 23, 2011 – 182 Georgia Water Coalition Partners

23 June 2011

Arnettia Murphy
Environmental Protection Division
Georgia Department of Natural Resources
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, GA. 30334

Subject: Public Comment: Middle Ocmulgee Regional Water Plan

Dear Ms. Murphy:

Please accept the following comments from the Georgia Wildlife Federation concerning the above-referenced plan. We were pleased to have been part of the public gallery invited to meetings of the Council. Members of our organization attended all of the meetings and several Joint Regional Plan meetings. The following detailed comments represent a compilation of notes and observations made by various members of the Georgia Wildlife Federation following this process.

We appreciate the inclusion of the goals in the regional plan and commend the council for their inclusion. However, we recommend that time be taken to clarify with clear definitions the intended protection objective of each goal. We find several of the goals ambiguous. For example, a definition for the term "water supply sources" should be clarified to mean either ground water or surface water and not left to the interpretation of the reader because of the importance of interpretation.

When the DNR board established the existing policy for minimum instream flows, the board recognized that the policy was flawed and that it did not adequately provide the protection to instream natural resources that was needed. They recommended that additional research be conducted to improve the policy. That research has not occurred and the current policy is still flawed. The council plan will also be flawed unless and until the current instream flow policy is compared to new research that more clearly defines the constraints needed to set a sustainable instream flow. We do not believe that the plan contains an instream flow policy that is protective of the natural resource base with in the planning region. The regional plan, therefore, must call for the conduct of the necessary research to answer the question before its implementation.

The plan mistakenly characterizes the fish and wildlife resources of the region. Data collected by the Wildlife Resources Division of DNR indicate that approximately 50% of the streams sampled in the region ranked poor or very poor as measured by an Index of Biotic Integrity.

This measure takes into account both abundance and diversity. The plan does not adequately deal with this diminished condition and it needs to do so. The plan should have a resources recovery water level identified before it programs and plans the use of the remaining water in the system. The council did not place more emphasis on the goals relating to protection and improvement of aquatic natural resources despite the characterization of the region as being a high priority conservation area. High priority in this instance means that it needs more conservation planning.

In our opinion, the information provide in the plan regarding sport fish and fishing potential is woefully short on fact and inadequate to describe the resources available and the nature and value of those resources. A much more in-depth section should be included in the plan, both to characterize the resources available and to demonstrate the protective policy within the plan to protect the quality of this fishery, which may be worth as much economically for the recreation as for the water for sale. Adequate treatment of the commercial fishery available and its value is also needed.

While we consider it good to list the five major water quality issues for the region, we think it more appropriate to show the relative importance (or priority) of these issues across the region. We recommend a much more detailed and direct section of the plan to address the common issues of degraded resources or supplies across the region be developed.

In conclusion we would like to illustrate the following general recommendations and ask that the Council work to incorporate these recommendations into the State Water Plan.

1) Metro Atlanta needs to look at raising Buford Dam two feet in height. This inexpensive method would add an enormous amount of water for Atlanta's future domestic water supply.
2) Georgia must not implement water management plans that impact downstream communities' development of future economic growth using Interbasin Transfers.
3) Future Regional Councils need upfront information from large water users like Southern Company on specific locations, size, and planned water consumption of future power plants being considered. This information must be a priority for EPD to obtain and provide to all councils.
4) Georgia should focus on aggressive water conservation measures which will provide water at a reasonable cost which should be spread over the entire state planning process.

We appreciate the opportunity to comment on the regional plan and to submit these comments via e-mail.

Sincerely,
Jerry L. McCollum
Certified Wildlife Biologist
President & CEO
Georgia Wildlife Federation

From: "Manning, Jeff" <jeff.manning@ncdenr.gov>
To: Jeff Larson <Jeff.Larson@dnr.state.ga.us>
Date: 6/23/2011 3:05 PM
Subject: RE: State of Georgia Regional Water Plans

Hi Jeff L.,
Thanks for forwarding the Georgia Water Plan drafts for our review. We looked over the Savannah-Upper Ogeechee and the Coosa-North Georgia plans. While the plans are written mainly for surface and groundwater Water Supply resource planning purposes, they do touch on support of all designated uses. So, with that in mind, I'll offer these comments:

* There is mention of collaboration with SC DHEC but no mention of NC DENR coordination. This is understood because of the small portion of the watersheds within NC. However, there are some impairments in the Hiwassee in NC that flow into GA, so we could work together to address these impairments.

* There's a 2 mile impaired segment of the Little Tennessee River flowing into NC from the GA line. We would be interested in collaborating with GA to to address activities that may be contributing to these impairments.

I like the fact that the plans forecast future wastewater flows and point out the essential need to strategically plan for those increased discharges in order to protect the regional water quality. Good luck with the final drafts. Thanks for the opportunity to comment.
Jeff Manning

Jeffrey P. Manning
BASINWIDE Planning Unit Supervisor, Division of Water Quality
North Carolina Department of Environment & Natural Resources, Raleigh, NC
Tel: (919) 807-6415 Fax: (919) 807-6497
BASINWIDE webpage: http://portal.ncdenr.org/web/wq/ps/bpu
Jeff.Manning@ncdenr.gov

From: Sullins, Coleen
Sent: Friday, May 13, 2011 3:59 PM
To: Jeff Larson
Cc: Manning, Jeff
Subject: RE: State of Georgia Regional Water Plans

Jeff - thank you. I am also forwarding your message on to Jeff Manning who manages our Basinwide Planning Unit for his information. Jeff's staff will be the ones who review and provide comments (as appropriate) on your plans. Coleen

Coleen H. Sullins, Director
Division of Water Quality
Phone: 919/807-6357
****

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From: Jeff Larson [mailto:Jeff.Larson@dnr.state.ga.us]
Sent: Friday, May 13, 2011 1:48 PM
To: Sullins, Coleen
Subject: State of Georgia Regional Water Plans

Coleen:

My name is Jeff larson. I work for Linda MacGregor with the GAEPD as an Assistant Branch Chief over the Savannah and Ogeechee River Basins here in GA. I am also EPD's rep to two of our ten water planning councils: the Savannah-Upper Ogeechee (SUO) and Coastal Georgia Councils.

I wanted to take this opportunity to let you know that initial draft recommended plans for the 10 planning councils are now at public notice for comment through June 23rd (you can view at www.georgiawaterplanning.org<http://www.georgiawaterplanning.org>). I also wanted to let you know that we are sending you hard copies (should go out Monday to your Raleigh addresss) of the SUO, Coastal, and Coosa draft regional plans as they deal specifically with the Savannah and Tennessee River Basins. As a neighboring state, I wanted to be sure you had hardcopies for your files.

After the comment period, and any potential plan revisions, final regional water plans will need to be submitted to our Director no later than September 30, 2011 for adoption.

Should you have any questions regarding these plans or the State Water Plan in general, plz give me a call.

thanks

Jeff 404-308-8062

From: "John Colberg" <jcolberg@GFC.STATE.GA.US>
To: <info@georgiawaterplanning.org>, <Drew.Marczak@plumcreek.com>, "Benjie T...
CC: "Harold West" <hwest@GFC.STATE.GA.US>, "James Johnson" <jjohnson@GFC.STA...
Date: 6/20/2011 4:36 PM
Subject: Upper Oconee Water Plan comments

Arnettia,

Comments on Upper Oconee Water Plan:

Thank you for allowing me to comment on language found in the Upper Oconee Regional Water Plan. I find the plan to be well organized and well-thought out. However, from a purely water quality standpoint, I would like to make a few observations and a recommendation.

In section 3 of the plan, it addresses impaired segments of waters within the basin, and the many Total Maximum Daily Load (TMDL) plans written for those stream segments, many of them for non-point source biota impairment typically caused by sedimentation. Further into the plan, in the specific Management Practices tables, it is stated in WQ-9 that it is planned to participate in and support the development and implementation process for TMDLs in the watershed and to comply with existing TMDLs. Yet nowhere in the plan does it discuss one of the most significant contributors to sedimentation, county dirt roads. So the question is how can it be seriously envisioned to manage and mitigate sedimentation within the basin without dealing with one of the most significant contributors of sedimentation?

There is a publication put out by the USDA Resource Conservation & Development Council entitled "Georgia Better Back Roads" that has been out for a few years, and deals squarely with the issue of county dirt road design, maintenance, and runoff/sedimentation management. This publication has been referenced by the Coastal Georgia Regional Water Plan in section 6 at NPSR-1 where the Coastal region hopes to control runoff from dirt roads by implementation of the Better Back Roads recommendations.

It is felt that a reference to the Georgia Better Back Roads publication should be similarly included in the Upper Oconee Regional Water Plan, to help address the sedimentation issue, and also help in implementation of the many sediment TMDLs in the basin. Here is a link to the publication: http://www.tworiversrcd.org/GABBR.htm

Georgia Forestry Commission's Forestry Water Quality Program, its BMP implementation monitoring and other efforts are referenced in the plan with the stated intention of support for our existing programs of BMP monitoring and educational outreach. We find these to be reasonable

expectations and seek the support of the Upper Oconee and other Water Planning Councils for our work and likewise offer any support and information we can reasonably provide to them.

Again, thank you for the opportunity for input into the plan and consideration of these comments.

John Colberg, RF

Water Quality Program Coordinator

Georgia Forestry Commission

2088 Warrenton Hwy

Thomson, GA 30824

Office: 706-595-0347

Cell: 706-993-0434

jcolberg@gfc.state.ga.us <mailto:jcolberg@gfc.state.ga.us>

From: EPD Comments
To: Arnettia Murphy
Date: 6/30/2011 12:01 PM
Subject: Fwd: Comments for all Regional Water Plans

>>> Larry McSwain <larryemc@yahoo.com> 6/22/2011 2:18 PM >>>
Please accept the following comments and recommendations regarding all the regional water plans currently posted for public review:

1. Each plan should preserve instream flows to protect aquatic resources and recreation. Monthly 7Q10 should not be the default standard by which planning is done:

* EPD needs to fund and encourage appropriate studies that lead to a more protective instream flow policy for the future.

* EPD and the councils should grandfathered withdrawal permits that currently require no minimum downstream releases.

* site specific studies should be required to determine protective downstream water releases below new water supply reservoirs.

2. Each plan needs to recommend aggressive watershed practices to reduce non point source pollution and to address other water quality problems that prevent streams from meeting their designated use standards. TMDL implementation needs to be pushed where stream impairments exist.

3. Each plan should recommend water conservation practices as the first means of improving supply and reducing gaps.

4. Each regional plan ought to be reviewed and its forcasted water demand compared to current plans for new water supply reservoirs. We need to be sure that locations where new reservoirs are already planned do in fact need them, based on updated population projections that reflect recent economic trends in the state.

5. All regional plans suffered from lack of timely and accurate data provided by EPD and the contractors. Surface Water Assessments were based on an inadequate number and often poorly chosen "planning nodes" that may well have resulted in poor predictions of water supply available for the future. Water quality assessments were based on a narrow set of criteria that likely underestimated the scope and severity of problems that needed to be addressed by the regional councils.

Respectfully,

Lawrence E. McSwain (Larry)
35 Glengarry Chase
Covington GA 30014
770-786-3221 HOME
678-410-9728 CELL

June 22, 2011

Arnettia Murphy
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, GA. 30334

Re: Comments on Initial Draft Recommended Regional Water Council Plans

Dear Ms. Murphy:

The Metropolitan North Georgia Water Planning District would like to submit the enclosed comments on the May 2011 draft plans developed by the State's Water Planning Councils. We understand how much work and effort these plans represent and commend all those who were involved in the development of these documents.

The District believes that the state's water resources are a shared asset for all of the residents of Georgia and that all stakeholders should share in the protection and preservation of this vital resource. The District is committed to working with the state's Water Planning Councils now and in the future and we hope that the State will find a way to keep these planning organizations in tact to help facilitate the implementation of the plans.

Again, the District appreciates all the effort of the Water Planning Councils, their consultants and especially Georgia EPD for their leadership in this massive planning effort.

Sincerely,

Boyd Austin,
Chairman

Enclosures

40 Courtland St., NE ♦ Atlanta, Georgia 30303-2538
Telephone: (404) 463-3256 ♦ Facsimile (404) 463-3254
www.northgeorgiawater.org

June 22, 2011
Metro Water District Comments on the
Coosa – North Georgia Regional Water Plan

Surface Water Availability

Page 5-5: The Plan states *"An increased potential gap, in both duration and volume, is observed at nodes such as the Gaylesville (9 percent of the time under 2050 conditions over the period of record; average gap is 9 MGD), New England (7 percent and 1.9 MGD), and Chickamauga (10 percent and 11 MGD)."*

Comment: These gaps are not expected to impact the Metropolitan North Georgia Water Planning District.

Page 5-5: The Plan states *"For the Coosa River Basin, the future Resource Assessment modeling indicates that there will be gaps in meeting the downstream flow regime based on the future 2050 demands at the Kingston and Rome nodes (Table 5-1). The flow regime could be met in the future with a combination of existing storage in Lake Allatoona or Carters Lake; however, it would require additional negotiation with and approval from the USACE."*

Comment: Any discussion involving changes in the operation of Lake Allatoona should include all affected stakeholders including the Metro Water District.

Water Conservation

Pages 6-2 through 6-5, 7-2: The Plan states *"The State will need to practice water conservation in order to meet its long-term water needs. Conservation also helps ensure responsible use of a public resource...The final 14 MPs listed in Table 6-1(a)...address potential gaps at the Gaylesville, New England, and Chickamauga nodes and in localized areas in the Tennessee Basin headwater communities."*

Comment: The importance of the shared water resources of this region requires responsible management and use by all stakeholders. The list of selected water conservation management practices is a good program and we hope these conservation measures will be implemented in the Coosa-North Georgia area.

Wastewater Treatment

Pages 5-14 and 5-15 (Table 5-4): Permitted Municipal Wastewater Discharge Limits versus Forecasted Municipal Wastewater Flows (MGD) illustrates shortages that will exist between municipal wastewater discharge limits and 2050 forecasted municipal wastewater flows for Catoosa, Dawson, Fannin, Lumpkin, Pickens, Towns, Union, White, and Whitfield Counties.

Comment: The Plan does a good job of identifying future wastewater capacity needs. As this capacity expands, we recommend the use of comparable high treatment limits on wastewater discharges throughout the Basin to protect the shared resources of all stakeholders. The upstream jurisdictions with a potential to impact water resources of the Metro Water District include Dawson, Lumpkin and Pickens counties.

Nutrients

Pages 5-11 through 5-13 and 5-17 reviews the nutrient issues and general reductions needed and page 6-12 states *"Table 5-6 notes the 9 CNG counties with assimilative capacity water quality issues and illustrates that the entire Region needs to focus on implementing Water Quality MPs to address the 303(d) listings in each County and the nutrient load reductions needed for those watersheds contributing to the Coosa River, Lake Allatoona, Weiss Lake and Carters Lake."*

Comment: The issue of nutrient loadings from both point and non-point sources are an issue that must be addressed by all stakeholders in the Coosa River Basin. We believe in a level playing field in which all stakeholders will implement applicable management practices to help achieve the necessary reductions in loadings from the watersheds contributing to the reservoirs and streams in the Basin.

Water Quality Management Practices

Pages 7-22 through 7-30: Water Quality Management Practices WQ-1 *"Encourage implementation of nutrient management programs"*

Comment: The Planning Council has selected an appropriate list of management practices for addressing the issues of 303(d) listed streams and nutrient loading. These management measures, along with the measures currently implemented by the Metro Water District, will help address these issues in the Coosa River Basin.

June 22, 2011
Metro Water District Comments on the
Lower Flint – Ochlockonee Regional Water Plan

Surface Water Availability

Pages 3-5 and 3-6: The Plan shows that given current water use by users in the Lower Flint, the flows in the Flint River at Bainbridge would fall below the EPD sustainability criteria on 3,276 days in the period of record (13% of the time). The average shortfall identified on those days was 352 cfs (227 MGD). The maximum shortfall (which occurred on one day) identified was 1,376 cfs (889 MGD). The Plan states that the Bainbridge node results were affected by the use of surface water and groundwater.

Pages 5-1, 5-2 and 5-8: The Plan states that a significant shortfall between resource capacity and demand persisted in the model results at Bainbridge for 2050. The shortfall occurred 13% of the time in the period of record, and the average shortfall on those days was 355 cfs (229 MGD). The maximum shortfall was 1,295 cfs (837 MGD).

Pages ES-3, ES-5, 3-5, 5-3, and 5-8: The Council expressed disagreement and concern with the model assumptions and the results. The Plan states that closing the identified "gaps" would ultimately cause significant harm to the region's economy.

Comment: The Corps of Engineers operates the Apalachicola Chattahoochee Flint River Basin System with flow targets just below Woodruff Dam below the GA/FLA state line. Any shortfalls or gaps in the Flint River flows at Bainbridge that are due to consumptive use in South Georgia reduce the flows to this target point. These gaps impact all the users in the Chattahoochee River Basin including Metro Atlanta because the Corps makes releases from the Corps reservoirs on the Chattahoochee River to maintain flows below Woodruff. Thus water from the Chattahoochee River is used to compensate or mitigate for "gaps" in the Flint River basin. This problem occurred in the 2007-2008 drought and is already beginning in the current drought. Water use "gaps" in South Georgia has great potential to harm other areas in the ACF River Basin. The State needs to take immediate action to implement the recommendations in Section 6 and 7 made by the Lower Flint Ochlockonee Water Council to improve agricultural water use efficiency and to provide for reservoir storage for flow augmentation.

Water Management Practices

Sections 6 and 7: These sections identify a number of water management practices. Page 6-3 states that: "Four management practices were selected by the Council as most important to fulfilling the Council's vision and goals and addressing gaps identified by the resource

assessment models. These practices are marked as "high priority" practices." The four high priority water management practices include:

Demand Management DM1: Continue to improve agricultural water use efficiency through innovation.

Supply Management and Flow Augmentation SF1: Evaluate reservoir storage options in the Flint River Basin that can provide for flow augmentation in dry periods.

Supply Management and Flow Augmentation SF2: Replace surface water withdrawals with groundwater withdrawals, where site specific evaluation indicates that this practice is practical and will not harm environmental resources.

Water Quality Management WQ 1: Improve enforcement of existing permits and regulations and implementation of existing plans and practices.

Comment: The State needs to take immediate action to either implement or require water users in the Lower Flint to implement these high priority recommendations made by the Lower Flint-Ochlockonee Water Council. In addition, the State should include storage in the Flint River Basin to offset agriculture use as a very high priority in the current evaluation by the Governors Water Supply Program. In the event there are no entities in the Flint available to take the lead to build storage in the Flint River Basin, the State should take the lead.

June 22, 2011
Metro Water District Comments on the
Middle Chattahoochee Regional Water Plan

Surface Water Availability Assessment

Chattahoochee Basin:

Page 3-10: The Plan found *"no apparent water withdrawal gaps for the Chattahoochee River under current conditions"*

Page 5-1: The Plan found *"no significant flow gap under 2050 demand conditions"*

Tallapoosa Basin:

Table 3-2 on page 3-9: Shortfalls are noted at the Helfin and Newell nodes under current conditions

Page 5-1: The Plan found *"Significant gaps are identified under future 2050 demand conditions"* for the same nodes in the Tallapoosa Basin

Comment: No comment

Water Conservation

Page 6-3: Water Management Practices WC-2 *"Encourage all water providers to consider conservation oriented rate structures at the time of refinancing or recapitalization"*

Comment: The importance of the shared water resources of this region requires that efficient use and water conservation should be practiced by all stakeholders. The Metro Water District suggests that this practice be modified so that conservation-oriented rate structures are required of all local utilities sooner rather than when systems are undertaking refinancing or recapitalization. At a minimum, utilities should be required to eliminate declining block rate pricing. In a basin with limited water resources, all communities need to implement water conservation rates.

Wastewater Assimilation

Page 6-5: Water Management Practice IU-1 *"Utilize and improve upon reservoir release quantity and time in the Chattahoochee River to maintain and/or improve water quality in the Chattahoochee River below the Columbus Planning Node"*

Comment: Releases from federal reservoirs should not be made to dilute the pollution from local wastewater discharges, especially when advance treatment options have not already been put in place. Water quality below the Columbus planning node should be maintained and improved by upgrading the wastewater treatment levels from the facilities discharging in the planning area.

ACF US Corps of Engineers Operations

Page 6-5: Water Management Practice IU-2 *"Advocate for changes to the U.S. Army Corps of Engineers Water Control Manual for the ACF Basin"*

Comment: The Metro Water District shares the desire of the Planning Council for changes to the ACF Water Control Manual to provide for more effective management of system projects to benefit all users and stakeholders within the ACF Basin. However, when we reviewed the presentation of Middle Georgia's alternative operations by the Georgia Tech's Water Resources Institute, we found that there was insufficient technical detail provided to allow us to replicate the results in other hydrologic models. We look forward to working together with the Council and others to advocate for operational changes that other areas can understand and support as well.

Page 3-13: The Plan states *"The Council is concerned that during such time of exceptional drought, the federal storage reservoirs upstream of Woodruff Dam are being penalized for a flow requirement which would otherwise not be naturally met and furthermore, that operational measures in the future be rationale and equitable for all users in the basin during critical low flow periods."*

Comment: The Metro Water District echoes this comment.

Navigation

Page 3-5: The Plan states *"Navigation is one of the congressionally authorized purposes of the federal reservoir projects on the Chattahoochee River. The head of navigation begins at Columbus and extends south to Apalachicola Bay. Maintaining this navigational channel is the responsibility of the U.S. Army Corps of Engineers, which currently maintains a nine-foot deep by 100-foot wide channel from Columbus to the mouth of the Apalachicola River. Flow control is provided by upstream reservoirs. Navigation is important to the regional economy and must be maintained between Columbus and Apalachicola Bay."*

Comment: The Metro Water District does not believe that the 9 foot navigation channel as envisioned in 1946 is feasible:

1. Rainfall and river flows in the ACF Basin were overestimated due to the limited rainfall and flow data record available in the 1930's at the time of system design.
2. Three dams and reservoir projects on the Flint River that were part of the original system (intended to help support this channel) were never built.
3. The Chipola Cutoff in Florida diverts at least 25% of the flow of the Apalachicola River and returns it downstream. This channel area is a problem for navigation due to the diversion.
4. Shoaling and the formation of sand bars in the lower ACF are worse than was originally expected; Florida also opposes any dredging to improve channel quality resulting in the need for higher flows.
5. Based on 1-4 above, the upstream reservoirs cannot reliably support a reliable 9 ft deep channel without jeopardizing the entire ACF system.

Metro Water Returns

Page 7-15: *"The May 7, 2009 Metro North District Plan includes ambitious predictions of returns to the river for which the Middle Chattahoochee resource assessments now greatly depend. The Council would like a comprehensive audit of these predictions and ongoing measurement and regular reporting on the progress in achieving these goals. Furthermore, the Council desires that such progress be reported as a range of statistical flows, including mean, minimum and maximum values of consumptive use."*

Comment: Water utilities within the Metro Water District are audited by Georgia EPD for compliance with all three District Plans, including when new or revised water withdrawal or discharge permits are requested. Also, in 2011, the Metro Water District published a comprehensive Water Metrics Report which included discharges and return flow data. We plan to continue such reporting in the future and we suggest all Planning Councils in the Basin should be required to prepare similar reports.

Metro Water Quality Impacts

Pages 7-15 through 7-16: *"The Middle Chattahoochee Council is also concerned about the nutrient load increase projected for 2050 that is estimated at the Whitesburg gauge. Nutrient loadings of phosphorus and nitrogen are expected to increase 200 percent by 2050. The Middle Chattahoochee region should not be burdened with additional waste water treatment or storm water BMPs caused by increases in upstream discharges. In addition, the Council is also concerned about sediment loading from upstream land management practices.*

Specific to nutrients, the Council is concerned about the increases in phosphorus and nitrogen and the resulting chlorophyll-a to West Point Lake and Lake Walter F. George and the potential for degradation of lake water quality.

The Council requests that the Metro North District provide: 1) specific details of how the increased nutrient and sediment loads will be mitigated before it reaches the Middle Chattahoochee basin, and 2) provide annual progress reports of nutrient and sediment levels and reduction effectiveness."

Comment: 1) Georgia EPD recently completed an assessment of water quality in West Point Lake and found no issues at the present time in term of water quality standards due to upstream discharges. The Metro Water District will continue to work with EPD to ensure that all future permits are consistent with state standards. 2) The Metro Water District communities are required to implement some of the most comprehensive stormwater controls and watershed management practices found in the nation as part of the District's Watershed Management Plan to address nonpoint source water pollution. 3) The Metro Water District's Implementation Report includes measures of progress on implementation of the best management practices and in 2011, the Metro Water District published a comprehensive Water Metrics Report which included water quality on the Chattahoochee River. We plan to continue this reporting in the future. These reports can be found on the Metro Water District website at www.northgeorgiawater.org. The issues of nutrients and sediment must be addressed by all stakeholders in the Chattahoochee River Basin. We recommend that comparable levels of treatment and best management practices be used throughout the Basin.

June 22, 2011
Metro Water District Comments on the
Middle Ocmulgee Regional Water Plan

Nutrients / Nitrogen

Page ES-3 and ES-5: The Plan states that high nutrient loadings (primarily nitrogen) are predicted in Lake Jackson and its tributary watersheds, including contributions from point source discharges in the Metro North Georgia Water Planning District. It also states that advanced treatment may be needed for wastewater treatment facilities located upstream of Lake Jackson to reduce nitrogen loadings into the lake.

Page 3-4: Baseline Modeling Results - The Plan states that the watershed and Lake Jackson modeling results confirmed that the lake met its chlorophyll-a standard at the mid-lake station every year for the period of record analyzed (1998-2007 for the watershed and 2001-2007 for the lake). The Plan also states that the watershed model confirms that, at current water use and return conditions, Lake Jackson and its major tributaries generally meet their total annual phosphorous loading standards. However, the modeling results showed that in dry years (with weather condition similar to 2007); the total nitrogen limit was exceeded in the South River reach.

Page 5-7: Future Modeling Results - The Plan states that Lake Jackson currently has a growing season average chlorophyll-a limit at mid-lake of 20 µg/L. The lake model simulated mid-lake chlorophyll-a concentration during various wet and dry year conditions. Figure 5-4 indicates that the chlorophyll-a limit is likely to be exceeded during drought years with the projected 2050 flows. However, the model predicted that the total phosphorus specific loadings for the lake will not be exceeded, as long as all point discharges are treated to effluent total phosphorus limits similar to that of wastewater treatment facilities in the Metro North Georgia Water Planning District (Figure 5-5).

Page 5-10, 5-12 and 5-13: The Plan states that total nitrogen loadings are projected to increase significantly from the baseline conditions, but there are currently no loadings limits for total nitrogen. Figure 5-8 shows future nitrogen loadings above Lake Jackson in DeKalb, Henry, and Rockdale counties. The plan also states that one of the major issues for the Middle Ocmulgee Region includes potential high nutrient loadings into Lake Jackson (particularly total nitrogen) and in the watersheds above Lake Jackson because of significant point discharge source contribution.

Comment: Phosphorous is the known limiting factor for algae growth in lakes in our region not nitrogen. The State and the Council need to proceed cautiously with any suggestions of

requiring costly nitrogen removal at wastewater treatment plants when nitrogen is not the controlling factor for algae / chlorophyll-a growth in Lake Jackson.

Page 6-4 and 7-10: The Council recommends the GA EPD conduct further studies to evaluate the impacts of potentially high nitrogen levels and determine whether nitrogen loading limits and instream nutrient standards are required to protect future water quality in Lake Jackson and in the Upper Ocmulgee Basin. The Plan estimates the cost of this study to be $250,000 - $500,000 funded by state and local governments. The study would include additional watershed modeling to evaluate impacts of nutrient loadings.

Comment: This study should be conducted and funded by the State.

Page 6-10 and 7-13: One of the Plan's recommended management measures is to conduct additional nutrient (nitrogen and phosphorous) monitoring and analysis in Lake Jackson and watersheds upstream of Lake Jackson. The Plan also recommends that the State evaluate future nutrient policy based on analysis of the additional monitoring data.

Comment: Nutrient monitoring should be conducted by the State.

Surface and Groundwater Availability

Pages 3-6 and 5-1 through 5-3: The Plan shows that there is no current and future predicted surface or groundwater availability shortage.

Page 6-8: Water Supply Management Practice WS2 in the Plan recommends evaluating the impacts to sustainable yield of Lake Jackson and Ocmulgee River (at Jackson node) if current interbasin transfers from the Chattahoochee/Flint River Basin to the Upper Ocmulgee River Basin (effluent discharges from Gwinnett, DeKalb, Clayton and Spalding counties are proposed to be discontinued).

Comment: An explanation of the need for this investigation was never discussed in the Plan prior to this brief recommendation. It appears that the Council may not want DeKalb to return water to the Chattahoochee Basin as proposed in the District Plan. GA EPD needs to resolve this policy issue and inform both the Council and the Metro Water District because the cost of returning water to the Chattahoochee will be tremendous and if there is good reason to not require that then we need to know soon.

Emerging Contaminants

Page ES-5, 7-3 and 7-10: The Plan states that the effects of emerging contaminants from the Metro Water District discharges should be studied.

Comment: Emerging contaminants is not just a District issue; this is a national and state issue for all wastewater discharges. This issue needs a statewide study.

June 22, 2011
Metro Water District Comments on the
Upper Flint Regional Water Plan

Surface Water Availability

Pages ES-4, 3-4: Given current water use in the Flint River Basin, the Plan showed no significant shortfall at the Montezuma node. At Bainbridge, however, the modeled flows in the Flint River at Bainbridge fell below the EPD sustainability criteria on 3,276 days in the period of record (13% of the time). The average shortfall identified on those days was 352 cfs (227 MGD). The maximum shortfall (which occurred on one day) identified was 1,376 cfs (889 MGD). The Plan states that the shortfall resulted from consumptive water use and the effect of model assumptions about withdrawals for storage above Montezuma. The Council recommends that future modeling to assess surface water flows in the Flint River Basin be preceded by an evaluation of actual withdrawals to fill reservoirs in the upper part of the Basin to support more accurate modeling of surface water flows.

Pages 5-1, 5-2: The Plan states that a significant shortfall between resource capacity and demand persisted in the model results at Bainbridge for 2050. The shortfall occurred 13% of the time in the period of record, and the average shortfall on those days was 355 cfs (229 MGD). The maximum shortfall was 1,295 cfs (837 MGD). At the Bainbridge node, the shortfall identified by the model was affected both by consumptive use of surface water and by groundwater withdrawals in Subarea 4 of the Upper Floridan aquifer in the Dougherty Plain.

Comment: The Corps of Engineers operates the Apalachicola Chattahoochee Flint River Basin System with flow targets just below Woodruff dam below the GA/FLA state line. Any shortfalls or gaps in the Flint River flows at Bainbridge that are due to consumptive use in South Georgia reduce the flows to this target point. These gaps impact all the users in the Chattahoochee River Basin including Metro Atlanta because the Corps makes releases from the Corps reservoirs on the Chattahoochee River to maintain flows below Woodruff. Thus water from the Chattahoochee River is used to compensate or mitigate for "gaps" in the Flint River Basin. This problem occurred in the 2007-2008 drought and is already beginning in the current drought. Water use "gaps" in South Georgia have great potential to harm other areas in the ACF River Basin. Given the importance of the shared water resources in the ACF Basin, water use efficiency should be required of all users and the State should include storage in the Flint River Basin to offset agriculture use as a very high priority in the current evaluation by the Governors Water Supply Program. In the event there are no entities in the Flint available to take the lead to build storage in the Flint River Basin, the State should take the lead.

Water Management Practices

Sections 6 and 7: These sections identify 19 water management practices. Three high priority water management practices identified include:

Demand Management DM1: Improve the agricultural water metering program.
Demand Management DM2: Use Irrigation suspension only through implementation of the Flint River Drought Protection Act, only by voluntary means, with notification to the farmers before March 1...
Supply Management and Flow Augmentation SF1: Evaluate storage options in the Upper Flint River Basin that can provide for flow augmentation in dry periods.

Pages 6-10, 6-11, and 6-12 further discuss the gap at Bainbridge and state "Therefore, it is the Council's position that the only way to satisfy the modeled gap at Bainbridge is to build one or more reservoirs in the Flint River Basin."

Comment: The State should include storage in the Flint River Basin to offset agriculture use as a very high priority in the current evaluation by the Governors Water Supply Program. In the event there are no entities in the Flint River Basin available to take the lead to build storage in the Flint River Basin, the State should take the lead.

MIDDLE
CHATTAHOOCHEE
WATER COALITION

Arnettia Murphy

Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive
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June 22, 2011

Georgia Water Planning

Thanks for the extensive effort that the Georgia Environmental Protection Division has put forth to develop a statewide water plan. Our organization, representing a wide diversity of residents, municipalities, businesses and industry, applauds the initiative to protect and conserve the health of the region's waters.

We wish to confirm support for Chattahoochee River flows and reservoir levels that are listed on the attachment. The congressionally authorized purposes of the five reservoirs should become an integral part of any plan developed. Regardless of flows coming out of the Flint sub-basin, the listed flows should be maintained in the middle and lower Chattahoochee sub-basin.

Please contact us if there are any questions concerning these numbers. They are the result of much thought and discussion among the members of our organization, and reflect a solid balance of knowledgeable input.

James H. Phillips

James H. Phillips
President

MINIMUM FLOWS (cfs)

	Whitesburg	Columbus	Columbia, AL
Instantaneous	750	800	2000
Daily Average	1000	1350	2000
7-Day Average	1350	1850	2000

RESERVIOR LEVEL OPERATING RANGES

NORMAL CONDITIONS

West Point	W. F. George	J. Woodruff
632.5 – 635	187.5 – 190	76.5 – 77.5

From: "Neill Herring" <neillherring@earthlink.net>
To: <info@georgiawaterplanning.org>
Date: 6/23/2011 3:00 PM
Subject: Comment on Altamaha Regional Initial Recommended Water Plan

Arnettia Murphy 22 June 2011 GA DNR, EPD
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, GA. 30334

Subject: Public Comment: Comments on the Altamaha Regional Initial Recommended Water Plan

Dear Ms. Murphy:

My name is Neill Herring. I live in Jesup, located within the Altamaha Regional Water Planning Council's boundaries. I was fortunate to be able to attend a majority of the meetings of the Altamaha Planning Council, and two joint meetings attended by some of that Council's members in Macon. I am an active member, and contract employee, of several organizations that are members of the Georgia Water Coalition, and I believe that the comments below reflect the views of the Coalition on the Altamaha Regional Initial Recommended Water Plan. I want to personally thank the members of the Council for all of their time and effort in the creation of this plan.

I. The work of the members of the Altamaha Regional Water Planning Council was commendable, and showed real dedication on the part of these voluntary appointees to the Council. Their willingness to put in the kind of time and effort demanded by the process was generous, and a fine example of citizenship. The initial "rough patches" occasioned by apparent differences of opinion from the various economic interests represented on the Council were welcome as honest expressions of those varying views. That the Council members were able to reach consensus on a variety of fundamental policy issues, balancing use and conservation of the resource was also welcome.

The variety of information from the differing backgrounds of the Council members was welcome in helping them achieve either agreement, or principled disagreements. The Council members were hampered in their work by the scheduling and presentation of information by EPD and its contractors. Individual Altamaha Council meetings, were there was time for free discussion of issues, were marked by what more than one member called "spoon feeding," while joint council meetings, which offered very little opportunity for discussion among members of the Altamaha Council (substituting panels and focus groups) were occasions for the transmission of relatively immense volumes of information, much of which was never discussed again.

An example of the latter "information by firehose" was the presentation of modeling data on groundwater, a vital subject to the Altamaha Council, where groundwater serves as the principle source for residential, municipal and industrial water supply. The model projected a huge projected future supply volume based on a rather dramatic "drawdown" scenario, yet no use that would result in such drawdown was ever presented along with it.

II. The plan includes management options that did not receive more than minority support from the Council, if that.

1) Aquifer Storage and Recovery was opposed by several council members on several occasions and is currently prohibited in the Region by statute. When the Planning Process was ratified by the General Assemby there was an assurance that nothing contrary to current law was to be included in it. This inclusion violates that assurance.

2) Interbasin Transfers were seldom discussed, and are difficult to comprehend in an area that relies on

groundwater for water supply, given the high capital costs associated with IBTs.

3) Large scale reservoir storage in the upper reaches of the Altamaha Council Region, or adjacent areas of neighboring councils is proposed, but little discussion of such options took place in Council meetings. Farm pond impoundment was discussed for supplemental agricultural water supply during periods of drought.

The inclusion of these proposals in the Initial Recommended Plan seems to come from the cautionary idea that "nothing should be removed from the toolbox." It would seem that "tools" that are prohibitively expensive or are prohibited by law are being included, perhaps because there are financial interests at stake.

III. The Plan's Information on Thermoelectric Power current and projected water demands is inadequate for any decision-making. The fact that the information on the largest single water use in the state was delayed until near the very end of the Planning Period seems to indicate a lack of interest on the part of the utility users of that water in the Council's work. The fact that the projections for future demand were made on a statewide basis, with no regional breakdowns as to where which uses would occur is further indication of the lack of utility interest in this process.

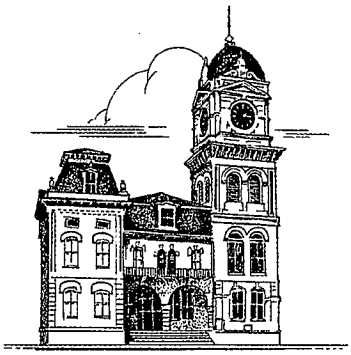
That future water uses by thermoelectric generators must be inferred by the Councils from a crude statewide capacity addition schedule of 1000 MW per year for 30 years is simply not a serious contribution to planning for the Altamaha Region, which supports a major utility thermoelectric plant, and appears to have the capacity to support additional production and should be encouraged to plan for that.

An 850 MW coal fired thermoelectric Plant Ben Hill is being proposed for a site near the Ocmulgee River in Ben Hill County, immediately outside the boundaries of the Altamaha Region. (This is yet another example of poorly drawn regional boundaries.) Plant Ben Hill is not mentioned in the plan because no permit has been applied for it. The fact that new waste water treatment plant permits have not been applied for has not prevented projections of additional waste water treatment for the Plan.

IV. Legislators, and the general public, were repeatedly assured that planning regions were needed because "one size does not fit all." Yet a comparison of the Altamaha Initial Regional Plan to any of the other regional plans, it seems that "one size fits all" very well, particularly those of adjacent regions, such as Suwannee-Satilla, Upper Savannah-Ogeechee and Coastal. This sameness is disappointing, perhaps to be expected for a first effort, but after three years of work it seems that more differences among the regions would have emerged than apparently did, or was allowed to.

V. The Legislative Resolution ratifying the Statewide Comprehensive Plan contains very clear language in regard to the role of the EPD in the writing of the regional plans. The EPD is free to reject any regional plan, or any portion thereof, and to write any additional material in any regional plan that EPD determines is needed. Despite this sweeping power of censorship and composition of the regional plans, EPD, and its contractors, have felt constrained to "put words in the mouths" of the Altamaha Council's members.

Clearly expressed sentiments on matters of water management policy by significant numbers of the members of the Council, in open public meetings, have not made it into the regional plan, while the very things they found objectionable are included in the plan, as if they had never spoken. If that is the way the process is designed to work, why bother with the Council?



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June 23, 2011

VIA FAX and REGULAR US MAIL
Arnettia Murphy
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Environmental Protection Division
2 Martin Luther King Jr. Drive
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Re: Comments on Middle Ocmulgee Draft Water Plan

Dear Ms. Murphy,

I appreciate the opportunity to provide comments on the draft Middle Ocmulgee Regional Water Plan (the "Plan") on behalf of Newton County. Within Newton County (the "County"), raw water supplies and wastewater treatment are provided by different entities. Since the County only provides raw water supplies, I will focus my comments on that portion of the Plan.

Identifying and securing adequate reliable water supplies is of the utmost importance to Newton County. As discussed in the Plan, the County will have a significant water supply shortage in 2050, and completion of the planned Bear Creek reservoir will be essential in meeting local water supply and infrastructure needs.

Newton County would like to point out a few differences between the data presented in the Plan and that utilized by the County in association with its Section 404 Permit application for the proposed Bear Creek Reservoir. In connection with reservoir planning, the County retained consultants to forecast population projections for 2050. GA EPD issued need verification letters on July 12, 2000, July 18, 2000, November 21, 2000, October 15, 2003 and May 2, 2006 approving a 2050 population of 361,517. Subsequently in March 2010, the Governor's Office of Planning and Budget (OPB) released its 2050 population projection of 371,631 for Newton County. Since EPD mandates that the OPB forecasts be utilized for regional planning, the OPB population projections are presented in the Plan (Table 4-1). In addition, the documentation supporting the County's Section 404 Permit application utilizes a per capita water usage rate of 130 gpcd. The Middle Ocmulgee Municipal and Industrial Forecasts (Jacobs JJG 2010) cited as a source for the data in Table 5-1 of the Plan implements a per capita water usage of 134.8 gpcd. The different population projections and water usage rates account for the difference between the

50.1 mgd projected water demand contained in the Plan and the 47 mgd projected water demand provided in the supporting documentation for the proposed Bear Creek reservoir.

Newton County would also like to comment on "Table 5-1: Municipal Permitted Withdrawal vs. 2050 Forecasted Demand" in the draft Plan. The table lists the current permitted withdrawals for each county in the basin; however, it does not provide information on the ultimate users of each withdrawal. The County is the named permittee for several multi-jurisdictional withdrawals for Lake Varner. It is important that the Plan does not improperly allocate water supply to Newton County that is otherwise committed to other entities via intergovernmental agreement. The County respectfully requests that the itemized information be provided to the County for confirmation so as to not adversely impact future water planning.

Finally, Newton County would like to clarify that while Table 5-1 states that the County's demand is expected to exceed its current permitted supply in 2040, this should not be interpreted as limiting the availability of additional supplies until that date. Upon approval of the County's Section 404 Permit application for the proposed Bear Creek Reservoir, the County intends to proceed with the development of this resource.

Thank you for the opportunity to provide comments on the Plan.

Sincerely,

Kathryn G. Morgan
Chairman

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June 23, 2011

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Via E-mail (info@georgiawaterplanning.org)

RE: STATEWIDE COMMENTS OF SOUTHERN ALLIANCE FOR CLEAN ENERGY ON THE ENERGY RELATED PORTIONS OF THE INITIAL DRAFT RECOMMENDED GEORGIA REGIONAL WATER PLANS

Dear Ms. Murphy:

The following comments by the Southern Alliance for Clean Energy concern policies, analyses and information on the energy sector that are presented in Georgia's draft regional water plans. These comments affect all draft regional water plans and affect water resource management planning statewide.

Southern Alliance for Clean Energy a non-profit organization that works on energy policy in the Southeast with members in Georgia who are concerned about water quality and other environmental issues. Thank you for providing an opportunity to comment. Regarding other aspects of the initial draft recommended regional water plans unrelated to electricity and energy, we generally support the comments being submitted by the Georgia Water Coalition of which SACE is a member.

The Georgia Environmental Protection Division (EPD) has established a planning process that recognizes there is a relationship between water consumption and electricity generation. Choices made today about Georgia's electricity supply will significantly affect future water use and consumption both statewide and locally. The State of Georgia recognizes the need to integrate its energy and water planning, and it is now taking an initial, commendable step toward achieving this.

However, major strides are needed for Georgia to accomplish basic goals of energy and water planning. Georgia's energy utilities use more water than any other sector[1], and some electric generating plants have been a driving factor behind water wars

[1] Georgia Department of Natural Resources (GA DNR), Environmental Protection Division (EPD), "Georgia's Water Conservation Implementation Plan," March 2010, p. 32. At http://www.georgiawaterplanning.org/pages/technical_guidance/water_conservation_implementation_plan.php

involving Georgia, Alabama and Florida.[2] Georgia's electric utilities have been advancing a highly water-intensive energy future for many decades. Unfortunately, this practice continues today as proposed power plants such as Plant Washington (coal-fired), Plant Ben Hill (coal-fired), Longleaf/Early County (coal-fired) and Vogtle 3&4 (nuclear reactors), that, if built, will negatively impact communities located both upstream and downstream from these facilities that may need that water for other uses in the future.

The notable absence of water-saving forecast scenarios in EPD's analysis that was drafted with the energy utility ad hoc group's guidance, described below, is strong evidence of inadequate planning at the statewide level. Because regional water councils relied heavily on statewide guidance for energy sector water forecasts, the statewide inadequacies are replicated in each of the energy sections of the draft regional water plans. EPD should take immediate action prior to the approval of any draft regional water plans to rectify the shortcomings of the energy section of these plans and directly address those shortcomings before finalizing regional water plans.

Southern Alliance for Clean Energy asked technical experts Anna Sommer and David Schlissel to review the Technical Memorandum of October 29, 2010 from William David and Mitch Horrie of CDM to Chuck Mueller of Georgia EPD regarding the Statewide Energy Sector Water Demand Forecast that outlines forecasts of Georgia's future as it pertains to the energy sector's needs for statewide water resources.[3] Sommer/Schlissel identified significant shortcomings in the EPD analysis with a focus on the amount of water that EPD determined was necessary to meet Georgia's projected future electricity demands, based on EPD's energy sector water forecast. Below are the most troubling shortcomings indentified in the Sommer/Schlissel review. Accompanying each shortcoming is a summary of the action EPD needs to take to rectify the problem.

1. Significant overestimation by EPD of the amount of water the state needs to set aside for electricity generation. EPD presents two forecasts of future electricity needs in its Technical Memorandum: a reference case and a high case. The reference case is the Baseline Power Needs forecast, which anticipates annual growth of 1.64%. The high case, which EPD calls the Alternative Statewide Power Needs forecast, projects a 2.14% rate of annual growth. All EPD scenarios assume that peak load will increase 1,000 MW per year, which is notably unrealistic. The assumptions made in the EPD Technical Memo means that the Baseline case is actually a worst-case scenario: too much energy production requiring excessively high water demand.

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[2] Alabama Governor Bob Riley letter to President George W. Bush regarding "Southeastern Drought Conditions," October 22, 2007; Ken Foskett, Margaret Newkirk & Stacy Shelton, "Electricity demand guzzling state's water," Atlanta Journal Constitution. November 18, 2007; and Kristi Swartz and Dan Chapman, "Ga., Ala. power companies have huge stake, influence in water wars," Atlanta Journal Constitution, August 5, 2009.

