



# Georgia's State Water Plan

## Lower Flint-Ochlockonee Water Council Meeting 9 February 10, 2011 - Colquitt Agenda

### *Objectives:*

- 1) Committee efforts update
- 2) Refinement of water quantity and water quality management practices selection
- 3) Discussion of WDCP revisions

- 8:30–9:00 a.m. Registration
- 9:00–9:20 Welcome, Introductions, Chairman's Discussion - Richard Royal  
*LFO Council schedule of meetings and deliverables, joint meeting with neighboring councils, council leadership elections*
- 9:20-9:45 Overview of Plan Revisions - Kristin Rowles
- 9:45-10:30 Water Quantity Committee Report and Recommendations - Jimmy Webb
- 10:30-10:45 Break
- 10:45-11:30 Water Quality Committee Report and Recommendations - Jerry Lee
- 11:30-12:00 Plan Review Committee Report and Recommendations - Richard Royal
- 12:00-1:00 p.m. Lunch
- 1:00-1:15 Technical Ad Hoc Committee Meeting Summary -- Kristin Rowles
- 1:15–2:00 Water Quality Modeling Update - Steve Simpson
- 2:00-2:15 Energy Forecasts Follow-up Discussion - Kristin Rowles
- 2:15-2:35 Shared Resources Discussion - Kristin Rowles
- 2:35-3:05 Review of Outstanding Issues/Plan to Finalize WDCP May 2nd Submittal - Kristin Rowles
- 3:05-3:20 Local Elected Official and Public Comments
- 3:20-3:30 Wrap Up/CM10 Preview/Council Meeting 9 Evaluation
- 3:30 Adjourn Full Council Meeting
- 3:30-4:30 Committee Meetings

To: Lower Flint Ochlockonee Water Planning Council

From: Kristin Rowles, GWPPC and Robert Osborne, Black & Veatch

cc: Tim Cash, Assistant Branch Chief, GA EPD

Subject: Meeting Summary: Council Meeting 8 on December 8, 2010

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The council meeting was held on December 8, 2010 in Sylvester. The list of attendees is attached. In addition to these minutes, all the presentations (slides) discussed in this meeting will be posted on the Lower Flint web portal (<http://www.lowerflint.org/>).

### **Welcome, Introductions and Chairman's discussion**

Chairman Royal started the meeting by welcoming the Council. John Bridges provided an invocation. Next, Chairman Royal asked the Council to approve the meeting summary, and it was approved by unanimous consensus. Next, Chairman Royal asked for consideration of the agenda. There was a slight change to correct an error on the agenda regarding who was giving the committee reports. The Council members approved the agenda by consensus.

Kristin Rowles referred to a [memo](#) from Allen Barnes, Director of GAEPD. The memo extends the original regional water planning schedule by three months. Since this memo came out after the pre-planning packet, Kristin noted this schedule is different than what was included in the pre-meeting packet. Kristin reviewed the following revised milestone schedule and asked for comments from the Council:

<u>Completion Date</u>	<u>Milestone</u>
November 30, 2010	Council Meeting 8
November, 2010	Lower Flint Receives Water Quality Modeling Results
December, 2010	Plan Review Committee Meeting
January, 2011	Council Meeting 9
March, 2011	Plan Review Committee Meeting
March, 2011	Council Meeting 10

May 2, 2011	Recommended Plan to GAEPD
May-July, 2011	Public Notice of Draft Plan
August, 2011	Final Production of Adopted WDCP
September 30, 2011	GAEPD Approves UF Regional WDCP

In discussing the schedule, some Council members expressed an interest in moving the Council meeting from January to February, and potentially the March meeting to April. There were no objections to this. Kristin asked if there were any questions or comments about the milestones. There were no other questions.

Next, Kristin reported on the October 6<sup>th</sup> Joint Council meeting in Macon. She said the response was positive from the meeting participants. She explained that representatives from all ten councils discussed how their plans were developed and many common themes were noted.

Kristin said there was a joint meeting between the Upper Flint and Lower Flint-Ochlockonee Councils' Water Quantity Committees on October 26<sup>th</sup> in Albany. She said it was a very constructive meeting in which the committees discussed how to address each others' concerns.

Kristin said there was Instream Flow Ad-Hoc Meeting on December 7, 2010 in Macon. Kristin explained this meeting was a work session on instream flows needs. The objective of the meeting was to develop recommendations regarding information and management related to instream flows targeted toward improved management in the next round of planning. Council member John Heath commented that it was a good meeting and there was agreement that a lot more information is needed. Kristin noted that many councils would like to see the more nodes used in evaluating surface water flows. Also, the meeting discussion focused on how to manage for variable flows and not just minimum flows. Chairman Royal asked Woody Hicks, member of the Technical Ad Hoc Committee, for his thoughts on the meeting. Woody commented that more nodes would be good for planning. He also said that the unimpaired flows data used in this process is a synthesized dataset, and he thinks there is an interest in looking at other methods such as the use of predevelopment flows data from USGS. Kristin said that several information needs were identified at the meeting. A summary of the meeting should be forthcoming soon. Kristin will provide the instream flow requirements handout from the meeting to council members.

Chairman Royal said that today (December 8<sup>th</sup>) there is a meeting of the joint legislative committee created by Senate Bill 370 to consider water supply issues. The regional water councils have been invited to send a representative, but they will not be provided with time to speak on the agenda. Representative Bob Hanner and Senator John Bulloch are likely attending this meeting, and Doug Wilson of the GWPPC has been asked to

speak. Kristin will distribute materials made available from this meeting to the Council members.

Chairman Royal said he met with GAEPD Director with Allen Barnes to discuss Endangered Species Act concerns in the region, including the USFWS letters that were discussed at the previous Council meeting. Director Barnes said that he recommends against GAEPD applying for a Section 10(a)(1)(b) taking permit because it would be an admission of guilt in a takings. He agrees that the risk in this situation is a 3<sup>rd</sup> party lawsuit. He recommends a focus on management practices to address concerns, including augmentation from groundwater in critical habitat areas during drought. State geologist Jim Kennedy has identified possible sites for such augmentation. Royal and Barnes discussed seeking funding for this augmentation proposal.

The Council discussed this issue; the following summarizes the discussion:

- Groundwater augmentation would need to come from deep aquifers (below the Floridan). Care must be taken to ensure that the source aquifers would not be harmed by pumping for augmentation. Woody Hicks thought that the potential for this type of augmentation would be quite limited in the region. He said that great care would be needed to protect the source aquifers. Council members reported that groundwater is limited in their experience and that they have concerns about using groundwater to augment surface water flow.
- Dry stream conditions did occur in Spring Creek (mussel habitat) before large scale irrigation started. Generally, however, these dry conditions were observed upstream of the Iron City gage, which is the gage that agencies like USFWS use in management. The Iron City gage did not go dry in the drought of 1954 (pre-irrigation).
- Sandy Tucker (USFWS) made a presentation to the Golden Triangle Soil and Water District recently. USFWS is particularly concerned about a new withdrawal near Colquitt, and several additional mussel species.
- Director Barnes is reluctant to re-open the Flint River Drought Protection Act to consider augmentation payments, but he is interested in pursuing a program to make payments to farmers for augmentation until the state can develop an augmentation program.
- The Metro District recently had a meeting/public hearing and discussed retrofitting commercial buildings with low flow toilets.

Chairman Royal said that the Water Quantity Committee had asked for more legal analysis of the situation, including evaluation of takings permits precedents in other places. This request has been made of GAEPD.

## **Energy Forecast Update**

Mitch Horrie with CDM presented the energy sector water demand results. The Executive Summary of this forecast is in the pre-meeting packet.

Mitch explained that he would discuss the forecast methodology, forecast results, and guidance to the Councils. He said that development of the forecasts was supported by an energy sector ad hoc group, which was comprised of representatives of the power industry (Georgia Power, MEAG Power, and Oglethorpe Power Corporation) and GEFA. The initial stages of the ad hoc group also included Dalton Utilities. The ad hoc group assisted with data collection, interpretation and technical review.

