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1601 Balboa Ave.
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May 29, 2008

Re: Proposed Modifications to Interim Operations Plan for ACF Reservoirs

Dear Mr. Flakes and Ms. Carmody:

I offer the following comments on the Corps' proposed modifications to the Interim Operations Plan ("MIOP") for its reservoirs in the Apalachicola-Chattahoochee-Flint ("ACF") River Basin on behalf of the Atlanta Regional Commission, the City of Atlanta, Georgia, Fulton County, DeKalb County, Cobb County-Marietta Water Authority, and the City of Gainesville, Georgia (collectively, the "Water Supply Providers"). Technical materials prepared by Megan Rivera, Ph.D. of Hydrologics, Inc. and George McMahon, Ph.D. of Arcadis are also attached.

First, let us begin by expressing our sincere appreciation to you and your respective agencies for your efforts to manage water resources in the ACF Basin. Although we strongly disagree with many of the decisions that have been made, and with the process used to make them, we do understand that you are using your best efforts in an extremely difficult situation.

The following comments are organized in two sections. The first section is directed at specific provisions of the MIOP. The second addresses a number of more fundamental considerations that need to be considered in the development of the new Water Control Plan for the ACF Basin.

To summarize our evaluation of the MIOP, we believe that, while it represents a slight improvement over the original IOP, it suffers from many of the same fundamental flaws. We have already shown that better alternatives exist. We urge you to give serious consideration to these alternatives rather than continuing to make incremental changes to a plan that should never have been adopted in the first place.

Indeed, we are extremely concerned that the MIOP will form the basis for the Water Control Plans that are currently in the process of being developed. We can and must do better. In other words, although we understand that we will likely have to live with the IOP/MIOP framework for some time to come, we believe this framework should be set aside at the first opportunity.

1. Comments on Specific Provisions of the MIOP

1.1 Refill Opportunities Are Still Too Limited

As the events of the past year demonstrate, the IOP's minimum flow requirements and restrictions on the Corps' ability to store water are unsustainable during a prolonged drought. The MIOP alters these provisions in several ways, and in this respect, constitutes an improvement over the IOP. Indeed, the modifications allowing storage of all flows above 5,000 cfs from December to February and reducing the prohibition on storage to 50% of Basin Inflow are welcome changes.

However, these modifications do not go far enough. Refill opportunities are still severely restricted during the wet period from March to May and the 50% prohibition on storage is too restrictive. The MIOP ensures that reservoir levels are consistently lower than is beneficial to many users in the system. These provisions can and should be modified to allow greater opportunities to refill the reservoirs. This would substantially benefit the reservoir system, and all those who rely upon it, with little to no effect on downstream flows.

Florida would have the Corps believe otherwise. In its letter dated May 15, 2008, Florida complains that release requirements for certain periods have been reduced under the MIOP to 50% of Basin Inflow, as opposed to 70% of Basin Inflow under the original IOP. As a result of this change, Florida claims that "flows to the Apalachicola River will be reduced by up to 20% of basin inflow under the Modified IOP in comparison to the original IOP." This is simply not correct.

The reality is that only a small fraction of Basin Inflow can actually be captured in storage, regardless of what the MIOP might allow. The fraction of Basin Inflow that can be stored depends on the distribution of inflow in relation to storage. Of the 17,230 $mi.^2$ drainage basin above Lake Seminole, 95% is below Lake Lanier, which represents 65% of total system storage; 80% is below West Point, which, together with Lake Lanier, represents 85% of total system storage; and 57% is below Walter F. George, which is the last storage project in the system. *See Figure 1*. In other words, run-off from 57% of the basin cannot be captured in any reservoir and 80% of the basin is controlled by the smallest storage project in the system, with only 244,000 acre-feet.