[3] Technical memo and Executive Summary of the Georgia Statewide Energy Sector Water Demand Forecast, October 29, 2010, is available at EPD's Georgia State Water Plan website: http://www.georgiawaterplanning.org/pages/forecasting/energy_water_use.php

Immediate EPD Action Needed: Revise EPD scenarios to correct for the inaccuracies identified in Section 3 of the Sommer/Schlissel review.

2. Failure to provide a low-water consuming energy scenario. EPD assumes that future electricity needs will be primarily met through water-intensive coal and nuclear plants. It fails to include low or no water consuming technologies available to Georgia's energy sector such as energy efficiency, solar and wind.

Immediate EPD Action Needed: Develop a Water Conserving Scenario that includes full energy efficiency (1.0% energy savings per year) and demand response resources. The Sommer/Schlissel review presents a water-conserving scenario for EPD consideration.

The above changes by EPD would more accurately reflect future electrical generation and provide a more realistic scenario of water consumption in the electric sector. Background on the need for these changes is provided in the attached document entitled "Comments on the Technical Memorandum for the Georgia Statewide Energy Sector Water Demand Forecast" prepared by Anna Sommer and David Schlissel of Schlissel Technical Consulting for Southern Alliance for Clean Energy, June 22, 2011.

Beyond these primary concerns addressed in the Sommer/Schlissel review, we have the following additional comments:

4. EPD omitted key non-utility energy industry players in the process of devising an energy-water forecast for Georgia's energy sector. EPD worked with the following participants in an "ad hoc energy group" that included Georgia Power, Oglethorpe Power Corporation, MEAG Power and the Georgia Environmental Finance Authority (GEFA).[4]

Examples of key non-utility industry players that were excluded from this process include both the energy efficiency industry and the renewable energy industry whose technologies and services are predicted to provide the most water-saving opportunities of any technologies available to Georgia.

5. Information about the utility energy water forecasts was kept undisclosed for an extended time thereby placing non-utility industry interests and the affected public at a disadvantage over electric utility interests. EPD was to have made the energy water forecast information available to the public by October of 2009.[5] The energy forecasting was released more than a year later, on October 29, 2010. Repeated requests by public commenters to have this information available were essentially

[4] Executive Summary of Georgia Statewide Energy Sector Water Demand Forecast, October 29, 2010, p. i. Available at http://www.georgiawaterplanning.org/pages/forecasting/energy_water_use.php

[5] See EPD's Comprehensive Statewide Water Management Plant 3-Year Implementation Schedule at http://www.georgiawaterplanning.org/documents/Final_3-year_SWP_Schedule_Pkg.pdf

ignored. For instance, representatives of Southern Alliance for Clean Energy (SACE) raised concerns about the delay of the issuance of the energy forecasting at several regional council meetings, including joint regional council meetings, and were not provided with explanations for the delays or firm estimates of when the energy forecasting would be released. It was not until the joint regional council meeting in Macon on October 6, 2010 that a SACE representative was provided a firmer estimate after presenting public comments that again questioned the delay. These delays made it impossible for public commenters to participate in the process in any effective way while some in the utility sector were apparently provided open opportunity to do so.

6. Some of the draft regional water plans draw erroneous conclusions about state agency roles in utility energy planning that need correction. For example, the Savannah Upper-Ogeechee Water Planning Council states in its initial plan that "As part of a planning process regulated by the Georgia Public Service Commission (PSC), Georgia Power and other power companies develop energy forecasts every 3 years for a 10-year planning period as part of their integrated public resource plan. The Savannah Upper-Ogeechee Water Planning Council believes that, while the current forecast is sufficient for this planning effort, updates to the Regional Water Plans should incorporate data from future PSC public resource plans." It is not correct that the PSC regulates a planning process for other power companies beyond Georgia Power. This poses a serious informational gap in statewide energy forecasting for the state and the regional water councils. Contrary to the Savannah Upper-Ogeechee Water Planning Council's belief, no updates for the electric membership corporations (EMCs) and municipal electric companies in Georgia will be possible through PSC reviewed utility resource plans because no such oversight exists for those utilities.

Another misconception is that the utility resource plans and forecasts are made publicly available; in fact, Georgia Power files its energy forecast information at the PSC as trade secret and is unwilling to share the forecast with the public. Similarly other utilities not regulated by the PSC have been unwilling to share their forecasts and the details of the resource plans publicly either. Unavailability of utility forecast data to the public makes it even more imperative that EPD and the regional water councils turn to other available data sources for more realistic forecasts.

7. Some power plants located outside of Georgia can impact Georgia water resources and may contribute to "gaps" within various water planning regions but are not addressed. For example, a Congressional Research Service report mentioned two Southern Company power plants that can affect or be affected by the complex Apalachicola-Chattahoochee-Flint systems.[6] Alabama Power's Plant Farley pulls from an intake canal that connects to the Chattahoochee River. Gulf Power's Plant

[6] Congressional Research Service, Apalachicola-Chattahoochee-Flint (ACF) Drought: Federal Reservoir and Species Management, Order Code RL34250, November 14, 2007, pp. CRS-13—CRS-15.

Scholz in the Florida panhandle has been indentified as potentially affecting the flow of the Apalachicola River.[7]

8. Though existing power plants withdraw a much smaller portion of water from groundwater sources than from surface water resources,[8] possible future groundwater use by new power plants may increase, especially during drought conditions and is not adequately addressed. For instance, the proposed Plant Washington coal plant plans to withdraw up to 16 million gallons of water per day from 14 proposed new wells in the Ogeechee and Oconee basins for "refilling of storage ponds, backup cooling and process water."[9] This increased groundwater use, which is proposed for water needs potentially during times of drought, could negatively impact surrounding communities' reliance on existing groundwater resources along with the two affected river basins.

Thank you for the consideration of our comments and concerns. We again appreciate the work that EPD has committed to this project along with that of all the Regional Councils. If you have any questions, please do not hesitate to contact us at 912-201-0354 or 404-373-5832, x1.

Sincerely,

Sara Barczak
Program Director

Rita Kilpatrick
Georgia Policy Director

Attachment

[7] CRS 2007, p. CRS-15.
[8] Executive Summary of Georgia Statewide Energy Sector Water Demand Forecast 2010, pp. ii-iii.
[9] EPD, Groundwater Permit #150-0026 for Power4Georgians, LLC, April 8, 2010. At http://www.gaepd.org/air/airpermit/downloads/permits/psd/dockets/plantwashington/othermedia/groundwaterfinal.pdf

Comments on the Technical Memorandum For the Georgia Statewide Energy Sector Water Demand Forecast

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June 22, 2011

1. Introduction and Summary

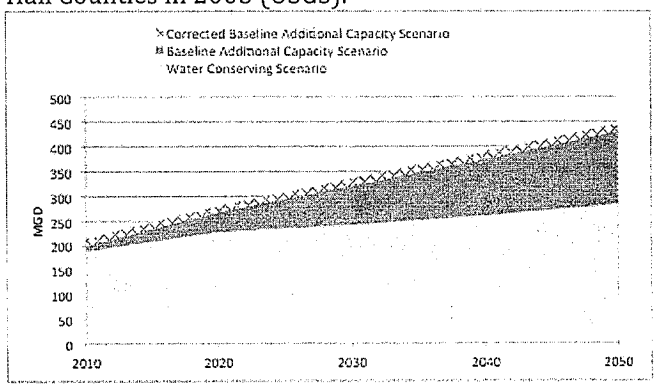
It is only recently that policymakers, researchers and citizens have begun to explore the linkages between energy and water consumption. Though we depend on a reliable electric supply to provide us a clean, reliable water supply and vice versa, there is a tendency to plan for one without thought to the availability of the other.

The focus of these comments and the Environmental Protection Division's ("EPD") energy sector water forecast is on the amount of water that is needed to meet Georgia's electricity demands. We applaud the state of Georgia and the EPD for establishing a planning process that recognizes the relationship between electricity production and water consumption. The choices that Georgia regulators, policymakers and utilities make today about the state's electricity supply will have observable and significant impacts on future water use and consumption. Georgia's recent past has revealed the problems drought and lack of water can cause and, consequently, the need for integrated water and energy planning.

However, our review reveals that the EPD's water consumption forecast for the energy sector significantly overestimates the amount of water that the state needs to set aside for electricity production because, in large part, it overstates how much new electric generating capacity the state will need. Most importantly, EPD's forecast does not address the future *availability* of water in Georgia[1] and the potential tradeoffs between providing for water in the electricity sector as opposed to water for agricultural or human consumption or other important uses.

Georgia's Electric Sector Could Use 150 MGD Less by 2050 than EPD Estimates

Correcting for some, though not all, the inaccuracies we've identified in EPD's forecast results in 150 million fewer gallons consumed each day by the electric sector by 2050. That's nearly equal to the water consumption in Carroll, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry and Hall Counties in 2005 (USGS).



1 The question of water availability is beyond the scope of this report, but will be part of the Regional Water Planning Councils' planning process.

2. EPD Scenarios

A. Two electricity growth rates used in EPD scenarios

EPD presents two forecasts of future electricity needs in the Technical Memorandum[2] - a reference case and a high case. The reference case is the Baseline Power Needs forecast, which anticipates annual growth of 1.64%. The high case is the Alternative Statewide Power Needs forecast, which projects a 2.14% rate of annual growth. All EPD scenarios assume that peak load will increase 1,000 MW per year.

EPD created two scenarios of energy supply to meet demand under the Baseline Power Needs forecast. The first scenario, the 2017 Capacity Scenario, adds 7,896 MW of net electricity capacity through 2017, but does not include new electric capacity after that date. Even so, Georgia can still meet its power needs through 2040. The second scenario, the Additional Capacity Scenario, adds 37,896 MW (megawatts) of new generation through 2050.

B. Background on power plant and cooling system types assumed in EPD scenarios

Nearly all the electrical generation in EPD's scenarios is assumed to come from thermoelectric power plants (nuclear, coal, oil or gas-fired). The rate of water consumption by a thermal power plant is primarily a function of its efficiency and secondarily a function of the cooling system employed.

For example, Figure 1 shows a Sankey diagram for a typical coal-fired power plant. The diagram is read from left to right and follows the energy content of the fuel (in this case coal at a rate of Btu/hr) into the plant to its conversion into electricity.

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2 Davis, William and Mitch Horrie. "Technical Memorandum Re: Statewide Energy Sector Water Demand Forecast.", October 29, 2010. Available for download at http://www.georgiawaterplanning.org/pages/forecasting/energy_water_use.php

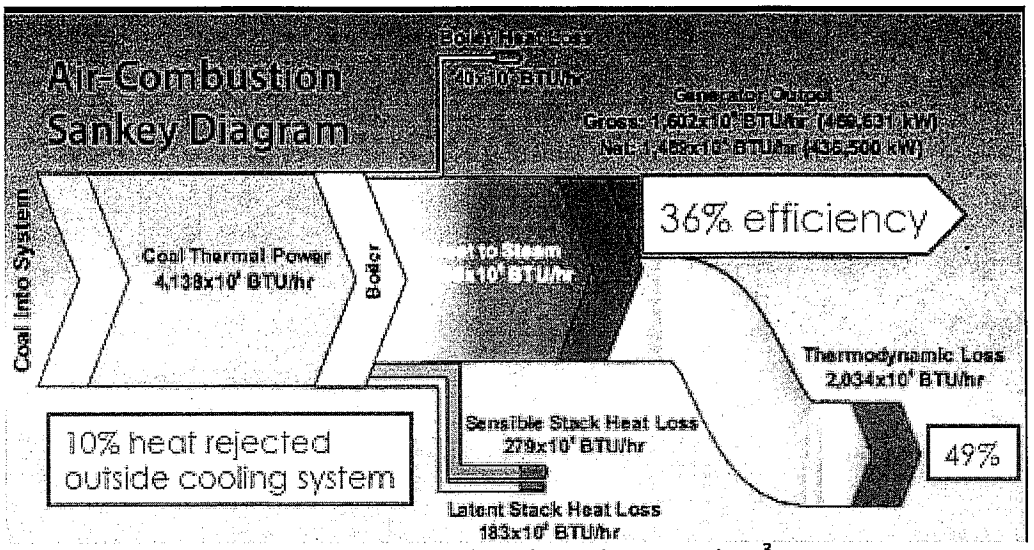

Figure 1. Sankey Diagram for a Typical Coal-Fired Power Plant[3]

Roughly 10% of the thermal input is rejected as heat and carried away without the need for a cooling system. A third (36%) is converted into electricity (generator output). And 49% is waste heat (thermodynamic loss that must be carried away most often by water). By increasing the generator output (the efficiency) one can simultaneously reduce the amount of waste heat. Coal and nuclear power plants are roughly 36% efficient. The most efficient thermal power plant commercially available is a combined cycle natural gas plant with an efficiency close to 50%.

A thermal power plant's water consumption is also influenced by the choice of cooling system. Air-cooled systems are available, though uncommon. The most common type of power plant cooling systems use water. These are once-through and closed loop (or recirculating) cooling systems.

A diagram of a once-through cooling system is shown in Figure 2.

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3 Ochs, Thomas, Danylo Oryschchyn, Steven Gerdemann, Cathy Summers. "Strategies for Improving Efficiencies in Oxy-Combustion Retrofits." A post at the Seventh Annual Conference on CCS, May 2008. http://www.netl.doe.gov/technologies/coalpower/ewr/pubs/Strategies%20for%20Improving%20Efficiencies%20in%20Oxy-Combustion%20Retr.pdf and Timothy Diehl, USGS.

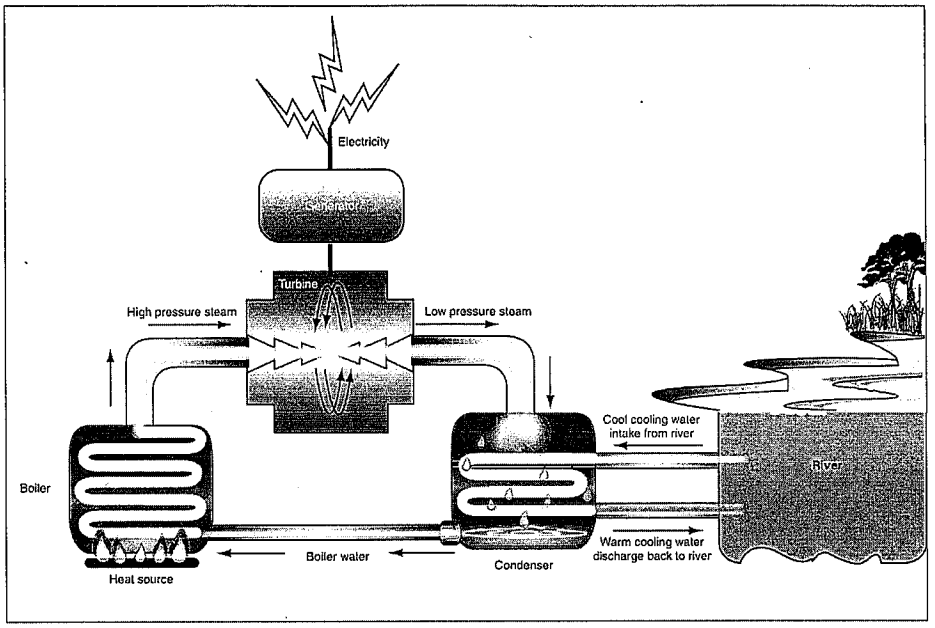

Figure 2. Steam Turbine with a Once-Through Cooling System[4]

Water is pulled in from the source – typically a river, lake or ocean – passed through the condenser of the power plant and immediately sent back to the source at an elevated temperature.

Figure 3 is a Landsat image of the Brunner Island coal-fired power plant that has a once-through cooling system. The red plume in the Susquehanna River is the discharged cooling water. The color of the plume in this Landsat image indicates that it does not mix immediately with the surrounding, cooler water and is therefore more likely to evaporate downstream of the plant.

4 Government Accountability Office, *Energy – Water Nexus: Improvements to Federal Water Use Data Would Increase Understanding of Trends in Power Plant Water Use*, October 2009.

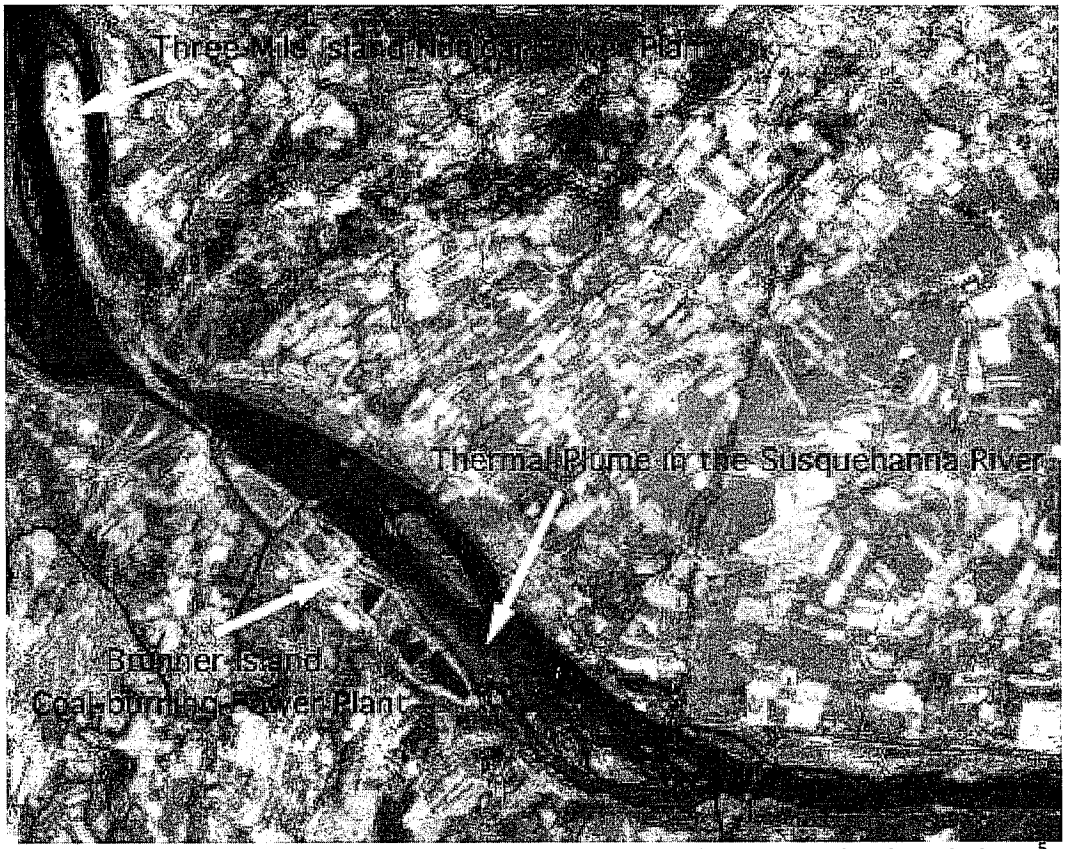

Figure 3. Landsat Image of Three Mile Island Nuclear and Brunner Island Coal Plants[5]

5 Franklin & Marshall College, http://www.fandm.edu/uploads/media_items/images-departments-earth-brunnera_6-5-3-jpg.480.379.s.jpg

Figure 4 shows a closed loop system.

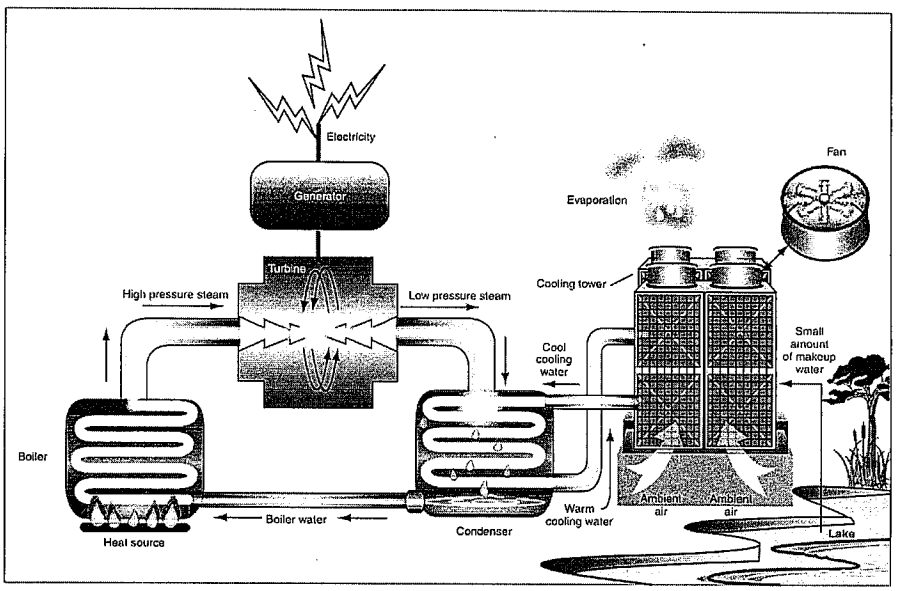

Figure 4. Steam Turbine with a Closed Loop Cooling System[6]

In a closed loop cooling system, water is pulled from the source, used to cool the plant and then sent to a cooling tower where it is condensed and reused again. In the process of condensing the water, roughly two percent[7] is lost through evaporation during each pass through the cooling tower. However, because the same water is used multiple times, roughly 70 to 90 percent of the water is ultimately consumed by the plant (depending on temperature and other factors) primarily due to evaporation from the cooling towers.

3. Inaccuracies that Impact the Forecast

We identified a number of problems with EPD's Technical Memorandum. We recommend that EPD address each of these inaccuracies in its baseline forecast, as well as adopting an alternative, water conserving scenario, as described in Section 5.

A. Forecast electricity consumption is based on an excessive growth rate

The EPD water consumption forecast is a worst-case scenario rather than a best estimate based on available data because it assumes that electricity consumption grows at an unreasonably high rate.

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6 Id.

7 U.S. National Energy Technology Laboratory (NETL). "Water Usage in Coal to Electrical Applications." http://www.netl.doe.gov/technologies/coalpower/gasification/gasifipedia/7-advantages/7-1-2_waterusage.html

It is understandable that EPD had difficulty developing a reliable energy forecast because the state of Georgia allows electric utilities to maintain energy forecasts "trade secret," in contrast to the vast majority of states which routinely publish such data.

In place of this information, EPD used population as the explanatory variable for energy consumption. Based on eighteen years of historical data, EPD found a positive correlation between population and electricity consumption and carried that relationship forward through 2050. The result is an assumption that electricity consumption will increase 1.64% annually (Baseline Power Needs).

The same relationship was used to develop the Alternative Statewide Power Needs forecast, but rather than taking the mean value for the dependent variable, i.e., electric generation needs, EPD took the upper limit of the 95 percent confidence interval. To put it another way, because population did not entirely explain generation, there is some variability around the mean value or the most likely result (which yielded the 1.64% rate). To estimate a higher rate of growth, EPD took the highest, yet still statistically significant value it could. That yielded a 2.14% rate of growth in the Alternative Statewide Power Needs forecast.

Though analytically correct, we doubt the validity of these forecasts for the simple reason that population is not the only variable explaining electricity consumption.

EPD's use of population growth as a proxy for electricity consumption growth neglects the steady erosion of that relationship over recent history. As illustrated in Figure 5, electricity growth has slowed from an average of 9.8 percent in the 1950s to 0.5 percent in the 2000s even as the U.S. population has dramatically increased.

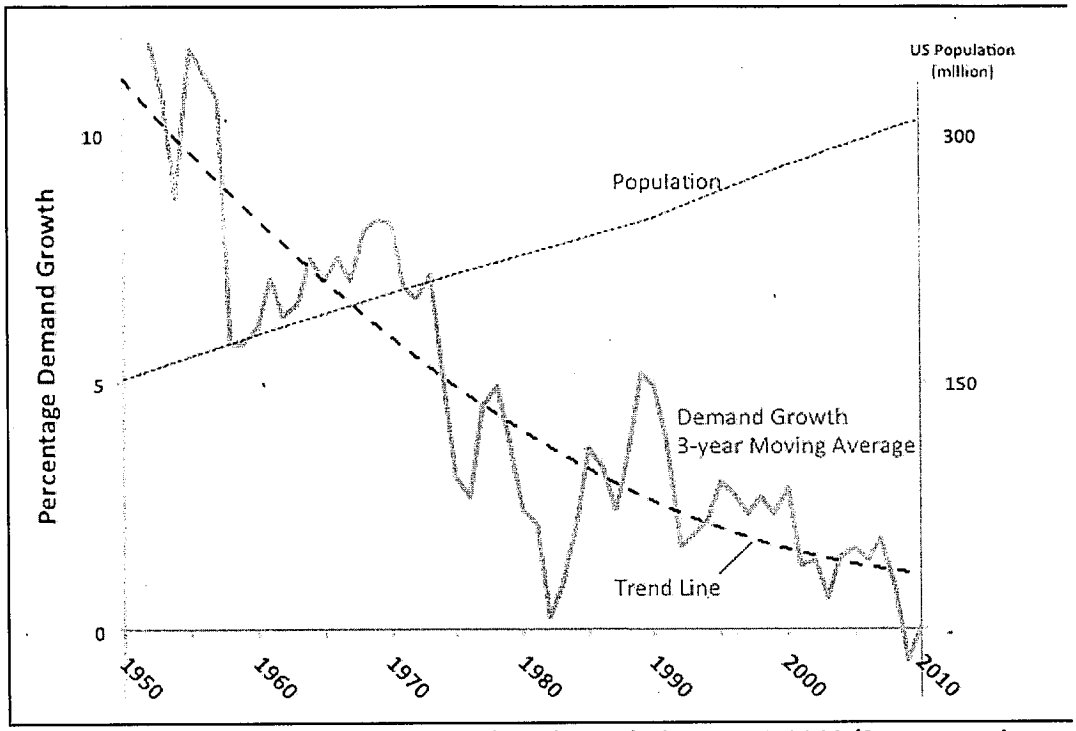


Figure 5. U.S. Electricity Demand Growth and Population, 1952-2010 (3-year moving avg.)[8]

Because of this and because of the recent downturn in the economy, we view these rates of increase as highly uncertain. A better estimate than EPD's 1.64% figure might be the 0.9% annual growth rate forecast in EIA's Annual Energy Outlook 2011 for the southeastern region of the SERC Reliability Corporation (SERC), which includes Alabama and Georgia.

B. Inaccurate baseline exaggerates current and future demand

The base 2010 electricity consumption used in the Technical Memorandum is too high. The EPD assumed that electricity generation in 2010 was 146,495 GWh (gigawatt hours) when Georgia utilities actually reported generation of 135,850 GWh.[9] The exaggerated baseline is magnified in future years by the excessive growth rate.

C. Capacity development scenario is poorly informed

EPD assumes that peak load will grow by 1,000 MW per year from 2020 to 2050, and that capacity additions to meet this demand will be dominated by nuclear and coal-fired

8 Energy Information Administration (EIA). *Annual Energy Outlook 2011*. At http://www.eia.doe.gov/forecasts/aeo/MT_electric.cfm and U.S. Census Bureau.

9 See EIA Form 923.

plants. These assumptions are neither reflective of recent history, consistent with likely future trends, nor justified when considering ongoing technological change.

The assumption of 1,000 MW per year growth in peak demand (most energy used at any moment of the year) is greater than historic trends. Approximately 800 MW per year of capacity has been built in Georgia since 1990. Furthermore, even adopting this historic figure would likely be an overestimate, considering the declining rate of load growth (discussed above). It is unrealistic to project a near doubling of electrical generating capacity without clear justification.

Another problem with the capacity development scenario is that half of the 30,000 MW of new capacity needed to meet this demand is assumed to be from nuclear and coal-fired power plants. This assumption is neither reflective of the existing system nor the capacity additions that have been made in recent years. Since 1990, capacity additions have been primarily natural gas plants. This type of capacity is easier to site and generally lower cost than coal or nuclear plants. Gas plants also happen to use much less water.

Furthermore, EPD's forecast overlooks other energy options that require significantly less water than nuclear or fossil-fired technologies. These include energy efficiency, solar and wind. Including these energy resources in its forecast would significantly reduce forecast water consumption.

D. No plant retirements after 2017

EPD has assumed that there will not be any power plant retirements after 2017. EPD's forecast implicitly assumes that a significant number of existing units will still be operating in 2050 in spite of being quite old. Plant Harlee Branch, for example, will be at least 80 years old by 2050. It is unrealistic to expect that power plants will continue to operate to that age.

It is likely that much of that older capacity uses once-through systems and if replaced MW for MW by new coal generation, water consumption could increase by roughly 60% (see Table 1).[10] A conservative assumption, i.e., one that would tend to minimize retirements, would be to retire plants once they reach 60 or 70 years of service.

E. Exclusion of the proposed Plant Ben Hill Coal Plant

Plant Ben Hill, a proposed 850 MW coal-fired power plant planned for south-central Ben Hill County, is not included in Table 10 of the Technical Memo which lists planned energy facilities. EPD excluded planned facilities that do not have a water permit, but

10 There are other energy alternatives such as energy efficiency, wind, solar and natural gas combined cycle, all of which consume less water.

Plant Ben Hill is no more or less likely to be built than Plant Washington, which was included in the forecast. Presumably Plant Ben Hill would have an in-service date prior to 2017, so the projected water consumption from this plant should be included in the Suwanee-Satilla region forecast demand. Assuming the plant is dispatched at the capacity factor assumed by EPD for comparable plants, it would consume an additional 8 million gallons per day (MGD).

F. Zero water consumption inappropriately assumed for once-through cooling systems

For purposes of its forecast, EPD has assumed that once-through cooling systems consume no water. While this may be technically accurate within the confines of a plant, as described previously, significant evaporation occurs when the warmed water is discharged back to its source. EPD implicitly acknowledged this fact by republishing consumption figures for once-through cooling systems from two sources in its Technical Memorandum – though it did not ultimately use those numbers. Table 1 compares EPD and one of those sources, the Electric Power Research Institute (EPRI).

Table 1. Comparison of EPRI and EPD Water Consumption Estimates[11]

Plant Type	Once-Through (gallons/MWh)	
	EPRI	*EPD*
Coal	300	0
Combined Cycle	100	N/A
Nuclear	400	N/A

It is important to note that new electric generation is very unlikely to have once-through cooling systems because of environmental concerns over the ecological impacts of withdrawing such large amounts of water. However, the forecast is affected by this inaccuracy because approximately 3,500 MW of existing capacity in Georgia has a once-through cooling system. Those plants include Plant Hammond, Plant Harlee Branch, Plant McManus, Plant Mitchell, and one unit at Plant McIntosh.

G. Additional water consumption for Flue Gas Desulfurization Units (Scrubbers) is not included

It is our understanding that most of the coal-fired power plants in Georgia either already have or are planning to install Flue Gas Desulfurization equipment ("FGD") to reduce sulfur dioxide emissions. It is unclear whether the EPD's forecast includes the increased water consumed by coal plants as a result of the addition of FGD equipment since EPD's numbers are the average of data from 2003 to 2007, prior to FGD installations at most plants. To the extent that the future water consumption by the state's coal-fired power

11 Id and EPD Technical Memorandum.

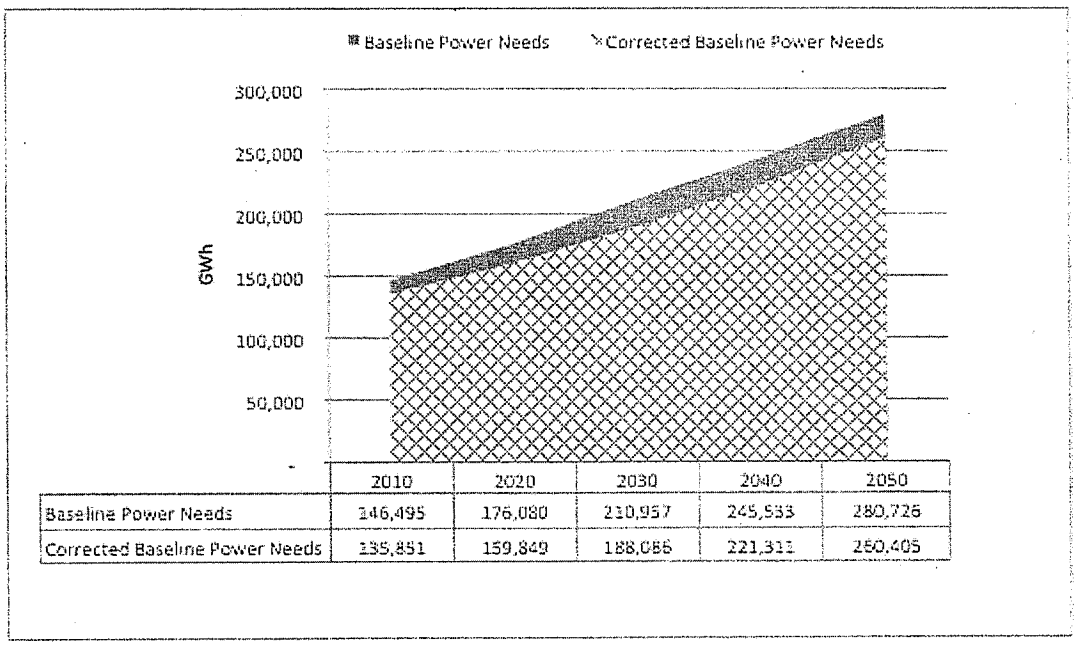
plants ignores the impact of FGDs, their future water consumption will be underestimated by roughly 10%.

H. Additional water consumption for carbon capture is not included

The 12,000 MW of new fossil-fired capacity that EPD assumes will be added during the forecast period (in the Baseline Power Needs Additional Capacity Scenario) could be required to install a pollution control technology called carbon capture. Although this technology will reduce the units' emissions of greenhouse gases, carbon capture will likely increase consumption rates by roughly 100%.[12] The technology is most likely to be required for new coal plants completed during the 2020 – 2050 timeframe to meet greenhouse gas regulations.

4. Corrected Baseline Power Needs Additional Capacity Scenario

We've developed a "Corrected Baseline Power Needs Additional Capacity Scenario" that adopts the 2010 electricity consumption reported by Georgia utilities to the EIA: 135,851 GWh rather than 146,495 GWh as EPD assumes.



	2010	2020	2030	2040	2050
Baseline Power Needs	146,495	176,080	210,957	245,533	280,726
Corrected Baseline Power Needs	135,851	159,849	188,086	221,311	260,405

Figure 6. Comparison of Baseline Power Needs and Corrected Baseline Power Needs Scenario Energy Forecasts

12 U.S. National Energy Technology Laboratory (NETL). "Water Usage in Coal to Electrical Applications." http://www.netl.doe.gov/technologies/coalpower/gasification/gasifipedia/7-advantages/7-1-2_waterusage.html

By 2050, the difference between these two forecasts magnifies to about 20,000 GWh. The effect of this change on water consumption will be driven by the energy resource mix that serves future needs and secondarily, by the type of cooling system used by thermal power plants included in that mix.

Another "simple" correction to EPD's analysis is to assign a consumption value to once-through cooling systems. For example, the EPRI data cited in EPD's report estimates that fossil fuel-fired power plants with once-through cooling systems consume 300 gallons per MWh generated. Under that assumption, EPD underestimates water consumption by thirteen to fifteen million gallons per day as demonstrated in Figure 7.

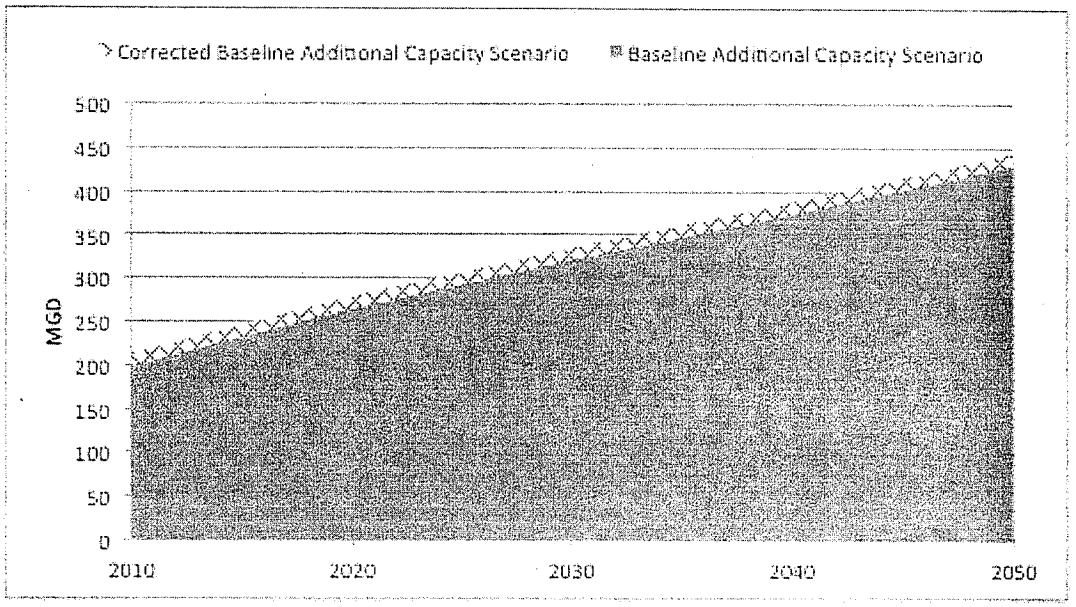


Figure 7. Comparison of EPD Baseline Additional Capacity Scenario Water Consumption with and without Consumption for Once-Through Cooling (MGD)

Note that the Corrected Baseline Additional Capacity Scenario illustrated in Figure 7 incorporates a different change here than what was shown in Figure 6. Figure 6 shows the change in GWh needed when starting from the proper 2010 baseline. Figure 7 simply shows the relative impact of adding in the consumption from once-through cooling systems. These two items were the only changes that were practical to implement given the limited data made public by EPD. We recommend EPD make additional changes, including accounting for FGD related water consumption, retiring older units, development of near-term capacity, and adopting a more realistic peak load forecast, which would produce an improved forecast.

5. A Water Conserving Scenario

As we noted in Section 2, EPD's water consumption scenarios all assume that nearly all electrical generation is produced by thermal power plants. However, wind and solar photovoltaic systems are not thermal power plants and therefore do not require water for cooling. The nominal water requirements of these technologies are for activities such as cleaning solar panels or turbine blades.[13]

In addition, energy efficiency and demand response resources use no water. Energy efficient technologies provide the same performance and convenience as conventional technologies but use less energy. Energy efficient technologies include compact fluorescent light bulbs, energy efficient refrigerators, building insulation, etc. Demand response is the reduction of load, typically at peak periods of usage. For example, a manufacturing facility might shift use of energy-intensive equipment to times of the day when demand decreases and therefore prices are more affordable. The combination of energy efficiency and demand response is commonly referred to as demand-side management (DSM).

Our proposed Water Conserving Scenario ("WCS") is an adjustment to the Corrected Baseline Power Needs Scenario. We did not adjust the assumptions related to power plant development plans through 2017, nor did we adjust the long term capacity forecast.

EPD adopts utility assumptions regarding the development of 7,896 MW of net capacity through 2017 (see Table 10 of the Technical Memo). We do not endorse that assumption as realistic for several reasons, not the least of which is that it results in far more generating capacity than is needed. Considering the permitting, licensing and financial obstacles to completing the large, water-intensive proposed plants (Vogtle reactor Units 3 and 4, Plant Washington and Longleaf coal plants), it remains uncertain whether these plants will ever be built. If these plants become operational, they would increase state water consumption by 44 million gallons per day relative to supplying the same amount of electricity from natural gas combined cycle plants.[14]

Our proposed WCS adjustments include the replacement of forecast power plant construction after 2017 with the use of energy efficiency and demand response resources, some natural gas rather than coal and nuclear, additional water consumption at plants with once-through cooling systems and the Corrected Baseline Power Needs energy forecast. Detailed data tables for the Water Conserving Scenario are given in Appendix A.

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13 United States Department of Energy (DOE), *Energy Demands on Water Resources, Report to Congress on the Interdependency on Energy and Water*, p. 41, December 2006.

14 Based on EPD assumptions.

The additional energy efficiency is applied starting in 2011, assuming Georgia begins to achieve incremental energy efficiency savings each year of 1.0% of sales.[15] Demand response reduces peak demand by 8.6% in any given year. Just the addition of DSM means that Georgia can meet its forecasted energy needs through 2050 and its peak demand needs until sometime after 2030.

The factor driving need for new capacity after 2030 was the increase in peak load[16] of 1,000 MW per year rather than the need for more megawatt hours. To meet "peaking" needs at low cost, we assumed 6,000 MW of new gas turbines (GTs) between 2030 and 2040 were built and an additional 6,000 MW between 2040 and 2050. This scenario suggests that Georgia's electricity needs could be met with much less water in 2050 than suggested in EPD's forecast.

As illustrated in Figure 8, energy efficiency savings (and to a lesser extent the Corrected Baseline Power Needs forecast described in Section 4) result in far less electrical generation in the Water Conserving Scenario than the Baseline Additional Capacity Scenario – a difference of nearly 100,000 GWh by 2050.

15 Chandler, Sharon and Marilyn A. Brown. "Meta-Review of Efficiency Potential Studies and Their Implications for the South." Working Paper #51 of the Georgia Tech Ivan College School of Public Policy.

16 Peak load is the highest moment of power demand during any one year and is measured in MW.

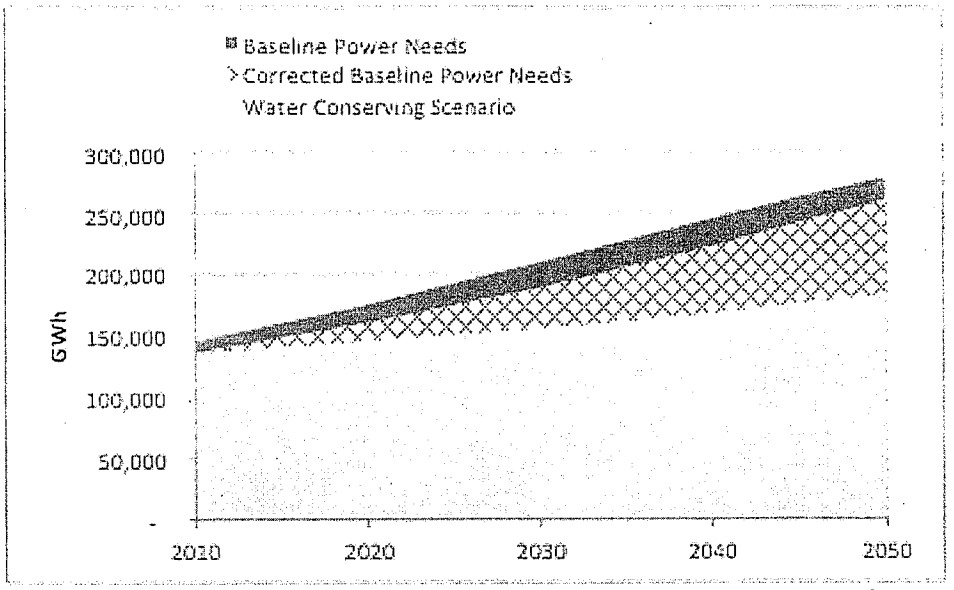


Figure 8. Generation (GWh) for Baseline Power Needs, Corrected Baseline and Water Conserving

As illustrated in Figure 9, the Water Conserving Scenario also requires much less generating capacity by 2050 because over 21,000 MW of DSM have been implemented.

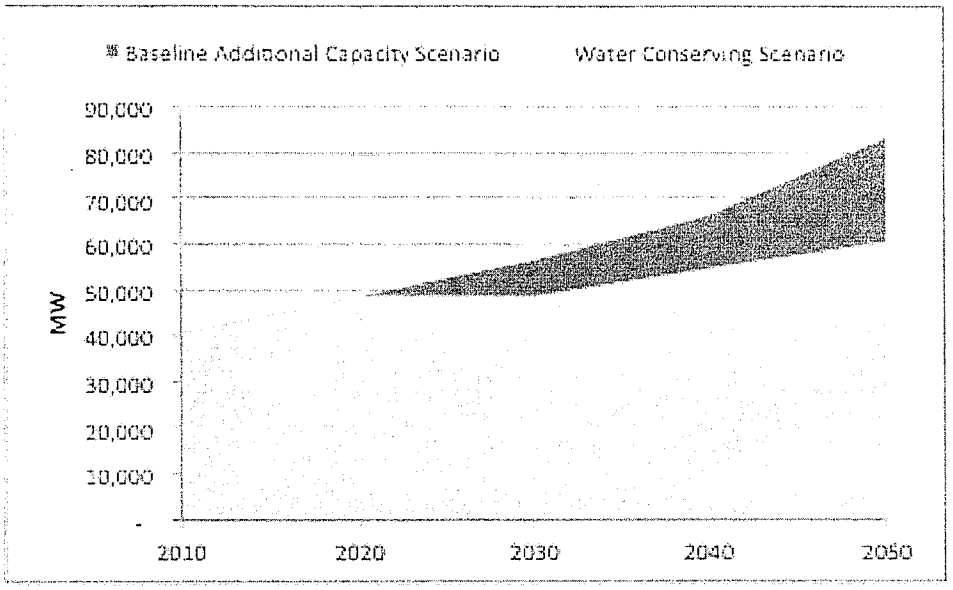


Figure 9. Total Generating Capacity (MW) for Water Conserving and Baseline Additional Capacity Scenarios

As illustrated in Figure 10, Georgia's energy needs can be met with far less water resource demand than suggested by the EPD Baseline forecast. Even under the Water Conserving Scenario, the electricity sector would consume additional water in the future. However, instead of more than doubling consumption by 2050, consumption increases nearly 50 percent by 2050. Both scenarios meet Georgia's generation demands but the water demands are radically different.