Council member Huddy Hudgens asked about power produced in North Georgia and if it goes to Florida. Mitch explained that with this methodology they only looked at the energy facilities and their relationship with the Georgia population.

Mitch explained the forecast methodology. He said the base year water withdrawals and consumption were for 2005 and the power generation needs forecast was developed using statistical analysis based on the historical rates of energy use. He noted that data was collected for all NAICS 22 facilities in Georgia as well as planned facilities that have applied for an EPD air quality permit.

Mitch said that water consumption refers to water that is consumed during the power production process and not returned to the stream. This is mostly as a result of evaporation during the cooling process. He said they found that statewide, 93% of the water withdrawn for the production of thermoelectric power was returned to the source.

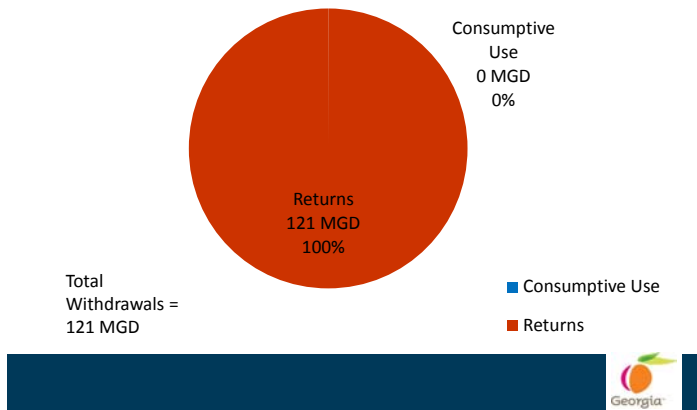
Mitch said a regression analysis of statewide power generation and population from 1990-2008 created the statewide power needs scenarios. There were two different power generation scenarios (baseline and alternative) and two forecast scenarios (2017 and 2050). Three total water demand forecasts were developed.

The baseline power needs scenario uses the mean parameters from the regression analysis, while the alternative power needs scenario uses the upper limits of the parameters while still within the 95% confidence interval. This scenario is higher to support conservative planning.

The 2017 water demand scenario presents what would happen if we did not add any new facilities beyond existing, permitted or planned. Under the 2017 Capacity Scenario, existing and planned facilities produce 100% of statewide power needs until their capacity factors reach maximum sustainable levels.

Next, Mitch showed the energy sector withdrawals for Lower Flint-Ochlockonee (see below). He said this region’s energy sector water demand was associated with Plant Mitchell in Dougherty County, Gum Power Plant in Dougherty County, and Crisp County Power Commission Steam plant in Worth County.

**Lower Flint Ochlockonee–Energy Sector 2005 Consumptive Use**



Mitch presented water withdrawal needs for existing and planned facilities for the Lower Flint-Ochlockonee region through 2050 as shown in the graphic below. The additional statewide water withdrawal needs for 2030 through 2050 are also shown. Future needs are presented as statewide needs and are not allocated to a specific region. Mitch noted that after the year 2020, this region’s withdrawals include the planned Longleaf coal-fired plant, with cooling towers, located in Early County, using Chattahoochee River water.

**Lower Flint Ochlockonee Energy Water Withdrawal Needs (mgd)**

Region	Power Needs Scenario	2010	2020	2030	2040	2050
Lower Flint Ochlockonee	Baseline	135	146	146	145	145
	Alternative	166	188	176	176	176
No Assigned Region	Baseline	-	-	106	210	313
	Alternative	-	-	118	233	346

Mitch next reported the water consumption needs for existing and planned facilities for the Lower Flint-Ochlockonee region through the year 2050. Again, he noted that future

needs are statewide needs and are not allocated to a specific region. Before the year 2020, none of the plants in the region are forecasted to consume water because they have once-through cooling. After the year 2020, the region’s consumption includes the planned Longleaf coal-fired plant, and because this plant will use cooling towers, it does have some consumptive water use.

**Lower Flint Ochlockonee Energy Water Consumption Needs (mgd)**

Region	Power Needs Scenario	2010	2020	2030	2040	2050
Lower Flint Ochlockonee	Baseline	0	11	11	11	11
	Alternative	0	12	12	12	12
No Assigned Region	Baseline	-	-	58	114	170
	Alternative	-	-	64	127	189



Council member Mike Newberry asked about future of biomass. Mitch said whether a plant is fueled by biomass or fossil fuel, the water demand is essentially the same. Mitch said the forecast did not separate out the percentage of future power that is biomass or fossil fuel.

Mitch noted each power generation combination has a maximum sustainable capacity factor. The energy ad hoc group assisted in developing these factors. The maximum sustainable capacity factor is not the “optimized” or most efficient level of power generation. It is the highest level of output that can be sustained over a period of time.

After describing more about the results, Mitch presented the following conclusions:

- Statewide energy sector withdrawals are forecasted to increase at about 0.20 – 0.25% annually from 2010 to 2050.
- Statewide energy sector consumption is forecasted to increase at about 1.80 – 1.85% annually from 2010 to 2050.
- Trends indicate more capacity development for water consumption intensive power generation (those with cooling towers)
- Little to no capacity development for water withdrawal intensive power generation processes (those with once-through cooling).
- Power generation from renewable energy, primarily biomass, will increase over the planning horizon.

- The additional capacity scenario presents the forecast most useful to Councils in making regional water resources planning decisions.

Mitch then offered the following guidance:

- Location of any assumed additional capacity beyond 2017 is unknown. (This is the capacity that is forecast for the state as a whole, but not allocated to the regions.)
- Councils can incorporate forecasted withdrawals and consumption directly attributable to existing and planned facilities into their regional plans.
- Councils should consider how much additional capacity would be desirable to have in this region and whether surface water resources are available in the region to support that capacity.
- For demands associated with assumed additional capacity beyond 2017, Councils may wish to address the issue more qualitatively by trying to understand the water resources implications should some percentage of future additional power generating capacity locate within their regions. (e.g., Is it logical to increase capacity in this region? Are the resources available?)

The council members discussed the forecasts; the following is a summary of the discussion:

- Council member Mike Newberry said that it appears that the state will need to add the equivalent of a new Longleaf energy plant each year (1,000 megawatts per year). Mitch confirmed that this is true, and Mike said that this was a lot of power capacity to be developed.
- Council member Will Vereen asked if the forecasted included the two nuclear power plants in Georgia. Mitch said yes.
- Mike Newberry asked why Plant Farley is not included in the forecasts for this region. Mitch said that Farley's withdrawal occurs in Alabama and only GAEPD permitted plants were included in the forecasts.
- New energy production capacity often locates near existing facilities.

### **Overview of October 15th Draft Water Development and Conservation Plan (WDCP)**

Kristin Rowles said that she and Steve had discussed the Council's October 15<sup>th</sup> draft plan with GAEPD and their responses were positive overall. She said that she thinks most of the comments can be addressed – either directly or by indicating where additional information is needed.

Kristin reviewed slides that summarized GAEPD's comments (available on Council website). She said that GAEPD was focused in its comments on adoptability and implementation. She said that it was ok not to completely resolve all issues today. At the

end of the meeting, she will review outstanding issues with the Council to focus on in the coming months.

In its general comments, GAEPD asked for additional coordination with existing plans to be noted, including local and regional comprehensive plans, the State energy strategy, and watershed management plans. GAEPD also asked that management practices be described as clearly and specifically as possible, including more explanation of why particular practices were selected, how they relate to the gap, and how they will be implemented.

Council member said John Heath said that the riparian legal doctrine is a constraint to managing demand. He asked whether GAEPD could provide any guidance on this issue. Given the size of the gap, limiting demand may be necessary in drought, but the state's powers to do so are limited by law. Kristin said that the Council has recommended agricultural withdrawal permit quantification to provide for more precise management of demand. At this time, it is not possible to require each use to reduce demand by a particular percentage amount because the permits are not based on use levels. Woody Hicks asked, for example, what does it mean to reduce demand by 30%? Jerry Lee said that in North Carolina, they established capacity use areas, monitored use in those areas for five years to set use baselines, and then reduced from the baseline amounts.