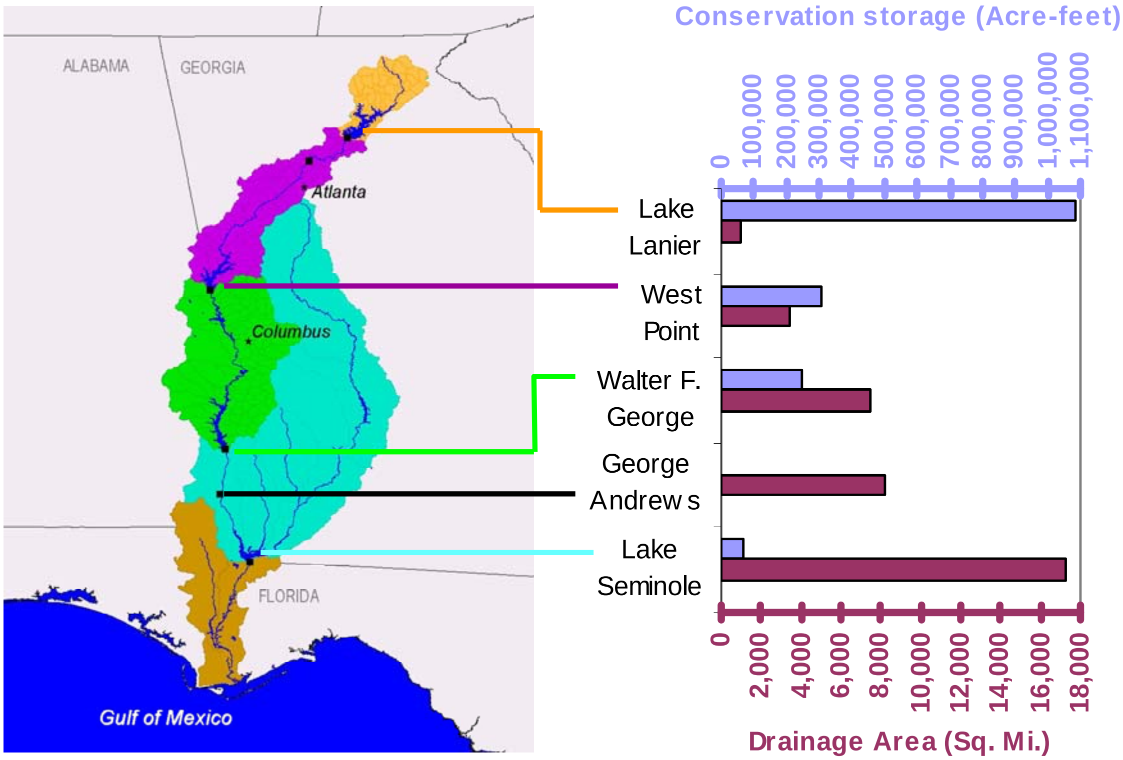

Figure 1. Conservation Storage and Drainage Basin for ACF Reservoirs.

The end result is that only a small fraction of Basin Inflow can actually be captured and stored in the federal reservoirs, because of their location in the basin, no matter what the rules theoretically allow. For example, for the period from January 2007 to present, the MIOP provision allowing storage of up to 50% of Basin Inflow would result in the actual storage of only 8% of Basin Inflow—the remaining 92% would pass downstream to Florida. Similarly, for the period from 2003 to 2004, the Corps would actually be able to store only 1% of Basin Inflow under the MIOP, whereas 99% would be passed downstream to Florida.

Because the Corps' ability to store water is so limited, the provision of the MIOP theoretically allowing storage of up to 50% of Basin Inflow cannot significantly impact flows in the Apalachicola River. Figure 2 through Figure 4 illustrate this point by comparing flows at the Chattahoochee gage under the IOP with those under the MIOP for three 2-year periods.[1] As these figures show, changes in storage limitations under the MIOP have virtually no effect on flows at the Florida line.

[1] All simulations discussed in this letter were prepared by Hydrologics, Inc. using the OASIS platform. Information concerning the validation of this model against HEC-5 is provided in Exhibit A. The models produce essentially the same results when the same assumptions are used. OASIS was used in preference to HEC-5. We would be happy to answer any questions that the Corps or Fish and Wildlife Service might have about these model runs.