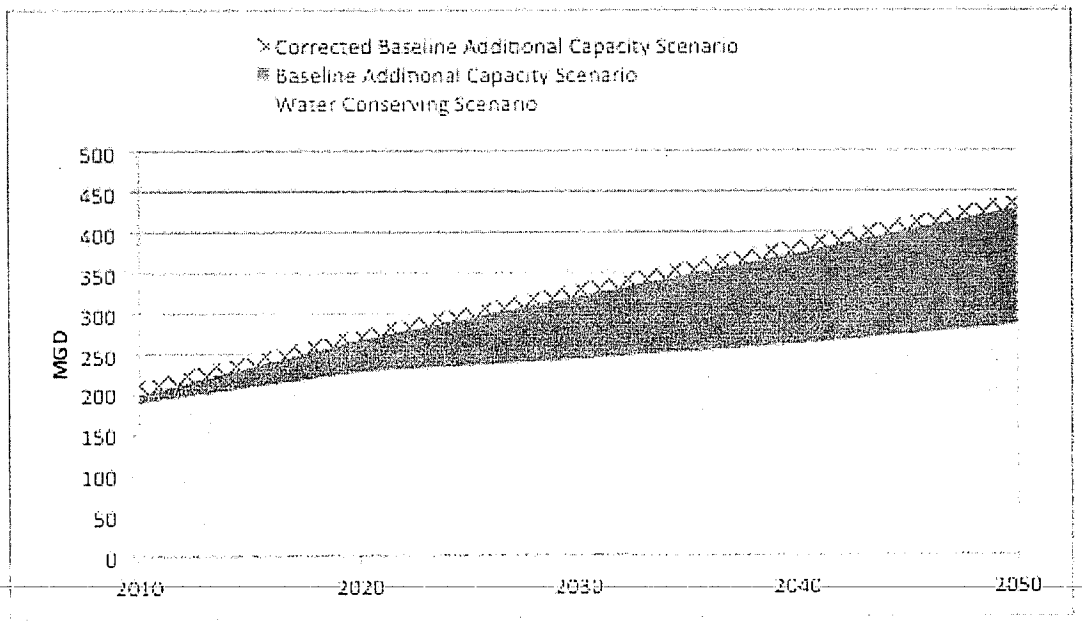


Figure 10. Water Consumption Demands, MGD

6. Summary of Recommendations

Georgia is taking an important step toward smart energy-water planning by examining how energy production and consumption might influence water consumption. The assumptions made in the EPD Technical Memo, however, mean that the Baseline case is actually a worst-case scenario: too much energy production requiring excessively high water demand. We recommend the following revisions to correct this problem:

1. Revise the EPD baseline scenario to correct for the inaccuracies identified in Section 3.[17]
2. Develop a Water Conserving Scenario that includes energy efficiency (1.0% energy savings per year) and demand response resources and a preference for natural gas among conventional resource options. EPD could add wind and solar resources to this scenario although doing so would introduce a greater level of complexity.

These changes would more accurately reflect future electrical generation. The implication of which, is a more realistic scenario of water consumption in the electric sector. Finally, as we noted in the introduction to this report, forecasting future water consumption that may be required for future electricity generation is only meaningful when accompanied by an assessment of water availability.

[17] We view the Alternative scenario as wildly unrealistic regarding future energy use and power plant construction. EPD may wish to omit this scenario from a revised analysis.

Appendix A

Table A.1 Capacity Factors of Power Generation Combinations in the Water Conserving and Baseline Additional Capacity Scenarios

Water Conserving Scenario					
	2010	2020	2030	2040	2050
NG, CC, CT	26.8%	16.0%	16.0%	22.0%	23.5%
FF/Bio, GT	3.0%	2.0%	2.0%	2.0%	2.0%
FF/Bio ST, OT	45.0%	26.0%	35.0%	35.0%	27.0%
FF/Bio, ST, CT	70.0%	60.0%	65.0%	66.0%	77.0%
Nuc, ST, CT	84.0%	73.0%	75.0%	85.0%	85.0%
Hydro	10.0%	10.0%	10.0%	10.0%	10.0%
Baseline Additional Capacity Scenario					
	2010	2020	2030	2040	2050
NG, CC, CT	26.8%	19.4%	17.0%	17.0%	17.0%
FF/Bio, GT	3.8%	2.0%	2.0%	2.5%	2.0%
FF/Bio ST, OT	57.0%	53.0%	53.0%	53.0%	53.0%
FF/Bio, ST, CT	74.0%	68.0%	67.0%	65.7%	65.3%
Nuc, ST, CT	90.0%	89.0%	89.0%	89.0%	89.0%
Hydro	10.0%	10.0%	10.0%	10.0%	10.0%

NG, CC, CT = natural gas combined cycle with cooling towers
FF/Bio, GT – fossil fuel/biomass, gas turbine[18]
FF/Bio ST, OT = fossil fuel/biomass, steam turbine, once-through cooling[19]
FF/Bio ST, CT = fossil fuel/biomass, steam turbine, cooling towers[20]
Nuc, ST, CT = nuclear, steam turbine, cooling towers

18 It should be assumed that gas turbines are fired with natural gas or diesel fuel. From a technological standpoint, it is highly unlikely that biomass would be used in a gas turbine.

19 It should be assumed that steam turbines are fired with coal. From a technological and economic standpoint, it is highly unlikely that biomass would exclusively be used in a steam plant.

20 It should be assumed that steam turbines are fired with coal. From a technological and economic standpoint, it is highly unlikely that biomass would exclusively be used in a steam plant.

Table A.2 Generation (GWh) by Power Generation Combination in the Water Conserving and Baseline Additional Capacity Scenarios[21]

Water Conserving Scenario					
	2010	2020	2030	2040	2050
NG, CC, CT	18,403	12,662	12,657	17,396	18,589
FF/Bio, GT	2,801	1,932	1,932	2,984	4,035
FF/Bio ST, OT	14,083	8,003	10,772	10,773	8,311
FF/Bio, ST, CT	67,772	79,935	86,644	87,928	102,594
Nuc, ST, CT	29,742	39,941	41,035	46,506	46,500
Hydro	3,195	3,195	3,195	3,195	3,195
EE	-	14,873	32,373	52,964	77,193
DR	-	-	-	-	-
Total	135,996	160,540	188,608	221,745	260,418
Total Required	135,851	159,849	188,086	221,311	260,405
Baseline Additional Capacity Scenario					
	2010	2020	2030	2040	2050
NG, CC, CT	18,403	15,353	17,916	22,384	26,851
FF/Bio, GT	3,548	1,932	2,283	3,291	3,729
FF/Bio ST, OT	17,839	16,313	16,313	16,313	16,313
FF/Bio, ST, CT	71,645	90,593	112,650	133,607	155,747
Nuc, ST, CT	31,866	48,695	56,491	64,288	72,084
Hydro	3,195	3,195	3,195	3,195	3,195
Other Renewable	-	-	2,110	2,455	2,807
Total	146,495	176,080	210,957	245,533	280,726
Total Required	146,495	176,080	210,957	245,533	280,726

NG, CC, CT = natural gas combined cycle with cooling towers
FF/Bio, GT – fossil fuel/biomass, gas turbine
FF/Bio ST, OT = fossil fuel/biomass, steam turbine, once-through cooling
FF/Bio ST, CT = fossil fuel/biomass, steam turbine, cooling towers
Nuc, ST, CT = nuclear, steam turbine, cooling towers
EE = energy efficiency
DR = demand response

21 "Total" GWh in the Water Conserving Scenario do not exactly match the "Total Required" because developing capacity factors to the number of significant digits necessary to exactly match the Total Required would not have yielded, we believed, a significantly more accurate forecast.

Table A.3 Water Consumption (MGD) by Power Generation Combination in the Water Conserving, Baseline Additional Capacity Scenarios and Corrected Baseline Additional Capacity Scenarios

Water Conserving Scenario					
	2010	2020	2030	2040	2050
NG, CC, CT	10	7	7	9	10
FF/Bio, GT	-	-	-	-	-
FF/Bio ST, OT	15	13	13	13	13
FF/Bio, ST, CT	105	124	135	137	159
Nuc, ST, CT	72	96	99	112	112
Hydro	-	-	-	-	-
Total	202	241	254	272	295
Baseline Additional Capacity Scenario					
	2010	2020	2030	2040	2050
NG, CC, CT	10	8	10	12	15
FF/Bio, GT	-	-	-	-	-
FF/Bio ST, OT	-	-	-	-	-
FF/Bio, ST, CT	111	141	175	208	242
Nuc, ST, CT	77	117	136	155	174
Hydro	-	-	-	-	-
Other Renewable	-	-	-	-	-
Total	198	266	321	375	430
Corrected Baseline Additional Capacity Scenario					
	2010	2020	2030	2040	2050
NG, CC, CT	10	8	10	12	15
FF/Bio, GT	0	0	0	0	0
FF/Bio ST, OT	15	13	13	13	13
FF/Bio, ST, CT	111	141	175	208	242
Nuc, ST, CT	77	117	136	155	174
Hydro	0	0	0	0	0
Other Renewable	0	0	0	0	0
Total	213	280	334	388	444

NG, CC, CT = natural gas combined cycle with cooling towers
FF/Bio, GT – fossil fuel/biomass, gas turbine
FF/Bio ST, OT = fossil fuel/biomass, steam turbine, once-through cooling
FF/Bio ST, CT = fossil fuel/biomass, steam turbine, cooling towers
Nuc, ST, CT = nuclear, steam turbine, cooling towers

SUWANNEE RIVER WATER MANAGEMENT DISTRICT

June 21, 2011

Ms. Arnettia Murphy
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King, Jr. Drive
Suite 1152, East Tower
Atlanta, GA 30334

Subject: Comments for the Suwannee-Satilla Initial Recommended Regional Water Plan (May 2011)

Dear Ms. Murphy:

The Suwannee River Water Management District (District) appreciates this opportunity to provide comments to the Suwannee-Satilla Initial Recommended Regional Water Plan (Plan). Following the general comments, numbered comments are presented based upon the District's review of the Plan.

General Comments: The District values the effort put forth by the Suwannee-Satilla Council in managing and preparing the Plan. Based on our experience with similar regional water resource planning, we recognize the difficulty in preparing an initial regional water plan encompassing a significant planning horizon. The Plan utilizes significant data and information collected and analyzed by the Suwannee-Satilla Council and their assigns and stakeholders. The District appreciates the efforts of the Council to identify current and predicted surface water and groundwater quantity and quality gaps, and their identification of short- and long-term water management practices to manage and close the gaps.

The District further appreciates the willingness of the Council to inform and invite the District to be a part of the Plan's process. We look forward to continuing and improving upon the relationship so that together we (and all stakeholders) can meet the challenges of equitably sharing and protecting our common water resources. It is in the spirit of this cooperative relationship that the District submits the following comments for consideration.

In late October, 2010, the District submitted detailed comments pertaining to the surface water and groundwater availability assessments (Assessments). The two Assessments (along with the surface water quality assessment) were foundational building blocks used by the Suwannee-Satilla Council to prepare the Plan. The Georgia Environmental Protection Division (EPD) compiled a summary of comments received by the public and provided responses to the Assessments in a stand-alone "Response to Comments" document. We request that the District's comments (including EPD's responses) be re-assessed for consideration as the Council moves forward toward refining and implementing the recommended short-term water quantity management practices.

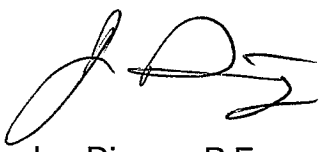
1. Section 1, "Goals": Due to the fact that the surface and groundwater resources of the Suwannee-Satilla planning region are directly connected to the surface and groundwater resources in the Suwannee River Water Management District, please consider how the 13 Council-stated goals apply to the water management districts in Florida.
2. Section 2: It may be helpful to include a more thorough discussion of the geology, hydrogeology, and hydrology of the Suwannee-Satilla Region in order to better understand the groundwater and surface water systems; including areas where surface water and groundwater are hydraulically connected.
3. Section 3.3: The Plan states that the Satilla and St. Marys rivers provide important riverine habitat for certain species, such as Shortnose Sturgeon, Atlantic Sturgeon, American Shad, and the American Eel (all anadromous species). Please note that the Suwannee River also provides important riverine habitat for certain species (for example, the anadromous Gulf Sturgeon, which is listed as "threatened" under the Endangered Species Act). The healthiest populations of Gulf Sturgeon are found in riverine habitats that include long, spring-fed, free-flowing rivers, typically with steep banks, a hard bottom, and an average water temperature of 60-72° F. This habitat is typical of the Suwannee River. Therefore, the District requests that Section 3.3 be revised to consider the riverine habitat considerations of the Suwannee River.
4. Sections 6, 7, and 8: The District commends the Council for identifying numerous important water management practices (short and long term) to address predicted future shortfalls, or gaps, in water resource availability; as well as definitions of action, initial implementation dates, future short- and long-term actions to complete implementation, benchmarks, measurement tools, and responsible parties. The District has identified several water management practices in particular where we would appreciate the opportunity to provide data, information, or other expertise to assist the Council with future Plan updates. Therefore, we request that the Council consider listing the Suwannee River Water Management District as an additional stakeholder under

the "Responsible Party" column in Table 7-1 for the following Water Management Practice numbers (particularly in data-sharing and exchange of information roles):

a. DCAR-1,
b. DCAR-2,
c. DCAR-3,
d. DCAR-9,
e. ASWS-3,
f. ASWS-4,
g. MGWPC-1,
h. IGWPC-1,
i. GW-1,
j. GW-3,
k. GW-4, and
l. SW-1.

The District appreciates that the Council and EPD have continued to involve us throughout the initial regional water planning process, whether by meetings or providing opportunities for sharing information. We feel that there is a firm foundation established between us, and hope to build upon that as we move forward in our regional water planning processes. We look forward to developing joint initiatives, where appropriate, to assist in meeting the water supply and environmental protection goals of both states.

Sincerely,



Jon Dinges, P.E.
Director, Water Supply & Resource Management

/dd
cc: David Still, P.E., Executive Director, SRWMD
Hal Wilkening, P.E., Director of Resource Management, SJRWMD
Janet Llewellyn, Florida Department of Environmental Protection

The Nature Conservancy
Protecting nature. Preserving life.™

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June 23, 2011

Mr. Allen Barnes, Director
Georgia Environmental Protection Division
2 Martin Luther King Jr. Drive, SE Suite 1252,
Atlanta, GA 30334

Dear Director Barnes,

As national experts in environmental flows and a major partner in the conservation of Georgia's rich aquatic resources, The Nature Conservancy appreciates the opportunity to comment on the regional water management plans. Our river scientists have been at the table from the beginning and have found that Georgia's state water management planning process is one of the best in the nation. The science-based, comprehensive approach that ties robust stakeholder plans for future water use with a regulatory program will surely benefit the state as water resources become more limited and complex to manage.

The Nature Conservancy appreciates your leadership of such a vitally important, transparent and data-rich planning process. We feel that the regional plans are a very good first step in what is likely to be a long and evolving water planning process. In the spirit of building upon this great work, The Nature Conservancy offers the following recommendations.

1) **Water Resource Assessments**

The Georgia Environmental Protection Division (EPD) did a commendable job with the resource assessments. A tremendous amount of water resource information was compiled and modeled on an unprecedented scale in the south. The resource assessment results formed a reasonable basis for the regional councils to begin to understand and manage their local water issues. We must emphasize, however, that the job is not finished. For example, operations of water supply reservoirs are not accurately represented in the surface water quantity assessments and the instream flow thresholds are not scientifically supported or protective of the plants and animals that depend on Georgia's rivers and streams.

- **EPD** should ensure that the models are fully verified and validated before the second round of planning begins.
- **EPD** should effectively utilize the Scientific and Engineering Advisory Panel for this purpose.

2) **Instream Flow Policy**

The importance of natural flow regimes to the ecological integrity of rivers has been established in the scientific community for decades. Georgia's interim instream flow guidelines are based on protection of low thresholds of flow and are not supported by the current understanding of

how aquatic life has adapted to the seasonal and interannual fluctuations of flow in rivers and streams. As demands for water supply grow under this policy, the natural variability of flows is reduced and, as demonstrated by the Chattahoochee River, water levels become 'flat-lined', restricting the life that should exist in that river. The health of our coastal estuaries is essential to Georgia and is dependent on freshwater flow. Instream flow policies need to be scientifically based and protective of the resources that are put in the public trust.

- As directed when the state's interim instream flow guidelines were put in place in 2001, the **Wildlife Resources Division (WRD)** should study how the ecology of Georgia's streams and rivers are harmed with altered flows. Seasonality, interannual flow and potential impact to estuaries should be considered.
- **WRD and EPD** should revise the interim instream flow guidelines based on these study results and current instream flow science before the second round of planning begins.
- **All regional water planning councils** should include in their plans this recommendation to the State as referenced on page 7-14 in the Savannah-Upper Ogeechee Regional Water Planning Council plan: "Evaluate minimum instream flow and unimpaired flow assumptions in the Surface Water Availability Resource Assessment. Consider pilot site-specific instream flow studies in the "X" basin (at locations predicted to have instream flow shortage). In combination with a low flow monitoring program and an agricultural use metering program, confirm the magnitude and frequency of predicted gaps. Update Surface Water Availability and Surface Water Quality Resource Assessment models based on the results of the studies for future Regional Water Plan update."
- **EPD** should act quickly to address the need for additional data identified by the Lower Flint-Ochlockonee Council by conducting instream flow studies. EPD should issue additional or expanded water withdrawal permits with caution until the results of the studies can be integrated into the permitting process and guide water management in the basin.

3) **Permitting Framework, Future Budget Requests and Continued Regional Planning**

The true benefits of such a thorough planning effort can only be realized through implementation. The regional water plans provide EPD with significant direction and EPD has a critical leadership role to play in implementing the plans. EPD should actively pursue the integration of the regional water plans into its permitting and monitoring activities and lay the groundwork for the second phase of regional water planning. These interrelated activities are integral to demonstrating to legislators that the first round of planning was worth the time and money expended and that another round of planning can accomplish even greater results.

- **EPD** should develop a watershed-based permitting framework using the resource assessments and Council recommendations, making every effort to coordinate upstream and downstream plans within a watershed. Given the status of the resource assessment models, a conservative approach should be taken in implementing irreversible and environmentally damaging water management practices. Water consumption should be minimized with maximum conservation and return of clean water to streams and rivers. Construction of new reservoirs, interbasin transfers, and reverse osmosis water treatment should be the last alternatives for meeting future water demands. Potential impacts to coastal estuaries must be evaluated.

- **EPD** should align future budget and rule-making requests with Council recommendations (i.e., additional data).
- **EPD** should evaluate the water planning process, scope the next phase of regional water planning and share the ideas with stakeholders and decision-makers. The Nature Conservancy recommends that watershed not political boundaries guide the make up of future regional water planning councils and that environmental interests be better represented on those councils. Given the status of the resource assessment models, the stakeholder process should continue with updated information as it becomes available from EPD.

4) Water Demand and Water Supply

With regard to water demand, The Nature Conservancy believes that the State took a major step forward by passing the Water Stewardship Act in 2010 and that the regional water plans provide an opportunity to go further.

- **All regional water planning councils** should include in their plans the implementation of at least Tier 3 water conservation management practices.
- **All regional water planning councils** should include in their plans the maximization of returning clean water to streams and rivers before constructing water supply reservoirs.

With regard to water supply, The Nature Conservancy supports the Water Contingency Task Force's recommendations to study the cost efficiency, environmental impact, and implementation feasibility of proposed reservoirs, which includes a detailed evaluation of the net impact on minimum flows. Reservoirs have significant environmental impacts and permanently damage the integrity of an ecosystem. The Nature Conservancy believes that the least environmentally damaging and most cost effective reservoir projects are expansions of existing reservoirs.

- **All regional water planning councils** should include in their plans a specific analysis of how they followed the statewide water management plan's comprehensive water supply reservoir policy.

The Nature Conservancy looks forward to continued support for the state's water planning efforts and will be actively engaged as it continues.

Thank you for your consideration.

Sincerely,

Shelly Lakly, Ph.D.
Executive Director

The Nature Conservancy
Protecting nature. Preserving life.™

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June 23, 2011

Arnettia Murphy
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2 Martin Luther King Jr. Drive
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Atlanta, GA 30334

Dear Ms. Murphy,

The Nature Conservancy appreciates the opportunity to provide comments on the Coosa-North Georgia Regional Water Plan. The Upper Coosa Watershed is one of the most biologically diverse watersheds in North America and we applaud the state for taking steps to develop a water planning process that will help ensure the Upper Coosa future water demands are met.

A representative of The Nature Conservancy attended each of the Coosa-North Georgia Regional Council meetings and followed discussions of the Council subcommittees. We fully support the evolving process of regional water planning and have identified several recommendations that we feel will make the Coosa-North Georgia Regional Water Plan an even better tool.

1. **Section 6.2.1- Water Conservation Management Practices**

    a. The Nature Conservancy fully supports the plan's emphases on the need to practice water conservation to meet long term water needs. In order for aggressive conservation measures to become a reality in the watershed we feel the management practices need to be enforced. As of now the vast majority of actions are characterized with the terms "encourage" or "consider". We believe stronger verbs such as "require" need to be used. (This comment holds true with all management practices identified throughout Section 6).

    b. While the plan encourages the use of smart irrigation, it does not mention the use of rain catchment systems. The Nature Conservancy recently completed a rooftop runoff capture project with the Upper Etowah River Alliance at a Canton fire station located in the Upper Etowah. Initial figures show a greatly reduced demand for treated water due to several

cisterns that capture roof runoff and allow for indoor toilet use and the washing of fire trucks. Due to its potential to greatly reduce water demand, rain harvesting should be listed separately as a management practice.

2. **Section 6.2.2- Water Supply Management Practices**

   a. WS-2 & WS-3: The Nature Conservancy believes that the expansion of all existing reservoirs should take priority over the construction of new reservoirs. In the fall of 2009 The Nature Conservancy, with the help of state and federal partners, mapped existing and proposed reservoirs in the Upper Coosa and evaluated potential threats to aquatic biodiversity, habitat, and existing protected lands. We would be happy to share this reservoir ranking data with EPD.

   b. WS-4: The Nature Conservancy cautions implementing aquifer storage and recovery (ASR) as a management practice. Adequate research has not been gathered on the short and long term effects of aquifer storage recovery in the Upper Coosa. Our initial assessment shows the Upper Coosa's unique geology would likely result in treated water migrating long distances underground. The state should ensure that adequate research on the viability of ASR in the region is conducted before proceeding with this management practice.

3. **Section 6.2.3- Wastewater Management Practices**

   a. WW-3: The Nature Conservancy is fully supportive of this management practice, which promotes better awareness of septic tank systems. Research in the Upper Coosa has identified several hot spots for failing septic systems and 319 funds were used to retrofit these systems. The Nature Conservancy believes that routine septic tank pumping should be required and enforced. Requiring that these systems be pumped and checked every 5 years will allow hundreds of faulty systems to be identified and fixed, instead of becoming long term pollutant sources in the watershed.

4. **Section 6.2.4- Water Quality Management Practices**

   a. WQ12- The Nature Conservancy encourages the state to proceed with caution on water quality credit trading. Credit trading has become a hot topic due to the need to reduce phosphorous loadings entering impoundments in the Upper Coosa. The Nature Conservancy believes that there is not enough adequate research on credit trading in the Upper Coosa to determine whether the program would result in true water quality benefits and recommends that the state establish a comprehensive

phosphorous monitoring program before moving forward with nutrient trading.

In addition to the recommendations listed above, The Nature Conservancy strongly encourages the Coosa-North Georgia Regional Water Planning Countil to specifically address interbasin transfers in the plan (i.e., the potential for large interbasin transfers between the Tennessee and Coosa, or the Coosa and Chattahoochee).

The Nature Conservancy looks forward to supporting the ongoing development of regional water plans.

Thank you for your consideration.

Sincerely,

Katie Owens

Katie Owens
Upper Coosa River Program Director

TRI RIVERS
Waterway Development Association
630 East Broad Street, Eufaula, Alabama 36027
334 / 688-1000 334 / 695-1878

June 23, 2011

SUBMITTED ELECTRONICALLY AT
www.gaepdcommentcenter.org AND VIA E-MAIL TO EPDComments@dnr.state.ga.us

Ms. Arnettia Murphy
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, Georgia 30334

Re: Initial Recommended Regional Water Plans for the Middle Chattahoochee, Upper Flint, and Lower Flint-Ochlockonee Regional Water Councils

Dear Ms. Murphy:

As part of Georgia's water planning process, the Environmental Protection Division of the Georgia Department of Natural Resources ("EPD") has solicited public comments on Initial Recommended Regional Water Plans ("Initial Plans") developed by the regional water councils. This letter provides the comments of Tri Rivers Waterway Development Association ("TRWDA") regarding the Initial Plans for the Middle Chattahoochee, Upper Flint, and Lower Flint-Ochlockonee Regions.

For 51 years, TRWDA has worked on behalf of its members in Alabama, Florida, and Georgia to support the Apalachicola-Chattahoochee-Flint ("ACF") River Basin. TRWDA is guided by the following mission:

> To promote an understanding of the true value of the ACF navigation channel and sustainable flows to the people of the ACF Basin and to work with the Corps of Engineers, federal, state, and local agencies, and other stakeholders to develop environmentally sound solutions to channel maintenance problems such that a reliable channel can be maintained with

> reasonable flow support. These efforts must take into account the various uses of the system including agriculture, industry, municipal use, economic development, tourism, water quality, and recreation.

TRWDA supports Georgia's efforts to initiate the planning process while recognizing the water resources in the ACF River Basin are highly complex with significant political, economic, and environmental issues unresolved.

TRWDA applauds the hard work of the Councils and EPD in developing the plans. In general, we support most of the recommendations contained in the three reports. We offer the following specific comments and suggestions.

As issues are resolved or operating plans change, the basis for certain assumptions made in this planning process are also subject to change, and the planning projections, conclusions and recommendations may require reconsideration. For example, the Corps of Engineers is planning to release a draft Master Water Control Manual for the ACF Basin ("ACF Master Manual") later this year. That document is subject to change, depending on public comments and the outcome of the multidistrict litigation. Any changes to the Master Manual that deviate from current practices may affect the Initial Plan's assumption of "no shortfall along the Chattahoochee River . . . on the basis that the current Revised Interim Operations Plan (RIOP) remains unchanged and conservation storage (in both Lake Lanier and Lake West Point Reservoirs) is available to fulfill demands," as stated in Section 5.1 of the Middle Chattahoochee Initial Plan. To the extent any of those changes result in limitations not accounted for in the Initial Plan, we urge EPD to remain cognizant of the needs of the Middle Chattahoochee area and review and reconsider any unforeseen impacts to the region.

Industry is a significant contributor to the economy of the State of Georgia and the region. However, the need for water to support existing and future industry is not adequately recognized in the currently recommended plan. For example, at Figure 4-3, Water Demand in 2010 and 2050, the Middle Chattahoochee Initial Plan assumes total industrial water demand for 2010 to be 4 million gallons per day ("mgd"), and it projects no increase in industrial water usage through 2050. The same figure assumes total industrial wastewater flow for 2010 to be 3 mgd, also with no change projected for 2050. Those assumptions significantly underestimate present industrial activity on the Middle Chattahoochee. We understand that Georgia planners did not receive water usage data from Alabama, and that may contribute to the report's underestimate of current industrial water usage and wastewater discharges. However, TRWDA is aware of a single facility in the ACF Basin with actual withdrawals from the Middle Chattahoochee River of 27.0 mgd in 2010 and wastewater discharges of 21.2 mgd in the same year. Further, whatever the correct figures for 2010 may be, the Initial Plan should not assume indefinite zero growth in the region, to the extent that assumption may contribute in any way to a limitation on future decisions to site critical and much-needed industrial or manufacturing sites in the Middle Chattahoochee region.

In general, TRWDA supports the recommendations to the State made by each of the Councils contained in Section 7.4 in each of the three plans. Specifically, we would like to add TRWDA's strong support to the Middle Chattahoochee recommendation concerning reservoir elevations and stream flows. These elevations and flows are shown in Table 5-1 on page 7-14. These requirements have been developed by the Middle Chattahoochee Water Coalition and adopted by the TRWDA Board. In addition to the 7-day average flows in Table 5-1, other minimum flow rates are required. These include an 800 cubic feet per seconds ("cfs") continuous minimum and a 1,350 cfs average daily flow at the Columbus gage and a 2,000 cfs average daily flow at the Columbia, Alabama, gage.

In addition, the three Councils have statements in each of their reports under Section 7 entitled, "Coordinated Recommendations with Neighboring Councils." These common sections address (1) the need for more storage, (2) improved modeling and data, and (3) justification for minimum flows at Woodruff Dam. TRWDA wishes to add its support to these coordinated recommendations to the State.

At the same time, TRWDA urges EPD to acknowledge that the Middle Chattahoochee River and Flint River Basins have independent needs, both of which depend on adequate flows in the two respective rivers. TRWDA is particularly concerned about minimum flow requirements at Woodruff. In the past, when rainfall has been relatively heavier in the Flint River Basin, the Corps has used the "windfall" of stronger flow from the Flint to justify reduced releases from its Chattahoochee reservoirs, for purposes of maintaining minimum flows at Woodruff. We urge EPD to support and defend adequate flows for the Middle Chattahoochee region, regardless of the volume of Flint River flows.

Another TRWDA concern is for water quality and the assessments performed in the planning process. It is our understanding that the water quality model outputs arrived very late in the planning process and that the Councils had very little time to evaluate and comment on their content. Specifically, TRWDA members have raised concerns about (1) the timing and quantities of reservoir releases to maintain and/or improve water quality in the Chattahoochee River below the Columbus planning node; (2) how the nutrient loadings (as measured by Chlorophyll A) below the Columbus node in Walter F. George Reservoir were developed; and (3) substantial variations in nutrient levels predicted by the models (both higher and lower) compared to actual field measurements. In addition, there appears to be a limited amount of field data points used for model calibration. We urge EPD to evaluate nutrient levels in a manner that acknowledges the extent to which upstream nutrient loading affects downstream areas and is beyond the ability of a downstream community to control.

As noted above, navigation in the ACF River Basin is an important component of TRWDA's mission. TRWDA would like to highlight the statement contained in Section 3.2 of the Middle Chattahoochee Initial Plan concerning navigation. Navigation is a Congressionally authorized purpose of the Federal reservoir projects on the

Chattahoochee River, and we agree as stated on page 3-5 that it is the responsibility of the Corps of Engineers to maintain a channel 9 feet deep and 100 feet wide.

TRWDA submitted to the Corps two sets of comments on the scope of the environmental analysis for purposes of revisions to the ACF Master Manual. In these two documents, dated November 21, 2008 and December 30, 2009, and attached for your convenience, TRWDA emphasized that the Corps must abide by the Congressionally authorized purposes of the ACF River System. TRWDA demonstrated that navigation was a lawful and Congressionally authorized project purpose for all five of the Corps' ACF reservoirs. Judge Magnuson's court order of July 7, 2009, has confirmed that navigation is among the authorized purposes of the ACF River System.

The Middle Chattahoochee Initial Plan indicates in several places an intent to fulfill the authorized purposes of the ACF. Table 2-1 correctly shows navigation as being among the Congressionally authorized purposes of the five Corps of Engineers reservoirs in the ACF Basin. Section 3.2 correctly states, "Navigation is important to the regional economy and must be maintained between Columbus and Apalachicola Bay." Section 1.3 also acknowledges the role of navigation.

However, some of the Plan's references to authorized purposes are incomplete. For example, the Initial Plan states at page 2-9, "The Middle Chattahoochee Water Planning Council has identified that the action zone values as developed contradict and compromise authorized purposes, specifically, recreational use at West Point Lake." The Initial Plan also refers to challenges to recreation at West Point in the context of Congressionally authorized purposes on pages 3-5 to 3-6 and 3-15. To the extent the Initial Plan indicates support for ACF project purposes, that support should extend to navigation. Most importantly, at Table 6-1, where Management Practice IU-2 references "Congressionally authorized purposes of federal reservoirs in the ACF Basin," that list of authorized purposes should include navigation. Further, to the extent Management Practice IU-2 references "Congressionally authorized purposes," the list should include only those project purposes shown in the far right column of Table 2-1. To the extent any purpose listed there is not a "Congressionally authorized" reservoir purpose, it is incorrect and inconsistent with Table 2-1.

TRWDA concurs in supporting the Congressionally authorized uses of the Corps' ACF reservoirs, including navigation. Congress intended to provide 308 navigable river miles for the ACF River System, and flows sufficient to provide for navigation also support industrial and municipal water users to stimulate much needed economic development for the middle section of the ACF Basin. TRWDA has been developing a plan that would improve navigation in a manner that minimizes impacts to upstream reservoirs and complies with the RIOP. Our intent is to submit this work to the Corps in the context of proposed revisions to the ACF Master Manual, but we would be pleased to discuss our studies and modeling with EPD as well.

TRWDA commends the State of Georgia for initiating this planning process, and we thank you again for the opportunity to provide comments. If you have any questions, please feel free to call Executive Director Billy Houston at (334) 688-1000 or me at (706) 596-1630.

Sincerely,

/s/ *Billy Turner*

Billy Turner
President

Attachments

ATTACHMENTS

(1) TRWDA, Scoping Comments for Revisions of the Water Control Manual for the Apalachicola-Chattahoochee-Flint River Basin (Nov. 21, 2008).

(2) TRWDA, Revisions to the Scope of Draft Environmental Impact Statement for Updating the Water Control Manuals for the Apalachicola-Chattahoochee-Flint River Basin (Dec. 30, 2009).

TRI RIVERS
Waterway Development Association
630 East Broad Street, Eufaula, Alabama 36027
334 / 688-1000 334 / 695-1878

November 21, 2008

SUBMITTED VIA E-MAIL TO COMMENTS@ACF-WCM.COM

Col. Byron Jorns, District Engineer
Mobile District, U.S. Army Corps of Engineers
107 Saint Francis Street, Suite 1403
Mobile, Alabama 36602-9986

Re: **Scoping Comments for Revisions of the Water Control Manual for the Apalachicola-Chattahoochee-Flint River Basin**

Dear Colonel Jorns:

This letter provides the comments of Tri Rivers Waterway Development Association ("TRWDA") regarding the scoping process of the Corps of Engineers ("Corps") to update its water control manual for the Apalachicola-Chattahoochee-Flint ("ACF") River System. Thank you for your consideration of TRWDA's views.

1. TRWDA's Interest in the ACF River Basin

TRWDA represents many stakeholders who rely on the ACF River System for a variety of uses, including navigation, hydropower generation, water supply, wastewater treatment, economic development, environmental enjoyment, tourism, and recreation. The members of TRWDA include the cities of Eufaula, Dothan, and Phenix City, Alabama, and Columbus and Bainbridge, Georgia; most of the counties in the three states along the federal navigation project; the Coalition of Alabama Waterway Associations; Columbus Water Works; Georgia Pacific; Lake Seminole Association; MeadWestvaco; Middle Chattahoochee Water Coalition; Riverway South; Southeast Water Alliance; and Southern Nuclear Company.

TRWDA seeks to partner with business, municipal, industrial, environmental, agricultural, and recreational interests, and with local, state and federal agencies to seek

Attachment 1

scientific, technical and economic solutions to the obstacles which have prevented a full realization of the benefits of the ACF River System in recent years. We have engaged experts in business development and economic analysis from Troy University to quantify the economic value and potential of the system, including impacts to industrial development, agriculture, municipal revenues, and tourism. We have also entered into direct discussions with representatives in the ACF river basin from Lake Lanier and the greater Atlanta area in the north to the Apalachicola Bay in the south, and we intend to continue to participate in those mutually cooperative efforts.

2. The Corps Must Operate the ACF Projects for Their Congressionally Authorized Purposes.

a. The Corps Should Acknowledge the Statutory Authorized Purposes for the ACF Reservoirs.

Congress enacted several federal statutes which provide the Corps' authority for its initial construction and subsequent operation of the ACF reservoirs. Any revision to the water control manual for the ACF River System must comply with those laws as well as with the Corps' regulations. TRWDA understands the federal reservoirs' primary Congressionally authorized purposes to be as follows:

- **Lake Lanier: Hydropower, downstream navigation, and flood control.** Sources: Pub. L. No. 79-525, 60 Stat. 634, 635 (1946) (referencing H.R. Doc. 80-300 (1946)).
- **West Point: Flood control, hydropower, fish and wildlife recreation, general recreation, and navigation.** Sources: Pub. L. No. 87-874, 76 Stat. 1173, 1180, (1962) (referencing H.R. Doc. No. 87-570 (1962)).
- **Walter F. George: Navigation and hydropower.** Sources: Pub. L. No. 79-14, 59 Stat. 10, 11, 17 (1945) (referencing H.R. Doc. No. 76-342 (1939)); Pub. L. No. 79-525 (referencing H.R. Doc. 80-300); Resolution of House Public Works Committee (May 19, 1953).
- **George W. Andrews: Navigation.** Sources: Pub. L. No. 79-14; Pub. L. No. 79-525; Resolution of House Public Works Committee (May 19, 1953).
- **Jim Woodruff: Navigation and hydropower.** Sources: Pub. L. No. 79-14; Pub. L. No. 79-525.

The laws cited above are the primary sources of the Corps' authority with respect to the ACF reservoirs. They provide the legal basis for how the Corps should operate the

Attachment 1

ACF reservoirs. To demonstrate compliance with these applicable laws and authorities, TRWDA urges the Corps to provide a clear explanation of the primary Congressionally authorized purposes for each reservoir in its revised manual and in the accompanying environmental documentation.

b. The Federal Action Is: Reservoir Operations for their Congressionally Authorized Purposes.

TRWDA urges the Corps to include in its environmental documentation a clear explanation of the federal "action" which the Corps is evaluating for purposes of complying with the National Environmental Policy Act. That "action" should be defined as the operation of the ACF reservoirs in accordance with their Congressionally authorized purposes.

Events leading to the development of the Corps' present Interim Operations Plan ("IOP") and Revised Interim Operations Plan ("RIOP") for the ACF river basin illustrate our concerns. In our view, the Corps never clearly defined the federal action which was the subject of its Section 7 consultation with the U.S. Fish and Wildlife Service ("FWS") under the Endangered Species Act ("ESA"). Under ESA Section 7(a)(2), federal agencies are required to consult with FWS to insure a proposed action does not (1) jeopardize the continued existence of a listed species, or (2) destroy or adversely modify the species' designated critical habitat. 16 U.S.C. § 1536(a)(2). If the action would cause jeopardy or adverse critical habitat modification, FWS is authorized to propose reasonable and prudent alternatives and reasonable and prudent measures. However, in developing the Corps' IOP and RIOP, the federal action constituting the basis for consultation was never clear. Rather than presenting to FWS its standard operating procedures under the authorizing statutes, the Corps entered into open-ended negotiations with FWS and developed what amounts to a freestanding conservation agreement for the Apalachicola River. The resulting RIOP now drives the Corps' operations for the rest of the ACF system.

TRWDA urges the Corps not to repeat that inappropriate model as it revises its manual. The Corps should begin by setting forth a set of operations that fulfills the authorized purposes of the reservoirs, according to the primary Congressional authorities. To the extent any manual revisions allow for alternative operations—such as operations to serve secondary project purposes or to comply with the ESA and other federal laws—the Corps should consider such alternatives only on the following terms:

(1) Any alternative that differs from optimal operation of the reservoirs for their primary Congressionally authorized purposes should be clearly identified as such.

(2) The need and/or legal basis to deviate from operation of the reservoirs for optimal fulfillment of the primary Congressionally authorized purposes should be clearly explained.

(3) The Corps should clearly explain applicable limitations on any deviation from operations for primary Congressionally authorized purposes, such as a time limit and the circumstances under which the Corps will restore primary operating parameters.

c. Revisions to the Manual Must Recognize Navigation as a Primary Congressionally Authorized Purpose and Reflect Statutory Intent to Support Downstream Communities.

A central and consistent Congressionally authorized purpose of all the ACF reservoirs as enacted by Congress is to support navigation. Commercial navigation on the Chattahoochee and Apalachicola Rivers has been historically limited to points between the Gulf of Mexico and the fall line at Columbus, Georgia. Most of the ACF projects also support hydropower; however, the lowermost hydropower facility (Woodruff) is a run-of-river project with no storage capacity, as is Andrews, the nearest upstream reservoir. If navigation is limited to points below the fall line, and the hydropower project farthest downstream is run-of-river, the inevitable conclusion is that Congress intended for the Corps to operate the upstream storage reservoirs, and especially the reservoir with the most storage capacity, substantially for purposes that would be realized in the lower regions of the ACF Basin, including navigation. Any revisions to the manual must be consistent with that clear demonstration of Congressional intent.

TRWDA is well aware of the reduction in commercial navigation which has occurred in the ACF River System in recent years. However, a major contributing factor was the failure of the Corps to properly maintain the channel, and the Corps must not ignore its statutory obligation to provide navigation as it revises its water control manual. The critical limitation on navigation is the lack of proper maintenance of a few small stretches of the Apalachicola River, which blocks access from the upstream Chattahoochee and Flint Rivers south to the Gulf of Mexico. However, channel maintenance is the Corps' responsibility under federal law.[1] The primary hindrance to navigation in the ACF system is the Corps' failure to provide it. The Corps must not and cannot lawfully use its own failure to perform its statutory duty to maintain the Apalachicola River for navigation as a basis to unilaterally reorder the project purposes without first obtaining Congressional approval to do so.

To justify its own failure to maintain the navigation channel, the Corps has cited a 2005 decision of the Florida Department of Environmental Protection ("FDEP") to deny certain state environmental authorizations for the Corps' channel maintenance activities. TRWDA remains concerned and disappointed that the Corps would so easily place itself

[1] TRWDA provided a thorough explanation of the Corps' obligation to maintain the Apalachicola River for navigation in a petition to the District Engineer and the Chief Engineer dated March 2, 2006, asking the Corps to resume navigation maintenance pursuant to Section 404(t) of the Clean Water Act. We trust that document remains available to the Corps, but we will be pleased to provide the Corps additional copies if needed.

in a subservient position to a state and allow a state agency to veto the Corps' federal authority and activities. TRWDA shares the concerns of FDEP and environmental groups with respect to the environmental impacts of certain dredging and disposal practices which were utilized in the past. However, TRWDA is convinced there are practical solutions for the Corps to be able to resume its channel maintenance activities in a manner acceptable to FDEP and all affected parties. In any event, the Corps should exercise its federal statutory preemptive authority to maintain the channel for navigation.

Aside from the direct interest of TRWDA and its members in navigation, we believe the Corps' provision of water flow sufficient to support navigation would also support industrial and municipal requirements, which are discussed further in Part 3 below. In addition, flows in the Chattahoochee and Apalachicola Rivers sufficient to support navigation will be beneficial to aquatic species and the natural resources of the Apalachicola River and Apalachicola Bay. A minimum flow of 5,000 cfs at Woodruff Dam has been established to benefit certain species protected under the ESA. However, it is the position of Apalachicola Bay and River Keeper and the Franklin County Seafood Workers that those minimum flows do not adequately protect the Bay and its other resources, including commercial fisheries and other ecological resources, on a sustained basis. TRWDA believes flows sufficient to meet Middle and Lower Chattahoochee requirements would increase the frequency of instances when flows below Woodruff Dam would exceed 5,000 cfs to benefit the Bay, particularly when combined with inflow contributions from the Flint River.

d. Water Supply Is Not a Primary Congressionally Authorized Purpose.

Congress has established the primary purposes of the ACF reservoirs, as described more fully above. All other purposes, including local water supply, are secondary. The Corps may not allow any secondary use of the ACF reservoirs that would interfere with those primary purposes without further Congressional approval. Specifically, according to the statutes governing the Corps' reservoir operations:

> Modifications of a reservoir project heretofore authorized, surveyed, planned, or constructed to include storage . . . which would seriously affect the purposes for which the project was authorized, surveyed, planned, or constructed, or which would involve major structural or operational changes shall be made only upon the approval of Congress as now provided by law.

43 U.S.C. § 390b(d). The Corps has interpreted this statutory provision to limit allocation of storage for water supply to the lesser of 15% of a project's total storage or 50,000 acre-feet. ER 1105-2-100, ¶ 3.8.b(5). The statute and the Corps' regulations are consistent with longstanding federal policy to view water supply as primarily a local and not a federal responsibility. Because local water supply is not among the primary project purposes established by Congress, federal law imposes strict limits on the Corps' authority to allow water diversions for local consumption.

3. The Corps Must Acknowledge and Address the Needs of the Middle Portions of the ACF River System.

Water shortages in North Georgia and endangered species in the Apalachicola River have dominated the public discourse on ACF operations in the past two years, due to the drought in the Southeast. However, Congress authorized and instructed the Corps to build and operate the ACF reservoirs substantially for the benefit of those located in between those two ends of the ACF River System. For example, as explained above, Congress authorized the three storage reservoirs, including Lake Lanier, primarily for navigation support and hydropower production below the fall line. West Point is subject to Congressional authorizations for additional purposes, namely, flood control, fish and wildlife recreation, and general recreation for those in the La Grange area. As the Corps develops revisions to its ACF water control manual, it must ensure its operations serve the communities and businesses of the ACF River System's middle regions.

a. Communities in the Lower Portions of the Basin Depend on the Corps' Provision of Adequate Flows.

Communities and businesses located and grew in cities like Dothan, Eufaula, and Phenix City, Alabama, and Bainbridge, Columbus, and La Grange, Georgia, with the full expectation that the Corps would operate the ACF reservoirs according to the laws authorizing their construction and operation. Those communities spent millions of dollars to build public works projects as well as infrastructure including the Eufaula Inland Dock, the Phenix City Inland Dock, and the Columbia Inland Dock in Alabama and the Port of Columbus and Port Bainbridge in Georgia. Those facilities made it possible for local communities to sell and ship agricultural, silvicultural and mineral products in bulk and to receive large deliveries of fuels and fertilizers by barge. Companies including TRWDA members Georgia Pacific, MeadWestvaco and Southern Nuclear Company sited and built major industrial facilities on the Chattahoochee River based in large part on the federal commitment that flows sufficient to serve the Congressionally authorized purposes would provide for their industrial cooling and discharge assimilation. They also expected to reap the benefits associated with barge transport of fuel and bulk products provided by a reliable navigation channel.

Not only have these communities and businesses acted and invested in reliance on the Corps' lawful operation of the ACF reservoirs in the past, but they are counting on adequate flows for their future survival. Industry and commerce will continue to grow in southeastern Alabama and southwestern Georgia with adequate flows and channel maintenance. Several new economic opportunities which depend on flows in the Chattahoochee and Apalachicola Rivers have recently been developed or are under serious consideration. The Corps and the cities of Columbus, Georgia, and Phenix City, Alabama, have been working on a river restoration project involving the removal of two small, historic dams to improve habitat and create a whitewater recreation course. Riverway South—an organization extending across all three ACF states—is actively promoting eco-tourism, and its success depends on the assurance of a safe and reliable

navigation channel from Columbus, Georgia, south to the Gulf of Mexico. Longleaf Energy Associates has a permit to site a new energy production facility on the Chattahoochee River in Early County, Georgia, and the company plans to begin construction next year. Several projects which include marinas or other river-based recreational opportunities have recently opened, are under development, or are in serious consideration, including a new marina which recently opened in Bainbridge, Georgia; the Trail's End Resort and Marina on Lake Seminole; a proposed new marina near the National Infantry Museum in Columbus, Georgia; a proposed marina and nature trail in Quitman County, Georgia; and a kayak venture proposed for Chattahoochee, Florida.