Kristin suggested that given that the Water Quantity Committee would probably be taking up the issue of permit quantification again, that this topic could be added to that discussion in committee.

### Section 6 Comments

Kristin reviewed the following major comments for this section:

- Quantify how management practices will address gaps (where possible)
- Address information gaps with recommendations for data collection and analysis to improve specificity of management practices and to support future planning
- Prioritize management practices for implementation

Kristin noted there were estimates in the strawman water quantity management practices document for water savings from various practices. These would be incorporated into the plan through an appendix. She noted that for some practices, good estimates might not be possible, especially given the lack of information on baseline levels of implementation. Kristin said she would like to work with the Council to improve specificity of management practices. The council also discussed the scheduled meeting to discuss water conservation practices and estimates of conservation. Kristin suggested that the Plan Review Committee decide how to address conservation and prioritization of the management practices.

### Section 7 comments

Kristin reviewed the following major comments for this section:

- Be more specific about entities responsible for implementing management practices (Table 7-1)
- Clarify priorities of management practices
  - Detail Council’s consideration of feasibility (technical, political, affordability) and effectiveness
  - Reflect Council’s consideration of financial and environmental costs of management practices.
- For actions identified for state entities, state what Council objective(s) that the action will support (per Section 14(7)(c)(xiii) of State Water Plan).
- Strongly consider adding eligible water quality projects as management practices to receive CWA Section 319 funds made available by GAEPD.

Kristin noted that the City of Griffin is implementing a 319 funded project to install pet waste stations.

### Section 8 comments

Kristin explained the following major comments for this section:

- Include benchmarks that can be used to assess progress and effectiveness
  - Select qualitative and quantitative benchmarks that can help to assess whether management practices are closing gaps and supporting attainment of Council vision and goals over time.
- Include benchmarks that measure progress relative to water use and environmental outcomes (i.e., not just implementation actions).
- Group benchmarks by categories where possible (e.g., implementing party, types of management practice, geographic area).

Next, Kristin reviewed other GAEPD comments including:

- Borrow from other councils’ plans
- Discuss lack of baseline information on implementation of conservation practices and how it affects the ability to evaluate extent (and cost) of future implementation needed
- Explain the portfolio of MPs: how it fits together to address gaps
- Specify geographic coverage of management practices, where applicable
- GAEPD will provide guidance on how to address future actions by Councils consistently
- Discuss more thoroughly how to evaluate the adverse impacts of identified gaps
- Add conclusion to Section 8 that ties plan together (linking goals, vision, management practices, expected outcomes)

Specific GAEPD comments related to water quality include:

- Make sure that the Water Quality assumptions about where future discharges will go are evaluated by the Council
- Add information on GA Forestry Commission on BMP implementation by forestry operations
- Consider adding a management practice that would implement a BMP tracking and complaint response program for agriculture (like that implemented by the GA Forestry Commission for forestry)
- Consider adding a management practice that would develop a monitoring network including local water systems that are implementing watershed assessment plans
- Be more specific about how to increase water quality monitoring

Kristin also noted that some formatting changes will be made, including numbering the management practices and carrying table heading over to each new page of a table.

### **Draft WDCP Sections 1-5**

Kristin said that comments on Sections 1-5 had been received from GAEPD on the August draft of the plan. Improvements were still being made to these sections; most would address presentation and formatting. She reviewed several modifications. She drew the Council's attention to the last subsection of Section 5 and asked for the Council members to read that over. It is a new section designed to explain the results of the resources assessments and how the Council used them in selecting management practices.

Council member Greg Murray asked where the Quincy gage in the Ochlockonee River is located. Kristin and Steve said that they will check.

### **Review of October 15<sup>th</sup> Draft Plan (Chapters 6-8)**

Kristin reviewed some of more specific comments from GAEPD on Sections 6, 7, and 8. A summary follows of the EPD comments and Council discussion follows:

- Section 6.1: Identifying Water Management Practices: This section needs to be simplified. Also in this section, GAEPD asked that we include several additional plans in the list of plans considered, including the State Energy Strategy and the Statewide Water Plan.
- List of uncertainties (Section 6-1, page 6-2): Note how these uncertainties are being addressed and where additional information can be found.
- Number the management practices for easier reference.
- Page 6-4: Implement Tier 3 and 4 non-farm water conservation practices with the support of incentive programs. GAEPD asked which incentive programs are referred to here. Kristin noted that there are not any at the state level. *The Council*

*recommends removing the word “existing” from the description section. There was consensus among the Council.*

- Page 6-5: GAEPD asked that the practice regarding the use of the Flint River Drought Protection Act be modified to reflect the need for better predictive tools to support GAEPD in determining the need for a drought declaration. GAEPD is currently developing such a tool. Without better predictive tools, GAEPD cannot make a drought declaration earlier than March 1. The Council recommends that a sentence be added to the description section that says that the council supports the GAEPD effort to develop better predictive tools to use in determining the need for a drought declaration.
- GAEPD asked for explanation regarding the purpose and functions of agricultural irrigation institutions. How far would the regulatory reach of this type of organization go? Would it be a permitting authority for withdrawals? Kristin noted that GAEPD had made a similar comment regarding recommendations for regional water management institutions in the Middle Chattahoochee and Upper Flint Plans. She said that the Council might want to consider those recommendations as it had discussed making a similar recommendation itself in the past. Then she asked the Council whether they envisioned a regional water institution for agricultural having permitting authority. Council member Greg Murray and John Bridges expressed support for decentralized permitting. Bridges said that people in the region would be more familiar with conditions here. Jerry Lee noted that it would mean that a local institution would be in the position of having to cut off water use if that became necessary. The Water Quantity committee was charged with further consideration of districts and bringing back a recommendation to the council at the next meeting.
- Farm ponds, page 6-6: GAEPD would like for the Council to specify that withdrawals to fill farms ponds from surface water withdrawals should be subject to requirements for low flow protection. Low flow protections are already in place for withdrawals from the Flint Basin, so this would only be new for withdrawals in other surface water systems. The Council had no objections to this change.
- Interbasin transfers, page 6-6: GAEPD recommends that this management practice be presented as a recommendation to the state (Section 7.4) instead of as a management practice. The Council had no objections to this change.
- Water Quality - Improve enforcement, page 6-7: GAEPD asked for more clarification on what is called for in the 1<sup>st</sup> bullet point in the description: “Improved enforcement of existing discharge permits.” This was referred to the Water Quality Committee.
- Water Quality – Improve Monitoring, page 6-7: GAEPD asked for more specificity on what type of monitoring is needed and what questions additional monitoring will seek to address. This was referred to the Water Quality Committee.

- The Council asked for definitions in the plan of Tiers 1-4 for conservation measures. Kristin said that this would be addressed in detail in the conservation technical memo that will become an appendix to the plan, but additional notation could be added in the plan itself to explain these references more clearly.
- GA EPD asked for better explanation of how closing the gap would violated the council’s vision and goals, adding “sources of funding” to the groundwater augmentation management practice, adding EPD to the list of responsible parties where appropriate, and adding “identify funding sources” for the reservoir storage study. The Council had no objections to these additions.
- In Section 7, Kristin said that the Recommendations to the State section would be expanded. In particular, it will include several recommendations to address information needs, many of which were discussed today.
- For Section 8, GAEPD suggested a conclusion section for the plan that ties together the vision and goals with the resource assessments, selected management practices, and expected outcomes.

Kristin said that several items had been identified for additional work in committees, which would meet before the next Council meeting. The goal is to provide a new draft for the Council at its next meeting in February.

Next, Kristin asked for the Council’s approval to post the draft version of the plan to the Council’s website. Chairman Royal asked if there were any objections. No objections were noted.

### **Water Quantity Committee Report**

Since Council member Jimmy Webb could not attend, Kristin made the Water Quantity Committee’s report. The Committee met with the Upper Flint Water Quantity Committee on October 26. A meeting summary is included as pages 35-39 of the pre-meeting packet. The committee then met by conference call on December 3rd. A meeting summary for the conference call was handed out during the meeting. At its meetings, the committee discussed management practices (agricultural permits, inter-basin transfers, storage), information needs, and Endangered Species Act concerns. The committee developed some recommendations for today’s Council meeting.