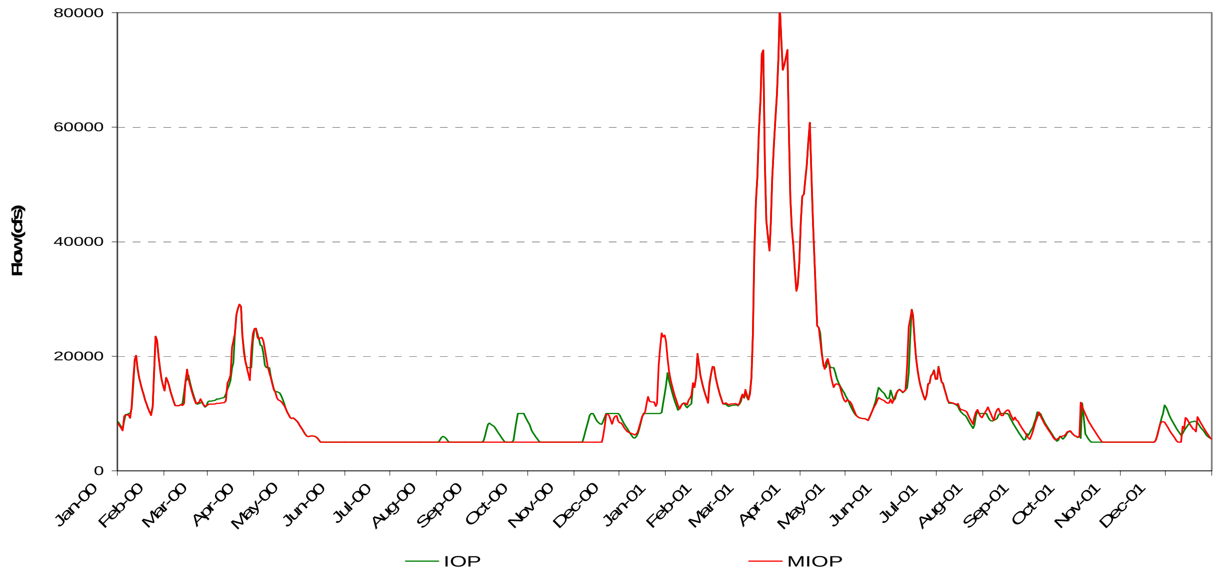

Figure 2. Comparison of flows at the Chattahoochee gage under IOP and MIOP for period from January 2000 through December 2001.

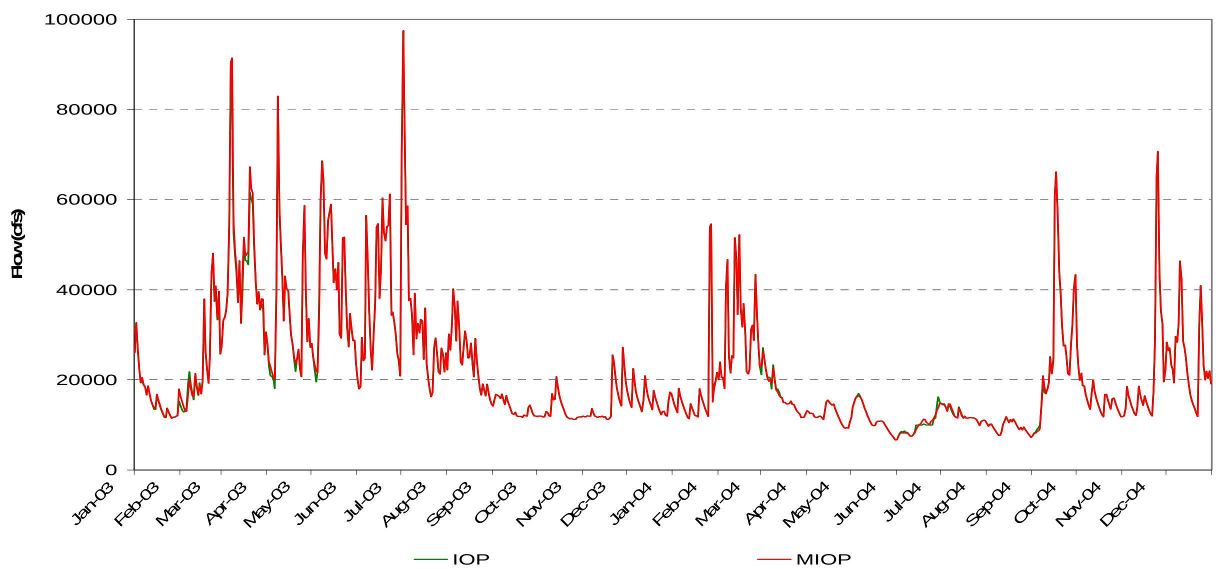

Figure 3. Comparison of flows at the Chattahoochee gage under IOP and MIOP for period from January 2003 through December 2004.