Without adequate flows and safe and reliable navigation, these opportunities for economic growth and business development will be subject to difficult challenges. TRWDA urges the Corps to explain in its revised manual and the accompanying environmental documentation how it intends to provide for the needs of the communities and industries located in the middle and lower portions of the ACF River System.

b. The Corps Must Continue to Provide Agreed-upon Minimum Flows in the Middle and Lower Chattahoochee River.

As you know, in recent years, representatives of Alabama, Florida, and Georgia attempted to develop a mutually agreeable allocation of water in the ACF River System. In that context, on July 22, 2003, the three governors signed an agreement which set flow parameters, including the following:

- "On the Chattahoochee River above its confluence with Peachtree Creek, a flow of 750 cfs will be maintained on a daily basis, with the understanding that the State of Georgia is entitled to a variable flow regime that requires no less than 650 cfs in winters. . . ."
- "On the Chattahoochee River at Columbus, Georgia, a flow of 1350 cfs will be maintained on a daily basis at all times, and a flow of 1850 cfs will be maintained on a weekly basis provided that the top of the storage pool in West Point Reservoir is above 621.6 feet."
- "On the Chattahoochee River at Columbia, Alabama, a flow of 2000 cfs will be maintained on a daily basis."
- "On the Apalachicola River at Chattahoochee, a minimum flow of 5000 cfs will be maintained on a weekly basis at all times. . . ."

Memorandum of Understanding Regarding Initial Allocation Formula for the ACF River Basin, ¶ 4 (July 22, 2003) (emphases added). Those flow figures were to be included in any allocation formula agreed to by the parties, and they were "intended to be met by the combined actions of maintaining water uses consistent with the allocation formula, and

by the Corps operating the federal reservoirs consistent with the allocation formula." *Id.* (emphasis added). The license issued by the Federal Energy Regulatory Commission for the Middle Chattahoochee Project, a privately owned, run-of-river project located between West Point reservoir and Columbus, Georgia, includes flow targets which depend on the Corps' releases from the West Point Dam upstream. Those targets reference the same flow levels for Columbus, Georgia, which are included in the tri-state agreement. Specifically, the targets are 1,350 cfs daily average, 1,850 cfs weekly average, and 800 cfs instantaneous when the Corps provides flows at or above those levels or, when the project's inflow is less than those levels, outflow equal to inflow. *See* 109 FERC 62,246, at Article 402 (2004).

In revising its manual, the Corps should develop its operation plan to satisfy the flow parameters agreed to by all three states. TRWDA in particular calls the Corps' attention to the Middle and Lower Chattahoochee flow requirements, namely, 1,350 cfs daily and 1,850 cfs weekly at Columbus, Georgia, and 2,000 cfs daily at Columbia, Alabama. We believe those flow levels are generally sufficient to meet the Congressionally authorized purposes of the ACF River System. They also correspond to the flows that are necessary to meet the water supply and water quality needs of Columbus Water Works, as well as the operation of industrial facilities on the Chattahoochee River, including those facilities operated by Georgia Pacific, MeadWestvaco, and Southern Nuclear Company.

c. The Corps Should Not Rely on Flint River Flows to Meet Apalachicola River Needs to the Detriment of Flows in the Middle and Lower Chattahoochee River.

Recently, increased flows from the Flint River have contributed to the Corps' release of water from Woodruff Dam to provide for the 5,000 cfs minimum flows at Chattahoochee. Like all stakeholders in the basin, TRWDA is grateful for any inflows that help meet system needs. However, the Corps must not rely on Flint River flows to meet Apalachicola River requirements to the detriment of the Middle and Lower Chattahoochee River communities. Contributions from the Flint River should provide no rationale for the Corps to reduce flows in the Middle and Lower Chattahoochee River below those levels necessary to support Congressionally authorized purposes and industrial and municipal needs.

As noted above, the primary Congressionally authorized purposes of the ACF federal reservoirs include hydropower, navigation, and flood control. The Corps' ability to fulfill the reservoirs' purposes for the benefit of the communities located along the ACF River System from Dothan, Alabama, to Gainesville, Georgia, depends exclusively on conditions in the Chattahoochee River. The Flint River has absolutely no effect at any point on the Chattahoochee River above its confluence with the Chattahoochee just above the Jim Woodruff Dam. Because Flint River conditions are independent from Chattahoochee River conditions, there is no logical basis to alter operations at the Corps'

Attachment 1

Chattahoochee River projects to the detriment of Middle and Lower Chattahoochee River stakeholders in response to conditions in the Flint River.

Thank you again for this opportunity to comment. Please feel free to contact me at (334) 668-1000 if you have any questions.

Sincerely,

Billy V. Houston
Executive Director

Attachment 2

TRI RIVERS
Waterway Development Association
630 East Broad Street, Eufaula, Alabama 36027
334 / 688-1000 334 / 695-1878

December 30, 2009

VIA OVERNIGHT DELIVERY AND ELECTRONIC SUBMISSION AT
http://www.sam.usace.army.mil/pa/acf-wcm/mail_list.htm

Col. Byron Jorns, District Engineer
Mobile District, U.S. Army Corps of Engineers
c/o Tetra Tech, Inc.
107 Saint Francis Street, Suite 1403
Mobile, Alabama 36602-9986

Re: **Revisions to the Scope of Draft Environmental Impact Statement for Updating the Water Control Manuals for the Apalachicola-Chattahoochee-Flint River Basin**

Dear Colonel Jorns:

This letter provides the comments of Tri Rivers Waterway Development Association ("TRWDA") regarding efforts of the Corps of Engineers ("Corps") to revise the scope of the Environmental Impact Statement ("EIS") for revisions to the water control manuals for the Apalachicola-Chattahoochee-Flint ("ACF") River Basin. *See* 74 Fed. Reg. 59,965 (Nov. 19, 2009). According to the Corps:

> Any comments previously submitted will be reviewed and addressed in any scoping revisions. There is no need to resubmit comments previously provided during the 2008 scoping effort, unless in your opinion the above-cited district court decision necessitates additional comments from you.

Id. at 59,966. TRWDA submitted comments dated November 21, 2008, and we have enclosed an additional copy of those comments which are hereby incorporated by reference. This letter provides additional comments in light of Judge Magnuson's July 17, 2009, memorandum and order in the Tri-State Water Rights litigation. *In re Tri-State Water Rights Litigation,* Case No. 3:07-md-01 (M.D. Fla. July 17, 2009). This letter hereinafter refers to the Court's memorandum and order as "Court Order."

1. The Corps Must Determine Project Purposes with Reference to the Original Authorizing Statutes.

TRWDA's previous comments emphasized that the Corps must abide by the Congressionally authorized purposes of the ACF River System, and TRWDA set forth the lawful project purposes for all five of the Corps' ACF reservoirs. The Court Order demonstrates that TRWDA applied the correct method to identify the Congressionally authorized purposes for the Corps' ACF projects.

TRWDA cited the original statutes authorizing the construction of the reservoirs, as well as the specific Corps documents referenced in those statutes. For example, in the case of Lake Lanier, TRWDA cited primarily the 1946 Rivers and Harbors Act, Pub. L. No. 79-525, 60 Stat. 634, 635 (1946), and House Document No. 80-300 (1946). From those documents, TRWDA concluded that the three Congressionally authorized purposes of Lake Lanier are flood control, navigation, and hydropower. The Court cited the very same documents under the sub-heading of "Authorization," as well as additional legislative history. Court Order at 6-9. The Court then concluded that the primary purposes of Lake Lanier are flood control, navigation, and hydropower. Court Order at 72-74. Therefore, the Court Order confirms that TRWDA has used the correct method to determine the lawful purposes of the Corps' reservoirs in the ACF River System.

TRWDA's prior comments explained that water supply is not a Congressionally authorized purpose of Lake Lanier. The Court agreed as follows:

> Having thoroughly reviewed the legislative history and the record, the Court comes to the inescapable conclusion that water supply, at least in the form of withdrawals from Lake Lanier, is not an authorized purpose of the Buford project.

Court Order at 77. The Court Order went on to explain that additional Congressional authorization would be required before the Corps could lawfully reallocate Lake Lanier storage for water supply regardless of what has been done in the past. Court Order at 88.

2. The Corps Must Support Navigation.

a. The Corps Is Obligated to Operate the ACF Reservoirs to Support Navigation.

Application of the correct methodology to determine the Congressionally authorized purposes of the ACF River System yields the inescapable conclusion that navigation is a primary authorized purpose of all five of the Corps' ACF reservoirs. TRWDA described the lawfully authorized project purposes for the remaining four reservoirs in the ACF River System in its previous comments and reiterates them here:

- **West Point: Flood control, hydropower, fish and wildlife recreation, general recreation, and NAVIGATION.** Sources: Pub. L. No. 87-874, 76 Stat. 1173, 1180 (1962) (referencing H.R. Doc. No. 87-570 (1962)).

- **Walter F. George: NAVIGATION and hydropower.** Sources: Pub. L. No. 79-14, 59 Stat. 10, 11, 17 (1945) (referencing H.R. Doc. No. 76-342 (1939)); Pub. L. No. 79-525 (referencing H.R. Doc. 80-300); Resolution of House Public Works Committee (May 19, 1953).

- **George W. Andrews: NAVIGATION.** Sources: Pub. L. No. 79-14; Pub. L. No. 79-525; Resolution of House Public Works Committee (May 19, 1953).

- **Jim Woodruff: NAVIGATION and hydropower.** Sources: Pub. L. No. 79-14; Pub. L. No. 79-525.

The Corps cannot lawfully rely on its own past failure to maintain the ACF River System for navigation as an excuse not to operate the reservoirs in a manner that supports navigation today and in the future. The Corps' failure to maintain the navigation channel is not some externality beyond the Corps' control. Rather, it is the Corps' own statutory responsibility to do so. Therefore, in accordance with the Court Order, the Corps should revise the scope of its EIS to ensure that reliable, year round navigation on the ACF system is a required alternative and is fully provided for in the revision of its water control plans and manuals. The Corps may not consider any alternative that does not fully account for navigation.

b. The Corps Has Adequate Navigation Maintenance Authority Regardless of State Approval.

The Corps cannot lawfully blame its failure to maintain the ACF River System for navigation on the action by the Florida Department of Environmental Protection ("FDEP") to deny state permit approval more than four years ago. TRWDA has engaged FDEP staff as well as environmental interests to explore the necessity of resuming maintenance dredging. Based on those discussions and the knowledge and experience of TRWDA members, we remain convinced that there are appropriate and environmentally responsible methods to perform all the tasks necessary to maintain a safe and reliable navigation channel. However, the Corps must exercise its mandated responsibilities. Unfortunately, the Corps has undertaken no apparent effort to identify navigation maintenance options which may be agreeable to FDEP and other interests. TRWDA urges the Corps to restore safe and reliable commercial navigation in the ACF River System.

Attachment 2

In developing a plan for navigation maintenance, TRWDA urges the Corps to work cooperatively with FDEP and other appropriate stakeholders, including navigation interests, environmental interests, and local governments. However, regardless of whether FDEP approval is obtained, the Corps has sufficient federal preemptive authority to maintain the federal navigation project, including specifically the ACF River System, regardless of state objections. TRWDA has previously explained the legal basis for the Corps' authority in a petition to maintain the ACF navigation project, which TRWDA submitted on March 2, 2006, and which these comments shall reference as the "404(t) Petition." A copy of that petition is enclosed and hereby incorporated in these comments.

TRWDA's petition focused on Sections 404(t) and 511(a) of the Clean Water Act ("CWA"). As recently as November of 2009, in the context of the Corps' efforts to dredge the Delaware River over the objections of the State of Delaware and others, the Corps acknowledged that those statutes and others authorize the Corps to conduct maintenance dredging for a federal navigation project over the objection of a state. According to the Corps, "Congress has exempted certain Federal construction projects from regulation under the CWA, thereby retaining for itself the authority to determine whether such projects should proceed." Brief for Federal Defendants at 21, *State of Del. Dep't of Nat. Res. & Envtl. Control,* Case No. 09-cv-821-SLR (D. Del. filed Nov. 20, 2009) (hereinafter "Corps' Brief").

Generally, the federal government is immune from state regulation. However, the CWA waives sovereign immunity for certain limited purposes under the CWA, which means some federal actions may be subject to state water quality regulation. Corps' Brief at 24-25. However, this waiver of sovereign immunity is limited. The Corps' Brief correctly explains that the CWA "'shall not be construed as . . . affecting or impairing the authority of the Secretary of the Army . . . to maintain navigation.'" Corps' Brief at 27 (quoting CWA § 511(a), as codified at 33 U.S.C. § 1371(a)). The intent of Section 511(a) was to ensure the Corps "has the authority to proceed with measures necessary to maintain navigation" in the event "State requirements relating to the disposal of dredged spoil may not be compatible with the responsibility of the Corps of Engineers to maintain navigation." 404(t) Petition at 19 (quoting remarks of Rep. Ray Roberts, 123 Cong. Rec. 38,970 (1977)).

CWA Section 404 specifically governs discharges of dredged or fill materials into areas subject to CWA jurisdiction. Section 404 generally authorizes states to "'control the discharge of dredged or fill material in any portion of the navigable waters within the jurisdiction of such State, including any activity of any Federal agency.'" Corps' Brief at 25 (quoting CWA 404(t), as codified at 33 U.S.C. § 1344(t)). States are authorized to add substantive and procedural requirements. *Id.* However, Section 404(t) also includes the following qualification: "'This section shall not be construed as affecting or impairing the authority of the Secretary to maintain navigation.'" Corps' Brief at 25 (quoting CWA 404(t), as codified at 33 U.S.C. § 1344(t)).

Attachment 2

The Corps also has stated that it may engage in dredging on the Delaware River notwithstanding Delaware's objection pursuant to the Coastal Zone Management Act ("CZMA"). According to the Corps, a direct action by a federal agency (as opposed to a private action taking place pursuant to a federal permit) "may proceed even if a state objects to a Federal consistency determination." Corps' Brief at 36 (citing 15 C.F.R. § 930.43(d)). Therefore, Delaware was "incorrect as a matter of law" that the Corps' dredging activities required state concurrence. *Id.* Thus, the Corps has amply demonstrated, and TRWDA agrees, that a state's refusal to concur under the CZMA is no bar to the Corps' maintenance of a federal navigation project, including the navigation channel in the ACF river basin.

The Corps has sufficient federal authority to maintain the navigation channel in the ACF river basin without regard to a state's action. The Corps' exercise of this navigation maintenance responsibility should be included in the scope of its EIS and fully accounted for in any revisions of its water control manuals for the ACF river basin.

Thank you for this opportunity to comment. Please feel free to contact me at (334) 668-1000 if you have any questions.

Sincerely,

Billy V. Houston
Executive Director

Enclosures

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June 23, 2011

Ms. Arnettia Murphy
Georgia Department of Natural Resources
Environmental Protection Division
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Atlanta, Georgia 30334

Dear Ms. Murphy:

The U.S. Fish and Wildlife Service (Service) is herein providing comments regarding the initial draft regional water plans released May 9, 2011. The 2004 Comprehensive State-wide Water Management Planning Act authorized the development of the State Water Plan. The State Water Plan in turn, calls for state-wide regional water planning to provide the necessary local and regional perspectives to ensure each of Georgia's ten water planning region's water resources are sustainably managed through at least 2050. We appreciate the effort of the basin councils and the hours of deliberation and thought that the 10 regional water plans represent.

We consider the basin plans an important first step in managing for sustainable water resources. As our review of the plans progressed, common themes emerged in the plans and in our concerns about the plans. Rather than provide detailed review of each plan, we are providing general comments and recommendations. As each basin plan is revised, we are available and eager to provide technical assistance to the councils regarding our concerns and how our recommendations could be implemented.

The State of Georgia includes an abundance of river systems that have vistas and species unlike any other. Unfortunately, Georgia also has one of the highest numbers of imperiled species, especially those that live in aquatic environments. As the human population grows and development spreads, the conflicts between the needs of citizens and aquatic systems will increase in number and intensity; conflict will be exacerbated during times of drought. We have already observed dramatic declines in the numbers of native freshwater mussels and shoal-dependent fishes, which were some of the first to feel the effects of low stream flows. Low flows contribute to degraded water quality, for people and for animals, which translates as additional costs to the tax-payers for lost services such as pollution treatment. The citizens of Georgia and those that visit Georgia will not continue to reap the benefits of the natural aquatic systems without a significant change in the current practices that affect them.

GENERAL CONCERNS

1. The regional water plans do not meet a basic goal of the 2004 Comprehensive State-wide Water Management Planning Act – protecting natural systems.

   The 2004 Comprehensive State-wide Water Management Planning Act mandated the development of a state-wide water plan that, in a sustainable manner, would (1) support the State's economy, (2) protect public health **and natural systems**, and (3) enhance the quality of life for all citizens. The State defines natural systems as "biological, ecological, and physical systems that arise and persist through mechanisms of nature as opposed to having been designed, constructed, and operated by mankind".

   The March 2010 Surface Water Resource Availability Assessment, which the regional water councils used extensively to evaluate water supply in the regional water plans, was based, in unregulated streams, on a monthly 7Q10 flow or natural inflow, whichever was lower. The monthly 7Q10 is the lowest seven-day running average of a stream's flow for each calendar month with a 10-year recurrence frequency; basically, the 7Q10 provides extreme seasonal low flow conditions in a stream over a given time period. The 7Q10 considers one factor only -- water quality – and fails to consider either the effect of long term exposure to extreme low flows or the natural flow of rivers necessary for the protection of fish and other aquatic resources.

   The University of Georgia's Carl Vinson Institute of Government, in a 2006 report to the Georgia Environmental Protection Division identified mimicking the natural flow regime, to the greatest extent possible, as one of seven major principles of instream flow protection. Natural flows include both high and low flows; the magnitude and frequency of these high and low flows regulate numerous ecological processes and provide different benefits to the stream's overall health. High flows flush silt from the crevices between gravel and cobble where many fish lay eggs, facilitate reproduction of aquatic species that mate and feed in the floodplain, stir up organic materials on which benthic macroinvertebrates forage, and import large woody debris that increases habitat complexity and diversity. Regularly occurring high flows determine the geomorphology of the river, including the location of pools and shoals/riffles that provide diverse aquatic habitats. Periods of lower flows and water velocities allow germination and growth of riparian plant species in floodplains and on streambanks, movement of fish and other aquatic organisms to upstream areas, and development of eggs and juveniles without being flushed from suitable habitats.

   Sustained inadequate low flow, in contrast, may result in long-term changes in fish, mussel, and other aquatic species distribution and abundance. During extreme low flows, the width of the wetted stream channel is greatly reduced, and fine sediment that degrades aquatic habitats is not flushed from the stream bottom. Fish become crowded into smaller areas and are more vulnerable to over-harvest, intra-specific competition and predation. Water temperatures may become too high for some species, interfering with their physiology and reproduction. Side channels used by the early-life stages of many aquatic species may be dewatered, and movement upstream through riffle and shoal areas may be blocked. Lowering the water table

and/or reducing overbank flooding may result in changes in the density, productivity, and species composition of wetland and riparian vegetation. Streamflow reduction may cause changes in the relative abundance of food resources, which can influence the abundance and distribution of benthic macroinvertebrates.

In a related matter, we understand that the metrics used in the assessments of surface water availability were based on specific State policies. However, we note that the assessment focused solely on the monthly 7Q10 from the Georgia Department of Natural Resources 2001 interim instream flow white paper and did not consider the broad range of options that protect water quality, human uses and habitat. Instream flow guidelines developed by the Environmental Protection Agency and Service in 1999 for the Alabama-Coosa-Tallapoosa (ACT) and Apalachicola-Chattahoochee-Flint (ACF) basins water allocation formula also were not considered in the assessment.

Another fundamental problem with the basin plans is that the planning nodes used to assess needs and shortages around the State provide a coarse overview of water supply. The nodes are few and far between so that, from a problem-solving perspective, the information provided is on too large a scale to find specific solutions. We do not understand how nodes were selected for study (other than for long-term data), and how (or if) node data was extrapolated to evaluate future water supply gaps in areas upstream of the nodes or on a county basis.

Additionally, because a low flow standard was used to portray a shortfall for water needs, unregulated streams are specifically singled out. This bias is evident in the Coosa/Tallapoosa analysis; there are no gaps in the Coosa because the planning nodes are all downstream of regulated systems that meet low flow requirements. However, meeting minimum flows is not an indication that water is plentiful or, as addressed above, that the aquatic system is being sustained.

We recommend that the plans fully explain what data were used to calculate permitted municipal water withdrawal limits vs. forecasted municipal water demands by county, explain how the node data are/will be used, explain why some gages with long-term data records were not included in the node evaluations, clarify that node data are limited to the locations where such flow data have been compiled, and stipulate that plan calculations do not address stream flows in smaller rivers and streams.

We recommend that each plan be modified to clearly state that the monthly 7Q10 was used merely for planning purposes, and that minimum-allowable flows in most of Georgia's rivers and streams will be determined on a case-by-case basis, with assistance from Federal and State agencies and other interested stakeholders, to ensure protection of aquatic resources and stream habitats. Basin plans should be revised to incorporate an estimate of actual demands and shortfalls based on a local scale and flow levels that sustain water quality, quantity, instream and floodplain habitat, and the broad array of goods and services that Georgia's water bodies provide.

2. The regional water plans fail to ensure that management practices are incorporated in water planning that will protect species listed under the Endangered Species Act, or those addressed in the Georgia State Wildlife Action Plan or State Wildlife Protection Act. Imperiled species are barometers of the health of the systems within which they live. Sustaining the natural assemblage of aquatic species will ensure that the water quality in which they live is also sustained. Federally-listed aquatic species under the Service's purview are listed by basin below. There are other listed species that might be affected by regional water plans to the extent that upland habitats are impacted. You can find a current list of threatened and endangered species on our office web site at http://athens.fws.gov and specific information about listed species in a given geographic areas of the State at http://ecos.fws.gov/ipac.

Altamaha:	Altamaha spinymussel (*Elliptio spinosa*)	Proposed Endangered
	West Indian manatee *(Trichechus manatus)*	Endangered
Chattahoochee:	Fat three-ridge mussel *(Amblema neislerii)*	Endangered
	Purple bankclimber *(Elliptoideus sloatianus)*	Threatened
	Chipola slabshell *(Elliptio chipolaensis)*	Threatened
	Shinyrayed pocketbook *(Hamiota subangulata)*	Endangered
	Gulf moccasinshell *(Medionidus penicillatus)*	Endangered
	Oval pigtoe *(Pleurobema pyriforme)*	Endangered
	Gulf sturgeon *(Acipenser oxyrinchus desotoi)*	Threatened
Conasauga:	Blue shiner (*Cyprinella caerulea*)	Threatened
	Amber darter (*Percina antesella*)	Endangered
	Conasauga logperch (*Percina jenkinsi*)	Endangered
	Fine-lined pocketbook (*Hamiota altilis*)	Threatened
	Alabama moccasinshell (*Medionidus acutissimus*)	Threatened
	Coosa moccasinshell (*Medionidus parvulus*)	Endangered
	Georgia pigtoe (*Pleurobema hanleyianum*)	Endangered
	Southern clubshell (*Pleurobema decisum*)	Endangered
	Southern pigtoe (*Pleurobema georgianum*)	Endangered
	Rayed kidneyshell (*Ptychobranchus formanianus/greeni*)	Endangered
Coosawattee:	Goldline darter (*Percina aurolineata*)	Threatened
	Southern clubshell (*Pleurobema decisum*)	Endangered
	Rayed kidneyshell (*Ptychobranchus formanianus/greeni*)	Endangered
Etowah:	Etowah darter (*Etheostoma etowahae*)	Endangered
	Cherokee darter (*Etheostoma scotti*)	Threatened
	Amber darter (*Percina antesella*)	Endangered
	Fine-lined pocketbook (*Hamiota altilis*)	Threatened
Flint:	Oval pigtoe *(Pleurobema pyriforme)*	Endangered
	Shinyrayed pocketbook *(Hamiota subangulata)*	Endangered
	Gulf moccasinshell *(Medionidus penicillatus)*	Endangered
	Fat threeridge *(Amblema neislerii)*	Endangered
	Purple bankclimber *(Elliptoideus sloatianus)*	Threatened
Ochlockonee:	Ochlockonee moccasinshell *(Medionidus simpsonianus)*	Endangered

	Purple bankclimber (*Elliptoideus sloatianus)*	Threatened
	Shinyrayed pocketbook *(Hamiota subangulata)*	Endangered
	Oval pigtoe *(Pleurobema pyriforme)*	Endangered
Ogeechee:	West Indian manatee *(Trichechus manatus)*	Endangered
Oostanaula:	Southern clubshell (*Pleurobema decisum*)	Endangered
Savannah:	Robust redhorse *(Moxostoma robustom)*	Candidate
Tallapoosa:	Fine-lined pocketbook (*Hamiota altilis*)	Threatened

The Endangered Species Act prohibits "take" of a listed species of fish or wildlife, where take is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a listed species and/or to degrade habitat such that the action kills or injures a listed species by significantly impairing essential behavioral patterns, such as breeding, feeding or sheltering." The Service identified critical habitat for listed mussels in the ACF and ACT basins, and for listed fish in the Conasauga basin. Critical habitat is a legally-designated geographic area crucial to continued species survival and recovery. Under the Act, it is unlawful for a Federal agency, such as the Corps of Engineers, to authorize, fund, or carry out an action that will result in the destruction or adverse modification of critical habitat.

Another useful resource for water planning is the Georgia State Wildlife Action Plan (SWAP), a comprehensive wildlife conservation strategy and one that has undergone extensive public review. It can be viewed in its entirety at http://www.georgiawildlife.com/node1703.
We recommend that the Council incorporate appropriate Conservation Actions from the SWAP in this Plan. For instance, on page 174, the SWAP states that "Establishment and maintenance of vegetated riparian buffers is one of the most important and cost-effective conservation measures for protection of water quality and aquatic ecosystem health". It identifies concrete strategies to implement this recommendation. The SWAP also outlines recommendations to protect wetlands and headwater streams, which are significant not only to protect wildlife and aquatic resources but also to protect downstream water quantity and quality. These actions would complement actions already identified in some of the plans.

We recommend that the councils meet with scientists such as those within the Service, Georgia Department of Natural Resource – Nongame, University of Georgia, and US Geological Survey who work in these basins to develop water management practices that will protect natural resources.

3. The regional water plans do not include conservation savings in calculations of future water demands (with the exception of two plumbing code changes which mandate new water saving lavatory fixtures). Georgia's State-wide Water Management Plan recognizes water conservation as a priority water quantity management practice that can help manage the consumptive use of Georgia's rivers, streams and aquifers. Compared to other types of tools for managing water resources, conservation is cost-effective and can preserve water for recreation and environmental needs. Though the regional water plans generally encourage

water conservation, they do not require it; especially, where the greatest shortfalls occur, such as agriculture irrigation.

The 2010 Surface Water Availability Assessment focuses on water supply and storage in the large Federal and Georgia Power reservoirs in the State, but we are unable to determine how municipal reservoir storage was incorporated into evaluations of gaps in supply. To our knowledge, local governments and water authorities have constructed13 new reservoirs, mostly in north Georgia, over the past 20 years to supply local jurisdictions in rapidly-growing parts of the state with drinking water. Seven proposed reservoirs currently are in the Federal permitting process but the regional water plans do not appear to consider these sources in evaluating gaps in supply. For example, the Surface Water Availability Assessment specifically states that "Three dams are located within the Georgia portion of the Coosa River basin, while a fourth, Weiss Dam in Alabama, has an impoundment that extends into Georgia." The three dams within Georgia are Allatoona Dam on the Etowah, and Carters Dam and Carters Rereg on the Coosawattee. No mention is made about Cherokee County's Hollis Latham Reservoir or Canton-Cobb County-Marietta's Hickory Log Creek Reservoir, or the future storage capacity in Dawson and Paulding Counties proposed reservoirs (Russell and Richland), which are awaiting Corps of Engineers authorization.

We recommend that the plans clearly identify the reservoirs considered in the water supply/gap analysis and how storage in these facilities was considered in these analyses. Additionally, we recommend the regional water plans include a calculation of water savings from conservation measure implementation and use these data, rather than pre-water conservation estimates, to identify gaps in water availability and the timing/frequency of such gaps.

4. The regional water plans do not evaluate the effects of large-scale interbasin transfer on water resources in the donor basin. Currently, we are aware of three large-scale interbasin transfer projects that have been suggested to meet the metro-Atlanta area's water supply needs -- the proposed Glades Reservoir (Hall County), Shoal Creek Reservoir (Dawson County), and Calhoun Creek Reservoir (Lumpkin County). Interbasin transfer can significantly reduce water supply in downstream reaches of the donor basin.

   We recommend that the Upper Coosa and other regional water plans considering large-scale interbasin transfers fully evaluate the impact that withdrawal of millions of gallons of waters would have on downstream users and ecosystems.

5. The regional water plans focus on water supply and conservation, but do not emphasize minimizing impacts of upstream activities that increase sediment-loads in the river and reduce water storage capacity in existing and future reservoirs.

   All rivers move sediment, but when a river is dammed, the sediments it carries are trapped in the reservoir. As these sediments accumulate, the dam gradually loses capacity to store water. Every reservoir loses storage to sedimentation, although the rate at which this happens varies widely. Large reservoirs in the US lose storage capacity at an average rate of around 2% per

year, with regional variations ranging from 5% per year in the Pacific states to 1% in the Northeast. Sediment-filled rivers also abrade turbines and other dam components. The efficiency of a dam's turbine is largely dependent upon the hydraulic properties of its blades --erosion and cracking of turbine blade tips by water–borne sand and silt considerably reduces generating efficiency and can require expensive repairs.

We recommend that regional water plans incorporate management practices to reduce the amount of sediment transported into drinking water reservoirs. Such measures would include stronger sediment and erosion requirements and enforcement for construction sites, grading restrictions on steep slopes and large developments, more extensive riparian buffer protection requirements for residential, agriculture, and forestry activities, and post-construction stormwater management to reduce channel scour and streambank erosion.

6. The language for many of the goals and management practices needs to be stronger and more proactive. Many actions are deferred to other agencies. While it is understandable that local communities must have funding and support from State and Federal entities, the councils represent those persons and organizations that strongly influence local trends and behavior; the members would not be on the councils if they were not people of influence. State law requires minimal conservation but local people can recognize the imperative nature of conservation and voluntarily take action on stricter measures to ensure the systems they depend on are, in fact, sustained for the good of current and future generations.

   We recommend that goals and management practices in each category be mandated to the greatest extent possible and be prioritized, so that communities can focus their resources and efforts on the highest priority actions first.

7. Georgia's water doctrine is one of reasonable use meaning that water users must not use water to the extent downstream users cannot also make reasonable use of the water. The focus of the water plans on minimum low flows does not give full consideration to downstream users. Downstream users not only include municipal water treatment facilities, but also include estuary commercial fishermen, recreational fishermen and recreational boaters, all of which require instream flow volumes above 7Q10 to sustain their activities.

   We recommend the basin plans include evaluation of the effects of upstream activities on downstream water users.

8. The basin plans contemplate a wealth of monitoring and research studies, and we applaud the councils for recognizing that monitoring and other adaptive measures are essential. Communities and regulators need to know how much water is being used, where specific shortfalls are occurring, how well conservation is working, and many other pieces of information. However, the desire for additional information should not delay immediate concrete actions to reduce water use.

We recommend the basin plans prioritize those management practices that will achieve water conservation as soon as possible.

9. Drought contingency plans should be developed that go into effect during low flow years and seasons. For example, during droughts most wastewater treatment plants are hydraulically under-loaded which gives them some operating latitude. A community could increase its level of treatment (e.g., added aeration, longer retention, higher recycling rates) when the plant is under-loaded. Such efforts would minimize degradation of local water quality during low flow times. Additionally, a drought contingency plan could invoke deeper water conservation measures so that stream reaches are not dewatered or are dewatered to a lesser degree during drought times.

We recommend the basin plans include drought contingency planning and water demands be adjusted based on occasional drought conditions.

10. All the basin plans include a management practice that would evaluate development or enhancement of reservoirs to augment water supply. Reservoir construction, including construction of farm ponds, is not a simple solution for water supply shortfalls. The cost of a new reservoir is considerable. Land must be purchased, sometimes from unwilling sellers. Houses, vegetation and other obstacles must be removed. Powerlines and other essential facilities must be relocated. Federal law also requires reservoir builders to compensate for the loss of wetlands and free-flowing streams by protecting similar wetlands and streams, in the same watershed if possible. Reservoirs also reduce the amount of water available to downstream communities. On a hot summer day, millions of gallons of water evaporate off Lake Lanier. In addition, dams significantly impact aquatic communities and can negatively impact downstream property. They isolate populations of fish and other aquatic species, cutting them off from their historic ranges. Dams alter the natural river flows, often causing severe streambank erosion for downstream homeowners and degrading water quality.

    When a new drinking water reservoir is proposed, the U.S. Army Corps of Engineers consults with the Service on expected impacts to wetlands, aquatic species, federally-protected species and other fish and wildlife that depend on free-flowing streams. Before new reservoirs are seriously considered, we recommend (1) water conservation options be maximized (e.g., repairing leaks in water supply lines, implementing conservation pricing, recycling gray water, developing rebate programs for installing low flush toilets and water-saving faucets, educating consumers about water conservation in the home); (2) maintaining or increasing storage capacity in existing reservoirs by enforcing/enhancing laws to minimize sediment entering reservoirs from upland sites, dredging and removing sediment that has built up in reservoirs over time, and/or raising dam heights or authorized reservoir water levels to impound more water, and (3) utilizing water in existing amenity and flood management lakes, deep quarries, and other impoundments.

We recommend the basin plans incorporate the realities of new reservoir construction and base needs on local information rather than the coarse overview of water supply shortfalls utilized for the draft plans. If further review indicates only extra storage will

meet needs, we recommend, in priority order, evaluation of (1) existing farm ponds, amenity lakes, quarries or other impoundments as a water resource for smaller, infrequent shortages; (2) expansion of existing impoundments; and, as a last resort, (3) construction of new reservoirs.

11. A key water conservation practice recognized by a number of the basin plans is an education program. This practice is essential to the success of water conservation. Many good programs already exist, including the Georgia Environmental Protection Division's Project Wet and Adopt-a-Stream programs. These programs include measures to reduce use but also information regarding the value of rivers and streams and how human behaviors and practices affect them.

    We recommend the basin plans require implementation of education programs to inform the public of the need for water conservation in their communities and how they can be a part of that conservation.

12. Many of the basin plans include goals of providing for balanced growth while protecting natural environments but for some there is an apparent lack of understanding regarding the connectivity among groundwater, surface water and water quality. The assessment reports provided to the councils did not promote a balanced approach to managing available water resources, since groundwater, surface water and water quality were treated in separate reports and as if the three components are independent of each other. One cannot manage one of these components without affecting the other because they are physically connected. The lower Flint basin is a clear example of how tightly bound ground and surface water sources can be.

    We recommend all the basin plans be modified to incorporate an awareness of the interrelationship of surface water, ground water and water quality.

SPECIFIC CONCERNS

For those basins most affected by ACF water management, there is an ongoing misunderstanding regarding the minimum flows released by the Corps of Engineers at Woodruff Dam. The 5000 cfs minimum flow is not scientifically-based; it was determined by the Corps as a parameter associated with management of the reservoir system dating back to the 1950's. When the Corps advised the Service how they would operate the reservoir system, we produced for the Corps, under the Endangered Species Act, a biological opinion regarding the affects of a 5000 cfs minimum flow on the listed fat threeridge, purple bankclimber, Chipola slabshell and Gulf sturgeon. The minimum 5000 cfs flow is not the amount of water that these aquatic species need but rather the minimum amount of water that these species receive given the current reservoir operations. The amount, however, is not likely to jeopardize these species continued survival; in other words, they will not be pushed to extinction faster due to the operations.

Over-allocation of the ground water aquifer in the lower Flint and other areas needs immediate attention. Implementing 80% efficiency for irrigation systems is admirable but low flow years

between now and 2020 will continue to injure listed mussels and potentially jeopardize their continued survival in the basin. We are pleased to see the intent to develop a habitat conservation plan (HCP) or similar tool to minimize the negative effects of agricultural irrigation on listed freshwater mussels of the lower Flint. In addition to reach-specific tools such as a HCP, the Flint River Drought Protection Act should be modified to allow even closer focus on problem areas within the basin. Although capacity use areas have been identified, the Act should allow Georgia EPD to provide funds for not irrigating in those areas where agricultural irrigation is dewatering streams with remaining listed mussel populations.

We commend the basin councils on their attention to the critical issue of water use. However, the initial draft plans need significant revision to guide water management decisions of the local communities and the Georgia EPD. We appreciate the opportunity to provide input on the regional water plans and look forward to involvement in the plans as they are revised. Please refer any questions or comments to me at telephone 706-613-9493 ext. 230 or email me at sandy_tucker@fws.gov.

Sincerely,

Sandra S. Tucker

Sandra S. Tucker
Field Supervisor

cc: file
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April 2, 2010

Colonel Byron Jorns
US Army Corps of Engineers, Mobile District
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Dear Colonel Jorns:

We are providing your agency with a Planning Aid Letter (PAL) for the proposed Water Control Manual (WCM) Updates for the Apalachicola-Chattahoochee-Flint (ACF) River Basin in Georgia, Alabama, and Florida. The purpose of the updates is to identify operating criteria and guidelines for managing water storage and release of water from Corps reservoirs. In the National Environmental Policy Act (NEPA) review, the Corps will address current operations, proposed changes in water management operations at the reservoir projects within the limits of the existing authorities, as well as potential impacts throughout the basin that would result from implementation of the updated manual.

The purpose of the PAL is to identify resource values and issues, identify endangered species issues, and propose preliminary changes, mitigation, or enhancement opportunities to facilitate your decision-making as it relates to equal consideration of fish and wildlife resources. We submit the following comments and recommendations under the ESA, the Migratory Bird Treaty Act (MBTA)(49 Stat. 755, as amended; 16 U.S.C. § 702 *et seq.*), and the FWCA (48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq.*). These comments are based on previous studies and government documents as well as new datasets and information provided by State and Federal agencies. Although all of the comments from the Florida Fish and Wildlife Conservation Commission (FFWCC) have not been integrated, this final version of the PAL addresses many of the issues that FFWCC raised. We will continue to provide additional expertise and information in the form of another PAL and/or the draft Fish and Wildlife Coordination Act report. A separate consultation will occur regarding the potential impacts of the Corp's proposal on federally-listed threatened and endangered fish and wildlife species protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 *et seq.*).

1. Development of Corps Alternatives and Mitigation

We have identified data needs and assessment methods that can help you in developing alternatives that maximize fish and wildlife benefits, and avoid, minimize and compensate for impacts to fish and wildlife resources, where appropriate.

1.1 Flow Regime

The WCM update should include a thorough evaluation of project-related flow regime alterations and the potential to restore flow regime components that have ecological and geomorphic significance. We recommend the Corps develop alternatives that would maximize benefits to fish and wildlife resources in light of other project purposes. To support this effort, we have provided preliminary ecosystem flow guidelines for four river sections; below Buford, West Point, Walter F. George, and Jim Woodruff dams. These flow regime guidelines are guided by the principle that ecosystems evolved as a response to the natural flow regime. Thus, we analyzed river flows and developed flow guidelines based on United States Geological Survey (USGS) flow data that were collected prior to Buford Dam construction in the mid 1950's, a benchmark of the first major river regulation source in the upper Chattahoochee River. Reliance on pre-regulation datasets to derive ecosystem flows is particularly useful for locations where empirically derived ecology-flow relationships are scant (such as the upper Chattahoochee River).

We recognize that complete implementation of all guidelines presented herein is not feasible given the expansive flow alteration and consumptive demands in the ACF River Basin that have occurred since Buford Dam construction. However, restoration of some natural flow regime components presented in these guidelines can restore structural and functional ecosystem elements that were lost or reduced as a consequence of flow regulation. For example, provision of stable flow windows (*sensu* Freeman et al. 2001) in the spring may increase riverine fish recruitment, even though restoration of other naturally occurring flow regime components may not be attainable. Relatively small discharge changes can have substantial ecological effects. For example, the Tennessee Valley Authority's (TVA's) strategy to increase baseflows below Normandy Dam (Figure 1) during the spring and summer mussel recruitment months resulted in biologically and statistically significant increases in mussel diversity and density (Figure 2, Ahlstedt and Johnson 2004).

Development of environmental flow alternatives would include an evaluation of the operational feasibility, constraints, and tradeoffs to providing the different aspects of environmental flow measures that are captured in our guidelines. Explicit magnitude, frequency, duration, timing, and rate of change guidelines are provided to illustrate the types of flow modifications that are likely to benefit the ecosystem and to help inform the development of Corps flow alternatives. However, should the magnitude of a flow guideline be deemed unattainable, we request that the Corps identify a flow magnitude that is attainable or recommend an attainable frequency for the recommended flow magnitude. An explanation for the change also will be helpful. We recognize these guidelines do not define whether the basin is entering a dry, average, or wet month, which are the lines between the lower and upper limits on the flow prescription graphs. We recommend that you work with us to develop appropriate hydrological and meteorological criteria (e.g., basin inflow, precipitation, and reservoir levels) needed to classify the coming month as a dry, average, or wet month.

Successful implementation of ecosystem flows in the Chattahoochee River is challenged by water demand increases, reduced operational flexibility imposed by meeting minimum discharge requirements at downstream locations, and the importance of minimizing high discharge-related

damage to infrastructure. To address these challenges, we considered only the range of flows that were likely to be above minimum flow requirements and less than flows that could cause major infrastructure damage as identified by information provided by the National Weather Service (NWS) Advanced Hydrologic Prediction Service (NWS 2010; Table 1). The ecosystem flow guidelines are preliminary because in instances where water is diverted from the channel, or the channel is anthropogenically altered, natural flows may be insufficient to meet ecological needs.

Successful implementation of ecosystem flows in the Apalachicola River is challenged by the same types of limitations described for the Chattahoochee River. The degree of Apalachicola River channel entrenchment and widening, caused largely by Corps reservoir and dredging operations, varies spatially, but the discharge that is now required to reach bankfull elevation and cause floodplain inundation in the upper portion of the river is generally greater than the discharge that was historically required. However, datasets are available that quantify the amount of floodplain habitat inundated with the current level of entrenchment and over a range of discharges. These datasets, in combination with those that describe flow effects on sturgeon spawning and mussel habitats, will help to inform the development of future ecosystem flow guidelines and the evaluation of alternatives.

Thorough explanations of the physical, chemical, and ecological benefits from base flows, pulses, stable flow windows for spawning, and intra- and interannual flow variation are outside the scope of this letter; however, we refer the reader to Junk et al. 1989, Poff et al. 1997, Richter et al. 1998, Freeman et al. 2001, Postel and Richter 2003, and Mathews and Richter 2007 for fuller descriptions. The importance of baseflows, pulses, and flood flows are described within these resources, and they are quantitatively evaluated using the recently developed Environmental Flow Components (EFCs) in Indicators of Hydrologic Alteration (IHA)(Mathews and Richter 2007). General descriptions of the baseflow, pulse, and high pulse flow guidelines are provided below with general descriptions of the ecological significance of those flow guidelines.

Similar to the Instream Flow Guidelines provided to the ACF Compact's Federal Commissioner (USFWS 1999), the guidelines provided in this letter were developed using IHA, use the pre-dam period of record as a benchmark for comparison of flow alternatives, and rely on percentiles to define the frequency of high and low flow extremes. Using EFCs is recommended because the analysis separates ecologically-relevant hydrograph components (e.g., baseflows from pulses) allowing computation of magnitude, frequency, duration, timing, and rate of change statistics on individual hydrograph components rather than on the entire dataset. Consequently, these hydrograph summary statistics are easily developed, interpreted, and communicated, and have been used successfully to inform flow management downstream from hydropower dams.

1.1.1 Baseflow and small pulses

Baseflows determine the amount of habitat that is available for forage, reproduction, and rearing, which has a substantial influence on the abundance, diversity, and distribution of aquatic fauna. We have provided explicit base flow recommendations for every month in dry, average, and wet water years. Small pulses that do not exceed bankfull elevation provide influxes of upstream

trophic subsidies, and reprieves from low dissolved oxygen and high temperature that sometimes occur during summer months. Small pulses are included in the guidelines with explicit magnitude, frequency, duration, timing, and rate of change recommendations (Figures 3-6).

The flow guidelines were based on average daily flows (Figures 3-6). Average daily flows obscure the diel streamflow variation imposed by hydropower generation. Consequently, hydropower generation at Buford, West Point, Walter F. George, and to a lesser extent, Woodruff Dam, may change discharge two orders of magnitude, and change river stage significantly within a few hours. As a result, habitat availability is limited to periods that are too brief for the completion of essential life history requirements. To mitigate this impact, the provision of non-hydropower peaking "windows" should be evaluated during critical reproductive and rearing periods in order to reestablish native plant, fish, and invertebrate abundance and diversity in river reaches downstream from Corps-operated projects. Generally, this period corresponds to March – May when water temperatures increase. The timing, duration, and magnitude of this window should vary interannually in order to optimize the reproductive requirements of each species every few years. However, the duration of the non-peaking window requires additional research, but we expect that a minimum of 4-6 weeks between March and May are required.

The dry, average, and wet year baseflow guidelines are based on a retrospective analysis of the pre-dam hydrograph (Figures 3-6). It will be necessary to use appropriate hydrological and meteorological criteria to classify the coming month into dry, average, or wet categories. However, average daily baseflows should remain near the dry, average, and wet year flow guidelines depending on the category, and should not fall below the lower limit on any day of any year.

1.1.2 High flow pulses

High flow pulses that exceed bankfull elevation provide important ecological services. A large proportion of sport and non-game fishes rely on floodplain habitats to spawn, rear young, and forage. High flow pulses are also major forces that control nutrient and organic matter dynamics in large rivers, create new habitats, and ultimately affect riverine animal biomass (Junk et al. 1989). However, the spring reservoir refill period extends into the principal spawning season for a high proportion of fishes, meaning that spring flows and floodplain inundation are reduced. Thus, ensuring seasonal high flows and river-floodplain connectivity with the timing, frequency, duration, magnitude, and rate of change necessary to sustain ecological functions and wildlife populations are essential flow management objectives for dams on large rivers.

To provide flows that inundate the floodplain, the potential for reducing the magnitude of the autumn drawdown, changing the order of refill, and/or beginning the spring refill earlier in order to provide fish access to and inundation of the floodplain should be evaluated. Similarly, the Savannah District Corps has operated the Savannah River reservoir system in recent years with reduced winter drawdown to provide spring pulses that meet multiple downriver ecosystem objectives. This evaluation should separately consider flow conditions in wet, average, and dry climatic years. Additionally, it should be noted that relatively small changes in river stage can significantly increase the amount of river-floodplain connectivity. Consequently, minor changes

in dam operation could have large and positive effects on the river-floodplain ecosystem.