GAEPD has asked for clarification in the plan of the role of the 2006 Flint Plan as permitting guidance. The committee recommends that a management practice similar to that recently adopted by the Upper Flint Council should be considered to provide this clarification. The Committee suggests a management practice that will:

- Acknowledge 2006 Flint Plan as current permit guidance until such a time as better information can support improved management of water withdrawals to protect streamflow
- Information needs:

- Water use: Better actual use information based on meters
- Impact evaluation: Improved assessment of effect of withdrawals on streamflow
- Metrics: Use of stream flow targets that directly relate to minimizing adverse impacts to downstream users and natural systems

The Upper Flint management practice reads as follows:

Manage new agricultural water withdrawal permits in the region according to the 2006 Flint River Basin Water Development and Conservation Plan

- The 2006 Flint Plan limits new agricultural withdrawal permits based on expected impact on nearby wells and streams (summarized by map of Capacity Use, Restricted Use, and Conservation Use areas included in the 2006 plan).
- Under the 2006 Flint Plan, new agricultural water withdrawal permits require mandatory conservation measures, such as end-gun shut off switches and leak prevention and repair, as a condition of the permit.
- New surface water permits in Ichawaynochaway and Spring Creek sub-basins must suspend use when streamflow drops below 25% Average Annual Discharge instead of 7Q10.
- New permits in the Flint River Basin have a \$250 application fee.

In the discussion, Council members thought that the Upper Flint management practice was acceptable, but noted that they would like to see it stated more clearly to note that the bulleted items are already required by the 2006 Flint Plan. With that modification, the Council had no objections to adding this management practice to the plan.

The Committee also discussed how to address GAEPD's request for quantification of potential water savings from conservation practices. The Committee asked that the Technical Ad Hoc Committee take this issue up with respect to water savings from agricultural conservation practices, consider information in the strawman document and the recent white paper from Stripling Irrigation Lab, and seek to develop agreement on estimates for these practices.

### **Water Quality Committee Report**

Committee chairman Jerry Lee gave the Water Quality Committee report. He started by discussing the recently released Florida nutrient standards. He said the new standards are numeric nutrient criteria to protect Florida's designated uses for freshwater lakes, springs, and streams. The effective date for the rule is 15 months from now in order to provide time for outreach and the development of compliance and implementation plans.

Jerry reviewed the timeline for the Florida nutrient standards:

- EPA made a Clean Water Act determination in January 2009 that numeric nutrient standards are needed.

- EPA entered into a consent decree in August 2009 (revised in June 2010 and October 2010) to:
  - Propose numeric criteria for lakes and flowing waters by Jan 2010, finalizing by Nov 2010.
  - Propose numeric criteria for estuaries and coastal waters by Nov 2011, finalizing by Aug 2012.

EPA relied on Florida's extensive data and used a variety of technical approaches developed by Florida's Department of Environmental Protection (FDEP) to develop the final nutrient criteria.

Jerry said he had never seen numbers this strict before as standards. It is not yet clear how the new standards would translate into permit limits in GA, but they are expected to have a significant effect.

Tim Cash said GAEPD does not have a specific plan or guidance yet about compliance with the new standards. Jerry emphasized the need for guidance from GAEPD on this issue and asked Tim to look into this to help the council in developing its water quality management practices.

Woody Hicks (Jones Ecological Research Center) briefly presented recent research that showed nutrient contributions from in-stream springs of nitrogen in the 3-14 mg/L range. Spring water samples were age dated to determine when they entered the groundwater, and samples were in the range of 10-50 years. Nutrient contributions from these springs are the result of decades old activities on the land and cannot be managed.

Jerry Lee and Tim Cash noted that the water quality modeling results were due to be available to the Council in the next few weeks.

Chairman Royal thanked the committee for their efforts.

### **Middle Chattahoochee Draft Plan Review**

Kristin presented an overview of the Middle Chattahoochee Council's October 15<sup>th</sup> draft plan. She noted that she was asked for this presentation by the Upper Flint Council, and Chairman Royal said he thought this Council could benefit from it, too. The slides will be available on the Council website.

Kristin noted a major theme of the Middle Chattahoochee plan is the assertion that the U.S. Army Corps of Engineers' current Water Control Manual for the ACF is inadequate and that it contradicts and compromises authorized purposes, specifically, recreational use at West Point Lake. The Water Control Manual is currently under revision; completion is due in 2012.

Kristin said the Middle Chattahoochee plan recommends that the Water Control Manual should be modified as follows:

- Reduce operational flood storage and improve lake levels for recreation in West Point Lake
- Establish and maintain in-stream flow targets below Columbus and Columbia planning nodes to ensure adequate protection of water quality for downstream users
- Allow for operational flexibility to enable storage reservoirs to recover faster after severe droughts and reduce risk of follow-up droughts
- Ensure protection of critical habitat for listed species, based on thorough science

The Middle Chattahoochee plan also endorses the modeling work of Georgakakos of modifications to the Water Control Manual.

Kristin reviewed management practices in the Middle Chattahoochee plan that relate to ACF management and storage. She also noted that the Middle Chattahoochee plan has a lengthy list of recommendations to the state which the Council could review for ideas for its own plan.

Kristin said that the Council's concerns regarding the Middle Chattahoochee plan would likely relate to the following issues:

- Competing uses in ACF (Middle Chattahoochee emphasis on recreation)
- Flint vs. Chattahoochee flow contributions
- Uncertainty surrounding Operations Plan revisions

Kristin said that the Council might want to look at "borrowing" certain parts of the Middle Chattahoochee plan. She said that the recommendations to the state on Woodruff dam target flows, water conservation program evaluation, and water planning districts might be desirable to the Council.

Council member Will Vereen asked what distinguishes the Georgakakos model from the GAEPD model for the ACF. The Georgakakos modeling incorporated higher levels in West Point Reservoir and suggests reducing instream flows following dry weather to allow faster refilling of system reservoirs. By doing so, the Georgakakos model is able to calculate greater storage levels in the reservoirs more often to meet the various water uses demanded from the system.

Kristin noted that the Middle Chattahoochee Council invited the Upper Flint to a meeting to discuss their concerns in January. Chairman Royal told Kristin that the LFO Council was interested in attending and requested council members be invited.

### **Identification of Outstanding Issues for WDCP**

Based on today's discussions, Kristin reviewed issues that still need to be addressed in the WDCP:

- Endangered Species Act concerns: Referred to Water Quantity Committee
- Energy Forecasts: Determine how to evaluate future capacity in region, referred to Water Quantity Committee
- Permit/Legal Doctrine issues: Referred to Water Quantity Committee
- Prioritization of management practices: Referred to Plan Review Committee
- Water Districts recommendations: Referred to Water Quantity Committee
- Various Water Quality Issues/Comments from GAEPD: Referred to Water Quality Committee
- Consideration of FL Nutrient Standards and Water Quality Modeling Results: Referred to Water Quality Committee
- Recommendations to State: Referred to Plan Review Committee
- Estimates of water savings from agricultural conservation practices: Referred to Technical Ad Hoc Committee

As noted earlier, committees will meet before the next Council meeting. *Additionally, Kristin asked that Council members send any plan edits that they have to her by December 20.*

### **Local Elected Officials and Public Comments**

Next, the Council provided time for local elected officials and the general public to address the council.

Luke Crosson from Region 5 of the Georgia Soil and Water Conservation Commission (GSWCC) addressed the Council. He said that the GSWCC has implemented a number of 319 funded projects across the state. He distributed a CD with Best Management Practices (BMP) information.

A Council member asked Woody Hicks to talk more about the study he discussed earlier regarding groundwater nutrient contributions and determining the "age" of groundwater. Hicks explained that monitoring has been done in springs along the Flint for the last 9 years. An increase in nutrient levels (in particular, nitrate has increased from 1 to 5-6 mg/L). Isotopes have been used to determine the approximate date when the water entered the ground, and there has been an attempt to correlate land use/spring/age of water. He said that the paper is currently in review for the Journal of the American Water Resources Association. It can be distributed after the review process is complete.