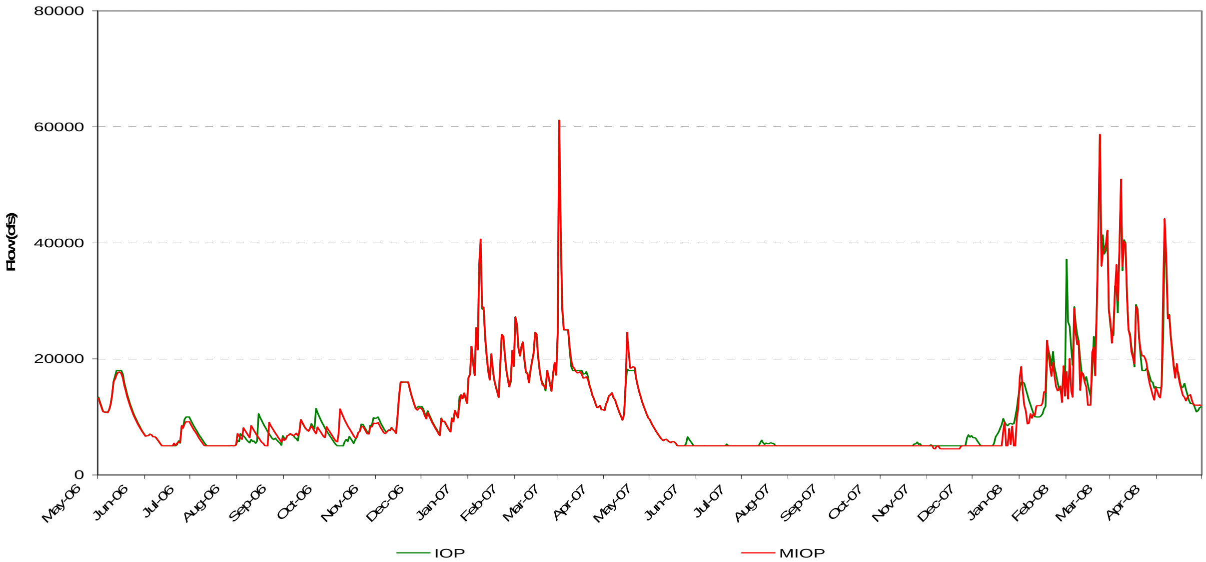

Figure 4. Comparison of flows at the Chattahoochee gage under IOP and MIOP for period from May 2007 through April 2008.

From this, two things are clear. First, Florida's argument that the MIOP will result in significantly reduced flows in the Apalachicola River is plainly not correct. Second, the Corps can and should utilize every opportunity to store water when such opportunities arise—and, given the placement of storage within the basin, such storage will have little appreciable effect on flows at the Florida line.

1.2 Down-Ramping Rates Are Unnecessary and Unreasonable

The ramping restrictions in the MIOP revert back to the rules set forth in the original IOP, which had previously been modified with the approval of the United States Fish and Wildlife Service. We believe the modified ramping restrictions approved by USFWS on October 19, 2008 were more appropriate.

The ramp-down restrictions in the MIOP require the Corps to release large amounts of water from storage to "smooth out" the natural variations in stream flow that occur when it rains. Instead of storing water associated with rainfall events, as it could and should, the Corps is instead required to release substantial amounts of water from storage to provide a gradual ramp-down from the high flows that result from these rainfall events. The result, at times, has been that rainfall events may actually *reduce* storage rather than increasing it.