Recognizing that there are limits on operational flexibility due to the presence of infrastructure in some floodplains, methods should be evaluated to provide the operational flexibility necessary for floodplain inundation, which falls under the Corps' coequal project purpose of "Fish and Wildlife Resources." Such methods could include 1) protecting structures (e.g. moving to locations of higher elevations or elevating structures using stilts as is done in coastal communities) that may be impacted by 2, 10, 50, and 100-year recurrence interval pre-dam flows during periods of floodplain inundation; and/or 2) the purchase of structures built in the historic floodplain so that the Corps can intentionally provide flows that inundate the floodplain. These analyses should be simple to conduct, and would include acquisition of floodplain maps and identification of anthropogenic structures within the 2, 10, 50, and 100-year floodplains.

1.2 Floodplain inundation assessments

The relationships among the areal extent of Apalachicola River floodplain inundation, channel entrenchment effects, and water releases from Jim Woodruff Lock and Dam were previously assessed and related to discharge using the datasets and summaries provided by Light et al. 1998 and Light et al. 2006. These datasets have informed biologists and the Corps of the effects of flow releases on river-floodplain resources. Due to the difficulty of surveying all floodplain streams, lakes, and forests, Light et al. 1998 used intensive surveys at a subset of sites, general surveys at approximately 300 sites, and Geographic Information Systems (GIS) to assess the effects of hydrogeomorphic alteration on floodplain inundation areal extent. Light et al. 2006 compared pre-dam stage (prior to 1954) and recent stage (1995–2004) at five streamflow gaging stations in relation to discharge at the Chattahoochee gage (USGS gage number 02358000, Apalachicola River at Chattahoochee, FL). These stage-discharge relationships can also be used to calculate area (acres) of aquatic habitat connected to the main channel of the non-tidal Apalachicola River at different discharges for the pre-Lanier (1929-1955) and post-West Point (1975-2007) periods.

More recently, floodplain elevation maps have been generated using Light Detection and Ranging (LIDAR) remote sensing data with <1 ft accuracy and related to Apalachicola River stage-discharge relationships developed by Light et al. 2006 (Ron Bartel, Northwest Florida Water Management District [NWFWMD], 2010, pers. comm.). Stage-based LIDAR data may provide a more thorough and accurate evaluation of river flow effects on river-floodplain connectivity and habitat availability. We recommend that the Corps contact the NWFWMD to confirm that these datasets exist, request permission to access and use these new datasets, or invite collaboration between the Corps and the NWFWMD to evaluate effects of flow alternatives on floodplain resources. Operations in the environmental flow alternatives should be developed that will use reservoir storage at certain times to augment flow and increase Apalachicola floodplain inundation.

1.3 Water Quality

The effects of reservoir operations on water quality should be closely examined in the WCM update, including ongoing and potential future effects to dissolved oxygen (DO), temperature, nutrient and organic material dynamics, and capacity to assimilate industrial and municipal

discharges. We request that the Mobile District use the WCM update to make necessary modifications that will improve water quality downstream of Corps projects, as is being done by TVA and other Corps districts.

1.3.1 Dissolved Oxygen

The Service is most concerned about low DO in project tailwaters. We recommend that the Corps make a concerted effort to ensure that releases from all five ACF dams meet or exceed DO and other applicable water quality standards. An appropriate effort would include first monitoring DO upstream and downstream of Corps reservoirs, experimenting with operational and/or structural modifications to Corps projects to improve DO levels, and conducting post-modification DO monitoring to ensure that DO levels have been improved to State water quality standards. Examples of low DO releases from Buford, West Point, and Walter F. George dams are detailed below.

We urge the Corps to 1) monitor DO upstream and downstream of Lanier Reservoir, West Point Reservoir, Walter F. George Reservoir, and Jim Woodruff Reservoir and 2) experiment with operational and/or structural modifications to improve DO levels, and conduct post-modification DO monitoring to ensure that DO levels increase to state water quality standards. Simple weighted averages that formulate the amount of sluicing necessary to achieve the required downstream dissolved oxygen requirements may be particularly useful. The DO that results from the mixing of two water bodies (DO_{mx}) is a function of the dissolved oxygen (DO_1 and DO_2) and volumes (Q_1 and Q_2) of the two water bodies and is calculated using the following equation:

$$DO_{mx} = \frac{Q_1 * DO_1 + Q_2 * DO_2}{Q_1 + Q_2}$$

1.3.1.1. Buford Dam tailwaters

Low DO levels were recorded by the Georgia Department of Natural Resources-Wildlife Resources Division (GDNR-WRD) just below Buford Dam during 1996-2006. These DO levels affect angler success, GDNR-WRD's stocking rates, and the native aquatic community. Periodic measurements taken during this period resulted in monthly minimum instantaneous ≤ 1.0 mg/L in September through December. Monthly average values were < 5.0 mg/L from August through November (Figure 7; Chris Martin, GDNR-WRD, 2010, pers. comm.). Low DO levels persisted downriver, depending on operational and climatic factors. For example, based on GDNR-WRD measurements on November 5, 2005, DO increased to 5.0 mg/L three miles downriver, and increased to 6.0 mg/L 5.2 miles downriver when releases from Buford Dam were < 2.0 mg/L (Chris Martin, GDNR-WRD, 2010, pers. comm.).

The Corps upgraded the venting capabilities of the Buford Dam turbines over the past few years. However, the upgrades resulted in < 1.0 mg/L increase over previous conditions (Chris Martin, GDNR-WRD, 2010, pers. comm.). The Corps should thoroughly evaluate the effectiveness of these upgrades.

Useful tools to improve DO levels to State standards in Georgia trout waters (6.0 mg/L daily average, 5.0 mg/L instantaneous) include sluicing instead of running discharge through the

penstocks and units, or to use a combination of the two routing methods. For example, on September 15, 2000, GDNR-WRD recorded a DO level of 1.5 mg/L at Buford Dam during a minimum flow release through the house unit. In contrast, DO levels measured on the same date during sluicing indicate that DO remained above 6.0 mg/L (Chris Martin, GDNR-WRD, 2010, pers. comm.). Thus, the Corps has demonstrated that sluicing below Buford Dam is an effective tool to mitigate low DO effects associated with hypolimnetic releases.

1.3.1.2. West Point Dam tailwaters

Dissolved oxygen data collected by the Corps downstream from West Point Dam from 1999 through 2001 indicate that DO levels met or exceeded the Georgia instantaneous standard (4 mg/L) 35% of the monitoring period in 1999, (monitoring from 6/15-9/14), 30% of the monitoring period in 2000 (monitoring from 7/25-9/30), and 4% of the monitoring period in 2001 (monitoring from 6/8-10/5; Georgia Power Company 2002). GDNR-WRD has investigated multiple fish kills below West Point Dam and has concluded that these fish kills are attributable to low dissolved oxygen levels (GDNR-WRD letter to the Corps, November 20, 2008).

1.3.1.3 Walter F. George Dam tailwaters

Low DO levels were associated with minor fish and mussel kills downstream of Walter F. George Dam (Rob Weller, GDNR-WRD, 2008, pers. comm.).

1.3.2 Temperature

The water temperatures of hypolimnetic releases below large dams are lower than would naturally occur during spring and summer months. Low water temperatures negatively affect warmwater fishes that require warmer water temperatures necessary for spawning and growth of young-of-year fishes. Thermal alteration can be ameliorated by structural modification of penstock location in the water column. Another option to moderate thermal alteration is to release (via sluicing) warmer water from a higher elevation in the reservoir's water column. Once this water mixes with the cold hypolimnetic release, water temperatures more closely approximate natural water temperatures. A recent example of sluicing effects in the Mobile District comes from measurements taken during summer 2009 below Allatoona Dam. Sluicing in June caused water temperatures to increase approximately10°C (Figure 8). Temperature increases were observed many miles downriver (USFWS 2009 unpublished data).

Similar to DO recommendations, we urge the Corps to monitor water temperature upstream and downstream of the five ACF Corps impoundments, and 1) experiment with operational and/or structural modifications to improve temperature levels, as needed, and 2) conduct post-modification monitoring to ensure that temperatures have been improved. Simple weighted averages that formulate the amount of sluicing necessary to achieve the required downstream temperature requirements may be useful. The seasonal timing of such releases exhibiting modified temperatures is of great importance. For example, the current summer thermal regime on the Etowah River, created by operations at Allatoona Dam, provides cool thermal refuge for striped bass in the upper Coosa River system. A thermal modification during the summer months below Allatoona Dam could be detrimental to fishes such as striped bass and lake sturgeon (Matt Thomas, GDNR-WRD, 2010, pers. comm.). Because the Service and GDNR-

WRD have responsibilities to protect native aquatic communities as well as recreational fisheries, we recommend the Corps explore methods for temperature modifications below their facilities, but coordinate closely with State and Federal agencies to determine the appropriate timing of such alterations.

In addition, it should be noted that the current thermal regime of Lanier Reservoir's tailwater is critical to the Chattahoochee River trout fishery and trout production at GDNR-WRD's Buford Hatchery. The tailwater trout fishery in the Chattahoochee, one of Georgia's premier fisheries, is dependent upon cold, well-oxygenated water releases for the survival of trout. The Buford Trout Hatchery produces 400,000 catchable trout annually and is dependent on Lanier Reservoir coldwater storage to maintain this production. Potential impacts to Chattahoochee River trout waters should be considered when making WCM decisions (Matt Thomas, GDNR-WRD, 2010, pers. comm.). The coldwater trout fishery below Buford Dam is of great importance to GDNR-WRD, and is also a responsibility for the Service as an important recreational fishery. Discussions between GDNR-WRD and the Corps should occur to determine if modifications are possible that avoid trout fishery impacts but also provide benefits to native warmwater fisheries below Buford Dam.

1.4 Fish Passage

Corps ACF dams impede the migration of diadromous and potadromous fishes including striped bass, Alabama shad, American eel, and Gulf sturgeon. Jim Woodruff Dam's impact on diadromous fish passage is large compared to dams on other southeastern rivers because it is located in the lower part of a large river basin. Consequently, there is significant interest in improving fish passage at this facility, as well as the two next upstream Corps facilities, George W. Andrews Lock and Dam and Walter F. George Lock and Dam. We appreciate the Corps' willingness and cooperation to modify operations thus far at Jim Woodruff to maximize fish passage for Alabama shad. Support and facilitation of fish passage research at Woodruff Dam, as well as other ACF Federal dams (notably George W. Andrews Lock and Dam and Walter F. George Lock and Dam) should continue with a goal of identifying and implementing operations and/or modifications that would allow riverine species to travel their historic migratory pathways. Provisions for fish passage should be incorporated in the WCM for Jim Woodruff Lock and Dam, George W. Andrews Lock and Dam, and Walter F. George Lock and Dam, while maintaining the need for operational flexibility.

1.5 Climate Change

The effects of climate change to ACF flow regimes and how to best adapt reservoir operations to the most likely foreseeable changes should be evaluated. It is our understanding that the Corps will be considering sea level rise when developing alternatives (Corps 2009). However, climate change will also affect river flows and the effects of a given set of operating rules will vary depending on whether the basin's climate becomes drier, wetter, more variable, or less variable. In particular, it is vitally important to adapt the level set as the top of conservation (TOC) pool to the long-term hydrology of the basin and the essential purposes the projects serve. In a scenario with greater variability between annual high flows and low flows, for example, it may not be feasible for these projects to simultaneously serve their existing levels of flood control protection and minimum flow support without adapting TOC pool levels to prevailing weather conditions.

The Corps already practices this concept with the multiple action zones and the occasional variances from the rule curves to store water above the TOC pool elevation during dry periods. Several models are developed that will be useful in this analysis and are briefly described in section *2.2 Evaluation of Alternative Models*. In addition to including multiple future climate scenarios into modeled discharge scenarios and Corps alternatives, flow provisions should be created for dry, average, and wet years in order to account for current climate variability.

1.6 Navigation

Navigation is an authorized project purpose for all five ACF Corps dams and the Corps has used reservoir storage in the past to support navigation. In recent years, however, lacking water quality certification to maintain the channel in Florida, we have seen only occasional flow management for the navigation purpose. Current physical channel dimensions dictate the flows that are necessary for navigability. Without providing flows to meet channel depth authorizations, dredging would be necessary to maintain channel navigability. Dredging has significant adverse effects to fish and wildlife. If flows for navigation are included in the WCM update, we recommend that dredging needs, dredging impacts on fish and wildlife, and a cost-benefit analysis be included in an evaluation of the effects of the channel maintenance activities required for navigation flow support. If flows for navigation are not included in the WCM update, improvement or simplification of the four-zone reservoir operational scheme that governs current operation should be considered.

1.7 Reservoir and Riverine Fisheries Management

The Corps follows a draft Standard Operating Procedure (SOP) for "Lake Regulations and Coordination for Fish Management Purposes." The "fish spawn" SOP goal is to manage for generally stable or rising reservoir levels and for generally stable or gradually declining river levels for about 4 to 6 weeks in the spring months at Corps' reservoirs. These draft SOPs are protective of reservoir fish spawning; however, stable or rising river levels are also beneficial for riverine sport fisheries. We understand it is not feasible to have stable and/or rising water levels in both the reservoirs and river during times of declining basin inflow. To address this issue, recent reservoir and riverine fisheries literature should be reviewed to evaluate whether a 4-6 week stable or rising reservoir window is supported for reservoir fish spawning and/or potentially detrimental to riverine fish spawning. We also recommend development of an alternative that includes modifying the draft SOPs to occasionally emphasize river spawning over reservoir spawning and define those circumstances where this would occur without unreasonably compromising other project purposes. Finally, we recommend that the Corps identify fish and wildlife recreation facilities that need infrastructure improvements to operate at a wider range of flows and/or reservoir elevations.

1.8 National Wildlife Refuges

The Service previously recommended to the Corps that a seasonal pattern of reservoir levels at W.F. George Reservoir would best accommodate the needs of Eufaula National Wildlife Refuge. Water levels that provide seasonal habitat for a large number of migratory bird species, control the spread of undesirable aquatic vegetation, and allow the manipulation of off-reservoir impoundments for waterfowl are principal concerns of the Refuge. These recommendations, which we included in the draft FWCA report for the Corps' 1998 Draft EIS on ACF water

allocation, were to manage the reservoir so that it behaves more like a river. Reservoir elevations that cycle between the highest levels (190 ft) in the late winter and early spring to the lowest levels (185 ft) in the late summer were recommended. These recommendations remain valid. How the benefits and impacts of such a scheme compare with the existing operating regime and other alternatives should be considered.

1.9 Apalachicola Bay

The predicted levels of freshwater inflow into Apalachicola Bay resulting from Corps alternatives will be of importance to the Service because they may affect salinity levels. Freshwater inflow reductions cause salinity increases and indirectly increase oyster mortality through increased colonization of marine oyster bed predators (Corps 1998). Additionally, juvenile Gulf sturgeons have optimal growth rates at relatively low salinity (9-10 ppt), and periods of extended higher salinities would likely limit feeding habitat availability.

As part of the Comprehensive Study for the Corps' DEIS (1998), the National Ocean Service (NOS) examined the freshwater inflow effects on the water circulation and salinity changes in Apalachicola Bay. Oysters were selected as a biological response variable because of their commercial fishery importance, habitat requirements, and expected response to salinity fluctuations (Corps 1998). A three-dimensional hydrodynamic model produced output that was used in an integrated biological model to assess the effects of potential freshwater inflow changes to Apalachicola Bay salinities and oysters. Predicted oyster mortality and oyster bed growth rates were compared for the various Corps' alternatives.

More recently, Livingston et al. (2000) developed a spatially-explicit hydrodynamic circulation model of the bay that predicts salinity, among other variables, as a function of freshwater inflow. This model has been used to model oyster mortality and growth in relation to freshwater inputs. The Service has used the results of this model to make inferences on the availability of low-salinity bay habitat for Gulf sturgeon. In addition, an alternative Apalachicola Bay salinity model was recently developed by Peter Sheng at the University of Florida (Sheng and Kim 2009). By using the Corps' daily average discharge output from the ResSim model for the Sumatra gage for the various alternatives, the model can compare the spatial extent and temporal duration of low- and high-salinity conditions among the alternative freshwater inflow scenarios. This information can be used to make inferences on the availability of bay habitat for Gulf sturgeon and to model oyster mortality and growth.

We recommend that the Corps or the Corps' consultants (Tetra Tech) contact the NWFWMD and/or the Florida Department of Environmental Protection (FDEP) to request permission to access and use the Livingston et al. models, or invite a collaboration between the Corps and NWFWMD/FDEP to evaluate effects of flow alternatives on Apalachicola Bay resources. The Sheng and Kim (2009) model should also be incorporated in the WCM update process to predict effects to Gulf sturgeon feeding habitat and potentially oyster mortality and growth. If all models are made available to the Corps and the Service, we recommend that the strengths and limitations of each model be evaluated to determine the model that will best suit the assessment requirements. In addition, coordination should occur with FFWCC's Fish and Wildlife Research

Institute to complete analyses of the relationship of freshwater inflow to the benthic communities of Apalachicola Bay and changes in fish and shellfish abundance.

1.10 Decision Support Model to Evaluate Changes to Corps' Operations

It is important to evaluate the effects of management strategies on the riverine ecosystem, recreation, navigation, hydropower, and other uses of Federal dams. Because of the numerous and sometimes competing demands for water, it is difficult to evaluate the effects of proposed management alternatives and to make the evaluation transparent. However, multiple free decision support tools (e.g., Netica) are available to facilitate the evaluation of alternatives. These tools are versatile in the sense that new information that results from monitoring the effects of management strategies is easily integrated into the analysis and decision process. Consequently, a better and more transparent understanding of how Corps operations affect the ecology and use of the ACF system can lead to improved future management. Therefore, a decision support model should be incorporated into the WCM update process.

1.11 Adaptive Management

An adaptive management program should be developed, consistent with the authorized purposes of the ACF reservoirs, for achieving specific ecological and social goals for the management of the ACF system including specific releases for Woodruff Dam. The program would formulate hypotheses about how such benefits might be achieved through dam operations, implement those operations, monitor ecosystem responses, and revise the operations based upon lessons learned.

2. Recommendations for Corps Hydrologic Modeling

2.1 Increasing Consumptive Demands

The impacts of increasing consumptive (municipal, industrial, and agricultural) water demands in the basin should be recognized and considered. This is a variable that an analysis of operational alternatives should incorporate along with climate-driven hydrologic variability. The relationship between increasing consumptive demands in the ACF Basin and effects on various project purposes should be quantified. For example, how is sustainable minimum flow release from Woodruff Dam affected if consumptive demands increase by 25, 50 or 100 percent by the years 2020, 2050, and 2080? We recognize the order made by Judge Magnuson limits operational alternatives for the express purposes of water supply. However, we also recognize that surface and groundwater withdrawals will continue to be made at various points in the system. The Corps alternative analysis must include metrics regarding water supply withdrawals including potential increases. The volume of storage that is being provided for water supply and has been proposed in each project and any limitations due to hydrologic conditions of meeting the water supply storage volume should be documented, as well as any potential changes in agricultural irrigation due to expanded irrigated acres or changes in crop composition.

2.2 Evaluation of Alternative Models

The Corps' unimpaired flows dataset that was used in the 1998 draft EIS was compared to 1) the unimpaired flows dataset that the Corps expects to use for the WCM update and 2) to the pre-Buford Dam USGS streamflow gage data. Aside from the addition of recent flow records, the most recent Corps-modeled unimpaired dataset is essentially unchanged from the 1998 version.

Compared to the USGS gage data, these datasets do not accurately represent the magnitude, duration, timing, and rate of change of flow extremes (i.e., minimum and maximum flows). Because flow extremes play important roles in reservoir operational decisions and in riverine, estuarine, and floodplain ecology, efforts should be made to develop unimpaired flow and alternative flow datasets that more accurately reflect flow extremes. We recommend that the use of alternative models be investigated to develop better unimpaired flow and alternative flow datasets.

Similarly, land cover has changed significantly since the early 20th century in the upper and middle portions of the ACF basin. Prior to both mainstem damming and discharge gaging, expansive agriculture, chestnut blight, fire suppression, and other factors affected land cover in the southern Appalachians, Piedmont, Fall-line Sandhills, and upper Coastal Plain regions. The hydrological consequences of land cover changes could have been manifested in the flow extremes observed during droughts and heavy rain. Nevertheless, the pre-dam hydrologic period of record is presently the best available hydrologic dataset to characterize pre-dam streamflows, develop ecosystem flow alternatives, and with which to compare flow alternatives. Models that predict hydrological alteration that occurs in response to land cover changes could be particularly useful in the development and assessment of flow alternatives.

The United States Geological Survey (USGS) is developing a Precipitation-Runoff Modeling System (PRMS, http://water.usgs.gov/software/PRMS) for the ACF. This watershed model will facilitate the inclusion of impacts of precipitation, climate, and land use changes on streamflow, sediment yields, and basin hydrology. If the PRMS is developed specifically for the ACF in a timeframe useful for the ACF WCM update process, it should be used as an additional evaluation tool. The PRMS output potentially could be used to 1) check the precision of the Corps' unimpaired flows datasets, and 2) supply an alternative unimpaired flow dataset to use based on informed climate and land use change predictions. Use of this model is based on the assumption that the PRMS model results reflect average flows and flow extremes better than existing datasets and other models. The latter analysis may be particularly useful to determine if reservoirs can maintain downstream flows through droughts.

National Oceanic and Atmospheric Administration (NOAA) funded the Georgia Water Resources Institute (GWRI) to complete a historical and future assessment of precipitation, evapotranspiration, soil moisture, and run-off trends in the ACF Basin to support ongoing water resources planning in the region. This method used both historical gage data and the Corps unimpaired flows dataset in a Joint Variable Spatial Downscaling model that incorporated climate change effects. Future stream flow, river flow, reservoir level, and power generation forecasts were made at the sub-basin level for the next 100 years. Coordination with USGS and GWRI should occur regarding these new models to explicitly address climate-based operational flexibility during the development and evaluation of flow alternatives, the WCM update, and the EIS analyses.

Lastly, the Corps' HEC-5Q water quality analyses rely on average daily flow to predict water quality parameters (e.g., temperature and dissolved oxygen) in six hour time steps and at 0.5 mile intervals. Although these model outputs can be used to compare among flow alternatives, they are not expected to accurately predict either the water quality values or the range of values that

are likely to occur in response to hourly discharge changes. Alternative water quality models exist and State resource agencies should be contacted to determine whether water quality models are developed for the ACF Basin. Additionally, regression models that accurately predict water quality parameters (e.g., water temperature and dissolved oxygen) can be developed using a combination of water quality datasets, hourly discharge, and other environmental parameters (e.g., weather and solar exposure). Alternative water quality assessment methods should be considered to accurately evaluate effects of flow alternatives on water quality.

3. Evaluation of Corps Alternatives for FWCA Report

3.1 ResSim Model Output Analyses

It is our understanding that ResSim will be used for the Corps' flow analyses. The flow statistics used by the Service in the past to analyze the resulting datasets were derived by using the Indicators of Hydrologic Alteration (IHA) and the Range of Variability Approach (RVA). Because flow is a master variable in fluvial systems, and because the ecology of fish and wildlife is closely linked to the flow regimes in which they evolved, the current evaluation should continue to rely on tools such as IHA, RVA, and Environmental Flow Components (EFCs) (Mathews and Richter 2007). Specific flow statistics and species-specific flow-ecology relationships (as available) that are important to natural resource sustainability, as well as the ACF Riverine Community Habitat Assessment and Restoration Concept (RCHARC) study (Freeman et al. 1997), should also be considered.

3.2 HEC-5Q Water Quality Model Output Analyses

It is our understanding that HEC-5Q will be used for the Corps' water quality analyses. We understand that this model predicts water quality parameters in six hour time intervals in river and reservoirs. Similar to the analyses contained in the Corps' 1998 draft EIS (Corps 1998), the analyzed data should be composed of summer values (May through October), separated by drought, dry, average, and wet year types for each alternative. The following information should be developed for each alternative to evaluate the effects on water quality and aquatic resources in the modeled tailrace and riverine locations:

- Total number of days with dissolved oxygen below a daily average of 6 milligrams per liter (mg/L) in locations within Georgia trout waters, and below a daily average of 5 mg/L in non-trout waters;
- Total number of instantaneous "measurements" less than 4 mg/L;
- Monthly exceedance figures and box plots with outliers for dissolved oxygen (mg/L);
- Monthly exceedance figures and box plots with outliers for water temperature; and
- Average stream percent wastewater.

For each alternative, the following information should be developed to evaluate the effects on water quality and aquatic resources for the modeled ACF reservoir locations:

- Average values of summer Chlorophyll a (*u*g/L);
- Average summer retention time (days); and

- Average summer phosphorus loading (pounds/acre/month).

3.3 Floodplain Connectivity Analyses

Assessing the extent of floodplain inundation will be a critical component of the alternatives analysis assessment. The Apalachicola River floodplain analysis should be decided following the Corps' attempt to access the river stage-based LIDAR data collected and housed by the NWFWMD. If the data are made available, the Corps should provide these data to the Service and an analysis of the area of aquatic habitat (separated by aquatic habitat type) connected to the Apalachicola River under the range of discharges for the period of record should be evaluated. If LIDAR data are not provided, the magnitude, duration, timing, frequency, and rate of change of Apalachicola River floodplain inundation should be evaluated using the relationships quantified by Light et al. 1998 and Light et al. 2006.

Although the areal extent of the Chattahoochee River floodplain is one-fifth that of the Apalachicola River floodplain (Davis 1997), it likely served multiple important ecological roles prior to flow alteration by multiple mainstem reservoirs. To our knowledge, the Tri-State Comprehensive Study Riparian Wetland Element (Davis 1997) houses the best available dataset for assessing the effects of flow alternatives on the Chattahoochee River floodplain. These data should be used to evaluate the probable extent of floodplain inundation for each flow alternative. However, data are only available for one riverine site in the Chattahoochee River Basin positioned between Jim Woodruff Lock and Dam and G.W. Andrews Lock and Dam. At unsurveyed locations, known river stages at which floodplain inundations occurs should be used to evaluate the frequency, duration, and timing of floodplain inundation for flow alternatives provided by the Corps (see Table 1 and associated information provided by NWS 2010). At sites without this information, the 2-year recurrence interval discharge to approximate the incipient point of flooding should be used to evaluate the frequency, duration, and timing of floodplain inundation. Because channel alteration (e.g., channel incision) can increase the recurrence interval at which flooding occurs and because we have little information on channel alteration, other data sources should be investigated to aid in the floodplain inundation assessment.

3.4 Reservoir Fisheries Analyses

Sport fisheries are important recreational and economic resources in all of the Federal ACF reservoirs. Important sport fishes in all five reservoirs include largemouth bass and crappie, but each reservoir supports a mix of several additional species, including walleye (Lanier Reservoir only), striped bass, bluegill, redear sunfish, and others. Based on interviews of fisheries managers and researchers in the basin, Ryder et al. (1995) identified the species considered critical in an evaluation of operating alternatives and the relative acceptability of reservoir levels for these species. A Delphi technique was used to obtain expert opinion for select reservoirs on reservoir fish guilds, important seasonal periods for those species, and acceptability ratings for various reservoir levels in the ACF and ACT (Ryder et al. 1995). The Service cooperated with the Corps for the 1998 draft EIS for ACF water allocation to develop a reservoir fisheries performance measure using the findings of Ryder et al. (1996). This information was used to create a reservoir fisheries performance measure by looking at the critical spawning and rearing periods, reservoir elevations during these times, and assigning a greater weight to stable or rising elevations during those time periods. The performance measures were then compared for the various alternatives.

The reservoir fisheries performance measure should be updated with additional information, literature, and/or relevant datasets that have been developed in the past ten years, and used to evaluate the relative impacts of the Corps' alternatives on reservoir sport fisheries. Potential new datasets to be included that have been indentified to date include largemouth bass young-of-year data in West Point Reservoir (Brent Hess, GDNR-WRD, 2010, pers. comm.), as well as black basses and crappie data in relation to reservoir retention times and year-class strength in Walter F. George, West Point, and Bartletts Ferry reservoirs (Mike Maceina, Auburn University, 2010, pers. comm.).

3.5 Riverine Fisheries Analyses

Sport fisheries are also important recreational and economic resources in the riverine portions of the ACF project, especially in the Apalachicola River. Reproduction of many fishes is intricately tied to the floodplain, and alteration of flow regimes can affect reproductive success, year-class strength, growth, condition, and other life-history attributes. Data identified to date will be provided by the FFWCC and the USGS and used to evaluate the relative impacts of the Corps' alternatives on riverine sport fisheries. Specific measures to be evaluated include year-class strength versus acres of inundated floodplain spawning habitat, changes in catch rates of sportfishes in various water years, and changes in relative weight (condition) of sportfishes in various water years.

3.6 Apalachicola Bay Salinity Analyses

If a salinity model is incorporated in the WCM update process, as described in Section 1.8 above, the model output should be incorporated in the FWCA evaluation. A list of data needs should be developed to be produced as a result of these analyses. These data should include the spatial extent and temporal duration of low- and high-salinity conditions among the alternative freshwater inflow scenarios and possibly the percent oyster mortality and oyster growth rates.

3.7 Federally-protected Species Analyses

It is our understanding that the Corps will be conducting certain analyses to evaluate the effects of the various alternatives on federally-protected species. These analyses will be contained in the Corps' Biological Assessment (BA) accompanying the draft EIS. The Service will include these analyses in our FWCA evaluation, assuming they are available for us to do so. The types of analyses that should be evaluated are contained in the "*Analyses for the Effects of the Action*" section of the Service's June 1, 2008, RIOP Biological Opinion (USFWS 2008) and are listed below:

Gulf sturgeon

- Frequency (% of days) of Gulf sturgeon spawning habitat availability (acres of potentially suitable spawning substrate inundated to depths of 8.5 to 17.8 feet) on each day March 1st through May 31st, at the two sites that support spawning;
- Frequency (% of years) of Gulf sturgeon spawning habitat availability (maximum acres of potentially suitable spawning substrate inundated to depths of 8.5 to 17.8 feet for at

least 30 consecutive days each year), March 1st through May 31st, at the two sites that support spawning;
- Daily fall rates with respect to exposure of Gulf sturgeon eggs and larvae;
- Maximum number of consecutive days per year less than 16,000 cfs; and
- Departures from average water temperatures between March 1st to May 31st.

Freshwater mussels
- Lowest daily flow for each year;
- Inter-annual frequency of flows less than 5,000-10,000 cfs;
- Maximum number of days per year with flows less than 5,000 – 10,000 cfs;
- Maximum number of consecutive days less than 5,000 – 10,000 cfs;
- Median number of days per year less than 5,000 – 10,000 cfs;
- Frequency (percent of days) of daily stage changes (ft/day); and
- Frequency (percent of days) of daily stage changes (ft/day) when releases at Woodruff Dam are less than 10,000 cfs.

Floodplain connectivity
- Frequency (% of days) of growing season (April-October) floodplain connectivity (acres) to the main channel using Light et al. (1998);
- Frequency (% of years) of growing season (April-October) floodplain connectivity (acres) to the main channel using Light et al. (1998).

4.0 Recommendations for Additional Coordination

This PAL includes comments from the State wildlife agencies in the basin. As is encouraged under the FWCA, we will continue to coordinate with these agencies, and will coordinate with NOAA Fisheries, as we move forward.

To assist in the development of alternatives and mitigation, we have suggested evaluations and analyses that address flow, water quality, fish passage, climate change, navigation, reservoir and riverine fisheries management, impacts to Eufaula National Wildlife Refuge, Apalachicola Bay resources, as well as the inclusion of a decision support model and adaptive management. Our recommendations for hydrologic modeling include addressing the impacts of increasing consumptive demands and evaluating alternative models to reflect flow extremes and climate change. We have identified analyses to evaluate Corps alternatives with respect to flow, water quality, floodplain connectivity, reservoir and riverine fisheries, Apalachicola Bay resources, and federally-protected species. We anticipate that the next step will be for the Corps and the Service to work together to update the interagency SOW to reflect Corps and Service responsibilities for the evaluations and analyses contained in this PAL. As you know, such a division of labor occurred to produce the prior DEIS and FWCA Report (Corps 1998).

We would like to be involved in the development of alternatives, including the development of environmental flows alternatives. The Service would like to assist in the development of such

alternatives to maximize benefits to ecological resources and to gain a better understanding of the consequences of implementing such alternatives on other authorized project purposes and operational constraints. Once all of the alternatives have been analyzed, we anticipate working with the Corps to identify opportunities for restoration, compensation, and enhancement.

We appreciate the opportunity to participate in the planning stages of your project. We would like to stress the Corps water management is not just about avoiding adverse affects, but also to look at opportunities to restore and improve habitat. If you have any questions, please contact Georgia Ecological Services staff biologists Alice Lawrence or Will Duncan at (706) 613-9493, or Panama City Ecological Services staff biologist Karen Herrington at (850) 769-0552 ext. 250.

Sincerely,

Sandra S. Tucker

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Field Supervisor

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P. Gagliano, EPA, Atlanta, GA
D. Bernhart, NOAA, St. Petersburg, FL

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Table 1. Locations and river stages in the Chattahoochee River where the National Weather Service Advanced Hydrologic Prediction Service predicts damage to occur. Discharges were calculated using stage-discharge relationships at USGS streamflow gages. Only damage to manmade structures was considered as damage. Flooding of riverwalks, riverwalk structures, yards, and moving of equipment or livestock to avoid inundation was not considered to be damage.

Location (upstream to downstream order	Stage at which damage occurs	Discharge at which damage occurs
Chattahoochee at Norcross	16	20631
Chattahoochee at Roswell	14	29846
Chattahoochee at Atlanta	18	22023
Chattahoochee at Whitesburg	26	49379
Chattahoochee at West Point	21	62530
Chattahoochee at Columbus	41	261407

Figure 1. Histogram of mean + standard error daily discharge values reported in cubic feet per second (cfs) obtained from river gauges on the Duck River at Shelbyville (top) and Columbia (bottom), Tennessee by season. Means represent daily discharge values for each month for 10 years pre and 10 years post Reservoir Release Discharge Initiative (RRI) completed at Normandy Dam beginning in late 1991. Letters atop standard error bars indicate significantly different means as determined by Tukey's a-posteriori test. Results of analysis of variance (F values and p values) are indicated below each graph. Graphs and figure title taken directly from Alstedht and Johnson 2004, and used with permission from Dr. Paul Johnson.

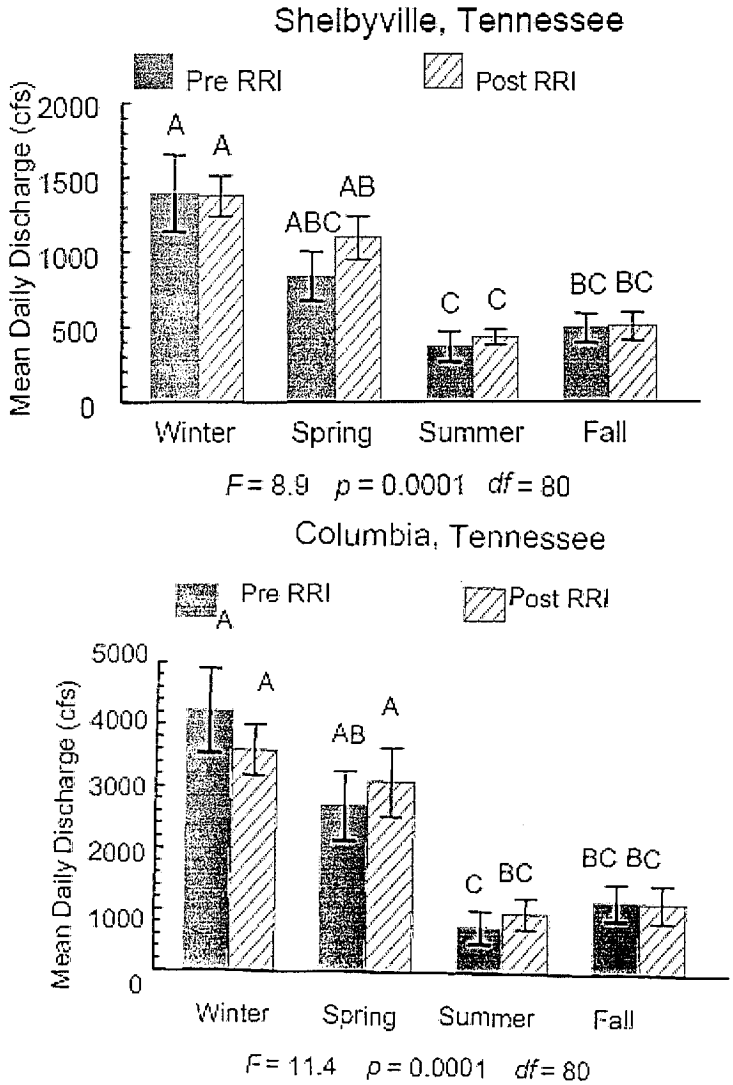
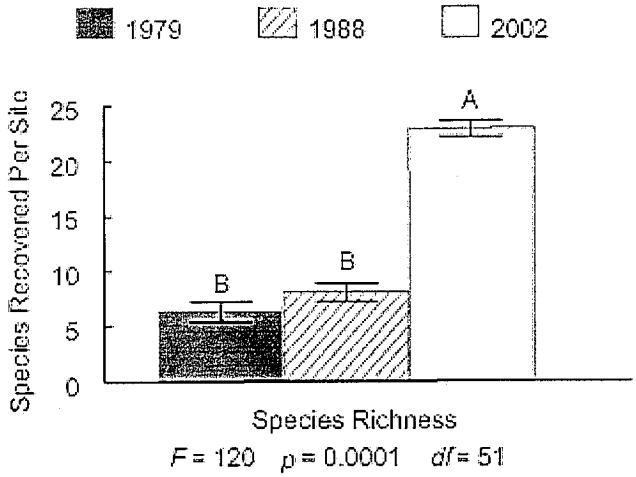


Figure 2. Comparative mean + s.e. of mussel species (top) and mussel number (bottom) sampled from 17 sites in the Duck River in 1977, 1988, and 2002. Letters atop standard error bars indicate statistically different means determined by Tukey's HSD a-posteriori test. Results of analysis of variance (F values and p values) are indicated below each graph. Graphs and figure title taken directly from Alstedht and Johnson 2004, and used with permission from Dr. Paul Johnson.



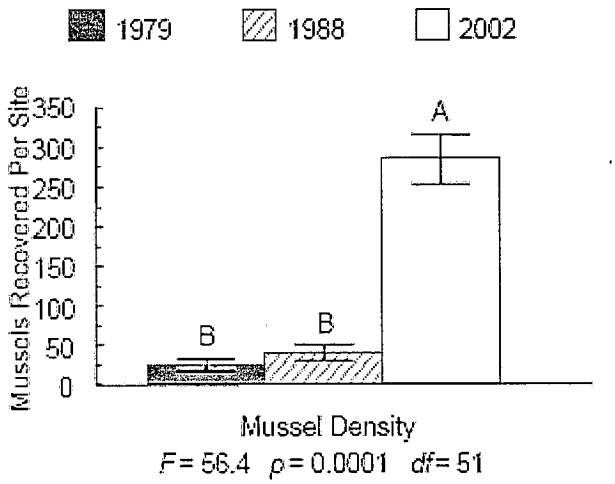
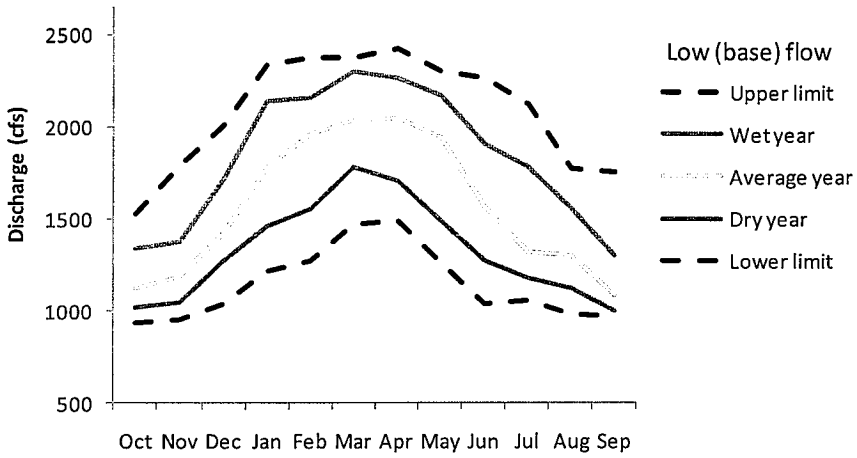


Figure 3. Preliminary a) low (base) flow and b) low and pulse flow guidelines and description for the Chattahoochee River USGS Norcross gage.

a)



b)

Data analyzed: The only pre-Buford dam data that were available for this analysis extended between 1903 and 1946 (44 years) at the Chattahoochee River gage (02335000) at Norcross.

Base flow description

Low (base) flows are defined as all flows that fall below the lower 25th percentile of flows for the pre-Buford dam period at the USGS Norcross gage. The 10th, 25th, 50th, 75th, and 90th percentiles for low flows for each month were then calculated to quantitatively describe the monthly lower and upper base flow limit, and dry, average, and wet year low flow recommendations. Most calculations were derived from Environmental Flow Components in Indicators of Hydrologic Alteration (Version 7-1).

Pulse flow description

High flows were defined as flows that exceeded 75% of the average daily flows for the period of record. Small pulses were defined as all high flows that were lower than the 2-year recurrence interval, and high pulses were defined as high flows that fall between the 2 and 10-year recurrence interval. The 2-year recurrence interval discharge was used as an indication of bankfull discharge because the discharge that corresponds to the incipient point of flooding was unknown. Consequently, small pulses are not expected to exceed bankfull elevation, but high pulses are expected to exceed bankfull elevation and cause floodplain inundation. The recommendations for small and high pulses correspond to the 25th and 75th percentiles of magnitude, frequency, duration, timing, and rise and fall rate values. High pulse recommendations were made only for wet years because more than half of pre-dam years did not contain pulses based on the parameters used to define high pulses in this analysis.

Small pulses

At the Chattahoochee River USGS Norcross gage, 9-18 flow pulses per year should be between 3,658 and 4,980 cfs, should last between 2-3 days, and should occur between mid-March and early June. Rise and fall rates can range between 1,260-2,054 cfs and 1,178-733 cfs, respectively.

High pulses

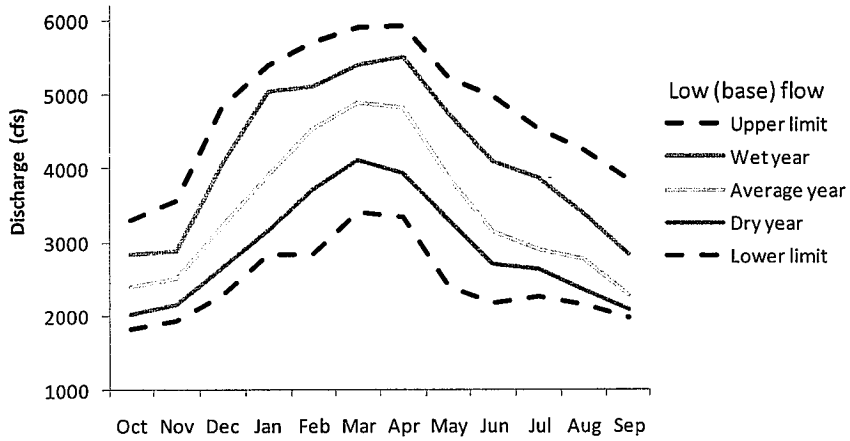
In wet years, a pulse of 17,650-28,080 cfs should last 9-80 days, should occur between early January and early May. Rise rates should range between 697-7518 cfs/day, and fall rates should range between 3376-460 cfs/day.

Non-hydropower peaking window

We recommend that the Corps evaluate the provision of non-hydropower peaking "windows" during critical reproductive and rearing periods for a minimum of 4-6 weeks from March – May.

Figure 4. Preliminary a) low (base) flow and b) low and pulse flow guidelines and description for the Chattahoochee River at the USGS gage below West Point Dam.

a)



b)

Data analyzed: The pre-Buford dam data that were available for this analysis extended between 1896 and 1955 (60 years) at the Chattahoochee River gage (02339500) below West Point Dam.

Base flow description

Low (base) flows are defined as all flows that fall below the lower 25th percentile of flows for the pre-Buford dam period at the USGS West Point gage. The 10th, 25th, 50th, 75th, and 90th percentiles for low flows for each month were then calculated to quantitatively describe the monthly lower and upper base flow limit, and dry, average, and wet year low flow recommendations. Most calculations were derived from Environmental Flow Components in Indicators of Hydrologic Alteration (Version 7-1).

Pulse flow description

High flows were defined as flows that exceeded 75% of the average daily flows for the period of record. Small pulses were defined as all high flows that were lower than the 2-year recurrence interval, and high pulses were defined as high flows that fall between the 2 and 10-year recurrence interval. The 2-year recurrence interval discharge was used as an indication of bankfull discharge because the discharge that corresponds to the incipient point of flooding was unknown. Consequently, small pulses are not expected to exceed bankfull elevation, but high pulses are expected to exceed bankfull elevation and cause floodplain inundation. The recommendations for small and high pulses correspond to the 25th and 75th percentiles of magnitude, frequency, duration, timing, and rise and fall rate values. High pulse recommendations were made only for wet years because more than half of pre-dam years did not contain pulses based on the parameters used to define high pulses in this analysis.

Small Pulses

At the Chattahoochee River gage below West Point, 9-16 flow pulses per year should peak between 8,853 and 11,580 cfs, should last between 3-4 days, and should occur between early March and mid-June. Rise and fall rates can range between 2,483-3,698 cfs/day and 2,256-1,536 cfs/day, respectively.