Hicks said he would like to address the Council with other comments. He said that members from other councils seem to have an incorrect perception of the Bainbridge surface water flow gap. A Middle Chattahoochee member that spoke with Hicks thought

that the Bainbridge gap was caused only by excessive water use, but that in actuality, it is created by all consumptive water use. Hicks said he thinks there is a significant perception problem regarding the Bainbridge gap and how it should be addressed.

Bert Early, Georgia Forestry Commission, also spoke to the Council. He said that the Commission has quite a bit of experience in monitoring forestry BMPs, and has shared the detailed monitoring report with the LFO Water Quality committee. He would be happy to assist the Council members in presenting information on forestry practices in the plan.

### **Wrap-Up and What to Expect Next Meeting**

The Council selected the first week of February for its next meeting. The location will be Colquitt. Kristin will send out a Doodle survey to the Council members to select the exact date.

### **Council Meeting 8 Evaluation**

At the conclusion of the Council meeting, the members completed an evaluation form about the meeting, and the meeting was adjourned.

**Attachment 1:**  
**Lower Flint-Ochlockonee Water Planning Council**  
**Council Meeting Attendance – December 8, 2010**

**Council Members**

Steve Bailey  
John Bridges  
Jimmy Champion  
Jerry Chapman  
Terry Clark  
Hal Haddock  
John Heath  
Huddy Hudgens  
Jerry Lee  
Chuck Lingle

George C. McIntosh  
Greg Murray  
Mike Newberry  
Jim Quinn  
Richard Royal  
Steve Singletary  
Howard Small  
Will Vereen  
Bill Yearta

**Council Members Not In Attendance**

John Bulloch  
Bob Hanner  
Josh Herring  
Chris Hobby  
Gary Leddon

Doyle Medders  
Rick Moss  
T.E. Moyer  
Steve Sykes  
Jimmy Webb

**Planning Consultants**

Steve Simpson, B&V  
Robert Osborne, B&V

Mark Masters, GWPPC  
Kristin Rowles, GWPPC

**Georgia EPD**

Tim Cash, Assistant Branch Chief  
Bill Morris

**Georgia State Agencies**



Lower Flint-Ochlockonee (LFO) – Technical Ad Hoc Committee

December 13, 2010

GWPPC Office, Albany, GA

Meeting Summary

Members Attending: John Heath, Woody Hicks, Mark Masters, Doug Wilson  
Others Attending: Kristin Rowles (GWPPC), Steve Golladay (Jones Ecological Research Center), Calvin Perry (UGA Stripling Irrigation Research Park), Rad Yager (UGA Stripling Irrigation Research Park)

Kristin introduced the charge to the committee from the Council: evaluate information on water savings from agricultural irrigation efficiency practices and support the development of estimates of total possible water savings for the Council's regional water plan.

The GWPPC provided information to the Water Quantity Committee of the LFO Council to estimate water savings, and this information was used in the selection of management practices by the committee and council. For these estimates, the GWPPC bounded potential savings by the following assumptions:

- Center pivot irrigation systems without conservation upgrades operate at 70% efficiency. The application of conservation technology can increase their efficiency to 95%.
- Any practices could be used to make that improvement, but most likely the improvement would involve the installation of a standard irrigation efficiency package (drop nozzle, end-gun shut-off, system audit).
- The current level of implementation of conservation in the field is not known. Based on discussions with irrigation equipment salespeople and technical advisors from NRCS, Soil and Water Districts, and GASWCC, it is believed that more than half of all irrigation systems in the field already have made substantial efficiency improvements.
- For the purposes of this process, we will assume that we need to upgrade 50% of the systems in the region with a conservation package and/or other practices to bring them to 95% efficiency.
- This level of improvement would result in water savings in the range of 10-25% from current use for each upgraded system.

Given these assumptions, at the high end, total water savings of 12.5% from current total use levels could be attained (50% of the systems attain 25% reductions in water use). This approach assumes that half of the existing systems are at 70% and half are at 95%. The reality is probably somewhere in between, but given the lack of baseline information, this is the estimate we will use for this process.

The group discussed the accuracy of these assumptions and estimates, especially in light of the recent one-page document issued by the Flint River Basin Partnership (FRBP)

(attached) that estimates relatively high levels of potential water savings from agricultural efficiency practices.

It was noted that the Suwannee Water Management District in Florida estimates that a total of 10% water savings is possible from agricultural efficiency practices, and our 10-25% range seems generous by comparison.

The FRBP document water savings estimates do not attempt to estimate total savings. The practices are not necessarily additive when calculating total savings.

After discussion of the estimates and their purpose, it was agreed that the above assumptions and estimates provided by the GWPPC are appropriate for the Council's purposes (i.e., to understand the possible water savings from these management practices). It was agreed that the GWPPC aggregate estimates are not out of line with the estimates for individual practices in the FRBP document, but difficult to compare due to the scale of each analysis and the question of additivity.

The group will review the conclusions of this meeting and pass them onto the Council.

# AGRICULTURAL WATER CONSERVATION IN THE LOWER FLINT RIVER BASIN OF GEORGIA

*By investing in 'smarter' irrigation, farmers are conserving water while enhancing productivity and yields.*

Improving the efficiency of agricultural water use is a shared goal of farmers, researchers and conservationists. Since 2000, these groups have leveraged significant resources to develop and deploy new conservation based technologies in the Lower Flint River Basin of southwest Georgia. The goal is to move innovative agricultural water conservation practices from the research laboratory to the working farm so as to determine economic feasibility, field functionality and conservation impact. Projects are funded through contributions from farmers and cost-share programs. Farmers in the Lower Flint River Basin of Georgia are employing (5) key water conservation measures:

**1. Low pressure drop nozzle retrofits with end gun shut-off:**

Savings are generated by applying irrigation water at a lower pressure nearer the soil surface to reduce evaporation and wind drift losses; installing end gun controls to keep irrigation inside the field boundary; and, repairing leaks. *Retrofits (LDR) reduce water use by up to 22.5%.*

**2. Variable rate irrigation:**

Savings are generated by removing non-crop areas from irrigation; coordinating application amounts with variations in soil type and field topography; and, eliminating double application due to pivot overlap. *Variable rate irrigation (VRI) reduces water use by an average of 15%.*

**3. Advanced irrigation scheduling:**

Savings are generated by identifying precise periods of time in which a farmer can irrigate less by using objective field data such as soil moisture, soil temperature, crop growth stage and localized ET. *Advanced irrigation scheduling (AIS) reduces water use by up to 15%.*

**4. Conservation tillage:**

Savings are generated by using a cover crop and leaving plant residue in the field, which modifies plant rooting structure and physiology to enable more efficient water use by crops; improves water holding capacity in the soil; increases water infiltration rates; and, reduces soil temperature, evaporative loss and field run-off. *Conservation tillage (CT) reduces water use by up to 15%.*

**5. Sod based rotation:**

Savings are generated by incorporating a rotation of a warm season perennial grass into a conservation tillage based production system which yields improved soil quality and water holding capacity, and increased water infiltration and retention. *Sod based rotation (SBR) reduces water use by up to 30%.*

**Note:** These measures, while in many cases complementary, are not necessarily additive as per the savings generated. Water conservation estimates are based on an average application rate of 13 acre inches per field in a dry year. Estimated reductions in water use are based on field experience, ongoing research and the *Project Report 32: Irrigation Conservation Practices Appropriate for the Southeastern United States*. Average cost per acre to deploy is \$100–LDR, \$175–VRI, \$40–AIS, \$40–CT and \$400–SBR. Many of these practices create economic and environmental benefits beyond water conservation which help to offset per acre cost.

**Who we are?** This information is provided by David Reckford, *Flint River Basin Partnership*; Calvin Perry, *UGA C.M. Stripling Irrigation Research Park*; Rad Yager, *UGA Cooperative Extension*; Jim Marois and David Wright, *UF/IFAS Extension*; Wilson Faircloth, *USDA–ARS*; Richard Barrett, *USDA–NRCS*; and, Marty McLendon, *Flint River SWCD*.