This is not appropriate. Ramp-down requirements should not be imposed to reduce the rate of fall of the river after a natural rainfall event. Rather, ramping requirements should only be used to transition between significant man-made alterations of the flow regime, such as between spawning and non-spawning flows or between navigation releases and normal operations.

The modified ramp-down restrictions in effect since October 2007 took these considerations into account. As we understood that rule, ramp-down restrictions were tied to the "Basin Inflow fall rate" rather than to the IOP maximum fall rate schedule. The one problem with the rule approved by the Service in October 2007 is that it might be necessary at times to ramp-down even when Basin Inflow is rising or remaining steady. Therefore, we suggest that the fall rate should be the *maximum* of (1) the Basin Inflow fall rate; or (2) the maximum fall rate schedule.

1.3 The "Volumetric Balancing" Scheme Is So Restricted as To Be Useless

Although the Corps originally stated, when it adopted the IOP, that it would employ "volumetric balancing" to recapture storage that is used to meet ramp-down requirements. The limitations stated in the letter to the Fish and Wildlife Service dated May 16, 2007 essentially negate this commitment.

The letter includes several conditions that must be met for storage credits to accumulate: (a) the actual release must be greater than the minimum required by the IOP; (b) the release required to comply with the fastest ramping rate allowed is greater than the minimum IOP required release; (c) today's release is less than yesterday's release (i.e., downramping is occurring); and (d) today's total storage is less than yesterday's total storage. When all of these conditions are met, the credit is equal to the *lesser* of (a) the decline in storage; or (b) the difference between the actual release and the minimum IOP required release.

We can think of no logical basis for limiting the accumulation of storage credits to situations where system storage is actually declining. A restriction preventing the accumulation of storage is no different from a requirement to release storage.

Two other aspects of the volumetric balancing scheme are particularly problematic. First, the letter states that volumetric balancing must be accomplished within 10 days and may not involve more than 10,000 day-second-feet (dsf) of storage. There is no basis for these temporal and volumetric limits. If the Corps is required to expend large quantities of storage to slow artificially the river's natural rate-of-fall, it should be permitted to recoup that storage as flows permit. Second, "credits" can only be used during high-flow periods (above 10,000 cfs). At such times, storage credits simply serve to refill the lower reservoirs a few days earlier. As a result, the storage that is "saved" by applying volumetric credits is "spilled" a few days later when the reservoirs are full.

These limitations render the volumetric balancing scheme essentially worthless. For example, by our calculations, ramping requirements caused approximately 90,000 acre-feet of water to be released in excess of IOP release requirements from May to October 2007. Of this amount, only 3,000 acre-feet could have been recovered through volumetric balancing in accordance with the restrictions imposed by the May 16, 2007 letter. *See* Exhibit B.

1.4 The MIOP's Drought Provisions Are Flawed

The MIOP constitutes a definite improvement over the IOP to the extent that elements of the Exceptional Drought Operations (EDO) Plan have been included. The absence of any such drought provisions was obviously a major omission in the original IOP. Nevertheless, two of these provisions need to be changed.

1.4.1 The Use of "Composite Storage" as the Trigger for Drought Operations Ignores Special Consideration that Should be Given to Lake Lanier.

First, we continue to object to the use of a drought trigger based on Composite Storage. Composite Storage does not accurately reflect the status of system storage. Because the lower reservoirs refill so quickly, in comparison to Lake Lanier, it is possible for system storage to be in Composite Zone 2—the threshold under the MIOP for ending Drought Contingency Operations—even while Lake Lanier is still in Zone 4.

To assess this probability we modeled the probability that system storage would reach Composite Zone 2 by April 30, 2009 under the MIOP, based on starting conditions as they existed on May 1, 2008. Probabilities were calculated using the Hirsch method to prepare conditional streamflow forecasts. The results are provided in Table 1 below. The analysis shows a 62% probability that system storage will reach Composite Zone 2—and hence that drought operations will end—at a time when Lake Lanier is still in Zone 4. This shows that the Drought Contingency Operations will terminate too soon in most cases. *See* Exhibit C.