High Pulses

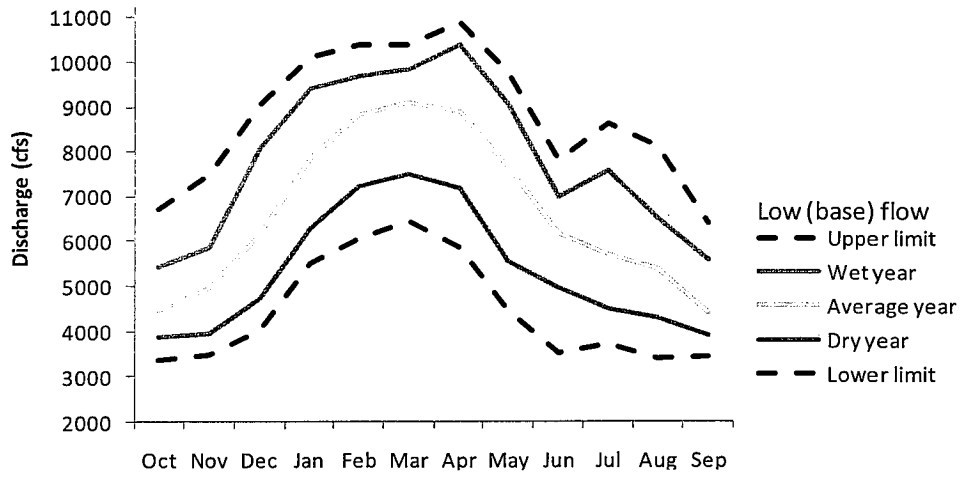
In wet years, a pulse that peaks between 48,830 - 58,950 cfs should last between 19-38 days, and should occur between mid-January and early April. Rise and fall rates can range between 5,563-13,170 cfs/day and 4,230-1787 cfs/day, respectively.

Non-hydropower peaking window

We recommend that the Corps evaluate the provision of non-hydropower peaking "windows" during critical reproductive and rearing periods for a minimum of 4-6 weeks from March – May.

Figure 5. Preliminary a) low (base) flow and b) low and pulse flow guidelines and description for the Chattahoochee River at the Walter F. George Corpsnode.

a)



b)

Data analyzed: ACOE unimpaired flows dataset at the Walter F. George node and inferences from West Point analysis results.

Base flow description

No USGS discharge data for the pre-Buford dam period are available at Walter F. George. However, comparisons between pre-Buford USGS gage data and Corps-modeled "unimpaired flows" data show similar median monthly flows. Thus, we used median monthly flows in the Corps-modeled unimpaired dataset (1936-2006) to calculate the predicted low (base) flows that should occur at the W.F. George node. We excluded 103 negative flow values from the Corps dataset in this analysis.

Low (base) flows are defined as all flows that fall below the lower 25th percentile of flows for the pre-Buford Dam period at the USGS West Point gage. The 10th, 25th, 50th, 75th, and 90th percentiles for low flows for each month were then calculated to quantitatively describe the monthly lower and upper base flow limit, and dry, average, and wet year low flow recommendations. Most calculations were derived from Environmental Flow Components in Indicators of Hydrologic Alteration (Version 7-1).

Pulse flow description

Again, no USGS discharge data for the pre-Buford dam period are available at Walter F. George. Corps-modeled unimpaired flows do not represent the flow extremes (minimum and maximum flow duration, magnitude, timing, frequency, and rate of change) that were observed at USGS gages during the pre-Buford Dam period. Consequently, using the Corps-modeled data to make high pulse recommendations cannot be justified.

Small pulses

We infer from the West Point analysis that used real pre-Buford Dam USGS data, that 9-16 flow pulses per year should peak between 1.8-2.4 times higher than the baseflow river stage (approximately 16,369-21,535 cfs) in March for an average flow year. Pulses should last between 3-4 days, and should occur between early March and mid-June. Rise and fall rates should not exceed rates from other site recommendations.

High pulses

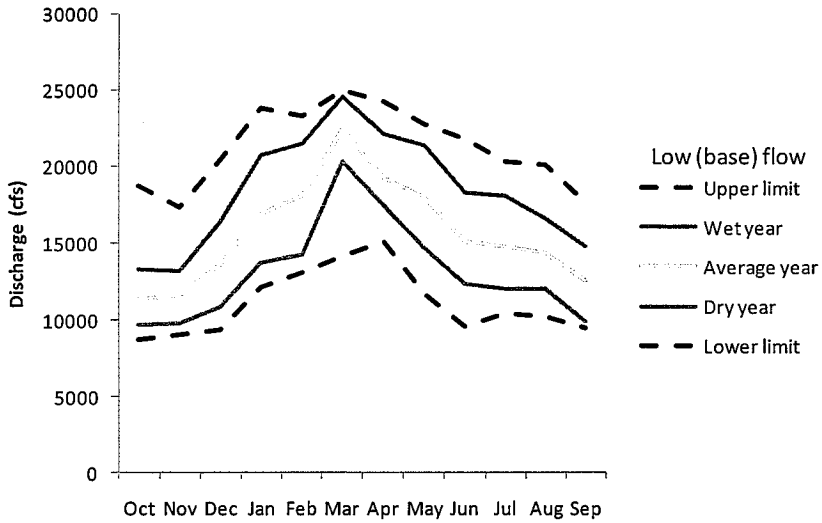
Development of a wet year flow guidelines is complicated by the fact that no stage-discharge relationships are presently known for the river segment between Walter F. George Dam and Woodruff Dam. However, the National Weather Service Advanced Hydrologic Prediction Service indicates that extensive floodplain inundation occurs at a river stage of 150 ft, although no significant damage is predicted to occur up to 160 ft. Consequently, we recommend that the ACOE evaluate wet year releases from Walter F. George that range between 150 and 160 ft. Duration, timing, and rates of change should be similar to the recommendations for West Point Dam.

Non-hydropower peaking window

We recommend that the Corps evaluate the provision of non-hydropower peaking "windows" during critical reproductive and rearing periods for a minimum of 4-6 weeks from March – May.

Figure 6. Preliminary a) low (base) flow and b) low and pulse flow guidelines and description for the Apalachicola River USGS gage at Chattahoochee, FL.

a)



b)

Data analyzed: The pre-Buford dam data that were available for this analysis extended between 1922 and 1955 (34 years) at the Apalachicola River gage (02358000) at Chattahoochee, FL.

Base flow description

Low (base) flows are defined as all flows that fall below the lower 25th percentile of flows for the pre-Buford dam period at the USGS West Point gage. The 10th, 25th, 50th, 75th, and 90th percentiles for low flows for each month were then calculated to quantitatively describe the monthly lower and upper base flow limit, and dry, average, and wet year low flow recommendations. Most calculations were derived from Environmental Flow Components in Indicators of Hydrologic Alteration (Version 7-1).

Pulse flow description

High flows were defined as flows that exceeded 75% of the average daily flows for the period of record. Small pulses were defined as all high flows that were lower than the 2-year recurrence interval, and high pulses were defined as high flows that fall between the 2 and 10-year recurrence interval. The 2-year recurrence interval discharge was used as an indication of bankfull discharge because the discharge that corresponds to the incipient point of flooding was unknown. Consequently, small pulses are not expected to exceed bankfull elevation, but high pulses are expected to exceed bankfull elevation and cause floodplain inundation. The recommendations for small and high pulses correspond to the 25th and 75th percentiles of magnitude, frequency, duration, timing, and rise and fall rate values. High pulse recommendations were made only for wet years because more than half of pre-dam years did not contain pulses based on the parameters used to define high pulses in this analysis.

Small Pulses

At the Apalachicola River gage at Chattahoochee, FL, 3-6 flow pulses per year should peak between 30,950 and 41,110 cfs, should last between 4-13 days, and should occur between mid-February and mid-May. Rise and fall rates can range between 2,493-5,356 cfs/day and 2,353-1,473 cfs/day, respectively.

High Pulses

In wet years, a pulse that peaks between 86,630-122,800 cfs should last between 28-68 days, and should occur between late-February and early April. Rise and fall rates can range between 2,544-8,108 cfs/day and 4,236-2,330 cfs/day, respectively.

Non-hydropower peaking window

We recommend that the Corps evaluate the provision of non-hydropower peaking "windows" during critical reproductive and rearing periods for a minimum of 4-6 weeks from March – May.

Figure 7. Monthly maximum, average, and minimum dissolved oxygen concentrations in the Chattahoochee River at Buford Dam. Data courtesy of Georgia Department of Natural Resources-Wildlife Resources Division.

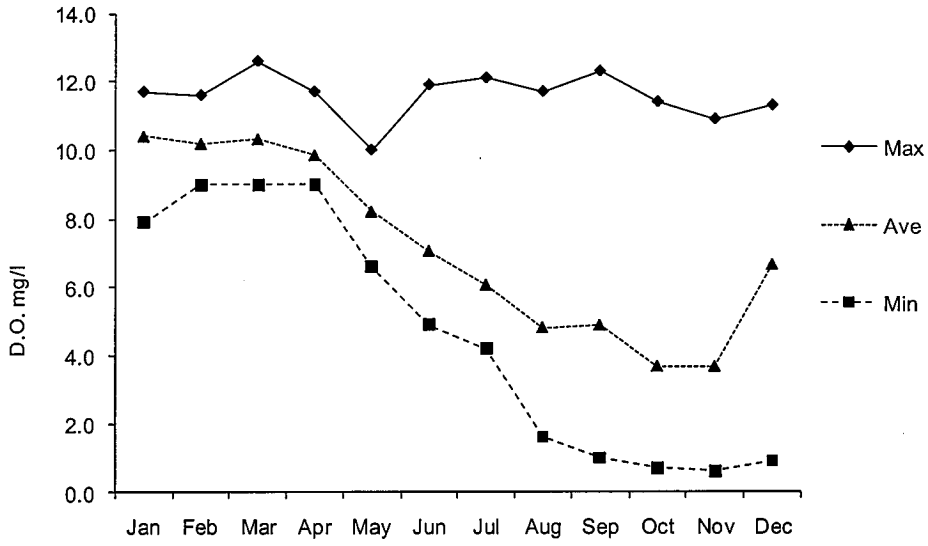
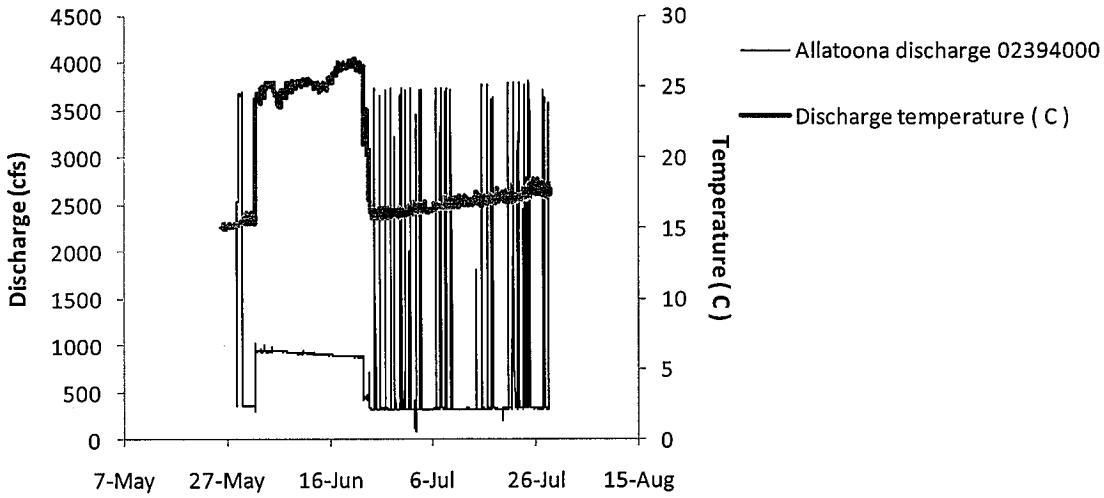


Figure 8. Discharge and water temperature measurements below Allatoona Dam on the Etowah River, Georgia. Sluicing from a location higher in the reservoir's water column occurred in June, causing the observed downriver temperature increases.



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March 1, 2011

Colonel Steven J. Roemhildt
US Army Corps of Engineers, Mobile District
P.O. Box 2288
Mobile, AL 36628-0001

Dear Colonel Roemhildt:

We are providing an Addendum to the U.S. Fish and Wildlife Service (Service)'s April 2, 2010, Planning Aid Letter (PAL) for the proposed Water Control Manual (WCM) Updates for the Apalachicola-Chattahoochee-Flint (ACF) River Basin in Georgia, Alabama, and Florida. The purpose of the WCM Updates is to identify operating criteria and guidelines for managing water storage and release of water from United States Army Corps of Engineers (Corps) reservoirs. In the National Environmental Policy Act (NEPA) review, the Corps will address current operations, proposed changes in water management operations at the reservoir projects within the limits of the existing authorities, as well as potential impacts throughout the basin that would result from implementation of the updated manual.

The purpose of the Service's 2010 PAL was to identify resource values and issues, identify endangered species issues, and propose preliminary changes, mitigation, or enhancement opportunities to facilitate your decision-making as it relates to equal consideration of fish and wildlife resources. Based on recent analyses conducted by the Service, we submit the following addendum under the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. § 661 *et seq.*). This addendum solely addresses ecosystem flow guidelines -- all other information and recommendations in the PAL are still applicable. In the future, we will provide additional information in the form of a draft Fish and Wildlife Coordination Act report. A separate consultation will occur regarding the potential impacts of the Corps' proposal on federally-listed fish and wildlife species protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 *et seq.*).

Rationale for revision of ecosystem flow guidelines

The ecosystem flow guidelines that were delivered in the PAL were developed with the aid of Indicators of Hydrologic Alteration (IHA; TNC 2007). Although the IHA methodology is scientifically defensible, subsequent examination of IHA methodology and output revealed several concerns that could affect possible incorporation of the guidelines in the Corps' operations. Therefore, the Service is providing revised low and high flow guidelines (Figures 1-4 and Tables 1-4).

We had two reasons for revising the flow guidelines. First, the default IHA parameters used for the PAL initially separated the flow data into high and low flows using a percentile of the pre-Buford period of record. This method resulted in representation of low-flow discharges in summer-fall months by many values, and representation of low flows in winter-spring months by fewer values. This means that some months in some years were not represented in subsequent analyses. For example, historic low flows in the Apalachicola River remained above the 75th percentile or above flood stage for prolonged time periods, meaning that those periods were not represented in the low flow analysis. Thus, if the historic flow regime is to be used to help guide low flow alternative development, evaluation, and implementation, the low flow analysis should examine the entire range of low flows that occurred in every month of every year before construction of Buford Dam.

Second, the low and high flow analyses in IHA calculate summary statistics using median values (for non-parametric analyses) to represent each year (TNC 2007). For example, IHA calculates the annual median high pulse magnitude, and uses the median values from every year to calculate summary statistics. While this is a statistically valid approach to summarizing large datasets, summarizing multiple intra-annual pulses by a single value results in a narrower range of magnitude, duration, timing, and rate of change values. Because the intent of the analysis is to quantify a range of discharge values that are likely to be beneficial to riverine habitat and fauna and to facilitate planning for high flows in the Corps' operations, we calculated the following high-flow guidelines by including each high flow event in summary statistic calculation (e.g., percentiles representing upper and lower limits, and dry, average, and wet years). With the exception of not using annual medians to calculate percentiles, the revised method for high flow guideline development is analogous to the "non-advanced" method for high flow analysis in IHA.

Low flow analysis methodology

1. In Microsoft Excel, the seven smallest values from each month in every year were extracted for analysis. We chose multiple values to represent each month so that the overall results are less likely to be influenced by an aberrant value (i.e., less likely to be skewed by one value), especially in future analyses that may examine and compare Corps' modeled flow alternatives which are likely to occasionally contain negative discharge values. A comparison of the effects of one, seven, and ten minimum flow values to represent low flows in each month showed little difference in overall low flow hydrograph shape, similar flow magnitudes throughout the year, and minor differences in winter 90th percentile flow magnitudes. These results also generally correspond to the Web-based Hydrograph Analysis Tool (WHAT Local Minimum Method; Lim et al. 2005) output for baseflow generation. Collectively, these results lend greater support for the decision to use the seven lowest values to characterize low flows.

2. The 10th, 25th, 50th, 75th, and 90th percentiles for each month were calculated on the extracted data to define the lower limit, dry year, average year, wet year, and upper limit, respectively.

3. The Walter F. George low flow guidelines were calculated slightly differently. A long-term period of pre-Buford Dam discharge data was not available below Walter F. George. As a proxy

for actual data, the Corps' unimpaired flows dataset was used. As referenced in the PAL, the unimpaired flows datasets do not accurately represent the magnitude, duration, timing, and rate of change of flow extremes (p. 14 in April 2, 2010 PAL). Thus, these low flow guidelines should be treated as estimates.

4. Note that in this low flow analysis, in cases where an entire month is above flood stage, the lowest values are flood-related values. A strength of the low flow analysis is that the user can characterize the entire range of the lower flows that occur in every month of the user's flow dataset.

High flow analysis methodology

1. In Microsoft Excel, the 75th percentile of all flows in the time series was used as the flow threshold to separate high flows from the remainder of the flow dataset. Because this is consistent with our understanding of the meteorological conditions that should cause pulses to occur, the 75th percentile is a valid threshold to separate low and high flows.

2. The following parameters were then calculated: The duration of each high flow event, the maximum discharge in each sequence of high flows, the date of the initial high flow value, the rise rate (calculated as the difference between the preceding low flow value to the maximum flow divided by the number of time steps (n-1)), and the fall rate (calculated as the difference between the maximum flow and the following low flow value, divided by the number of time steps (n-1)).

3. The 2-year and 10-year recurrence interval discharges were calculated using the following methodology: Maximum discharge was calculated for every year, and the 50th and 90th percentiles in Excel were used to calculate approximations of the 2- and 10-year recurrence intervals, respectively. This is a close approximation to the IHA method, but not as sophisticated as the USGS PeakFQ calculation (Flynn et al. 2006). Nevertheless, these percentiles provide close approximations of these recurrence interval discharges. Although bankfull discharge in the Coastal Plain physiographic province tends to occur more frequently than every two years, we used an approximate 2-year recurrence interval basinwide as a consistent guide.

4. The 2-year and 10-year recurrence interval discharges were used to further separate high flows into small pulses, high pulses, and floods (note: these are the default values used in IHA to separate high flow data). Maximum high flow values between the 75th percentile and the 2-year recurrence interval were classified as small pulses (analogous to High Pulses in IHA). Values between the 2- and 10-year recurrence interval were classified as high pulses (analogous to small floods in IHA), and values greater than the 10-year recurrence interval were classified as floods. With the exception of the Apalachicola River analysis, floods greater than the 10-year recurrence interval were excluded from this letter because they exceed the discharge stages that are predicted to cause damage according to the National Weather Service Advanced Hydrologic Prediction Service (Table 1 in April 2, 2010 PAL).

5. The range of discharge values that were used to define small and high pulses are presented in the tables. Similar to the PAL, we also provide the 25th and 75th percentiles of the magnitudes, frequencies, durations, rise rates, and fall rates which were calculated separately for small pulses,

high pulses, and floods. These values correspond to the high flow guidelines presented in Tables 1-4. Timing values were visually estimated from histograms of pulse or flood occurrence by month.

6. The Walter F. George high flow guidelines were calculated slightly differently. As referenced in the PAL, the unimpaired flows datasets do not accurately represent the magnitude, duration, timing, and rate of change of flow extremes (p. 14 in April 2, 2010 PAL). Consequently, using the Corps-modeled data to make high pulse recommendations cannot be justified. Thus, high pulse frequency, duration, timing, and rate of change calculations were used from the West Point analysis. To calculate magnitudes, however, the West Point analysis indicated that pulses should peak 1.6-3.5 times higher than the low flow river discharge in March [7,720-16,500 cubic feet per second (cfs)]. Assuming that pulses at Walter F. George should also peak 1.6-3.5 times higher than March low flow (derived from the Corps' unimpaired flows model output), small pulses below Walter F. George should peak between 14,161-30,978 cfs.

Figure 1. Low flow guidelines for the Chattahoochee River near Norcross, GA (USGS 02335000).

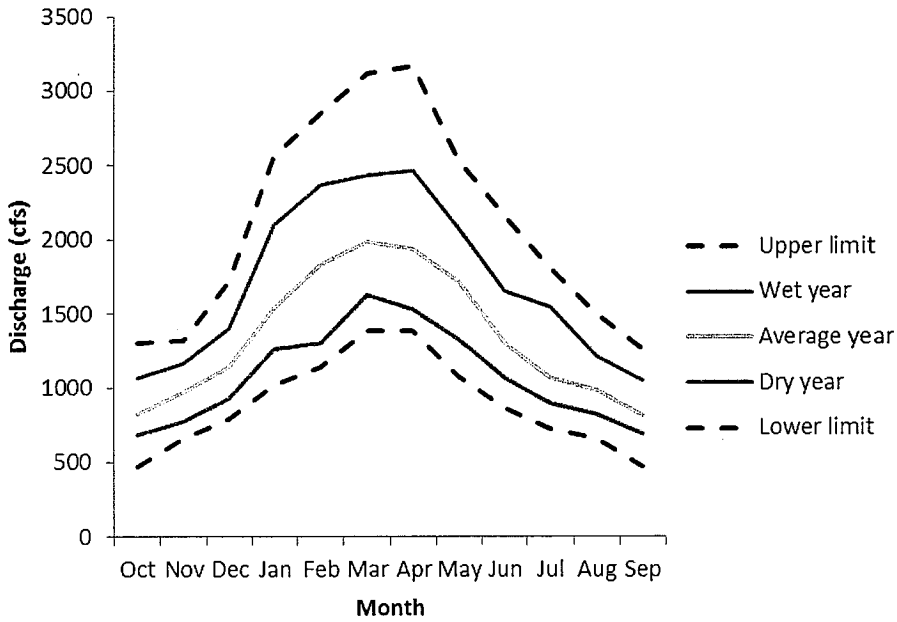


Figure 2. Low flow guidelines for the Chattahoochee River at West Point, GA (USGS 02339500).

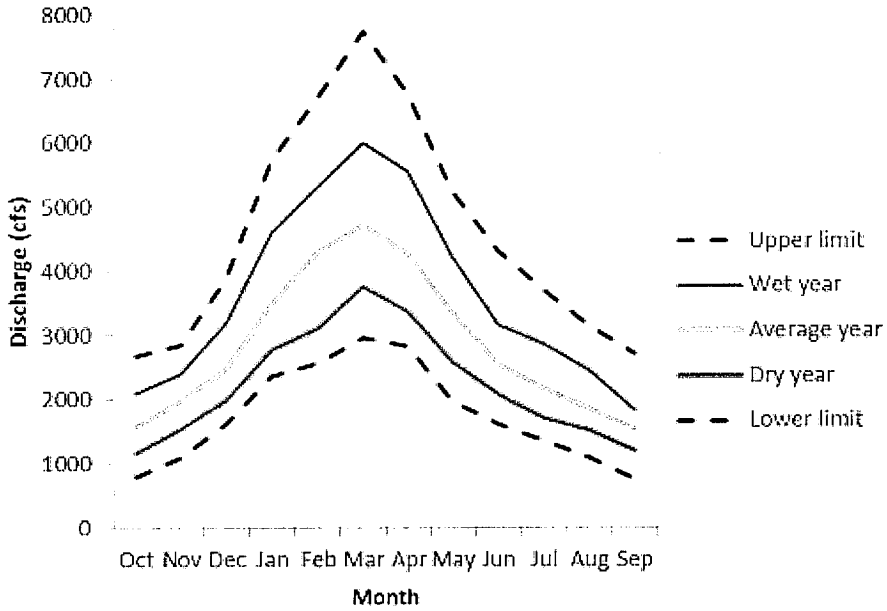


Figure 3. Low flow guidelines for the Chattahoochee River at Walter F. George using the Corps' unimpaired flows dataset.

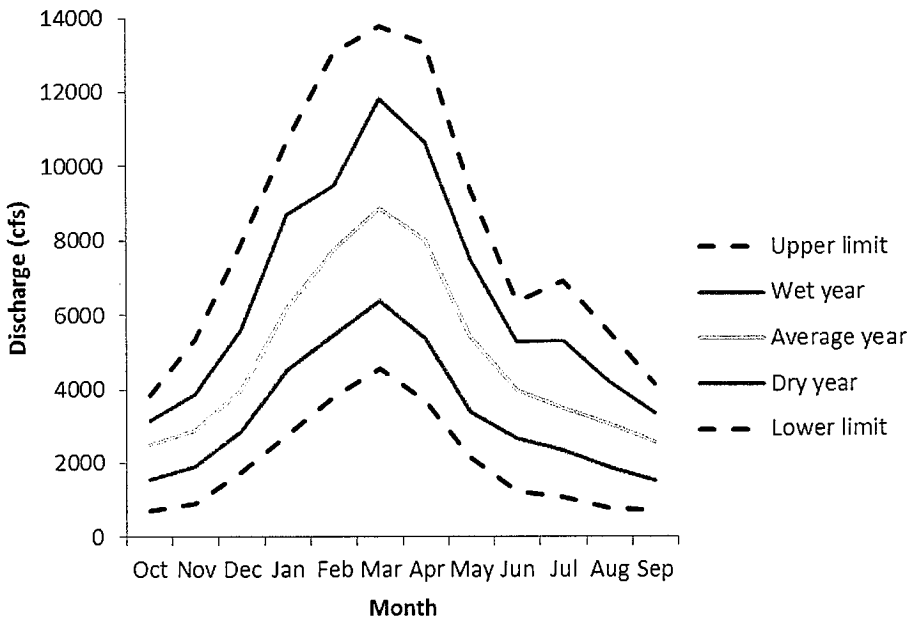


Figure 4. Low flow guidelines for the Apalachicola River at Chattahoochee, FL (USGS 02358000).

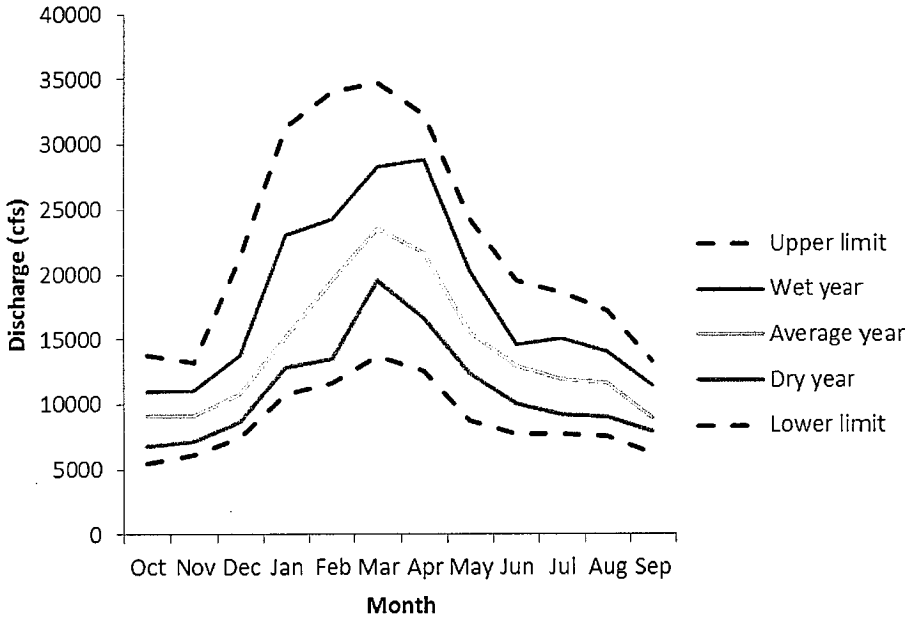


Table 1. High flow guidelines for the Chattahoochee River near Norcross, GA developed from USGS gage 02335000 for the pre-Buford Dam period from January 1, 1903 to September 30, 1946.

	Small pulse	High Pulse
Range used (cfs)	2550-17249	17250-33549
Magnitude (cfs)	3105-6787.5	19000-28900
Frequency (# events/year)	9-18	0-1
Duration (days)	1-5	11-72
Rise Rate (cfs/day)	770-2775	927-7830
Fall Rate (cfs/day)	507-1452	459-2193
Timing	Oct-Sep	Dec- Mar

Table 2. High flow guidelines for the Chattahoochee River near West Point Dam developed from USGS gage 02339500 for the pre-Buford Dam period from August 1, 1896 to December 31, 1955.

	Small pulse	High Pulse
Range used (cfs)	6250-45649	45650-71079
Magnitude (cfs)	7720-16500	51150-60825
Frequency (# events/year)	10-15	0-1
Duration (days)	2-6	17-39
Rise Rate (cfs/day)	1605-5118	5336-12509
Fall Rate (cfs/day)	1092-2850	1622-4472
Timing	Oct-Sep	Dec- Mar

Table 3. High flow guidelines for the Chattahoochee River at Walter F. George Dam developed from low flow analysis on the Corps' unimpaired flow dataset, and inferences from Chattahoochee River at West Point Dam high flow analysis. See text for additional details.

	Small pulse	High Pulse
Range used (cfs)	N/A	N/A
Magnitude (cfs)	14,161-30,978	95598-114187
Frequency (# events/year)	10-15	0-1
Duration (days)	2-6	17-39
Rise Rate (cfs/day)	1605-5118	5336-12509
Fall Rate (cfs/day)	1092-2850	1622-4472
Timing	Oct-Sep	Dec- Mar

*Upper range of high pulse values may need to be reevaluated to ensure that damage to structures is avoided. The stage discharge relationship (used to ensure that guidelines do not cause damage) was calculated using available data between 79 ft (6,510 cfs) and 110 ft (90,200 cfs; USGS gage 02343805), meaning that discharge calculations above this range of values are extrapolations and should be used cautiously.

Table 4. High flow guidelines for the Apalachicola River near Chattahoochee, FL developed from USGS gage 02358000 for the pre-Buford Dam period from July 1, 1922 to December 31, 1955.

	Small pulse	High Pulse	Flood
Range used (cfs)	25800-73799	73800-150499	≥ 150500
Magnitude (cfs)	28600-43475	85650-116500	201500-268500
Frequency (# events/year)	3-6	0-1	≥ 10 year RI
Duration (days)	3-15	32.5-68.5	49.5-89.5
Rise Rate (cfs/day)	2166-5606	2763-8056	7650-8761
Fall Rate (cfs/day)	1250-2615	1916-3811	4527-5795
Timing	Dec-Sep	Jan-Mar	Jan-Apr

Thank you for your January 18, 2011, response to the Service's PAL-requested analyses. We are currently reviewing the information that you provided, but recommend using ecosystem flow guidelines as calculated in the manner outlined above. As we continue to review the information you have produced, additional addendums or information requests may be supplied by the Service. We appreciate the opportunity to participate in the planning stages of your project and look forward to exploring opportunities to restore and improve habitat. If you have any questions, please contact Georgia Ecological Services staff biologists Will Duncan or Alice Lawrence at (706) 613-9493, or Panama City Ecological Services staff biologist Karen Herrington at (850) 769-0552 ext. 250.

Sincerely,

Sandra S. Tucker
Field Supervisor

cc: J. Ziewitz, USFWS, Tallahassee, FL
D. Everson, USFWS, Daphne, AL
S. Abbott, USFWS, Ft. Benning, GA
M. Hubbard, USFWS, Eufaula, AL
B. Zettle, Corps, Mobile, AL
Pete Taylor, Corps, Mobile, AL
C. Sumner, Corps, Mobile, AL
M. Thomas, GDNR-WRD, Social Circle, GA
C. Martin, GDNR-WRD, Social Circle, GA
B. Hess, GDNR-WRD, LaGrange, GA
R. Weller, GDNR-WRD, Albany, GA
S. Cook, ADCNR, Montgomery, AL
T. Hoehn, FFWCC, Tallahassee, FL
P. Gagliano, EPA, Atlanta, GA
D. Bernhart, NOAA, St. Petersburg, FL

Literature Cited

Flynn, K.M., Kirby, W.H., and Hummel, P.R. 2006. User's manual for program PeakFQ, Annual Flood Frequency Analysis Using Bulletin 17B Guidelines: U.S. Geological Survey Techniques and Methods Book 4, Chapter B4, 42 pp.

Lim, K.J., B.A. Engel, Z. Tang, J. Choi, K. Kim, S. Muthukrishnan, and D. Tripathy. 2005. Web GIS-based Hydrograph Analysis Tool, WHAT. Journal of the American Water Resources Association 41(6): 1407-1416.

The Nature Conservancy (TNC). 2007. Indicators of Hydrologic Alteration Version 7 User's Manual. 70 pp.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, MOBILE DISTRICT
CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF:

SEP 20 2010

Inland Environment Team
Planning and Environmental Division

Mr. Donald Imm
Field Supervisor
U.S. Fish and Wildlife Service
1601 Balboa Avenue
Panama City, Florida 32405-3721

Dear Mr. Imm:

I am writing in response to your September 14, 2010 letter, recommending that the U.S. Army Corps of Engineers (Corps), Mobile District reinitiate consultation of the 2008 biological opinion (BO) of the Revised Interim Operations Plan (RIOP) for Jim Woodruff Dam, per section 7 of the Endangered Species Act (ESA). We agree that the depth distribution data recently collected by Dr. Michael Gangloff, documenting the re-colonization of endangered fat threeridge mussels at river stages greater than 5,000 cubic feet per second (cfs) constitutes new information that was not considered in the BO. Furthermore, the Corps agrees that this information could affect the conclusions of the BO and incidental take statement.

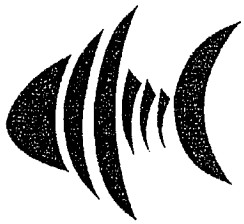
Pursuant to Section 7 of the ESA, the Corps is requesting to reinitiate formal consultation on its RIOP at Jim Woodruff Dam. At this time, we are not recommending any changes to the RIOP and until formal consultation is concluded we intend to operate Jim Woodruff Dam in accordance with the provisions contained in the RIOP. As we notified you on September 14, 2010, in compliance with the RIOP provisions, we resumed the reduction in flows from Jim Woodruff to approximately 5,000 cfs.

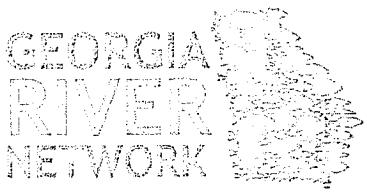
The mussel depth distribution data collected by Dr. Gangloff has already been provided to your staff and we stand by ready to assist with additional data collection or analysis. Should you have any questions, comments, or recommendations, please contact Mr. Brian Zettle, (251) 690-2115, Email: brian.a.zettle@sam.usace.army.mil.

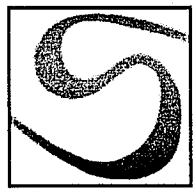
Sincerely,

Steven J. Roemhildt

Steven J. Roemhildt, P.E.
Colonel, Corps of Engineers
District Commander







Keeping Watch Over Our Waters

Director F. Allen Barnes
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, GA 30334

June 30, 2010

RE: Draft Water Resource Assessments

Dear Director Barnes:

We are writing on behalf of the Altamaha Riverkeeper, Coosa River Basin Initiative, Flint Riverkeeper, Georgia River Network, Ogeechee Riverkeeper, Satilla Riverkeeper, Savannah Riverkeeper, and Upper Chattahoochee Riverkeeper, collectively representing over 10,000 Georgians who fish, boat, hunt, own property and small businesses, operate manufacturing facilities, and otherwise rely on healthy aquatic ecosystems to ensure we have enough clean water for ourselves and future generations. We appreciate this opportunity to comment on the three draft resource assessments Georgia's Environmental Protection Division (EPD) has prepared pursuant to the State Water Plan. We submit the following comments, questions, and concerns for your consideration. We also appreciate the hard work that EPD staff and your contractors have put into the planning process thus far.

Our comments and recommendations regarding the draft water resource assessments, critical components of Georgia's emerging state water plan, are described below in four primary areas.

- Lack of integration among assessments
- Deficiencies of surface water availability assessments
- Deficiencies of ground water availability assessments
- Deficiencies of assimilative capacity assessments.

We also have provided comments on three additional outstanding issues: population projections, economic growth projections and responsibilities of the Governor's Office of Planning and Budget.

Generally, we are very concerned that the draft assessments are not accompanied by the technical and scientific documents needed to fully evaluate them, thereby making it difficult for us and the public to conduct a thorough review.

Lack of Integration among Assessments

We first note a lack of integration among all three assessments. The lack of integration is significant—for example, the ground water availability assessments assume we have sufficient groundwater supplies largely premised on the assumption that surface water supplies for the purpose of recharge are unlimited. Similarly, the surface water availability assessments effectively assume that drawdown of groundwater will not impact surface water supplies, even though the science presented to the water planning councils explicitly shows that this is not the case.

With respect to water quality, the assessments essentially ignore the impacts that reduced surface water and ground water availability may have on water quality. The water quality assessments mention TMDLs in passing but choose instead to focus on the presence or absence of assimilative capacity. The only semblance of integration between water quantity and quality is found in the use of 7Q10 or the lowest observed flow to determine gaps in surface water availability. In reality, applying 7Q10 is an academic exercise at best, because low flows in Georgia's free flowing streams have been declining for decades due to increasing withdrawals, impervious surfaces, channelization, and global temperatures. Rather, scientific consensus views the use of 7Q10 to determine the absolute minimum base flow sufficient to protect water quality as inadequate in virtually every context.

Deficiencies of Surface Water Availability Assessments

The surface water availability assessments for the Chattahoochee River presume use of Lake Lanier to meet water supply needs in spite of the recent federal judicial decision to the contrary. Thus, these assessments simply do not mirror legal reality. Even if we were to reach an allocation agreement with our neighboring states, we have no guarantee that Georgia's allocation will remain as high as it is now. We strongly recommend that EPD rerun these assessments assuming no use of Lake Lanier for water supply, as well as assuming lesser reliance on Lanier compared to that which is currently used, to account for such uncertainties.

The surface water availability assessments for the Flint River contain gross inaccuracies. Due to the importance of various aquifer inputs to the system, the choice of gauging stations for baseline assessments is critical. In the Flint, at the fall line, inputs from aquifers begin. A few miles downstream, they constitute a large and ever increasing component of base flow. Choosing to site a gauge *downstream* of the fall line sets an artificially high baseline for the base flow. The mathematical implications of this are obvious, particularly when modeling or predicting "gaps" that must be accounted for and resolved. In the case of the Flint, there is an available gauge situated immediately upstream of the fall line (at Carsonville), and it was not used. The justification for this was that the time series at Carsonville is not equivalent to the gauge further downstream, and indeed gauges all over the state. Yet, the time series at Carsonville is quite extensive. This is a case of poor judgment by the modelers because the error introduced by copious aquifer inputs to base flow far outweighs that introduced by using a shorter time series. When management options are being considered or debated, it is important for those giving their time to serve on the Regional Water Planning Councils responsible for the Flint's resources to have accurate assessments available for their and for the contractors' consideration.

The surface water availability assessments for the Altamaha, the Chattahoochee, and the Savannah contain assumptions addressing management of reservoirs (other than Lanier) that, while physically possible, are not culturally and economically, and therefore politically, viable. Specifically, it is assumed that reservoirs such as Jackson, Strom Thurmond, Hartwell, West Point (and many others) are fully drawn down to "conservation pool" levels. Although perhaps commendable in that staff have established such a modeling input as one boundary of their output, given the inevitable pushback on this issue from lakeside and lake-use constituencies, modeling of flow/volume availability should have presented a suite of reservoir-pool usage for council members to consider. This was not done.

Moreover, all of the assessments assume that water supply is unlimited as long as the surface water flows do not drop below what are effectively already stressed, low flow conditions (i.e., minimum monthly 7Q10 or daily cumulative unimpaired flows, whichever is less). In fact, the assessments go so far as to admit that water for water supply was prioritized over satisfying flow regime and that water use would be curtailed only when flows were insufficient to meet water use *regardless of actual flow regime violations.* This admission indicates that the health of the natural system was ignored; if so, EPD must explain and justify this decision.

As you are aware, the Clean Water Act requires more than mere preservation of the status quo; the state must work toward restoration of water quality, including flows, necessary to sustain designated uses. We further note that these draft assessments appear to ignore the recovery requirements of the Endangered Species Act, which go beyond simply avoiding jeopardy to actually conserving federally protected species.

In order to restore Georgia's waters to swimmable, fishable standards and to conserve the state's imperiled species, we strongly recommend that EPD fully engage its own Science and Engineering Advisory Panel (SEAP), the U.S. Fish and Wildlife Service (FWS), the National Oceanic and Atmospheric Administration (NOAA), the U.S. Environmental Protection Agency (EPA), the U.S. National Park Service (NPS), and fish and wildlife experts within EPD itself to identify interim flow targets and hydrological operations protective of these federally-mandated ecological needs. These ecological flows serve as a surrogate for natural constraints on the system, constraints that *must* be taken into account prior to allocating water for consumptive purposes.

Finally, we note that the energy forecasts have yet to be completed. We have learned from Georgia Power, which is preparing these forecasts, that it will not be providing basin- or district- level forecasts for future energy demand; rather, it will be providing a state-wide analysis. This approach is unacceptable for obvious reasons. In order to determine surface (and to a lesser extent, groundwater) availability within each planning district, the energy forecasts must be performed at the same scale as other demand forecasts. Accordingly, we strongly urge EPD to secure an independent contractor to perform the necessary district-level energy forecasts.

Deficiencies of Ground Water Availability Assessments

We appreciate the recognition of the vertical and horizontal connection between aquifer systems and surface water systems. However, as noted above, there is a disconnect between the assumptions and modeling of these systems. While recognizing the interconnection between these systems, we must also connect the use, availability, and other assumptions made in the modeling of these systems.

By EPD's own admission, the upper and lower ranges of sustainable yield in each of the prioritized aquifers were set arbitrarily. As a consequence, these ground water assessments provide little support for any conclusions drawn concerning subterranean-resource sustainability or the adequacy of resulting surface water flows. While EPD's technical staff admits that these target yields are arbitrary, staff also admit that rerunning the models with more scientifically defensible values is not feasible due to budgetary constraints. This is unacceptable. Clearly, these models must be rerun with other parameter values, if for no other reason than to perform the rudimentary sensitivity analysis scientists traditionally perform in conjunction with even the most basic models.

Furthermore, while the assessment notes a vertical hydraulic connection between aquifers, the modeling frequently fails to consider usage in groundwater layers other than the priority ones that were modeled. In fact, in specific instances, the modeling assumes increases in use of these priority systems while holding usage in aquifer systems steady. The reality is that if conditions require increased pumping in one system, this increase is likely across aquifers. This failure could result in more dramatic aquifer draw downs and impacts on surface water systems than the current models indicate.

Finally, the modeling is significantly flawed in that it fails to consider new withdrawals permitted by the Georgia Environmental Protection Division since 1999. For example, a new coal fired power plant has been permitted that, if built, will consume up to 16 million gallons of water a day under low flow conditions from 15 wells in the Sandersville area from the Cretaceous system. This failure to model such a significant user and the impact on this already stressed system raises serious questions as to the legitimacy of the findings.

Overall, the assumptions made on ground water usage are highly flawed and illogical. We believe that any management or permitting decisions made on these models could be determined to be arbitrary and capricious.

Deficiencies of Assimilative Capacity Assessments

First, we note the obvious, unexplained delay in completing the assimilative capacity assessments for Lake Lanier and the Chattahoochee River. Given the need to understand the current status of water quality in the Apalachicola-Chattahoochee-Flint (ACF) river basin *before* reaching a reallocation agreement that does not further impair our waters, we find this omission to be a glaring one. Please explain and justify the delay.

Other water quality issues aside, we note that these assessments do not address all of the water quality impacts associated with wastewater and other discharges, because the models are limited in scope to dissolved oxygen, chlorophyll a, and nutrients, but ignore other key parameters including fecal coliform, sediment, pesticides, metals, temperature, and pH. This is also in contradiction to the repeated assertion of the predecessor Georgia A Water Planning Council that "one size does not fit all," which practically became a mantra when used in obtaining legislative consent for the current planning effort by the Regional Water Planning Councils.

As with the surface water availability assessments, these assimilative capacity documents also ignore the restorative and anti-degradation requirements of the Clean Water Act. Perhaps more troubling is EPD's recognition of this deficiency—EPD staff acknowledge that their modeling approach is suboptimal but point to budgetary constraints as their rationale for refusing to correct the deficiency and rerun these assessments to reflect legal and scientific reality.

Rather than modeling the status quo, we strongly urge EPD to rerun these assessments assuming instead incremental improvements in water quality, in consultation with SEAP, EPA, and other appropriate water quality experts to determine what the appropriate increments should be. Furthermore, EPD should commit to reducing limits on permits for withdrawals from and discharges to impaired waters until those waters have been adequately restored through the TMDL program or a comparable program.

Other Outstanding Issues

Population projections are unreliable

The projections of future regional population changes have been criticized for inaccuracy in most, if not all, of the Regional Water Planning Councils that have received them. In several (perhaps most) councils, projections were seen as too low, while in some other councils, projections for certain counties were analyzed and finally understood to be mere projections of previous growth patterns. In the latter cases, counties that had seen prison populations increase in previous decades were credited with additional prison expansions for no discernible reason.

In some cases, the county-by-county approach to projecting population growth within the rigid boundaries of the planning regions ignores economic geography. As a result, projections for less densely populated counties such as Wayne tend to understate future growth, while projections for adjacent, nearly built-out counties like Glynn tend to overstate future growth in spite of the dearth of buildable real estate for such new growth. The failure to integrate projections for economic and population growth across

the already poorly located boundaries of the regional councils makes the projections, thus far, of very limited utility to this planning process.

Economic growth projections are also dubious

Similarly, economic projections for those same water councils were so poor as to be rejected as useless, and were to be replaced by projections for specific high water consumption industrial sectors. The list provided for those included "oil and gas" which is not an industry of any notable size in Georgia apart from a few smaller asphalt refineries.

The previously cited failure to provide regional analysis of the largest single continuous user of water, thermoelectric power production, is particularly unhelpful in assisting the regional councils to develop management plans, since they must now speculate concerning the effect the largest user may have on local supplies during periods of low flows.

Economic analysis that looks at regional and local population, income and public sector investment (such as transportation investment) and which shows the relationships of those factors to previous rates of growth (and decline) would be very useful to the councils in the development of their management plans. The lack of any economic information on water dependent outdoor recreation, such as fishing, boating, even hunting, and "eco-tourism" is a significant omission in the information with which the councils must work.

Use of the Office of Planning and Budget for development of statistical information remains puzzling.

When the water councils first had their initial meetings in their regions, it was announced that the Office of Planning and Budget would be responsible for the generation of the statistical information on population and economic forecasting for the water planning process. This was something of a surprise to observers of state government, who viewed that agency, a part of the Office of the Governor, as an administrative unit almost entirely dedicated to the development of the state budget. That it would receive this additional workload during a period of considerable budget stress, occasioned by steady declines in state revenues, was a surprise.

The fact that the population and economic forecasts were initially faulty, and that corrected versions of them were not made available to the councils on a schedule that conformed to the timetables set for their work was not surprising in light of the OPB's ordinary, routine duties, but it does raise the question of why this agency was chosen

for this task when other academic and private sector providers could have make the required projections. In all likelihood, this was not a decision made by EPD; however, we would appreciate any comments on this decision.