**Why the Lower Flint?** Incorporating 27 counties in southwest Georgia, the Lower Flint is one of the most diverse and ecologically rich river systems in Georgia. Together with the upper part of the Apalachicola, the area is home to the highest density of reptile and amphibian life in the United States, and four federally protected mussel species — the Fat threeridge, Gulf moccasinshell, Oval pigtoe and Shinyrayed pocketbook. The area is also one of the most agriculturally intensive regions in Georgia with more than 40% of the Basin's land mass producing \$2 billion in farm based revenue annually. Irrigation is central to production with 6,750 center pivot systems in operation.

*The Flint River Basin Partnership was formed by the Flint River Soil and Water Conservation District, Natural Resources Conservation Service and The Nature Conservancy to promote agricultural water conservation in the Lower Flint.*

**FOR MORE INFORMATION, CONTACT DAVID RECKFORD OF THE FLINT RIVER BASIN PARTNERSHIP @ (229) 400–0035.**

## Meeting Summary

### Instream Flows Ad Hoc Meeting December 7, 2010 Macon, GA

#### Introduction

Becky Champion, Assistant Branch Chief with EPD working with the Coosa-North Georgia Water Planning Council, provided a welcome to the group. At the last Coosa-North Georgia Council meeting, there was a request for more details on the science regarding instream flows related to the resource assessments. This ad hoc meeting was convened as members of several councils asked for similar information.

Gail Cowie with EPD provided an introduction and reminded everyone that the meeting is a work session for Council Members. The meeting is intended to support the writing of the Regional Water Plans by the Councils, provide an opportunity for Councils to gain better understanding of the resource assessments, and ask more detailed questions of experts regarding instream flows. There will be an opportunity before lunch and at the end of the day for comments from the public.

#### Background: Instream Flow Provisions in Georgia and Other States

Nap Caldwell with EPD provided a presentation regarding current instream flow criteria in Georgia.<sup>1</sup> This presentation summarized where we have been and what we are doing, not where we are going.

In the early 1970s, the passage of the Clean Water Act and the Georgia Water Quality Control Act created a platform for permitting. There were a number of wastewater treatment plants being constructed to control organic pollution into the receiving streams. These plants were designed and operated based on assumptions regarding certain minimum instream flows, with permitting decisions made to protect water quality. Withdrawal permits at the time relied on annual 7Q10 as the requirement.

In 1977, the goal of minimum instream flow requirements was to protect the WWTP discharges and not necessarily protect aquatic habitat. From 1977 to 2001, the following alternatives were used: lesser of annual 7Q10 or inflow; lesser of non-depletable flow or inflow (to protect downstream withdrawals from actions upstream); or other metrics defined by the Director.

In 1982, DNR's Wildlife Resources Division (WRD) began looking at the annual 7Q10 instream flow policy requirement. Drawing from 1997 recommendations, the DNR Board adopted an interim instream flow policy that was used in 2001 and beyond. Three alternatives are used in permits:

- (1) Lesser of monthly 7Q10 or inflow;
- (2) Flow based on site-specific instream flow studies; or
- (3) Mean annual flow (MAF) options. For applicants proposing direct stream withdrawals with no reservoir, the lesser of 30% MAF or inflow. For applicants proposing withdrawals from a reservoir, the lesser of 30% MAF (for July-November), 60% MAF (for January-April), 40% MAF (for May, June, or December) or inflow.

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<sup>1</sup> Presentations and handouts from the meeting are available on the Statewide Water Planning website ([www.georgiawaterplanning.org](http://www.georgiawaterplanning.org)).

Q: Are the instream flows you're describing the same as the unimpaired flows used in the Surface Water Availability model?

A: Nap responded that the unimpaired flow data were not available when the interim instream flow policy was developed. Permitting decisions are based on observed flows. The resource assessments use a series of monthly 7Q10 based on unimpaired flows.

Q: Is the 7Q10 in the resource assessments based on gage data?

A: Nap responded that the unimpaired flow is calculated based on adjusting the gage flows to remove the human impacts on these flows over a number of years.

Q: Please confirm that the actual gage data were not used.

A: Nap confirmed that the gage data does not have the benefit of the operations performed by EPD to develop the unimpaired flows.

Gail Cowie distributed a handout summarizing instream flow policies in neighboring states.

- Florida – complex system mainly related to their 5 District structure. The goal is to prevent harm to water resources. Establishes the functions of the water resource and the instream flows are designed to protect that functionality. They use a pattern of flows over a year (hydrograph). The instream flows are used for planning and permitting.
- Alabama – regulate wastewater discharges based on annual 7Q10. No water withdrawal permitting or other instream flow provisions.
- Tennessee – recently added instream flow considerations to state water quality standards to meet the fish & wildlife habitat criteria and support recreational uses.
- South Carolina – new water withdrawal permitting requirements that requires looking at minimum instream flows and also accounts for downstream users needs. Requirements look at seasonal instream flow needs.
- North Carolina – address through state water policy acts that requires site specific studies for withdrawals of a certain size. Minimum releases from dams also varies based on physiographic province, stream size, and condition of aquatic habitat. A 2008 Act requires hydrologic modeling to evaluate ecological flows for all river basins across the state that will be used of regional water planning.

In summary, each State considers instream flows differently. The differences between States are related to how they manage resources and when their instream flow policies were adopted. Seasonal variation is a trend as well as approaches that respond to the different uses or characteristics of water resources versus one set standard.

Q: Who performs the instream flow studies in North Carolina?

A: Gail Cowie responded that the NC state regulatory agency does (NC Department of Environment and Natural Resources).

### **Identifying Resource Values and Instream Flows to Support Them**

Gail Cowie introduced Mary Freeman who is with US Geologic Survey and who is on the Scientific Engineering and Advisory Panel (SEAP), because she is nationally recognized for her understanding of instream flows in Georgia.

Mary began her presentation by describing flow-dependent values and flow variations. Flow-dependent values may include: water supply, waste assimilation, power production, navigation, recreation, fisheries, and biodiversity. Low flow protections support uses like navigation, water supply, and waste assimilation. Recreation, fisheries, biodiversity and other natural resource values, however, are generally maintained by variability in flows. It is the alteration of natural patterns of flow that impact fish and other organisms, not necessarily the flow level. Flow variability includes seasonal variation, high and low-flow occurrence (floods and droughts), and variations from year to year.

Flow regimes are naturally variable. A continuum of flows, from high to low, are important from an ecological perspective. High flows are important for sediment transport and shaping the channel, maintaining the floodplain. High flow pulses are important for connecting upstream and downstream areas, allowing for migration and connection the floodplain to the stream. Habitat formation occurs during high flows but the animals migrate during the moderate flows. Low flows are important for fish reproduction and growth, plant growth and seed germination.

Variation of wet to dry years is also important. In wet years, there is high reproduction by some migratory fish but these may not be good years for juvenile survival. Dry years provide good juvenile survival for some fishes because of long stable periods of low flow in the stream margins. Dry years are good for migratory fishes, fish-eating birds, establishment of flood-sensitive plant seedlings, algae & sediment build-up, but not as good for canoeing.

Mary provided an overview of the surface water availability resource assessments as they relate to instream flow needs. There are 39 different planning nodes that have daily time-step data. The resource assessments are based on unimpaired flows, which are observed flows with most human impacts removed. The Interim instream flow policy of monthly 7Q10 or unimpaired flow was applied at the unregulated nodes and the requirements for flow from dams were applied at the regulated nodes.

Mary Freeman commented that the resource assessments provide a good hydrologic basis to look at how resource values may be affected by current or future water use. In the resource assessments, if the instream flow falls below the 7Q10 or unimpaired flow, then there is a gap. The assumption is that the need for instream flow protection is during the low flow extremes. Mary feels the resource assessments provide the Councils with a lot of good information. There are some planning nodes where, under current or future water demand scenarios, drought conditions are seen more frequently in the model results than under natural conditions.