Table 1. Probability that System Storage Will Reach Composite Zone 2 by April 1, 2009, Terminating Drought Operations, While Lake Lanier is in a Given Zone

	System Storage Reaches Composite Zone 2 When …				**System Storage Does Not Reach Composite Zone 2**
	Lanier is in Zone 4	Lanier is in Zone 3	Lanier is in Zone 2	Lanier is in Zone 1	
# years in simulation	42 of 67	10 of 67	0 of 67	0 of 67	15 of 67
probability	62%	15%	0%	0%	22%

Instead of using Composite Storage, drought operations should continue until *Lake Lanier* is in Zone 1. Alternatively, it is possible to construct a rule based on forecasts of the probability that Lanier will refill within a certain period of time. Such a rule would have the potential to optimize operations using the best available information.

1.4.2 The "Drought Zone" Is Too Low

We do not believe the "Drought Zone," as currently drawn, sufficiently protects users who rely on reservoir storage. By the time system storage has fallen into the Drought Zone, the system is already at a severe risk and past the point at which emergency actions should be taken. What is more, initiating drought operations when conservation storage is nearly exhausted would be particularly problematic in a prolonged, multi-year drought. In that case, conservation storage could be almost completely expended early in the drought period and prior to the commencement of drought operations. This would leave insufficient storage to meet needs in the basin, including water supply for metropolitan Atlanta, in the remaining drought years.

We reiterate that it is inappropriate for the drought trigger to be based on Composite Storage. But if the Corps is determined to use Composite Storage as the trigger for reducing minimum flow requirements, the flow should be reduced immediately whenever the system is in Composite Zone 4, and such measures should remain in place until Composite Storage and Lake Lanier have both recovered to Zone 1.

1.4.3 The "Drought Zone" Is Arbitrary

Furthermore, the delineation of the "Drought Zone" appears to be completely arbitrary. The Corps' letter to FWS states that the Drought Zone delineates a volume of water "roughly equivalent" to the amount of storage in the inactive storages in Walter F. George and West Point and Lake Lanier combined with the amount of storage in Lake Lanier Zone 4. In other words, the Drought Zone will generally be entered when the lower reservoirs are empty (of conservation storage) and Lake Lanier is in Zone 4. But the description further states—without explanation or justification—that the Drought Zone has been "adjusted" to include a "smaller volume of water at the beginning and end of the calendar year." What is the basis for these "adjustments" to the Drought Zone, and why would it ever be appropriate to terminate emergency operations at a time when the lower reservoirs are empty and Lake Lanier is in Zone 4?

1.5 Forecasts Should be Used To Improve Reservoir Operations

A large body of literature has been developed on the subject of hydrological forecasting. The United States Geological Service (USGS) has been using and relying on these methods for decades. The Corps should utilize these tools, with appropriate margins of error, to optimize reservoir operations.

The MIOP uses "Composite Storage" as the principal indicator of drought conditions, but this is a poor surrogate for a good forecast. Operations in the Spring of 2007 under the IOP/Concept 5 provide a case in point. Concept 5 required the Corps to meet a "desired flow" of 6,500 cfs—as opposed to the "required flow" of 5,000 cfs—until composite storage fell to Zone 3. The Corps began releasing water from storage to meet the "desired" target of 6,500 cfs on May 8, 2007, at a time when the available forecasts were already predicting an extremely dry summer. The predictable result was a rapid, pointless depletion of system storage—42,000 acre-feet of water were released between May 8 and May 31, at which time system storage fell into Composite Zone 3 and releases were finally reduced.

The 42,000 acre-feet of water that were released from May 8 to May 31 to meet the "desired flow" of 6,500 cfs equates to over a foot of elevation in Lake Lanier—enough water to meet the average annual consumptive needs of the metropolitan area (250 cfs) for 84 days. The loss of this water had a lasting impact on system storage, which still has not recovered. In exchange for this substantial cost, the temporary increase in flows to the Apalachicola River had no lasting benefit. After depleting system storage to the level of Composite Zone 3 within just 3 weeks, flows in the Apalachicola River fell to the "required" level of 5,000 cfs and remained at that level throughout the summer and fall—that is, until the alarming loss of system storage caused the "required" flow of 5,000 cfs to be reduced even further. Therefore, any organisms requiring flows at or above 5,000 cfs must have perished during the long period after May 31 when flows were at or below this level.