We hope you will carefully consider the issues we have raised and look forward to discussing these and other issues concerning the state water planning effort when we meet with you on July 15. Meanwhile, if you have any questions, please do not hesitate to contact Laura Hartt (Upper Chattahoochee Riverkeeper) at 404-452-9828, x 15.

We look forward to continuing the dialogue.

Sincerely,

Sally Bethea

Sally Bethea
Upper Chattahoochee Riverkeeper
Atlanta, GA

Also on behalf of

Deborah Sheppard
Altamaha Riverkeeper
Darien, GA

Gordon Rogers
Flint Riverkeeper
Albany, GA

Chandra Brown
Ogeechee Riverkeeper
Statesboro, GA

Tonya Bonitatibus
Savannah Riverkeeper
Augusta, GA

Joe Cook
Coosa River Basin Initiative
Rome, GA

April Ingle
Georgia River Network
Athens, GA

Bill Miller
Satilla Riverkeeper
Woodbine, GA

Cc: Arnetia Murphy
Regional Water Planning Council Chairs

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Arnettia Murphy
Georgia Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, GA 30334

June 23, 2011

RE: Draft Recommended Middle Chattahoochee Regional Water Plan

Dear Ms. Murphy:

On behalf of the Upper Chattahoochee Riverkeeper (UCR), I am submitting these comments on the draft Recommended Middle Chattahoochee Regional Water Plan. UCR is a non-profit environmental advocacy organization devoted to the protection and restoration of the Chattahoochee River. We have over 5,000 members devoted to ensuring we have enough clean water for people, fish, and wildlife throughout the Apalachicola-Chattahoochee-Flint (ACF) River basin. For the past decade, UCR has been active in Georgia's water planning effort; we will continue to monitor the state's efforts, particularly in terms of responsiveness to any legal outcome concerning future access to Lake Lanier for water supply.

We hope you will carefully consider our questions and concerns, as outlined below for each section of the draft plan.

<u>Section 2</u>

In order to conclude the Middle Chattahoochee water planning region has no current or future water supply gaps, the draft plan relies on flawed assumptions regarding the availability of Lake Lanier for water supply. For example,

- In Table 2-1, the draft plan improperly includes water supply among the "Stated Purposes—Draft 1989 Water Control Manual" (p. 2-5).
- The draft plan is based on "current scenarios due to the uncertainties of the outcome of political and environmental issues." (p. 2-8). However, there are clearly a finite number of possibilities (full allocation, partial allocation, no allocation) that could and should have been modeled to derive a range of contingencies. The state has no basis for assuming the status quo as far as Lanier allocation for water supply after repeated legal decisions suggesting otherwise.
- The draft plan acknowledges that the U.S. Army Corps of Engineers (Corps) draft Apalachicola-Chattahoochee-Flint (ACF) Water Control Manual and Environmental Impact Statement, which

will define the extent to which Lanier may be operated for water supply, is forthcoming late summer (p. 2-9), yet refuses to wait a matter of a few months for that information despite repeated requests from the Middle Chattahoochee Water Planning Council (MCWPC) to do so.

- We have raised these concerns previously. *See* June 30, 2010 letter from UCR et al. to EPD, RE: Draft Water Resource Assessments (attached). Prior to finalizing the regional plan, Upper Chattahoochee Riverkeeper (UCR) again strongly urges Georgia's Environmental Protection Division (EPD) to reconvene the MCWPC in order to incorporate the Corps proposed operations of the ACF into the regional plan.

Section 3

The draft plan relies on flawed assumptions regarding instream flow needs to conclude no water supply gaps exist for the region. Below, we discuss these flawed assumptions as well as raise the following questions and other related concerns.

- The draft plan falsely states that land application systems, septic systems, and agricultural use are all 100% consumptive (p. 3-4).
- For unregulated portions of the basin, the plan's reliance on the monthly 7Q10, which mimics prolonged drought conditions, does not provide adequate ecological protection (p. 3-7). We have raised this concern previously. *See* June 30, 2010 letter from UCR et al. to EPD, RE: Draft Water Resource Assessments (attached).
- For regulated portions of the basin, pooling conservation storage in the entire system in order to determine whether a local water supply gap exists is misleading (p. 3-9), especially because the Corps is not authorized to operate Lanier for water supply.
- The draft plan identifies a "gap" at Bainbridge (p. 3-9) but does not adequately identify the cause of the gap, and therefore cannot prescribe BMPs to alleviate the shortfall.
- We support council's call for a sustainable management approach for fish & wildlife (pp. 3-11, 3-12)—at a minimum, we strongly urge the council to incorporate the flow guidelines outlined by the U.S. Fish and Wildlife Service (FWS) in their ACF Planning Aid Letter (PAL) and Addendum (both attached). The PAL and its Addendum prescribe environmental flows for nodes on the Chattahoochee River, including Norcross, West Point Lake & Walter F. George Reservoir.
- The draft plan asserts there is no scientific basis forming the minimum flow requirements designated in the Corps Revised Interim Operating Procedures (RIOP) and determined by FWS not to jeopardize listed species (p. 3-13). UCR notes that the FWS biological opinion on the RIOP has been upheld by a federal district court. The draft plan does not provide any new scientific evidence to call into question the expertise of the FWS (p. 3-13). In fact, FWS has reinitiated consultation on the RIOP because of new information suggesting that flows at the state border may in fact be too low, as opposed to too high (attached). Finally, the Corps will have to consult with FWS in conjunction with the update of the ACF Water Control Manual. Therefore, UCR finds the council's critique of the FWS premature and unsupported by the science.
- The draft plan's analysis of unimpaired, run-of-the-river modeling data from 1939-2007 is flawed because simply adding back in withdrawals and subtracting out returns does not correct

for the impacts of land use changes on hydrology (p. 3-13). UCR urges the council to request more comprehensive modeling from EPD to evaluate the impacts of all human activity on Chattahoochee flows.

- Where is the support for the assertion that other reservoirs are filled as soon as possible after a drought, regardless of other needs/purposes (p. 3-13)?
- Where is the support for the assertion that Corps operations at West Point Lake have harmed hydropower production (p. 3-14)? How can this statement be reconciled with the fact that we don't have district-specific information regarding current power use and future demand?
- We concur that instream flows in the Chattahoochee at the Columbus and Columbia planning nodes area areas of concern with respect to assimilative capacity (p. 3-14); however, we do not concur that the Corps operations are the sole culprit nor do we agree that the only solution to increasing assimilative capacity is through further dilution by increasing flows (p. 3-14). Also, how can this instream flow concern be reconciled with the draft plan's assertion there is no "gap" when it comes to wastewater assimilative capacity (p. 3-16)? UCR suggests the council work with EPD to set a flow-related water quality standard, with which both the Corps and discharge permittees would have to comply.
- We ask the council to clarify its statements regarding the tradeoff between flood control and economic and other uses (p. 3-14)—can the council really imagine a scenario where economics would trump flood control needs? UCR notes that the Corps does not have discretion to elevate economics over flood control, navigation, or hydropower.

The draft plan relies on flawed assumptions regarding the state's responsibilities under the Clean Water Act to conclude no water quality gaps exist for the region. Below, we discuss these flawed assumptions as well as raise the following questions and other related concerns.

- The state supplants the Clean Water Act standard of protect, restore, and anti-degradation with its own perverted view of water quality standards by asserting

  > "The assimilative capacity assessment estimates the capacity of Georgia's surface waters to naturally degrade pollutant levels without unacceptable degradation of water quality. The term assimilative capacity refers to the ability of a water body to naturally reduce pollutants to a level that does not exceed state water quality standards or harm aquatic life." (p. 3-16)

  Simply stated, under the Clean Water Act, water quality degradation is unacceptable per se. There is no "acceptable" level.
- As the draft plan acknowledges, "the water quality assessment models are not the same as the 303(d) list of impaired waters or total maximum daily loads, because this assessment is only looking at dissolved oxygen and nutrients; the 303(d) list includes stream metals, etc. Furthermore, the 303(d) list is based on analytical results from stream monitoring and not model results" (p. 3-17). Given the truth of this statement, why does the council imply they have addressed "surface water quality" gaps through this planning process?
- Although the draft plan dismisses the 303(d) list as including "stream metals, etc.," the vast majority of the listings are flow-related because they involve fecal coli form (p. 3-22). Therefore, we urge the council to request EPD map the 303(d) information together with the dissolved oxygen (DO) and

nutrient assimilative capacity information. Combining this information is important, because it would identify already stressed water bodies incapable of tolerating increased wastewater and other discharges.

Section 4

The draft plan relies on deficient methods to generate forecasts for future water resource needs. Below, we discuss these deficiencies as well as raise the following questions and other related concerns.

- The draft plan's discussion of municipal water forecasts relies on a technical memo, "Municipal and Industrial Water and Wastewater Forecasting Memorandum." The memo establishes a large range of per capita water use values: "A typical range has been determined to be between 75 and 175 gallons per day per capita (gpcd)." 75 gpcd appears to come from the USGS report (p. 9). What is the origin of the 175 gpcd estimate?
- The technical memo combines municipal, commercial, and "non-major" industrial demands—what is the justification for doing so (p. 6)? Also, what is the distinction between a "non-major" and a "major" industrial use? Why not just look at residential customers and calculate single-family indoor use? Including commercial and "minor" industrial uses in the calculation will inflate per capita use and future demand. Lumping these uses in this way also inhibits the development of targeted and therefore effective best management practices for reducing future water demand.
- The draft plan says adjustments were made "based on input from water suppliers, council members, and historical survey data as provided by EPD" (p. 4-2). How were adjustments made? Were demand values ever decreased? Are the adjustments science-based or mere guesses on the part of those providing input? What is the expertise of those who provided input? The draft plan should clarify precisely how the adjustments were made and what the underlying rationale was for doing so.
- The technical memo states that 2005 was used as the base year for generating projections, and that other years were used when "verified anomalies were reported by council members" (p. 7). What expertise do council members have with respect to judging the accuracy of water supply data? Why not simply use multiple years as the initial conditions for purposes of projecting future water demand?
- The technical memo also states that "an appropriate 'weather correction (or adjustment) factor' was considered based on historical rainfall data in the Planning Region and available raw water withdrawal records (both surface and groundwater) of representative communities in the Planning Region. Where sufficient data was available for a meaningful correlation, this factor was used to adjust the per capita water use rate with input from water suppliers." (p. 9). What does this mean? What were the two variables that were correlated? Was per capita use ever adjusted downward? Why did the council rely on water suppliers rather than climatologists for this input?
- Both the technical memo and draft plan state: "Water use for any industry with a projected decline in employment remained at the level of water use before the employment begins to decline. The assumption that industrial water needs may not remain tied to employment in the future and a

decline in employment may not reflect a decrease in water use for the industry. Furthermore, for regional planning purposes, the regions should plan to retain current water use levels and plan for growth" (p. 14 of the technical memo, p. 4-4 of the draft plan). If these statements are true, why rely on employment data at all? Applying the same logic, is the converse not also true—i.e., increasing employment does not necessitate increased water demand?

- Were any assumptions made regarding increased efficiency across the industry sector--either through plumbing upgrades or other water or energy conservation measures?
- How was employment within the commercial sector factored into the calculations provided in the technical memo (p. 14), given that municipal demand calculations do not rely on employment figures?
- What was the rationale for not using the "Georgia Water Use and Conservation Profiles" for water demand as was used for the wastewater forecasts (technical memo, p. 16)?
- Why are septic systems expected to increase over time (p. 4-3)? The draft plan should discourage the use of septic in order to maximize returns to the basin of origin and to minimize adverse water quality problems.
- The draft plan states "The additional power plant capacity has not been geographically determined; therefore, lacking this information, the Middle Chattahoochee region shows no increase in water consumption for thermoelectric power requirements for the planning period" (p. 4-6). The plan further states that although an "increase in annual energy needs to approximately 330,000 gigawatt hours" is anticipated for 2050, because "additional power needs could be met by producing energy anywhere in the state" the water need was not "geographically determined" (p. 4-7). Energy is one of the biggest consumers of water in our state and in our region—44% of the water demand in 2010 (or 95 MGD) is attributed to the energy sector (p. 4-9). In spite of the state's acknowledgement that the energy sector's demand for water will increase substantially by 2050, the draft plan assumes that demand will remain at 95 MGD for the next 40 years. Apparently, because the state cannot pinpoint with great precision the location of future or expanding power plants, owing in part to Georgia Power's refusal to disclose their intentions with respect to current or future power plants, the state has chosen instead to ignore the demand that future energy production will place on our finite water supply. UCR finds the state's position absurd and without merit. We strongly urge the council to call upon EPD to provide regional information regarding future water demand by the energy sector.

<u>Section 5</u>

The draft plan relies on flawed assumptions to determine "no gaps" in the future. Below, we discuss these flawed assumptions as well as raise the following questions and other related concerns.

- The conclusion that there are no observed shortfalls for the Chattahoochee River is based on the assumption that the current RIOP will remain unchanged into the future (p. 5-1). As stated above, UCR is puzzled as to why the state did not model alternative scenarios (no allocation, partial allocation, full allocation) or at the very least, wait for the Corps to release its water control manual later this year?

- As stated above, the conclusion that there are no shortfalls with respect to water supply (p. 5-1) also presumes that managing unregulated streams down to monthly 7Q10 standards, which mimic prolonged drought conditions, is acceptable for maintaining all instream uses. UCR strongly disagrees with this presumption. *See* June 30, 2010 letter from UCR et al. to EPD, RE: Draft Water Resource Assessments (attached).
- UCR concurs with the council that establishing instream flow guidelines below the Columbus and Columbia planning nodes would help protect water quality for downstream users (p. 5-3). Ideally, these flow guidelines would protect other instream uses as well, including fish, wildlife, and recreation. We further note that the 750 cfs flow requirement at Peachtree Creek is the absolute minimum target deemed acceptable for assimilative capacity purposes only, and is not a guarantee that other water quality, fish, wildlife, and recreational instream needs will be met. In fact, the National Park Service has recommended flows of 1000 cfs through the Chattahoochee River National Recreation Area. We strongly encourage the MCWPC to pursue an instream flow policy that is protective of all instream uses, and not just assimilative capacity. As mentioned above, we suggest the FWS PAL and Addendum as starting points for deriving healthy instream flows.
- The draft plan references FERC permit flow guidelines for the Columbus planning node but does not specify whether those guidelines are actually adequate for protecting water quality. (p. 5-3)
- The draft plan references a single target of 1200 cfs for the Columbus planning node (p. 5-3). We strongly encourage the MCWPC to evaluate this target in light of all instream flow needs, including how those needs may vary over time. While carrying capacity will undoubtedly improve at higher flows, increasing flow alone may not protect other instream uses, especially if those higher flows come with more pollution load.
- The surface water quality "comparisons" are merely a statement of model results and not an actual analysis of future assimilative capacity (p. 5-6). UCR remains concerned that the council has not had adequate time to evaluate the water quality modeling results—the draft plan reaffirms this concern. This section is clearly incomplete—we strongly urge EPD to work with the council to provide more details regarding the modeling methods, results, and conclusions.

Section 6

Below, we raise the following questions and other related concerns.

Give the nature and extent of the uncertainties identified by the council, we strongly urge EPD to require and facilitate an update sooner rather waiting 5 years (p. 6-1).

The draft plan reflects a lack of substantial commitment to water conservation—the draft plan relies on minimum state requirements, which fall well short of what is needed or even what the neighboring Metro District is doing. (p. 6-3) At a minimum, the council should encourage each local water provider to implement conservation pricing for residential, commercial, and irrigation users, establish a retrofit program to speed up the replacement of old plumbing fixtures (i.e., through rebates) , provide residential and commercial water audits, and establish a water waste policy.

The draft plan includes several recommended management practices relating to stormwater management, with which UCR concurs:

- more funding for enforcement of erosion and sediment control (p. 6-6)
- more funding for monitoring and enforcement of stream buffers (p. 6-6)
- require local governments to adopt the GA Stormwater Management Manual (p. 6-6)
- creation of a conservation land program to increase stream buffer protection (p. 6-7)

The draft plan calls for improved water quality monitoring—UCR concurs with this recommendation (p. 6-7).

The draft plan calls for increased implementation of existing best management practices (bmps) across major sectors (forestry, roads, agriculture, land development)—UCR concurs with this recommendation and encourages the council to consider additional bmps (p. 7-6).

UCR does not agree that a lack of baseline implementation data means that the council lacks "the ability to generate meaningful results regarding water savings" (p. 6-9). All utilities have access to the Alliance for Water Efficiency's conservation tracking tool (http://www.allianceforwaterefficiency.org/Tracking-Tool.aspx) which can help identify cost-effective conservation measures tailored to the water utility's customer base and budget. Also, a lack of data does not mean we should not bother doing water conservation. Obviously, water demand will decrease in response to measures taken. We may not know by how much until measures are actually taken, but that's not the point. We see no reason for further delays.

Why weren't solutions other than reservoirs, farm ponds, and ASR—all costly and intrusive storage options—considered for closing the Bainbridge gap, especially since the draft plan does not identify the origin of this gap? (p. 6-10). Why not start by evaluating how much water can be saved through aggressive conservation efforts?

Section 7

Below, we raise the following questions and other related concerns.

We see no reason for local water providers to wait until refinancing or recapitalization to begin considering conservation-oriented rate structures (p. 7-2). State Revolving Funds are available to help fund a rate and revenue analysis.

With respect to implementation costs (table 7-2, "Supplemental Guidance for Planning Contractors: Water Management Practice Cost Comparison")—the state does not provide adequate support for the cost estimates included. Some cost ranges are so large they are essentially meaningless.

With respect to individual recommendations to the state:

- Water Control Manual: The Georgakakos model does not address ecological instream needs (p. 7-14)—the state should urge the Corps to incorporate FWS PAL and Addendum flow recommendations during the update.
- Energy Forecasting: UCR concurs with the council—EPD must regionalize the forecasting in order to come up with meaningful projections of future demand (p. 7-14).
- Metro District Returns: UCR concurs with the council (p. 7-15)—the Metro District projections of future demand are grossly inflated, premised on high growth scenarios. The projected returns may be overly optimistic.
- Jim Woodruff Dam Releases—As stated above, a federal judge has upheld the science used by FWS to conclude Corps operations were not jeopardizing listed species. Consultation has been reinitiated because of new information suggesting flows are inadequate. Also, the Corps will have to consult with FWS as they finalize their water control manual. In other words, FWS is re-evaluating the Corps operations in light of new information and any questions about the scientific validity of their methods has been put to rest by a judge (p. 7-15).
- Groundwater Development—UCR concurs with the council (p. 7-17)—a greater understanding of the relationship between surface and groundwater in the Flint River basin is essential. However, we disagree with the implication that flows from the Chattahoochee should be matched by flows from the Flint. The two systems are not at all comparable and to make them comparable would require impoundments on the Flint (or removal of impoundments on the Chattahoochee). Land use changes differ, large water users differ, inflows differ, and so on. We instead should focus our efforts on securing healthy instream flows for both river basins.
- Increased Storage—UCR concurs with the concept of designating environmental storage in existing reservoirs (p. 7-17). However, we disagree with the premise that we must build more reservoirs in order to provide adequate instream flows. EPD must require aggressive water conservation prior to authorizing new impoundments. The draft plan falls well short of even the modest requirements imposed within the Metro District. EPD also must ensure that existing sources, including Lake Lanier, are being used to their full potential prior to building new, costly, destructive impoundments.
- Water Conservation Evaluation—UCR concurs that it is important to have good baseline data in order to assess progress (p. 7-17). However, we do not believe that the baseline data must precede efforts to begin conserving. The goal is not to get credit for conservation efforts but to actually reduce the demands we are placing on our already stressed system.
- Funding for Additional Resource Assessments (p. 7-18)—The council will need funding to update their assessments in response to the Water Control Manual update and litigation over Lanier. The council also needs funding to refine water quality assessments. However, we do not agree that the lack of baseline data means that we should delay implementing best management practices that will reduce non-point source and point source pollution.
- Funding for implementation (p. 7-19)—The draft plan also should recommend EPD increasing funding available for water conservation.
- Joint Recommendations for New Storage on the Flint (p. 7-20)—UCR strongly believes that it is premature to recommend new storage in the ACF to meet federal regulatory requirements. UCR strongly urges all three councils to evaluate existing conservation efforts across all sectors and

determine the maximum water that could be saved through aggressive efforts. UCR also notes that until the Corps updates its manual and the FWS has approved that update, we do not know what the regulatory requirements will be.

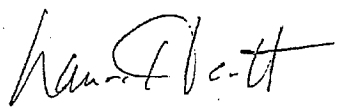
Section 8

The council notes a request for an extension in order to include information forthcoming from the Corps in conjunction with the Water Control Manual update (p. 8-4). We concur with the council's request. Once the Corps information is available, EPD should reconvene the MCWPC immediately in order to determine what major revisions will be necessary to the plan, particularly with respect to identifying water supply gaps

Related to this, UCR concurs with the council's request to allow amendments to the plan prior to the 5-year update (p. 8-4). This flexibility is essential to ensuring a viable plan.

We hope you will give serious consideration to the concerns and questions outlined above. We thank you for allowing us the opportunity to comment on the draft plan for the Middle Chattahoochee region.

Sincerely,



Laura Hartt

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WEST POINT LAKE
COALITION

a non-profit organization

June 22, 2011

Mr. Tim Cash
Assistant Branch Chief
Georgia EPD

On behalf of the West Point Lake Coalition, the City of LaGrange, and Troup County, we appreciate the opportunity to submit the comments below re: the Middle Chattahoochee Regional Water Planning Council's Draft Plan.

COMMENTS:

- **We certainly agree that water is a limited resource; and we support the goal of managing water resources in a sustainable manner thru 2050.**
- **Any new plan should require all stakeholders to be the best stewards possible of the limited resource. In most, if not all instances, this will require certain stakeholders to invest in their operations to minimize the amount of water needed. Neither the state of Georgia nor other stakeholders should be responsible for these investments or design flaws as the minimum flow requirements are well known and systems should have been designed accordingly.**
- **How much water would be available or just how limited would be this valuable resource if all stakeholders were the best stewards possible?**
- **The Draft Plan lists numerous stated purposes and or uses of the ACF System i.e. hydropower, water quality, water supply, recreation, and cooling water for nuclear and coal fired power plants, to name a few. It is important to differentiate between stated purposes/uses and Congressional Authorizations! Uses are allowed and/or permitted; Congressional Authorizations are mandated and should be honored and/or prioritized.**

- **The Congressional Authorizations for Lanier are hydropower, flood mitigation, and navigation; the Congressional Authorizations for West Point Lake are hydropower, flood mitigation, navigation, recreation, and sport fishing/wildlife development; and the Congressional Authorizations for Walter F. George are hydropower and navigation.**
- **Congressional Authorizations should be met before other uses are prioritized.**
- **EPD developed water availability and water Resource Assessments for the State's river basins and aquifers; basis the RA's, EPD maintains there is NO gap on the Chattahoochee. This is ludicrous because the State assumes draining all of the storage from Lanier and West Point ignoring the Congressional Authorizations and transferring wealth from one community to another community(s) using water as currency! There should be focus on the federal reservoirs equal to the focus on river basins and aquifers.**
- **Note that Lanier and West Point Lake are among the nation's most visited federal reservoirs for recreation contributing billions of dollars to the State's and local communities' economies.**
- **If increased storage is pursued, it should be mandatory that any new reservoirs are STORAGE ONLY; they could be full or bone dry depending on conditions. The State should own a significant buffer around any new storage reservoirs and no homes or amenities should be permitted. If Lanier is increased to 1073 MSL, full pool should be maintained as 1071 MSL and the additional 2 feet specifically designated for storage for downstream needs.**
- **The RIOP needs to be re-visited by USFWS to examine the economic harm to upstream stakeholders. 5,000 CFS is an artificial flow which does not mimic Mother Nature nor does it account for Congressional Authorizations on West Point Lake. There needs to be a better balance which is fair to all stakeholders.**
- **USFWS should study the possible relocation of the endangered species to the Flint or to the Chattahoochee above West Point Lake, to name two possibilities. Additionally, USFWS needs to examine other alternatives such as weir dams, artificial habitat, etc.**

- **The Chattahoochee and the Flint should share equally the burden of the 5,000 CFS at the Florida line i.e. 2,500 CFS each. To the extent that the Flint doesn't meet 2,500 CFS or exceeds 2,500 CFS, you mimic the natural flow!**
- **Please note that three separate Regional Planning Councils (the Middle Chattahoochee, the Upper Flint, and the Lower Flint-Ochlockonee) all question the need for 5,000 CFS.**
- **EPD should be calling for an expansion of sewer systems, a reduction in septic systems, and tertiary treatment of waste water, all of which will increase returns and reduce consumption!**
- **Re: guaranteed flows at Columbus, there are FERC Guidelines and Columbus' flows are determined by Georgia Power and Bartlett's Ferry. There have been no water quality violations. The minimum guaranteed flow from West Point Lake is 675 CFS; and West Point Lake is not authorized for waste assimilation.**
- **During severe drought conditions, Bartlett's Ferry, a Georgia Power reservoir, has available storage; and that federal water should be put in play to meet water quality and downstream needs.**
- **If the State funds a flood study on Lanier, funds should also be allocated for a similar study on West Point Lake to determine increased, available storage.**

Thank you again for the opportunity to comment on the serious water issues facing our State.

Respectively submitted,

Dick Timmerberg
Executive Director
West Point Lake Coalition

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
Jack Gleason	**6/23/2011**	**Posted**	• Altamaha • Coastal Georgia • Coosa North Georgia • Lower Flint Ochlockonee • Middle Chattahoochee • Middle Ocmulgee • Savannah Upper Ogeechee • Suwannee Satilla • Upper Flint • Upper Oconee	To Whom it should concern, (font-emphasis added for clarity) 1. In the interest of procuring a real implementation of "Change" with regard to substantially IMPROVING the States otherwise negatively impacted Streams and Rivers -- this for insufficient Stormwater Management Practices implemented of Development Interests activities occouring within it over the last decade specifically -- the ACF must be designated a "Regionally Importantnt Resource" (RIR) immediatly! Otherwise disolve the DCA as an impotant-fassad of State Regulatory Buracracy. 2. In the interest of procuring a higher level of both Quality and Sustainability, All of the entire REGIONS "Stormwater Management Plans" need to incorporate more comprehensive protective measures taken with regard to Future Development occouring within both "Small" Watersupply Watersheds and "Minor" Aquifer Recharge Zones/Groundwater Recharge Areas (ARZ/GRA) -- especially when occouring upon BOTH -- by determinating prudent and enforceable (Maximum Percentage Allowable) Impervious Surface Coverage (ISC), and Maximum Allowable Percentage-Change of Water Temprature of Discharge (WTD), while very well too, increasing by at least 25% the specifications regarding "Sedimentation" and Time/Volume release of Stormwater from ALL SOURCES within those particularly Environmentally Sensitive (Watersupply Watersheds and ARZ/GRA) Impact-Components. 3. Impose strict Implementation and Enforcement (I&E) of both existing (a.) Un-disturbed Riparian Corridor Vegitative and (b.) Impervious Surface Coverage Buffers, and (c.) include protections being extended toward true "Lay-of-the-land" Ephemeral Streams specifically existing within "Small" Watersupply Watersheds, ARZ/GRA, and other geological features contributive to the "Top of the Watershed". In consideration of both todays and Our Future "Landscape" with regard to procuring a Sustainable Watersupply for the Region I strongly believe that implementation of these considerations only make Common Sense and can be implemented by the simple universal change of "Should" to "Shall" as it exists withing current ordinance nomenclature.

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				Respectfully then, Your considerations paid are greatly appreciated, I Thank You. Sincerely, Jack Gleason Concerned Citizen Forsyth County Dist. 2 jgleason@FriendsOfCaneyCreek.org 770-329-6848 cell & 770-569-5325 hm. "Impossible" is a degree of difficulty...set by imagination for lack of motivation.
neill herring	**6/23/2011**	**Posted**	• Altamaha	Arnettia Murphy 22 June 2011 GA DNR, EPD 2 Martin Luther King Jr. Drive Suite 1152, East Tower Atlanta, GA. 30334 Subject: Public Comment: Comments on the Altamaha Regional Initial Recommended Water Plan Dear Ms. Murphy: My name is Neill Herring. I live in Jesup, located within the Altamaha Regional Water Planning Council's boundaries. I was fortunate to be able to attend a majority of the meetings of the Altamaha Planning Council, and two joint meetings attended by some of that Council's members in Macon. I am an active member, and contract employee, of several organizations that are members of the Georgia Water Coalition, and I believe that the comments below reflect the views of the Coalition on the Altamaha Regional Initial Recommended Water Plan. I want to personally thank the members of the Council for all of their time and effort in the creation of this plan. I. The work of the members of the Altamaha Regional Water Planning Council was commendable, and showed real dedication on the part of these voluntary appointees to the Council. Their willingness to put in

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				the kind of time and effort demanded by the process was generous, and a fine example of citizenship. The initial "rough patches" occasioned by apparent differences of opinion from the various economic interests represented on the Council were welcome as honest expressions of those varying views. That the Council members were able to reach consensus on a variety of fundamental policy issues, balancing use and conservation of the resource was also welcome. The variety of information from the differing backgrounds of the Council members was welcome in helping them achieve either agreement, or principled disagreements. The Council members were hampered in their work by the scheduling and presentation of information by EPD and its contractors. Individual Altamaha Council meetings, were there was time for free discussion of issues, were marked by what more than one member called "spoon feeding" while joint council meetings, which offered very little opportunity for discussion among members of the Altamaha Council (substituting panels and focus groups) were occasions for the transmission of relatively immense volumes of information, much of which was never discussed again. An example of the latter "information by firehose" was the presentation of modeling data on groundwater, a vital subject to the Altamaha Council, where groundwater serves as the principle source for residential, municipal and industrial water supply. The model projected a huge projected future supply volume based on a rather dramatic "drawdown" scenario, yet no use that would result in such drawdown was ever presented along with it. II. The plan includes management options that did not receive more than minority support from the Council, if that. 1) Aquifer Storage and Recovery was opposed by several council members on several occasions and is currently prohibited in the Region by statute. When the Planning Process was ratified by the General Assembly there was an assurance that nothing contrary to

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				current law was to be included in it. This inclusion violates that assurance. 2) Interbasin Transfers were seldom discussed, and are difficult to comprehend in an area that relies on groundwater for water supply, given the high capital costs associated with IBTs. 3) Large scale reservoir storage in the upper reaches of the Altamaha Council Region, or adjacent areas of neighboring councils is proposed, but little discussion of such options took place in Council meetings. Farm pond impoundment was discussed for supplemental agricultural water supply during periods of drought. The inclusion of these proposals in the Initial Recommended Plan seems to come from the cautionary idea that "nothing should be removed from the toolbox." It would seem that "tools" that are prohibitively expensive or are prohibited by law are being included, perhaps because there are financial interests at stake. III. The Plan's Information on Thermoelectric Power current and projected water demands is inadequate for any decision-making. The fact that the information on the largest single water use in the state was delayed until near the very end of the Planning Period seems to indicate a lack of interest on the part of the utility users of that water in the Council's work. The fact that the projections for future demand were made on a statewide basis, with no regional breakdowns as to where which uses would occur is further indication of the lack of utility interest in this process. That future water uses by thermoelectric generators must be inferred by the Councils from a crude statewide capacity addition schedule of 1000 MW per year for 30 years is simply not a serious contribution to planning for the Altamaha Region, which supports a major utility thermoelectric plant, and appears to have the capacity to support additional production and should be encouraged to plan for that. An 850 MW coal fired thermoelectric Plant Ben Hill is being proposed for a site near the Ocmulgee River in Ben Hill County, immediately outside the boundaries of the Altamaha Region. (This is yet another example of

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				poorly drawn regional boundaries.) Plant Ben Hill is not mentioned in the plan because no permit has been applied for it. The fact that new waste water treatment plant permits have not been applied for has not prevented projections of additional waste water treatment for the Plan. IV. IV. Legislators, and the general public, were repeatedly assured that planning regions were needed because "one size does not fit all." Yet a comparison of the Altamaha Initial Regional Plan to any of the other regional plans, it seems that "one size fits all" very well, particularly those of adjacent regions, such as Suwannee-Satilla, Upper Savannah-Ogeechee and Coastal. This sameness is disappointing, perhaps to be expected for a first effort, but after three years of work it seems that more differences among the regions would have emerged than apparently did, or was allowed to. V. The Legislative Resolution ratifying the Statewide Comprehensive Plan contains very clear language in regard to the role of the EPD in the writing of the regional plans. The EPD is free to reject any regional plan, or any portion thereof, and to write any additional material in any regional plan that EPD determines is needed. Despite this sweeping power of censorship and composition of the regional plans, EPD, and its contractors, have felt constrained to "put words in the mouths" of the Altamaha Council's members. Clearly expressed sentiments on matters of water management policy by significant numbers of the members of the Council, in open public meetings, have not made it into the regional plan, while the very things they found objectionable are included in the plan, as if they had never spoken. If that is the way the process is designed to work, why bother with the Council?

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
Deborah Phillips	**6/23/2011**	**Posted**	• Altamaha • Coastal Georgia • Coosa North Georgia • Lower Flint Ochlockonee • Middle Chattahoochee • Middle Ocmulgee • Savannah Upper Ogeechee • Suwannee Satilla • Upper Flint Upper Oconee	The entire comment package, including attachment and figures, submitted by the Georgia Industry Environmental Coalition can be viewed at http://www.giec.org/WaterWorkgroupActivities.shtml. We are writing on behalf of the Georgia Industry Environmental Coalition, Inc. (GIEC) regarding the ten Initial Draft Recommended Regional Water Plans that the Georgia Environmental Protection Division (EPD) released on May 9, 2011 for public review and comment. GIEC has reviewed the initial draft plans and provides the following comments and concerns for consideration by EPD as the plans are undergoing further EPD review before consideration for adoption by the Director. 1. For unregulated streams, the draft plans assume daily instream "flow-regime criteria" determined by EPD as the monthly "unimpaired" 7Q10 low flow or the "natural inflow", whichever was lower for a 68-year period (1939-2007) of unimpaired daily flows that were synthesized by EPD. It is not clear from the plans if one year of the synthesized unimpaired record was used as a surrogate for the unimpaired daily "natural inflow" but the entire 68-year period of unimpaired record was apparently used for making the monthly 7Q10 determinations. Use of synthesized "unimpaired" flows for such a long historic period (i.e., 1939 - 2007) for current purposes of 7Q10 determinations can be a significant problem if the underlying historic flow regime has itself shifted over time in which case older record periods are not reliable indicators of current and probable future low-flow conditions. The reasons for shifting low-flow conditions over time can include reservoir construction and diversions in the upstream area of the basin, urban expansion with increasing impervious area and reduced stream base flow contribution, land use and land cover changes affecting evapotranspiration, increasing amounts of upstream consumptive use, lowered ground water tables resulting from increasing ground water withdrawals, and climatic shifts. The USGS

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				Surface Water Branch Technical Memorandum 79.06 illustrates the variability of low-flow frequency curves based on different periods of historic record. (See http://water.usgs.gov/osw/pubs/memos/sw79.06.attachment.html.) To be certain, there have been significant on-the-ground changes across Georgia since 1940 that have undoubtedly influenced or impaired the instream flow regime in many, if not most, Georgia streams. For example, the population of Georgia has grown more than three fold since 1940, as illustrated by Figure 1 showing the magnitude and distribution of Georgia's population growth between 1940 and 2010. Further, today's use of agricultural irrigation, as illustrated by Figure 2 showing the inferred magnitude and distribution of permitted agricultural water use across Georgia in 2011, is very different than 1940 conditions when large-scale agricultural irrigation was virtually nonexistent in Georgia. The point is, there are real and permanent changes that are today's reality as the appropriate starting point for water planning using more realistic instream flow regime criteria. We submit that to now essentially ignore today's reality by proposing post facto to use unimpaired flow regime criteria as the basis for water plans and water supply allocations would be a critical water supply policy mistake for water users in Georgia and we urge you to reconsider as follows. If contemporary estimates of low-flow statistics are needed for current forward-looking planning purposes, and we believe that is the case, then low-flow frequency analysis should be based on a period of actual streamflow record that is long enough to be statistically robust (e.g., at least 10 years of record for determination of 10-year-return low flows) but not so long as to reflect long past basin conditions that are no longer applicable today. With these considerations in mind, using the most recent 20 years of actual streamflow record (e.g., 1991 through 2010) would be an appropriate contemporary period of record for estimating monthly 7Q10 flows as they now actually exist. Of course, using the 7Q10 statistic as a basis for setting flow-regime criteria carries with it the

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				inherent 1-in-10 risk, or 10-percent probability, that the actual 7-day low flow observed in any one month will be less than the 7Q10 flow for that month, and it carries an even greater risk that actual daily flows will be less than the 7Q10. This inherent risk of actual flows dropping below the 7Q10 level should be noted in the water quantity gap analysis of the plans in order to put the number and percentage of calculated shortfall days in better perspective. 2. The draft water plans cite use of the 2001 DNR Interim Instream Flow Policy as a rationale for setting monthly 7Q10 flow regime criteria for unregulated streamflows in each of the regional plans. The original context of the DNR Interim Instream Flow Policy is important to understand in considering the potential implications of now applying that DNR Policy for overall flow-regime criteria in the context of the draft regional water plans. The DNR Interim Instream Flow Policy is applicable to new (after April 1, 2001) non-farm surface water withdrawal applications. It is not applicable to intermittent agricultural irrigation withdrawals that neither give nor receive instream flow protection under the DNR Interim Instream Flow Policy, and the policy is not applicable to ground water withdrawals. Municipal and industrial surface water withdrawals that are subject to the DNR Interim Instream Flow Policy are typically required to pass the lesser of the actual “inflow”at the point of withdrawal or the “non-depletable flow” The non-depletable flow consists of the monthly 7Q10 flow plus an additional flow amount specifically calculated to protect water availability for downstream permitted non-farm surface water withdrawals that typically have required low flow limits imposed on them by their withdrawal permits. In other words, for municipal and industrial permits that are subject to the DNR Interim Instream Flow Policy, if the stream reaches a certain low flow level, permittees may not withdraw any water from the stream and must instead rely on off-stream stored water or other permitted water sources until suitable streamflow levels return that support resumption of permitted withdrawals. Importantly, the DNR Interim Instream Flow Policy is based on the use of actual flows for the stream inflow values and

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				monthly 7Q10 determinations and is decidedly not based on the use of "unimpaired flows" as is proposed by EPD for flow-regime criteria in the draft regional plans. While we support the DNR Interim Instream Flow Policy as a reasonable basis for flow-regime targets in the draft plans, it must be based on the use of actual contemporary streamflow records and not based on the use of synthetic unimpaired flows. In contrast to municipal and industrial permittees that are subject to the DNR Interim Instream Flow Policy, farm withdrawal permittees are typically authorized to withdraw at any streamflow level. We are concerned that the practical effect of now imposing unimpaired monthly 7Q10 criteria as flow-regime targets in the regional water plans is that all withdrawals (municipal, industrial and agricultural) would essentially be subjected to new unimpaired flow regime criteria. The enormity of adopting an "unimpaired flow-regime policy" is exemplified by the magnitude (>800 MGD) of the unimpaired streamflow "gap" as calculated by EPD for the Flint River at Bainbridge. EPD's unimpaired flow regime requirement tends to create higher minimum instream flows than the actual available low-flow regimes can support and still maintain existing uses in developed regions. This proposed unimpaired flow-regime approach increases instream flow protection levels but it reduces water available for consumptive use and, thereby, increases reservoir storage/yield requirements to meet water supply needs for everyone. We think adoption of the "unimpaired flow-regime policy" is a major strategic mistake and urge EPD to instead apply the DNR Interim Instream Flow policy as originally intended using actual contemporary streamflow records rather than using synthetic historic "unimpaired" flows as the draft plans now propose. 3. There are a number of remaining technical uncertainties about the water quantity modeling and associated assumptions used in the draft plans. The sheer magnitude of the calculated streamflow shortfall in the Flint River at Bainbridge serves to highlight the interrelated nature of water management among planning regions. Any actual shortfall in streamflow

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Name	**Date**	**Status**	**Comment Received by**	**Comment**
				contribution to the downstream Apalachicola River from the Flint River must necessarily be offset by the use of stored water from the large Federal reservoirs on the Chattahoochee River (in another planning region) in order to maintain minimum downstream flow criteria in the Apalachicola River at Jim Woodruff Dam. In effect, stored water from the Chattahoochee subsidizes or augments streamflow shortfalls from the Flint River because there are no large storage reservoirs on the Flint River and the majority of water used in the Flint Basin is through agricultural water withdrawal permits that do not include instream flow protection criteria as a condition of withdrawal. On a shorter planning horizon, the conversion of Flint basin surface water withdrawals to ground water sources would seem logical in combination with a program to identify and convert to deeper aquifers those areas where current groundwater withdrawals from the Floridan aquifer are known to be highly connected to the surface water system. The selective use of groundwater pumping to seasonally augment instream low flows may also have merit in some areas. Whatever is used for instream flow regime criteria, verification of any "calculated gaps" should include a peer-reviewed surface water and groundwater hydrologic budget for the region that is based on a credible data base and reasonable assumptions. The current draft plans do not provide such a water-balance verification. (See attached "Water Balance Considerations".) It seems reasonable for the State to insist that all regional plans include a commitment to begin closing whatever verified "streamflow gap" may exist at the downstream boundary of a water planning region. 4. The draft plans assume septic tank systems and land application systems are 100-percent consumptive of water based on the unsupported assertion that the water they return to streams is not returned within a time frame that offsets the water withdrawal they represent. We believe this "time-frame rationale" fundamentally misrepresents the ongoing and continuous nature of the significant base flow returns to streams that septic tank systems and land application systems represent statewide.

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				Our position is supported in recent reports, including Onsite Wastewater and Land Application Systems: Consumptive Use and Water Supply by D.E. Radcliffe, L.T. West, L.A. Morris, and T.C. Rasmussen (http://apps.caes.uga.edu/urbanag/WasteManagement/Consumptive_water_use.pdf) and Influence of Septic Wastewater-Treatment Systems on Base Flow in Southeastern Gwinnett County, Georgia, October 2007, by Mark N. Landers and Paul D. Ankcorn (http://www.gwri.gatech.edu/uploads/proceedings/2009/5.5.1_Landers.pdf.). Notably, some of the draft plans indicate that more than half of the municipal and industrial wastewater generated is treated in septic tank systems or land application systems. To ignore the base-flow returns from such a large proportion of generated wastewater overstates consumptive use amounts in those plans. And in some plans, the consumptive use assumption for septic tank systems and land application systems appears to have given rise to a wastewater management strategy favoring the use of point source discharges on the mistaken premise that septic tank systems and land application systems are harmful to streamflows. Such a point-source strategy for streamflow improvement would be very costly to implement in terms of additional sewer infrastructure and treatment capacity requirements and yet such a strategy would not yield proportionate streamflow benefits because septic tanks and land application systems already support base flow returns to streams. We suggest that the plans note that as a “simplifying and conservative assumption” stream base flow returns from septic tank systems and land application systems have not been accounted for in the initial plans and will be included in future plan updates. The “time-frame rationale” should not be included in any of the plans as it provides no substantive value and otherwise serves to hurt technical credibility of the plans. The ten draft plans provide a great deal of basic descriptive information and analyses in one place and will serve as a useful reference source in that regard. However, much of the modeling and associated assumptions, along with the nagging lack of a credible data base in many settings,

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				makes the plans generally unsuitable for specific permitting purposes. The ten draft plans and the Metro plan will need to be integrated and optimized on a statewide scale to build a Statewide Water Plan that is not unduly constrained by regional boundaries or myopic views about the need for ample water supplies to meet all reasonable future water needs statewide. The Statewide Water Plan will need to be much more than just the sum of eleven different regional plans. We are concerned that without a well-integrated state water plan, some parts of the state may suffer recurrent water shortfalls causing economic stagnation or decline even as other regions enjoy a water surplus. The key to a successful Statewide Water Plan is to invent and optimize solutions at the right scale. We appreciate your consideration of our comments. Sincerely, GEORGIA INDUSTRY ENVIRONMENTAL COALITION, INC. Gregory L. Jones Tammy R. Wyles Vice Chair, Board of Directors Chair, Board of Directors Chair, Water Resources Workgroup
Katie Kirkpatrick	**6/23/2011**	**Posted**	• Altamaha • Coastal Georgia • Coosa North Georgia • Lower Flint Ochlockonee • Middle Chattahoochee • Middle Ocmulgee • Savannah Upper Ogeechee	June 23, 2011 Mr. Allen Barnes Director, Georgia Environmental Protection Division 2 Martin Luther King Jr., Drive Suite 1152 Atlanta, GA 30334 RE: Draft Regional Water Plans Comprehensive Statewide Water Management Plan Dear Director Barnes: The Georgia Water Alliance is a broad coalition of stakeholders representing business, local government, water service providers, utilities and agribusiness

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
			• Suwannee Satilla • Upper Flint Upper Oconee	interests. The Georgia Water Alliance (Alliance) was formed in 2006 to provide a unified voice during the development and implementation of Georgia's Comprehensive Statewide Water Management Plan (State Water Plan). We fully support the legislature's water policy statement that "Georgia manages water resources in a sustainable manner to support the state's economy, to protect public health and natural systems, and to enhance the quality of life for all citizens." Given our history with the development and implementation of the State Water Plan, we offer the following comments and recommendations on the content of the regional plans. 1. Implementation of Regional Water Plans. The State Water Plan states in Section 14 that "upon adoption, the Director shall use the water development and conservation plans to guide decisions regarding permitting." However, in the background contained in Section 14 the following statement is made: "Once adopted by EPD, the regional WDCPs will be used by EPD as a basis for making permitting decisions." Further, O.C.G.A. 12-5-522(e) states "the Division shall make all water withdrawal permitting decisions in accordance with this chapter, the comprehensive state-wide water management plan that has been approved or enacted by the General Assembly as provided by this article, and any applicable regional water development and conservation plan." (Emphasis added). These statements contradict each other and do not provide clarity in how the Georgia Environmental Protection Division (GEPD) will implement the regional water plans with regard to permitting. This is especially troubling considering the iterative and adaptive nature of planning as well as numerous calls by regional councils for additional monitoring, data collection and modeling needs. The Alliance recognizes that the initial plans are based on the best data available at the time of development. However, with overarching concerns about the flow data used to model current and future water availability, it is

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				unwise to require permitting decisions to be made solely on the regional plans. Recommendation: The Georgia Environmental Protection Division (GEPD) should clearly state in each regional plan the following: This regional water development and conservation plan shall be used to guide permitting decisions by the Georgia Environmental Protection Division but should not be considered as legally binding when developing water withdrawal and discharge permits. The Division retains the legal authority to issue permits that are consistent with state law and that consider, but may not fully conform with, this regional plan. 2. Use of Unimpaired Flows The Alliance remains very concerned that use of unimpaired flows in the water resource assessment will become an EPD permitting requirement replacing the 2001 DNR policy on instream flow protection which utilizes real streamflow data. GEPD staff has explained that the intent of the water resource assessment is to provide general guidance on the future availability of water. GEPD also stated that the specific gap numbers generated are not intended for current or future water withdrawal permit decisions. However, GEPD stated that the connection between planning and permitting is unclear. Future surface water withdrawal permitting decisions will be made by EPD staff and, if appealed, by administrative law judges. We can, unfortunately, foresee the possibility of future decisions requiring use of virtual unimpaired flows rather than real streamflows on the basis that the water resource assessment is part of the State Water Plan and that the Plan supersedes previous DNR policy.