The resource assessments, however, don't currently assess flows during non-drought conditions. Looking at any node with a gap, especially if there is a big gap, there is water consumption somewhere in the basin that causes the more frequent or more severe drought conditions than natural. Conversely, however, just because there is only a small or no gap doesn't mean that conditions aren't coming very close to the threshold. Understanding how much flow is really altered requires looking at flows during non-drought periods as well.

Q: Is that an answer to the data needs question, that Councils need to understand the flows during non-drought conditions to assess flow alterations?

A: Mary Freeman responded that the information currently available looks at low flow conditions and not at the higher flows, so Councils could request information for higher flow regimes. Councils may also recommend information be developed for the next round of planning.

Q: Current permits already grant a certain level of water withdrawals. I think my Council should proceed cautiously with identifying management practices if the impacts to streams are uncertain. The management practices could negatively affect businesses and therefore should be carefully considered. How do the Councils proceed if the information is not available?

A: Gail Cowie reminded the Council members that EPD Director Barnes has described this round of regional planning as a discovery process. One of the important elements of the regional planning process is the assessment by the Council of what is known and unknown. The Council can identify the resources that are most important to the Council and then recommend that EPD study how the current/planned activities will affect flow for future rounds of planning.

Comment: The constraints of each Council and within each Council will be unique.

Q: During drought years, it is clear that upstream actions could affect downstream flows, but conversely actions downstream could affect upstream water availability as well, right?

A: Mary Freeman agreed.

Q: Do Councils really have an opportunity to develop regional standards as the instream flow policy is statewide?

A: Gail Cowie responded that, while there is state-level regulation of instream flows, the task ahead of the Council is to look at their region. Councils can establish regional goals and identify priority water resources for further study.

Q: Will the State defer to the Regional Water Plan?

A: Gail Cowie responded that the Regional Water Plans, once adopted, will guide EPD permitting. Plans may also include recommendations to the State.

Comment: The natural evolution from other states seemed to start with state-level policies and then progressed to regional policies as more data became available. If water is already allocated to the minimum level, then there may not be an opportunity to adjust demands to a level that is more suitable for the specific conditions. How can Councils change conditions if the permits are already written? The environmental perspective is that provisions for additional instream flows need to be made now or the resource will be over-allocated so that there is no room for protection.

Comment: This discussion is not directly related to permitting or regulatory issues. Councils might be more comfortable moving forward if it was clear that the flow regimes are for informational purposes only.

A: Mary Freeman appreciated the comments. The focus is not on changing State-wide regulations and policies. The Councils need to know how to protect the resources most important to the water planning region. Protecting these resources includes considering the effects of flows and the needed mix of high and low flows. Some changes in flow regime may be acceptable. It is very difficult to make predictions about flows under future conditions.

Mary Freeman continued her presentation and showed a graph from a paper published last year by Brian Richter, a member of the SEAP who works world-wide on water allocation processes. The hydrograph shows annual flow variations. Conceptually, there are sustainability boundaries. For a given resource and functionality, it is possible to alter flows without harming the resource's functionality. Adding too much or depleting too much water, however, may yield an unacceptable result. The concept is very helpful in demonstrating the complexity.

At a specific node, the degree of change from unimpaired flows could be calculated, either as seasonal or monthly or for “typical” high and low flow scenarios. The percentage of change from unimpaired flows can be evaluated and resulting changes in ecological conditions can then be hypothesized. From an ecological perspective, there will not be a one-size-fits-all solution because the solution depends on what functionality is being protected and the specific conditions of the stream.

Q: In rivers dredged for navigation, like the Chattahoochee River, shouldn't the Councils look at the navigation needs, needs of specific fish, and the human needs and then evaluate management practices based on these conditions?

A: Mary Freeman agreed that water planning should not be done for one resource in isolation without looking at other resource needs.

Comment: The City of Griffin has a current challenge related to pigtoe mussels. A hurricane “flushed” the mussels downstream. There are unusual occurrences, like hurricanes, that affect natural resources. It is tough to plan for these unusual occurrences.

A: Mary responded that planning for the long-term viability of species is an important but different issue. Typically, those plans look at the range of conditions for species across the landscape.

Comment: The challenge is to identify data needs for the future. It seems that unimpaired flows are a tool for looking at the future along with real data.

Comment: It is an interesting consideration, natural conditions changing outside of the Councils' control.

A: Mary Freeman responded that the concept of adaptive management has become more popular because it allows for responses to unforeseen conditions.

A: Gail Cowie added that the State Water Plan calls for the review and revision of the Regional Water Plans every 5 years. The revisions could include changes in forecasts, resource assessments, or other changes. One of the present tasks for the Councils is to identify benchmarks that will be used during the 5-year update to assess whether progress toward the goals has been made.

Q: Can we get a briefing from the DNR staff in attendance on stream conditions based on the ongoing stream surveys? I'm interested in the general condition of the streams based on impaired or unimpaired populations. The current conditions are important for estimating the need for restoration.

A: Patti Lanford with WRD will give a presentation following lunch on this topic.

Q: Are there studies of species regeneration after drought? Water pollution may be a bigger issue than low instream flow.

A: Mary Freeman responded that the stream will change and species will be lost if there are only all wet years or all drought years. There have been some specific studies regarding re-colonization of species over time following drought. It is important to remember that droughts are natural occurrences.

Q: Is it possible to separate the man-made influences and the natural variations?

A: Mary Freeman discussed a study that assessed fish communities just below water withdrawal locations as well as just below urban (impervious) areas. Mary has done a study which showed a decline in fish community condition as the size of water withdrawals increased relative to the size of the stream. Fewer stream-dependent species were found and instream flows were lowest where the permitted withdrawals were highest. Mary said the results suggest a hypothesis: As withdrawal capacity out of the

stream increases, flow variability decreases. The biggest losses have been seen downstream of reservoirs because of the lack of variation in flow.

Q: Did your study considered the seasonality of withdrawals? One of Griffin's withdrawal points is only used during the rainy season so it would not aggravate low flow conditions.

A: Mary responded that this was not part of the study. She added that there wasn't gage data available for the 28 sites studied. The study did look at the withdrawal records and noted the large variation. There was a lot of scatter and site-to-site variability. The study did compare the size of the permitted withdrawal related to the size of the stream.

Comment: There are specific concerns for the Towaliaga River related to meeting TMDLs and low instream flows. Upstream reservoirs and proposed withdrawals will aggravate the current low flow conditions during drought.

Q: Was there a comparison of the downstream and upstream fish assemblages in the study Mary discussed?

A: Mary Freeman responded that was not part of the study.

Comment: Instream flows affect all downstream users and not just natural resource considerations. All human, industrial, and natural users downstream benefit from greater flows in the River.

Mary concluded by noting that there are potentially many stream reaches with values that are not reflected in the resource assessments. One example may be the Wildlife Resource Division's priority waters. The resource assessment nodes are not at locations that evaluate flow changes in these reaches. A potential for the future would be to add additional assessment nodes to assess specific values that depend on instream flows.

### **Information Needs**

Gail Cowie provided additional information related to questions from the morning session. First, there was a question about whether or not EPD was open to the concept of different instream flow policies in different parts of the State. Gail commented that yes, the interim instream flow policy currently provides flexibility for site-specific studies. EPD's Regional Planning Guidance also gives Council's the flexibility to look at flow regimes that are higher than monthly 7Q10.

EPD received comments on the draft current resource assessments requesting comparison of assessment results using monthly 7Q10 with those using the 30% mean annual flow option, also provided by the interim flow policy. Based on these requests, EPD is completing this analysis and it will be sent to the Council members and stakeholders either late this week or early next week.

Gail also added that during the morning discussion there were several comments regarding instream flow for regulated nodes with facilities operated by the Corps of Engineers. These regulated nodes have very different management considerations. It is important to distinguish between regulated and non-regulated nodes.

Q: Are there any real world examples where the 30% mean annual flow is lower than the 7Q10 flow?