Needless to say, we are pleased to see that the Corps has taken these events to heart and has modified the IOP to eliminate the "desired flow" of 6,500 cfs. The larger point remains, however, that release requirements and flow reductions under the MIOP are still tied to Composite Storage without reference to hydrological forecasts. This is a fundamental flaw in the framework of the IOP.

1.6 Lanier Should Not Be Used To Balance the Lower Reservoirs In Cases Where the Lower Reservoirs Can Fill On Their Own, Without Support From Lake Lanier

Also, although it is generally appropriate to use Lanier to balance the lower reservoirs, this does not always make sense. Releasing water from Lanier to help refill West Point and Walter F. George as the top of their conservation pools rise between February and June is especially wasteful. In most years the only effect of releasing water from Lake Lanier to balance the lower reservoirs is to fill the lower reservoirs a few days earlier. This is wasteful in situations where system storage is low and needs to be preserved, and where it is unlikely that Lake Lanier itself will refill. In these cases intervening flow should be used to refill the lower reservoirs instead of releasing water from storage in Lake Lanier.

1.7 Release Requirements Should Consider Management Objective and Not Blindly Adhere to Basin Inflow

Another fundamental flaw in the MIOP is the fact that release requirements are blindly tied to Basin Inflow without operating for specific needs and balancing needs in the basin.

"Basin Inflow" is a legal construct with little connection to specific needs or operational objectives. Its original justification, as is clear from the record, was that reservoir operations could not be considered the legal cause of any environmental impacts caused by flows at least equal to Basin Inflow. Although this is legally correct, it does not follow that passing Basin Inflow is the best mode of operation for the reservoirs or that the Corps is legally required to operate in this manner.

The stated objective to maximize spawning habitat for the Gulf sturgeon is a perfect example. There is no evidence to show that reservoir operations have any effect on sturgeon spawning success, or that the amount of spawning habitat currently available at RM 105.5 is not sufficient to meet the needs of the species. Nonetheless, even if increasing sturgeon spawning habitat were an appropriate objective, the data show that the amount of spawning habitat available at RM 105 plateaus at 10,000 cfs to 11,000 cfs. Flows in excess of this amount actually *reduce* the amount of available habitat. Therefore, the MIOP is actually counter-productive to the extent it requires releases in excess of 11,000 cfs based on the level of Basin Inflow.

This is just one example of many. The more general point is that the Corps should strive to develop an operating plan in which release requirements are based on balanced operational objectives as opposed to abstract concepts like Basin Inflow.

1.8 Corps Models and Data Need to be Corrected

Finally, we are concerned that the Corps continues to use flawed models to evaluate modifications such as the MIOP. Deficiencies are detailed in the attached memorandum from George McMahon, Ph.D. *See* Exhibit D.

2. The Corps Should Not Attempt To Use Reservoir Storage to Drought Proof the Apalachicola River

In addition to commenting on the specific provisions of the MIOP, we have also taken this opportunity to address certain fundamental limitations of the ACF Reservoir system that need to be considered by all stakeholders in the development of water control plans for the ACF Reservoirs.

The reality is that reservoir operations cannot significantly affect the timing or quantity of flows in the Apalachicola River for any extended period of time. This is a consequence of the distribution of storage within the basin, as is described further in Section 2.1 below. Another consequence of the distribution of storage within the basin is that attempts to utilize reservoir storage to manipulate the Apalachicola River can quickly drain Lake Lanier, which may take years to refill. This is discussed further in Section 2.2. In terms of cost-benefit analysis, such operations provide negligible benefit to the Apalachicola River while creating significant economic hardship and creating great risks to the health, safety and well-being of the millions of people who rely on reservoir storage for water supply and other purposes. These impacts are discussed in Section 2.3.

Further, as is discussed in Section 2.4, the State of Florida's focus on metro Atlanta is completely misplaced. The truth is that metro-area water use is not a significant contributor to environmental issues in the Apalachicola River and Bay. Instead of pointing fingers, the State of Florida should work with the Corps to identify and address the causes of and potential solutions to these problems.