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				Recommendation: Each water resource assessment and regional water plan should contain a clear discussion on the use of unimpaired flows and the use of the assessment. This discussion should definitively state that the assessment is for general planning purposes only and is not to be used for permitting decisions. Also, the discussion should verify that the 2001 DNR policy, using real streamflows, is operative until such time it is changed by the DNR Board. 3. Future Work of Regional Councils Multiple regional councils identified the need for additional data collection, modeling efforts, state action and plan revisions. Yet, the State Water Plan did not address future needs for regional planning upon completion of the first iteration. It is critical that each council and council member continue the work that has only just begun and that continuity is ensured. In addition, the regional councils have identified various practices and projects that require funding and technical expertise. The regional plans also contain recommendations that are similar in scope. Implementation of resources should be coordinated to prevent duplication across the regions. There remains no mechanism for this to occur. The regional planning effort has produced 10 regional planning documents with no implementation strategy. Recommendation: Each regional water council should be reconstituted. Each regional water plan should include an implementation strategy with funding sources identified. These sources should not rely solely on local governments but a mix of local, state, federal and private dollars. Human capital must also be assessed and immediate action items should be included. 4. Measurement of Progress

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				Each regional council should be commended on their tremendous leadership and time expended in the development of each plan. With the scope and technical complexity related to water analysis, these plans are an extraordinary achievement for Georgia born out of countless volunteer hours. The plans have identified the potential gaps in water supply and assimilative capacity as required and proposed various management practices to close the gap. However, it appears that the practices have not been modeled to confirm their positive impact. Further, to fully understand our progress, each region must benchmark existing water conditions and define metrics by which to measure progress. The regional water plans do not consider or discuss how progress is reported and ensured. In addition, the regional approach to water management maximizes local control over regional water resources. No region should be allowed to have conditions at an exit node below the flow guidance (the monthly 7Q10 or inflow, whichever is less) or below the assimilative capacity needed by downstream users. Recommendation: Each regional plan should establish reasonable benchmarks by which progress can be measured. The basin plans should also offer a reasonable glide path to closing all modeled gaps, over time, to assure both water quantity and water quality for downstream users. 5. One "State" Water Plan At the end of this process, Georgia will have 11 regional water plans (10 regional water plans and 1 Metropolitan North Georgia Water Planning District plan). It was the intent of the State Water Plan to create one plan for Georgia through the efforts of regional planning. It is important to ask how will these 11 plans be integrated and, once combined, does the new State Water Plan address the top water issues for the State of Georgia. For example, collectively, do the plans address the ongoing dispute over the ACF and ACT river systems? Do the plans secure water supply for North Georgia? Do the plans address the agricultural water needs of Southwest Georgia? Recommendation:

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Name	**Date**	**Status**	**Comment Received by**	**Comment**
				The Georgia Environmental Protection Division should develop and publish a strategy for integrating the 11 regional water plans into one document. A rationale should also be developed demonstrating that the plans have met the long-term water needs of Georgia. In conclusion, Georgia must remain a competitive state and remain open for business. Perception by our peers and critics is that Georgia is out of water. These plans are a critical link to demonstrating that Georgia is taking proactive steps to ensure adequate water resources for our water future. Sincerely, American Council of Engineering Companies of Georgia Associated General Contractors, Georgia Branch City of Austell“ Public Works Council for Quality Growth Georgia Agribusiness Council Georgia Association of Manufacturers Georgia Association of Water Professionals Georgia Beverage Association Georgia Chamber of Commerce Georgia Chemistry Council Georgia EMC Georgia Industry Environmental Coalition, Inc. Georgia Mining Association Georgia Paper and Forest Products Association Georgia Power Company Metro Atlanta Chamber Oglethorpe Power Corporation Regional Business Coalition of Metro Atlanta The William L. Bonnell Co., Inc. Urban Ag Council Please direct inquiries about the Georgia Water Alliance, c/o Ms. Katie Kirkpatrick, Vice President - Environmental Policy, Metro Atlanta Chamber of

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				Commerce, 235 Andrew Young International Boulevard, NW, Atlanta, GA 30303 or kkirkpatrick@macoc.com.
Alex Kearns	5/11/2011	Posted	• Coastal Georgia	Regarding the projected estimates for Camden County, Ga, is the EPD aware of this http://www.propertysystemsland.com/images/idlewildebook.pdf ? The Idlewilde project, combined with the previously-approved Cabin Bluff development plan (DRI #1905), means that the number of single family units being considered for future development is a staggering 52,948 homes. http://www.co.camden.ga.us/DocumentView.aspx?DID=732 If the estimated 53,000 (approx.) single-family homes are built and occupied over the coming years (and assuming a family size average of 3.5), that would mean an increase of 185,500 people in Camden County - thus effectively tripling our population and water demands.
James Haun	5/12/2011	Posted	• Coosa North Georgia	The chickamauga creek located in walker county runs north to Chattanooga Tennessee. This is an excellent source for water. Why not use Georgia water for Georgia residents. This would not have legal complications because all water originates in Georgia.
William Moore	5/9/2011	Posted	• Coosa North Georgia	The current and future water demand and wastewater assimilation of the Upper Chattahoochee River located in parts of Dawson, Habersham, Lumpkin, and White Counties do not appear to have an appreciable negative impact on the Metropolitan North Georgia Water Planning District.
Bryan Tolar	6/27/2011	Posted	• Lower Flint Ochlockonee	The agriculture industry is the state's largest economic engine and in this region, it represents 43% of the land use in row crops and pasture alone. It has a strong record of stewardship and current efforts to develop even more efficient irrigation systems suggest our conservation practices are not wavering. We commend the Lower Flint - Ochlockonee Regional Water Council for their countless volunteer hours to analyze, plan and suggest implementation for water management practices that would benefit their area with regard to the economy, the environment and the population. We believe they have done just that and are pleased to support many of their findings and suggestions.

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
				We agree with the Council that the criteria used to determine gaps for surface water flows are not the appropriate metrics to use when evaluating the impacts of consumptive water use. Measuring our progress is of critical importance in future planning efforts and we support efforts to assess the extent of existing water conservation activities. It is indeed important to highlight the impacts water use has on the resource, but the data generated to establish “gaps” for this region of the state appears far from perfect. Furthermore, the continued evaluation of irrigation water as being 100% consumptive contributes to conclusions that are misinformed. As long as these variables remain off target, the results will draw incorrect conclusions. In fact, preparing for the future should be considered the most important aspect of the water planning process. The Council’s recommendations to analyze the possibilities of new reservoirs, best management practices for agricultural permit holders, and the development of farm ponds are all solid aspects of water planning that should be carefully considered and implemented as practicable. Protecting the integrity of agricultural water use permits is of the utmost importance as it contributes to protecting the investment of crop production for those rural communities, input suppliers and consumer markets. We appreciate the willingness of the Environmental Protection Division to take input regarding this important issue and for providing technical assistance throughout the process. Please contact us if we can be of further assistance. Respectfully, Bryan Tolar Daniel Groce President Public Affairs Coordinator

Comments Submitted Through the Web Comment Tool Online				
Name	**Date**	**Status**	**Comment Received by**	**Comment**
Neil Fleckenstein	6/23/2011	Posted	• Lower Flint Ochlockonee	June 23, 2011 Ms. Arnettia Murphy Georgia Department of Natural Resources Environmental Protection Division 2 Martin Luther King Jr. Drive Suite 1152, East Tower Atlanta, GA. 30334 Dear Ms. Murphy, I would like to offer the following comments on behalf of the Tall Timbers Land Conservancy (TTLC) in Tallahassee, Florida. The TTLC is one of the largest regional land trusts in the southeastern United States, holding conservation easements on nearly 115,000 acres of land in south Georgia and north Florida. We have significant conservation interests in both the Ochlockonee River and Flint River watersheds. Our staff have reviewed the Lower Flint-Ochlockonee River Regional Water Plan and offer the following comments. • Overall, the Lower Flint-Ochlockonee River Committee and the planning consultant did an admirable job given a highly complex task, time limitations, and data constraints. • Staff agree with the committee's "High Priority Management Practice" to continue to improve agricultural water efficiency through innovation. Aggressive conservation measures should be the centerpiece of any water planning effort. We would expand the recommendation to include aggressive water conservation measures by all users including agriculture, municipalities, residences, business and industry, and electric power producers. • Staff agree that additional study and data are needed to better understand the critical issue of shortfalls ("gaps") in the capacity of water resources to meet water supply needs. Any effort to study water supply gaps should focus on meeting human needs and the ecological needs of

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				the Flint and Ochlockonee Rivers and their respective tributaries. • Staff agree with the need for continued funding for water resource planning in the Lower Flint-Ochlockonee River watersheds and throughout Georgia. Funding is needed to address data gaps including (but not limited to): impacts to natural systems from reservoirs and large impoundments; re-examination of groundwater modeling for major aquifers in the state; and research on the rate and proportion of return to the system for water used in agricultural irrigation. Funding is also needed for professional water resource planning staff at the regional level. As Georgia's population and agricultural economy grow, demand for scarce water resources will require that regional water councils (or water management districts) have the professional expertise necessary to inform policy makers regarding difficult water resource decisions. • Staff disagree with the recommended "High Priority Management Practice" to evaluate reservoir storage options in the Lower Flint River Basin. Specifically, staff are concerned about the potentially adverse impacts associated with large volume, main stem and tributary impoundments in the Lower Flint (e.g. altered flow regimes, changes to sediment transport, impacts to water quality and habitat, etc.). • Staff recommend as regional water planning in the Lower Flint-Ochlockonee River watersheds continues, that the advisory committee be broadened to include members with scientific, academic, and conservation backgrounds. • Understandably, the vast majority of the Committee's efforts have been directed toward the Lower Flint. However, the Ochlockonee River could benefit from additional study regarding water quality impacts, flow

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Name	**Date**	**Status**	**Comment Received by**	**Comment**
				requirements to meet reasonable beneficial uses while maintaining a healthy river and tributary system, and management recommendations â€“ specifically tailored to the Ochlockonee River â€“ to achieve these outcomes. Thank you for the opportunity to comment on the Regional Water Plan. Do not hesitate to contact me should you require any additional information. Regards, Neil Fleckenstein, AICP Planning Coordinator Tall Timbers Research Station & Land Conservancy 13093 Henry Beadel Drive Tallahassee, FL 32303
bradley currey	6/22/2011	Posted	• Lower Flint Ochlockonee	This is in reply to your request for comments on the regional water plans. The following are my comments on the Lower Flint Ochlocknee Water Plan. This plan clearly identified a big gap in resource availability in the event of a severe drought. What is missing is any indication of what the agriculture interests and the local water utilities are prepared to do to reduce the gap in order to help themselves. Therefore, the gap would presumably be met by drawing more water from the Chattahoochee basin in order to meet the minimum flow requirements at the Florida line. It seems to me at the bare minimum folks in the Flint River Basin need to implement conservation measures such as those that have been implemented in the Metro North Georgia Water Planning District to reduce demand. Those measures have made a significant dent in the per capita consumption in the Upper Chattahoochee Basin and an improvement in the quality of the returns. The agriculture sector, as the largest user in the Flint basin, needs to refocus on all possible effective conservation measures in order to avoid "the tragedy of the commons," particularly because of the dire economic consequences to itself and

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				for the economy of the state if they do not. Clearly, there do need to be efforts to develop water storage in the upper reaches of the Flint River, but there is much that could be done here and now. We all know that reservoir building will be slow and contentious and it does not seem to be prudent to wait on that. The fundamental problem is that at the point when a drought would have gotten really severe, Lake Seminole, Lake Walter F. George and West Point Lake will have been drawn down to the point where virtually 100% of the water supply will have to come out of Lake Lanier. That in itself is an unsustainable solution. The bottom line is that we are going to need a State Water Plan that reconciles differences between and among the regional plans and sets standards to which the regional plans must comply in order to get water and wastewater permits. Given how long it will take to get additional reservoirs built and operating, conservation measures like tiered pricing, plugging leaks, appliance replacement, etc, etc., need to start now. Thank you for considering these comments. Brad Currey
James McClatchey	5/23/2011	Posted	• Lower Flint Ochlockonee	The Lower Flint is one of the finest agricultural areas in the state. With the price of corn and cotton at record highs, it is a golden time for agriculture in South Georgia. The basis of this economy is irrigation from the aquifers which lay under the entire region. These aquifers are vast and quickly recharge from rainfall, but they are not unlimited and have direct effects on surface water flows which go far beyond the usage in the immediate area. It is regrettable that this plan is so inadequate to the task it lays out for itself of assuring the sustainable use of the valuable water resources in the area. The key paragraph to understanding the intention of the council is on page 8 in the Executive Summary: The Lower Flint-Ochlockonee Council questions whether the criteria used to determine “gaps” for surface water flows are appropriate metrics by which to

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				evaluate the impacts of consumptive water use on the state's water resources. The "gaps" do not provide for reasonable use by lawfully permitted users. Moreover, the "gaps" are not defined in terms of any demonstrable environmental harm. Closing the identified "gaps" could ultimately cause significant harm to the region's economy and would be counter to the Council's Visions and Goals. Therefore, the Council insists that no modifications to existing water withdrawal permitting practices be enacted based on the assessment model results." In more direct words: we don't believe the data presented by EPD, we are not changing anything, and, as a matter of fact, we intend to use even more water in the future. This is not a sustainable plan for the resource. The entire ACF basin is an integrated system. Water taken from anywhere in the basin of the two rivers has an impact on all users of the basin. This is true of the users in the metro Atlanta area and is true of the irrigators in the Lower Flint. Because of the direct interchange between groundwater and surface water in the lower Flint, agricultural irrigation has a direct effect on the flow in the Flint. It may seem like groundwater to the farmers, but they may as well be pumping directly out of the river. Indeed, from the point of view of Woodruff dam at the Florida line, a gallon of water used to flush a toilet in Atlanta is the same as a gallon of water used to irrigate a corn field in Camilla. The "gap" at Bainbridge has significance far beyond the users downstream of Bainbridge. The Corp of Engineers operates Woodruff Dam at the Florida line with a minimum flow of 5000 CFS. For a variety of reasons, it is highly unlikely the resolution of the tri-state water wars will lead to a lower number in the future. If anything, it is more likely to be a higher number than a lower one because of endangered mussels in the Apalachicola River, thermoelectric generation on the Apalachicola, and the impact on the fishery in Apalachicola Bay. It is critical to realize that because of the flows required at Woodruff Dam, flows of the Flint River that fall below the normal historical contribution(below 7Q10) of the Flint River to the Apalachicola River must be made up from the

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				Chattahoochee, or more particularly, from the reservoirs in the Chattahoochee. In other words, during drought conditions, water from Lake Lanier and the other Chattahoochee reservoirs is being used to facilitate unlimited use of groundwater in the Lower Flint. This is neither just nor sustainable. The Lower Flint/Ochlockonee plan expresses disbelief at EPDs data. This disbelief is correct not because it has overstated, but because it is most likely has understated the water usage in the lower Flint. There are three obvious flaws. First, the permitting system for agricultural groundwater withdrawals generally covers wells sized 6" or above. There are numerous 4" wells scattered all over the area which pump unknown amounts of water; some of them running 24 hours a day. Second, wells are permitted by bore size and not by volume. The state program designed to measure irrigation flows has been continuously underfunded. It is a near certainty that groundwater use far exceeds the official measurements. Finally, the dry year groundwater use numbers are based on a 75th percentile flow. 25% of the time, groundwater use will be even higher. It is in the time of this highest need that the effects up and downstream become the most severe. But even taking the numbers at face value leads to striking conclusions. A comparison of the Lower Flint/Ochlockonee Plan against the North Georgia Metro Planning District 2009 Metrics document is a starting point. Keep in mind that many in the lower Flint think Atlanta is using too much water. Page 8 of the Lower Flint document contains the following paragraph: Current water use in the Lower Flint-Ochlockonee Region is approximately 872 million gallons per day (MGD). Water use in the region is projected to increase to 1,037 MGD in 2050. Currently, agriculture is the largest water using sector in the region by a significant margin, and it is expected to remain the largest water user through 2050. As a result, much of the Council's planning effort has been focused on the agricultural sector. The Council notes the importance of agriculture to the region's economy in its goals. Wastewater flows in the region are currently approximately 317 MGD and expected to remain at a similar level in 2050. From this paragraph, the net consumptive use in the lower Flint would be 872-

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				317 = 555 MGD. (The 317 MGD return figure includes septic systems and land application systems (LAS) of 32 MGD per day- see page 23. There is dispute as to whether these systems should be included in calculations of wastewater returns.) The North Georgia document contains the following information on page 34. Withdrawals in the metro district from the Chattahoochee and Flint basins in 2009 were 370 + 16 = 386 MGD and net returns 292 + 8 = 300 MGD. (This net return does not include septic tanks.). Net use then from these two basins in the metro area was 86 MGD. The amount used in the lower Flint (555 MGD) is more than 6 times what is used in the metro Atlanta area! It is important to also note that the net use in the metro area has been reduced from 213 MGD since 2000 - an almost 60% reduction. Riparian rights allow for “reasonable” use. The current unlimited issuance of groundwater permits in the lower Flint is a threat to every other user in the basin all the way back to the headwaters of the Chattahoochee in far north Georgia and falls far outside reasonable use. EPD should modify this plan to close the Bainbridge “gap” . In particular, EPD should consider adding the following to the plan: 1. A moratorium on new agricultural well permits in the lower Flint. 2. An invigorated and adequately funded program to permit and measure water that includes smaller wells down to at least 4” bore size. 3. Quantity based groundwater withdrawal permits along with implementation of an absolute cap on irrigation flows during drought conditions. 4. Additional funding for the UGA Stripling Irrigation Research Center and in particular for the replacement of three recent vacancies in faculty at UGA-Tifton specializing in water resources. This research should be directed at more efficient irrigation systems as well as research on the effect of crop selection on water use. 5. Mandatory use of best practices in irrigation throughout the lower Flint. 6. Development of a meaningful plan to reduce irrigation during droughts so that the Flint contributes its historical percentage of flow into the Apalachicola River and does not over commit the Corp of Engineers reservoir system on the

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				Chattahoochee. What is underway in the lower Flint is a classic "tragedy of the commons". Because individual users are shielded from the full impacts and costs of their use, the groundwater and surface water resources are overused and over-committed. The impact of this overuse is being felt throughout the ACF system. Current usage in the lower Flint coupled with the operation of the reservoir system on the Chattahoochee to assure flows at the Florida line creates the largest inter-basin transfer in the state from the Chattahoochee to the Flint. The proposed plan fails to protect the sustainability of its own resources and threatens the availability of water throughout the ACF. The "gap" at Bainbridge must be closed. Thank you for the opportunity to comment. James N. McClatchey Atlanta
Brad Moore	6/23/2011	Posted	• Middle Chattahoochee	These comments regarding the Georgia Regional plan for the Middle Chattahoochee River come from the Indian Hills Neighborhood Association (IHNA), an organization of homeowners living on Lake Walter F. George interested in protecting and promoting the lake. IHNA applauds the work of the GEPD and the councils in developing the plans and we hardily support most of the recommendations. We support the Middle Chattahoochee recommendations concerning reservoir level for Walter F. George and the 2000 cfm average daily flow at Columbia, Alabama. We are quite concerned about the projection for increased nutrient levels coming from metro Atlanta point sources over the next 10 years. The consequences of these high levels of nutrients could have significant adverse impacts on fish and other aquatic life in the lake. IHNA recommends increased monitoring the middle Chattahoochee and Indian Hills residents will be glad to assist in sampling and reporting to aid GEPD. In addition, we would like to see stronger effluent controls on the point sources to ensure nutrient levels do not reach detrimental levels.

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Name	**Date**	**Status**	**Comment Received by**	**Comment**
				We thank GEPD for the opportunity to comment on the regional plans.
Steven Burns	6/23/2011	Posted	• Middle Chattahoochee	Following is the text of comments submitted on behalf of Tri Rivers Waterway Development Association by its President, Billy Turner, with respect to the Initial Plans prepared by the Middle Chattahoochee, Upper Flint, and Lower Flint-Ochlockonee Regional Councils. A letter with the same text, which includes attachments, is also being submitted today via e-mail to EPDComments@dnr.state.ga.us. Ms. Arnettia Murphy Georgia Department of Natural Resources Environmental Protection Division 2 Martin Luther King Jr. Drive Suite 1152, East Tower Atlanta, Georgia 30334 Re: Initial Recommended Regional Water Plans for the Middle Chattahoochee, Upper Flint, and Lower Flint-Ochlockonee Regional Water Councils Dear Ms. Murphy: As part of Georgia's water planning process, the Environmental Protection Division of the Georgia Department of Natural Resources ("EPD") has solicited public comments on Initial Recommended Regional Water Plans ("Initial Plans") developed by the regional water councils. This letter provides the comments of Tri Rivers Waterway Development Association ("TRWDA") regarding the Initial Plans for the Middle Chattahoochee, Upper Flint, and Lower Flint-Ochlockonee Regions. For 51 years, TRWDA has worked on behalf of its members in Alabama, Florida, and Georgia to support the Apalachicola-Chattahoochee-Flint ("ACF") River Basin. TRWDA is guided by the following mission: To promote an understanding of the true value of the ACF navigation channel and sustainable flows to the people of the ACF Basin and to work with the Corps

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				of Engineers, federal, state, and local agencies, and other stakeholders to develop environmentally sound solutions to channel maintenance problems such that a reliable channel can be maintained with reasonable flow support. These efforts must take into account the various uses of the system including agriculture, industry, municipal use, economic development, tourism, water quality, and recreation. TRWDA supports Georgia's efforts to initiate the planning process while recognizing the water resources in the ACF River Basin are highly complex with significant political, economic, and environmental issues unresolved. TRWDA applauds the hard work of the Councils and EPD in developing the plans. In general, we support most of the recommendations contained in the three reports. We offer the following specific comments and suggestions. As issues are resolved or operating plans change, the basis for certain assumptions made in this planning process are also subject to change, and the planning projections, conclusions and recommendations may require reconsideration. For example, the Corps of Engineers is planning to release a draft Master Water Control Manual for the ACF Basin ("ACF Master Manual") later this year. That document is subject to change, depending on public comments and the outcome of the multidistrict litigation. Any changes to the Master Manual that deviate from current practices may affect the Initial Plan's assumption of "no shortfall along the Chattahoochee River . . . on the basis that the current Revised Interim Operations Plan (RIOP) remains unchanged and conservation storage (in both Lake Lanier and Lake West Point Reservoirs) is available to fulfill demands," as stated in Section 5.1 of the Middle Chattahoochee Initial Plan. To the extent any of those changes result in limitations not accounted for in the Initial Plan, we urge EPD to remain cognizant of the needs of the Middle Chattahoochee area and review and reconsider any unforeseen impacts to the region. Industry is a significant contributor to the economy of the State of Georgia and the region. However, the need for water to support existing and future industry is not adequately recognized in the currently recommended plan. For example, at

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				Figure 4-3, Water Demand in 2010 and 2050, the Middle Chattahoochee Initial Plan assumes total industrial water demand for 2010 to be 4 million gallons per day ("mgd"), and it projects no increase in industrial water usage through 2050. The same figure assumes total industrial wastewater flow for 2010 to be 3 mgd, also with no change projected for 2050. Those assumptions significantly underestimate present industrial activity on the Middle Chattahoochee. We understand that Georgia planners did not receive water usage data from Alabama, and that may contribute to the report's underestimate of current industrial water usage and wastewater discharges. However, TRWDA is aware of a single facility in the ACF Basin with actual withdrawals from the Middle Chattahoochee River of 27.0 mgd in 2010 and wastewater discharges of 21.2 mgd in the same year. Further, whatever the correct figures for 2010 may be, the Initial Plan should not assume indefinite zero growth in the region, to the extent that assumption may contribute in any way to a limitation on future decisions to site critical and much-needed industrial or manufacturing sites in the Middle Chattahoochee region. In general, TRWDA supports the recommendations to the State made by each of the Councils contained in Section 7.4 in each of the three plans. Specifically, we would like to add TRWDA's strong support to the Middle Chattahoochee recommendation concerning reservoir elevations and stream flows. These elevations and flows are shown in Table 5-1 on page 7-14. These requirements have been developed by the Middle Chattahoochee Water Coalition and adopted by the TRWDA Board. In addition to the 7-day average flows in Table 5-1, other minimum flow rates are required. These include an 800 cubic feet per seconds ("cfs") continuous minimum and a 1,350 cfs average daily flow at the Columbus gage and a 2,000 cfs average daily flow at the Columbia, Alabama, gage. In addition, the three Councils have statements in each of their reports under Section 7 entitled, "Coordinated Recommendations with Neighboring Councils." These common sections address (1) the need for more storage, (2) improved modeling and data, and (3) justification for minimum flows at Woodruff Dam. TRWDA wishes to add its support to these coordinated recommendations to the State.

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Name	**Date**	**Status**	**Comment Received by**	**Comment**
				At the same time, TRWDA urges EPD to acknowledge that the Middle Chattahoochee River and Flint River Basins have independent needs, both of which depend on adequate flows in the two respective rivers. TRWDA is particularly concerned about minimum flow requirements at Woodruff. In the past, when rainfall has been relatively heavier in the Flint River Basin, the Corps has used the "windfall" of stronger flow from the Flint to justify reduced releases from its Chattahoochee reservoirs, for purposes of maintaining minimum flows at Woodruff. We urge EPD to support and defend adequate flows for the Middle Chattahoochee region, regardless of the volume of Flint River flows. Another TRWDA concern is for water quality and the assessments performed in the planning process. It is our understanding that the water quality model outputs arrived very late in the planning process and that the Councils had very little time to evaluate and comment on their content. Specifically, TRWDA members have raised concerns about (1) the timing and quantities of reservoir releases to maintain and/or improve water quality in the Chattahoochee River below the Columbus planning node; (2) how the nutrient loadings (as measured by Chlorophyll A) below the Columbus node in Walter F. George Reservoir were developed; and (3) substantial variations in nutrient levels predicted by the models (both higher and lower) compared to actual field measurements. In addition, there appears to be a limited amount of field data points used for model calibration. We urge EPD to evaluate nutrient levels in a manner that acknowledges the extent to which upstream nutrient loading affects downstream areas and is beyond the ability of a downstream community to control. As noted above, navigation in the ACF River Basin is an important component of TRWDA's mission. TRWDA would like to highlight the statement contained in Section 3.2 of the Middle Chattahoochee Initial Plan concerning navigation. Navigation is a Congressionally authorized purpose of the Federal reservoir projects on the Chattahoochee River, and we agree as stated on page 3-5 that it is the responsibility of the Corps of Engineers to maintain a channel 9 feet deep and 100 feet wide.

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				TRWDA submitted to the Corps two sets of comments on the scope of the environmental analysis for purposes of revisions to the ACF Master Manual. In these two documents, dated November 21, 2008 and December 30, 2009, and attached for your convenience, TRWDA emphasized that the Corps must abide by the Congressionally authorized purposes of the ACF River System. TRWDA demonstrated that navigation was a lawful and Congressionally authorized project purpose for all five of the Corps' ACF reservoirs. Judge Magnuson's court order of July 7, 2009, has confirmed that navigation is among the authorized purposes of the ACF River System. The Middle Chattahoochee Initial Plan indicates in several places an intent to fulfill the authorized purposes of the ACF. Table 2-1 correctly shows navigation as being among the Congressionally authorized purposes of the five Corps of Engineers reservoirs in the ACF Basin. Section 3.2 correctly states, "Navigation is important to the regional economy and must be maintained between Columbus and Apalachicola Bay." Section 1.3 also acknowledges the role of navigation. However, some of the Plan's references to authorized purposes are incomplete. For example, the Initial Plan states at page 2-9, "The Middle Chattahoochee Water Planning Council has identified that the action zone values as developed contradict and compromise authorized purposes, specifically, recreational use at West Point Lake." The Initial Plan also refers to challenges to recreation at West Point in the context of Congressionally authorized purposes on pages 3-5 to 3-6 and 3-15. To the extent the Initial Plan indicates support for ACF project purposes, that support should extend to navigation. Most importantly, at Table 6-1, where Management Practice IU-2 references "Congressionally authorized purposes of federal reservoirs in the ACF Basin," that list of authorized purposes should include navigation. Further, to the extent Management Practice IU-2 references "Congressionally authorized purposes," the list should include only those project purposes shown in the far right column of Table 2-1. To the extent any purpose listed there is not a "Congressionally authorized" reservoir purpose, it is incorrect and inconsistent with Table 2-1. TRWDA concurs in supporting the Congressionally authorized uses of the Corps' ACF reservoirs, including navigation. Congress intended to provide 308 navigable

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				river miles for the ACF River System, and flows sufficient to provide for navigation also support industrial and municipal water users to stimulate much needed economic development for the middle section of the ACF Basin. TRWDA has been developing a plan that would improve navigation in a manner that minimizes impacts to upstream reservoirs and complies with the RIOP. Our intent is to submit this work to the Corps in the context of proposed revisions to the ACF Master Manual, but we would be pleased to discuss our studies and modeling with EPD as well. TRWDA commends the State of Georgia for initiating this planning process, and we thank you again for the opportunity to provide comments. If you have any questions, please feel free to call Executive Director Billy Houston at (334) 688-1000 or me at (706) 596-1630. Sincerely, /s/ Billy Turner Billy Turner President Attachments
William Moore	5/9/2011	Posted	• Middle Chattahoochee	Middle Chatahoochee River Basin does not appear to be negatively impacted by the current water demand or the current wastewater assimilation upstream in the Metropolitan North Gerogia Water Planning District.
Bryan Tolar	6/29/2011	Posted	• Middle Ocmulgee	The Middle Ocmulgee region is made up of many industry sectors and water uses, and the future forecasts of population growth indicate the strength of the region. Agriculture plays a vital role in the economies of counties located in the southern part of the region, specifically in Houston, Pulaski and Peach Counties. It is important to plan for the expected population increase that will occur over the next 40 years. For this reason, water conservation and storage are of the utmost importance. We commend the work of the Georgia Soil and Water Conservation Commission for educating and assisting Georgia's agriculture industry on innovative ways to conserve water and improve efficiency. We encourage the state to invest needed funds in these efforts as well as planning for reservoir development.

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Name	**Date**	**Status**	**Comment Received by**	**Comment**
				Preparing for the future should be considered the most important aspect of the water planning process. The Council's recommendations to analyze the possibilities of new reservoirs, best management practices for agricultural permit holders, and the development of farm ponds are all solid aspects of water planning that should be carefully considered and implemented as practicable. We had an opportunity to work with lawmakers in crafting legislation dealing with agricultural withdrawal permits, and we support the Council's recommendation of implementing this new process. Reclassifying dormant permits will help the Region assess the impact agricultural irrigation has on the water management of the area. Furthermore, the continued evaluation of irrigation water as being 100% consumptive contributes to conclusions that are misinformed. As long as these variables remain off target, the results will draw incorrect conclusions. We appreciate the willingness of the Environmental Protection Division to take input regarding this important issue and for providing technical assistance throughout the process. Respectfully, Bryan Tolar Daniel Groce President Public Affairs Coordinator
Rachel Jones	6/23/2011	Posted	• Middle Ocmulgee	As the Planning Contractor for the Middle Ocmulgee Council, we received the following comment from Dr. Johnny Bembry, a member of the Middle Ocmulgee Council, and are posting it on his behalf. A number of rural neighbors here in Pulaski County who rely on private wells for their water supply have run out of water during the past week (as of June 6, 2011). This prompted me to try recollecting when and how we addressed such situations on our regional water plan. In reviewing the document which is now available for public comment, I couldn't find rural residential water deficiencies addressed in any manner. This is not a new problem in our area. It has occurred during extreme drought periods in the past and is often resolved by the homeowner having a well drilling contractor lower the submersible pump or in

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				some cases having a new well drilled. It is obvious that the problem occurs most often during drought periods (which obviously are concurrent with periods of heavy irrigation water usage). I asked some related questions of the geologist/hydrologist who gave us the "updated information" on aquifer water supply. My question was more specifically related to the obvious "drying up" of flowing springs in our region since irrigation has become so prevalent, but obviously the rural well situation would be related. As best I can recall, his response was that there is no gap (between supply and demand). With full appreciation that he was addressing supply from each respective aquifer and that these residential wells very likely don't draw from an aquifer which he studied, it still seems that we should consider those sources before we declare there is no "gap". It seems to me that the public would be surprised to find that this issue was not addressed in our regional water plan, especially those members of the public who are without water at their sink. Furthermore, it seems that the last section in the plan which addresses issues which should prompt review or reassessment of the plan should include extreme weather events, such as severe drought or flooding. Johnny Bembry
Frank Stephens	5/13/2011	Posted	• Middle Ocmulgee	Priority management practice WS2 states the importance of reclaimed water discharges to the sustainable yield of the basin. Gwinnett County is currently completing a $277 million upgrade of its 22-mgd Yellow River Water Reclamation Facility.
Jerry Murkerson	5/13/2011	Posted	• Middle Ocmulgee	Please insert the 2010 census data on tables 2-1 and 4-1.
Sam Booher	6/22/2011	Posted	• Savannah Upper Ogeechee	Arnettia Murphy 22 June 2011 Subject: Public Comment: Savannah River -Upper Ogeechee Regional Water Plan Dear Ms. Murphy:

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Name	**Date**	**Status**	**Comment Received by**	**Comment**
				My name is Sam Booher. The following are my comments concerning the above referenced plan. I attended all of the Regional meeting and several Joint Regional meetings since they were initially formed and began meetings in 2008 I was very pleased both with how well I was welcomed and included in all of the Savannah Water -Upper Ogeechee Water Planning meetings and the Public Meeting held by the Water Planning Council. I recommend the Governor continue this program and that future regional council meetings continue including one or more public meetings solely for the purpose of presenting information and gathering public input. The Savannah River -Upper Ogeechee Water Planning council welcomed and included my comments at any time during their meetings and left an open period at the end for any additional comments I wished to make. Looking at the continuing drought conditions across Georgia and then at all of the Regional Water Plans. There seems to be a disconnect with regional water planning. As a Southern Company Shareholder I have been reading about future planned power plants that Southern Company intends to build in Georgia. I looked for this information being mentioned in the Regional Water Plans. There seems to be another disconnect. At a join Regional meeting held in Macon, the lack of information on water needs of future Southern Company planned construction of New Electrical Power Plants was evident. I offer that without this information, Regional Water Plans could be made irrelevant. The lack of this information presents a State wide problem that must be resolved. While water conservation measures were discussed, they are missing from the Final Recommendations to the State. The Savannah-Upper Ogeechee council's plan specifically included water conservation as a cost effective way to close water shortages, (see parg 6-1A/B). For some reason, this topic was dropped from the Final Recommendation to the State.

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				Having attended all of the Savannah-Upper Ogeechee Council's meetings, I am aware of the discussions and time spent discussing Inter Basin Transfers (IBT). Looking at the final report, I only find IBT mentioned in Section 1, parg. 1.312. Again the Final Recommendations to the State does not mention IBT. I can not imagine the council leaving it out so I can only conclude someone is making changes to the individual council's final reports. In fact the only topic left in the Savannah Water -Upper Ogeechee Water Council's Final Recommendation to the State concerned management of the water in Clark Hill Lake. One could conclude a lot of time was spent on this topic and that is not true. In conclusion, I recommend several actions. First, Metro Atlanta needs to look at raising Buford Dam two feet in height. This inexpensive method would add an enormous amount of water for Atlanta's future growth. Second, Georgia must not implement water management plans that impact downstream communities of future economic growth through Interbasin Transfers. Third, future Regional Councils need upfront information from Southern Company on specific locations, size, and planned water consumption of future power plants being considered. This information must be a priority for EPD to obtain and provide all councils. Last, Georgia should focus on aggressive water conservation measures which will provide water at a cost less than the expensive options currently being considered. Georgia can no longer continue wasting existing water.
Harris Little	6/7/2011	Posted	• Savannah Upper Ogeechee	I continue to be concerned that all the enforcement of any rules that may be written as a result of this plan will be brought to bear on local governments, while local governments are responsible for withdrawals and discharges of water most do a great job of returning water back to the streams that is of higher quality than is in the stream. Because of this, governments that do a good job

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				managing water and waste-water should be encouraged to use water not penalized for that use. While conservation is something that people should make a personal decision whether to do or not do, it (conservation) should not be the linchpin of our water planning. Increasing treatment capacity and doing everything possible to encourage interconnections between systems is by far the better way to insure we all have adequate drinking water supplies. There needs to be more examination of exactly how much water we have compared to what we use. All uses of water, whatever they may be, are a collective drop in the bucket compared to what we have available to us. Georgia gets a huge amount of rain, even in drought years, we get in the 30 inch per year range. Let the public know this, tell them how much water we have. 99% of people have no clue. Further effort must be made in regards to how the Corps of Engineers manages the federal reservoirs inside and on our state borders. Drinking water and other public uses must be the first priority. Work with our legislative delegation in Washington to make these changes. We have more than enough storage of water in this state, use what we have. Building more little "buckets" (reservoirs) is a colossal waste of time and money. People need to get off this fear of transferring water where you need it. Water is just a natural resource, like wood, natural gas, and others. Nobody cares where the wood that built your house comes from, or where the natural gas you cook or heat with originates, why this concern over water. If Atlanta needs the water we have, treat it and sell it to them, they have the money and we have the water. Thank God we can't hem up the air we breathe, some folks would want to stop the wind from blowing. One last point on transfers, water transfers happen and have been happening since the earth started. You'll notice I don't call them inter-basin transfers because there is only one basin, all water flows to the oceans and all the oceans are connected. These natural water transfers are commonly called rain. Surely nobody thinks the water that falls on Georgia evaporated from Georgia? Lets start thinking more regionally when it comes to water supply, and I don't mean basin regionally. I'm thankful that these resources have been studied and concern has been placed on water supply, I hope the people involved began to

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				realize that we have an abundant supply of water, and maybe they understand that we need more aggressive plans to use what we have and encourage interconnections and regional cooperation.
Larry Walker	5/31/2011	Posted	• Savannah Upper Ogeechee	I was a member of the Savannah Upper Ogeechee Council. I think our plan became much too technical as the process evolved. I believe that by far the most important contributions of the Council are in the Goals, and by far the most important one of those is regarding inter-basin transfers. No other factor, now or in the future, will or could have as much bearing on this watershed as inter-basin transfers. If nothing else is said or done regarding this effort, it should be remembered that this Council raised a flag of concern about inter-basin transfers, especially those that might be done to feed an insatiable appetite for water by a water wasting society in metro Atlanta.
Michael Massey	5/18/2011	Posted	• Savannah Upper Ogeechee	Disappointment – Plenty of good data gathering and documenting in sections 1-5 but: It is another well documented work of suggestions, guidelines and benchmarks for monitoring. I am not sure WHO or WHAT AGENCY will grab this and move forward with it. There are no strong legislative recommendations. Perhaps they have recognized that they have little strength to go forward with a hard recommendation. The final paragraph on page 8-5 says it all: The Council requests to form a permanent Savannah and Ogeechee water planning organization as the conduit for bringing together all stakeholders and assisting the State with implementation of water resource goals in the entire basin. One third of the current Water Planning Council will be grandfathered on the permanent organization. The discussions on this new organization are in the very initial stage. The Council recommends that any plan amendments be reviewed and approved by EPD until a future organization is formed. Any meetings conducted to review and approve future plan amendments should

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				invite stakeholders and allow for general public input. MY REVIEW: It certainly does little to provide a feeling that there will be major accomplishments resulting from this list of proposals. This is a disappointing end (at this point) for a lot of hard work. Little accomplishments in the pipeline.
Bryan Tolar	6/29/2011	Posted	• Suwannee Satilla	Agriculture plays a vital role in the economies of counties located in the Suwanee Satilla region. For this reason, water conservation and storage are of the utmost importance. We commend the work of the Georgia Soil and Water Conservation Commission for educating and assisting Georgia's agriculture industry on innovative ways to conserve water and improve efficiency. We encourage the state to invest needed funds in these efforts as well as planning for reservoir development. Preparing for the future should be considered the most important aspect of the water planning process. The continued evaluation of irrigation water as being 100% consumptive contributes to conclusions that are misinformed. As long as these variables remain off target, the results will draw incorrect conclusions. Protecting the integrity of agricultural water use permits is of the utmost importance as it contributes to protecting the investment of crop production for those rural communities, input suppliers and consumer markets. The economic importance of an abundant water supply cannot be overstated. We appreciate the willingness of the Environmental Protection Division to take input regarding this important issue and for providing technical assistance throughout the process. Respectfully, Bryan Tolar Daniel Groce President Public Affairs Coordinator

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Larry Hanson	6/21/2011	Posted	• Suwannee Satilla	The City of Valdosta would first like to commend the Georgia Environmental Protection Division (EPD), Suwannee-Satilla Council, and all others involved for their efforts throughout the regional water planning process. Each plan is specific to its region's water supply and needs, while also encompassing the intent of the Georgia Comprehensive Statewide Water Management Plan. Through the available data, reasonable recommendations have been identified for water supply, wastewater, conservation and stormwater. The recommendations reflect specifically our water sources, the agricultural, industrial, and municipal users, and recognizes the implementation needs of technical support, guidance, and funding. While a tremendous amount of data is available for the Suwannee-Satilla, there are areas that need attention and continued studies, including the regional management of stormwater. In early 2009, 46 counties in South Georgia were declared disaster areas as the result of flooding. The City of Valdosta was greatly impacted by this event as a result of being located on the downstream end of where the Withlacoochee River and Little River sub-watersheds join together. Valdosta contributes only approximately 1% to the total 1,450 square miles that drain into these watersheds, so without regional coordination our local efforts cannot solve the massive stormwater issue we inherit, and certainly we cannot prevent another event of the 2009 magnitude without state assistance, funding and regional support. Based on the EPD website, there are 105 cities and 39 counties that are permitted by the State through the Phase I or II programs. These federal regulations have helped to implement stormwater measures across the state; however, every community is impacted by stormwater and a large number of communities in Georgia are not taking appropriate measures to address the long-term impacts. By implementing a regional approach, this would help to streamline stormwater management through consistent control measures, regulations, and provide a more cost-effective approach. Through the proper evaluation, a series of storage areas could be identified to control stormwater flows, while providing additional benefits such as water quality, water quantity, and additional water supply. To implement such measures, the coordination

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				between local, state and federal organizations is critical. In addition, a regional task force or sub-committee should be formed, to continue the work of the Suwannee-Satilla Council, while representing all stakeholders and providing a formal planning mechanism to address the regional stormwater issues. Such a planning effort presents a unique opportunity to address multiple concerns as identified in the proposed regional water plan. For example, by seeking the opportunity to merge regional needs associated to agriculture, drought, and low flow with a regional challenge such as stormwater, the two issues can be addressed simultaneously and provide environmentally responsible solutions that best utilize our precious resources. The Suwannee-Satilla plan specifically recognizes the drought and low flow conditions experienced throughout the state and particularly in this area where agriculture is so important to the economy. Dramatic decreases in the average water depth of rivers has occurred based upon measurements from 1965 and 2000 as compared to present measurements. According to Brian McCallum, Assistant Director of the U.S. Geological Survey, the river data measured on June 17, 2011, shows all the waterways in South Georgia are at record lows and becoming more severe. In areas of South Georgia the normal rainfall should be 25 inches; however is currently at 16 inches. The U.S. Department of Agriculture (USDA) completed a recent survey and determined that as of June 12th, 42% of the state's corn crop was poor or very poor, 46% of the state's cotton crop was poor or very poor, and 73% of the state's pastures and ranges were poor or very poor. As a result, Governor Deal has requested the USDA to declare 22 counties agricultural disaster areas. By considering a number of practices, including the use of regional reservoirs, stormwater can be captured, stored, and utilized to address surface water gaps. While the benefits can include irrigation purposes, drought relief, and low flow conditions in streams, it is important to carefully evaluate the placement of such reservoirs so that environmentally sensitive areas are not lost and other negative adverse impacts are created. It is our position that addressing the regional needs collectively is sound science, public policy, and efficient use of resources. We

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				commend the efforts put forth through the 2011 Water Reservoir Act and believe the associated funding for reservoirs should look beyond the needs of metro Atlanta and that projects in south Georgia should have equal priority and commitment. The City of Valdosta is committed to seeking viable solutions so that our water resources are protected and managed, while providing the highest quality service to our community for generations.
Bryan Tolar	6/29/2011	Posted	• Upper Flint	Agriculture plays a vital role in the economies of counties located in the Upper Flint region. For this reason, water conservation and storage are of the utmost importance. We commend the work of the Georgia Soil and Water Conservation Commission for educating and assisting Georgia's agriculture industry on innovative ways to conserve water and improve efficiency. We encourage the state to invest needed funds in these efforts as well as planning for reservoir development. Preparing for the future should be considered the most important aspect of the water planning process. The continued evaluation of irrigation water as being 100% consumptive contributes to conclusions that are misinformed. As long as these variables remain off target, the results will draw incorrect conclusions. Protecting the integrity of agricultural water use permits is of the utmost importance as it contributes to supporting the investment of crop production for these communities, input suppliers and consumer markets. The economic importance of an abundant water supply cannot be overstated. We appreciate the willingness of the Environmental Protection Division to take input regarding this important issue and for providing technical assistance throughout the process. Respectfully, Bryan Tolar Daniel Groce President Public Affairs Coordinator

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Randall Starling	6/14/2011	Posted	• Upper Flint	The recommendation on page 7-18 item 3 was not agreed to by the council and should not be in the plan. Item 2 on the same page was the final agreement. Page 6-6, GFC awards program should be GFA awards program. Page 7-16, the GFC should be mentioned along with forest industry as conducting periodic BMP surveys.
William Moore	5/9/2011	Posted	• Upper Flint	Upper Flint River Basin does not appear to be negatively impacted by the current water demand or the current wastewater assimilation capacity of the Metropolitan North Georgia Water Planning District.