A: Mary Freeman responded that it depends on whether you look at monthly or annual 7Q10. In the winter months, the monthly 7Q10 is typically higher than 30% mean annual flow. Nap added that

except during the high flow months, it was unlikely that there would be a circumstance where the annual 7Q10 would be higher than the 30% MAF.

Comment: Based on the discussion in the morning, it appears that the level of water (depth) may be more important than flow.

A: Mary Freeman – Flow is really important for some aquatic life. To support fish passage, typically the criteria are based on the height of water in the shallowest portion of the stream. The function being evaluated will dictate whether the level or flow is more important, but both are important. Woody Hicks added that flow and stage/level are also tied to one another and the relationship between these two parameters changes over time. The Florida instream flow protocol considers both flow and level. Woody recommended that any future instream flow policy recommendations consider both flow and level as both are important to protecting stream health.

Comment: The majority of the existing water withdrawal permits are based on annual 7Q10 minimum instream flows. Only a handful of new permits have been issued under the existing interim policy. The Councils should consider addressing the grandfathered withdrawals that are permitted using the annual 7Q10.

Gail Cowie introduced Patti Lanford to give an overview of the state's fish monitoring program.

Patti Lanford explained that she is a fish biologist with the Fisheries Section of the Wildlife Resources Division (WRD) of DNR. She assesses the fish assemblages in wadeable streams in Georgia. The quantity and type of fish species are used by the state in the TMDL process. To date, they have assessed almost 1,000 streams. The streams are assessed using the Index of Biological Integrity (IBI). The streams that rate poor or very poor are considered impaired. Assuming the stream water quality follows a normal distribution, then approximately 65% of the fish community scores would rank fair or better and about 35% of the scores would be poor or very poor. The actual monitoring results have a higher percentage of poor and very poor sites compared to the theoretical normal distribution.

The fish sampling results are available by ecoregion. Streams in the Appalachian Mountain, Blue Ridge, and Ridge and Valley Provinces tend to score higher, while the Piedmont and South Georgia Provinces tend to have more impaired streams. The differences in ranking are probably associated with the levels of development.

Q: Is the definition of an impaired stream in the Blue Ridge Province was the same as for the Coastal Province?

A: Patti Lanford responded that the criteria are dependent on the ecoregion, river basin, and other site-specific criteria.

Q: Is a dam considered an impairment?

A: Patti Lanford responded that although dams may impact fish communities and/or water quality, a dam itself is not considered an impairment.

Q: Do the fish assessments compare the IBI scores for urban and rural areas?

A: Patti Lanford responded that the IBI scores consider whether fish are pollutant tolerant (hardy) or not. If all of the fish identified in a stream are tolerant to pollution, then the stream is likely impaired. The impairment may be from urban areas. The ranking depends on both the type and number of fish.

Q: Do you also look at macroinvertebrates, as they are also good indicators of habitat quality?

A: Patti Lanford responded that macroinvertebrate monitoring is performed by another group within DNR. The fish assessments have been done longer than macroinvertebrate monitoring, so the fish data are much more extensive.

Q: Do these results just look at streams with fish impairment and not streams with other types of impairment?

A: Patti Lanford responded that the metrics incorporate some additional factors, such as water quality, into the ranking.

Comment: The Adopt-A-Stream program assesses macroinvertebrates because their health is linked to water quality.

Q: Why isn't the goal for streams 100% unimpaired?

A: Patti Lanford responded that this reflects the assumption of a normal distribution.

Q: How can Councils get a list of the fish assessment results?

A: Patti Lanford responded that Councils should request the list through the Assistant Branch Chief working with their Council.

Q: The Councils have maps that show the streams impaired for dissolved oxygen and nutrients. Is there a map for streams considered impaired based on fish assemblages?

A: Gail Cowie responded that the Councils should have a list of all impaired streams, but it would be easy to show those streams just impaired for fish.

Q: There are federal requirements that streams meet their designated use. Are there Council obligations to meet these requirements and how will the Regional Water Plans be assessed by the federal government?

A: Gail Cowie responded that the state has programs to address the federal requirements. Each Council should have received a list of the impaired streams. The Councils can look at adding provisions in their Regional Water Plans to address and restore these streams. There will not be federal oversight of the Regional Water Plans.

Mary Freeman commented that the Councils may choose to identify the stream reaches that they care to protect (due to state protected species, federally protected species, recreational uses, etc.). If there are values the Council wants to protect, the resource assessment models can show how much the flow shifts from unimpaired flows in addition to showing how often they drop below minimum instream flow. However, detailed information on, for example, the change between high spring flows and the number of spring bass in a specific river may not exist. Aquatic systems are complicated and the Councils may never have that level of detail. If the Council identifies the values to protect, the models can be used to get a rough idea of the probability of change in those values.

### **Options for Council Consideration**

Gail Cowie stated that the intent of the final portion of the agenda was for Council members to discuss language that might be considered for inclusion in the Regional Water Plans.

Comment: Determining the future flows needed to protect aquatic species is uncertain. There is a struggle between reactive and proactive planning. Despite good planning, there is still a need to react to the natural flow variability.

A: Gail Cowie commented that planning for rivers with impoundments it is a very different problem. For streams without impoundments, being less reactive may help protect the values important to those who use those streams. Councils can consider their priorities for the most important streams to assess in greater detail.

Q: Can we expect more reservoirs to be built that depend on off-stream flows?

A: Gail Cowie responded that building reservoirs on smaller streams that are augmented by pumping bigger streams is one of the management practices under consideration by different Councils.

Comment: Reservoirs permitted in upstream communities will affect the downstream communities and downstream communities may also affect upstream communities.

A: Gail Cowie responded that the permitting process considers the impacts on other users. This may be a thought process to include in the Regional Water Plan. For example, Councils may want to direct any off-stream storage away from priority areas.

Q: How about the amount of water that Florida wants out of Lake Seminole? If high and low flows are good, would that not also be the case for flows out of Lake Seminole?

A: Alice Lawrence with the US Fish and Wildlife Service in the Athens, GA office responded that the 5,000 cfs flow is the historic flow based on low-flow gage data from 1928 to 1950s when Woodruff was built. The flow requirement is also tied to the coal-fired plant downstream.

Gail Cowie asked the Council members if there are data needs to improve the next round of Regional Water Planning.

Comment: There is a concern that water resources in the Lower Flint-Ochlockonee Council are already over-permitted. The water users in the region are working hard to reduce their water demands but that may not be enough.

A: Gail Cowie responded that there are alternatives being considered to address the periods where the low flows are lower or longer than they would have been otherwise. Practices include groundwater augmentation and adjusting the current mix of water sources, among others. The guidance from EPD Director Barnes is to identify practices to move toward closing the gap. Practices may include recommendations to the State on things that should be changed.

Comment: The resource assessment models should be based on permitted and not peak withdrawals. The assumptions behind the resource assessment cause some concern; gaps will be more manageable with some changes in assumptions. Not including Alabama's withdrawals from the Chattahoochee River in the energy data is also a concern. The nutrient data from Florida is also not included, which makes it hard to set regional standards or deal with instream nutrients. Councils will have difficulty writing the Regional Water Plan given the concerns with the resource assessments.

Q: Who will revise the Regional Water Plans in 5 years?

A: Gail Cowie responded that the State Water Plan specifies that the Councils will review the Regional Water Plans every 5 years. The individuals serving on the Councils may change, as these positions are appointed, but EPD and the Councils have roles in review and revision.

Q: Why didn't EPD place a moratorium on permitting actions until the Councils completed their Regional Water Plans? Withdrawals for Plant Washington and the City of Forsyth are moving forward concurrent with the Regional Water Plans.

A: Gail Cowie explained that the Regional Water Plans will be based on the best available data and the State Water Plan explicitly states that water management decisions should continue to be made based on the best information available at the time. As data and information are improved, through regional planning and after, that information can then be used for decision making.

Q: How will the information presented today be shared with the rest of the Councils and Council members who are not in attendance?

A: Gail Cowie responded that the meeting summary and the presentations would be posted on the EPD website.

There were no more questions or comments and the meeting was adjourned.