2.1 Reservoir Operations Cannot Significantly Affect Flows in the Apalachicola River Over an Extended Period of Time

One result of the upside-down distribution of reservoir storage within the ACF Basin is that reservoir operations cannot significantly affect the pattern of flows in the Apalachicola River. This can be seen by modeling a plan in which each reservoir is permitted to maximize storage subject only to at-site release requirements. For illustration purposes only we have modeled such a rule, which we call the "At Site Objectives" Plan. In this plan each reservoir operates to meet at-site objectives, including the 750 cfs flow target for Buford Dam and the 5,000 cfs flow target for Jim Woodruff.

Figure 5 and Figure 6 show the cumulative distribution of flows at the Chattahoochee gage for the MIOP and the "At Site Objectives" Plan. Although the MIOP does provide slightly higher flows in the range between 5,000 cfs and 15,000 cfs, *see* Figure 5, the difference is remarkably small and insignificant over the entire range of flows. *See* Figure 6.

The differences between the MIOP and the At Site Objectives Plan are even less significant when one considers impacts to the hydrograph. Figure 7 through Figure 9 show three representative two-year periods, two dry and one wet. These figures demonstrate that reservoir operations have little effect on the overall timing and pattern of flows in the Apalachicola River.

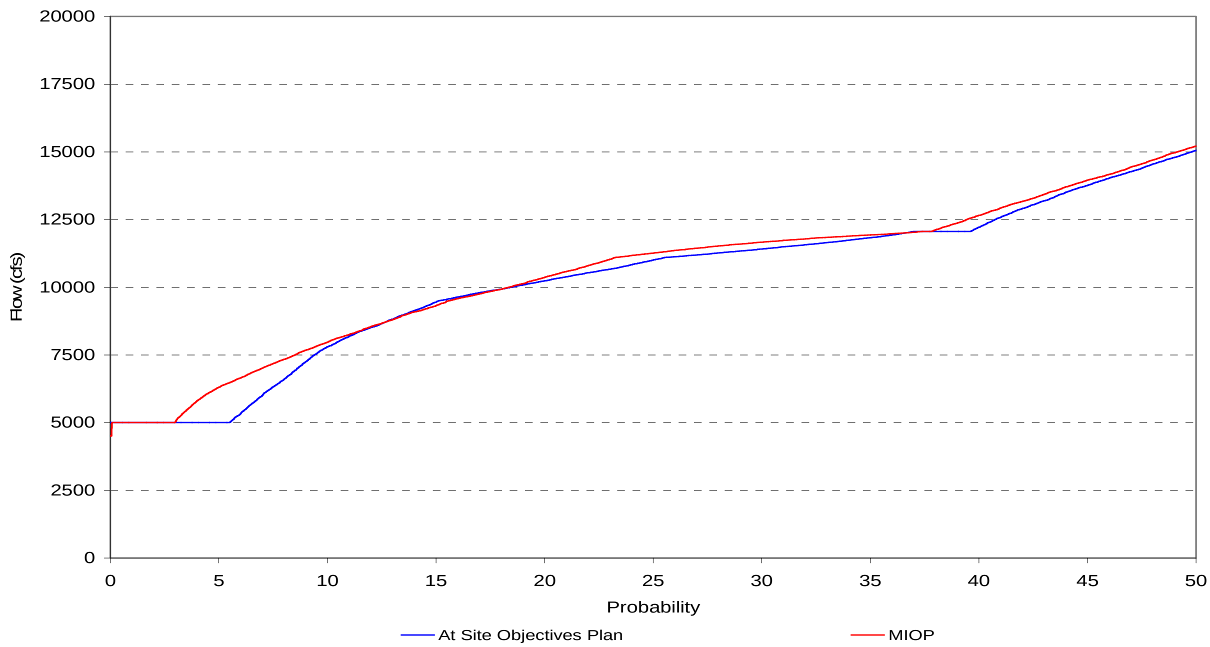

Figure 5. Flow at the Chattahoochee gage under MIOP as compared to flow under the "At Site Objectives" Operating plan.

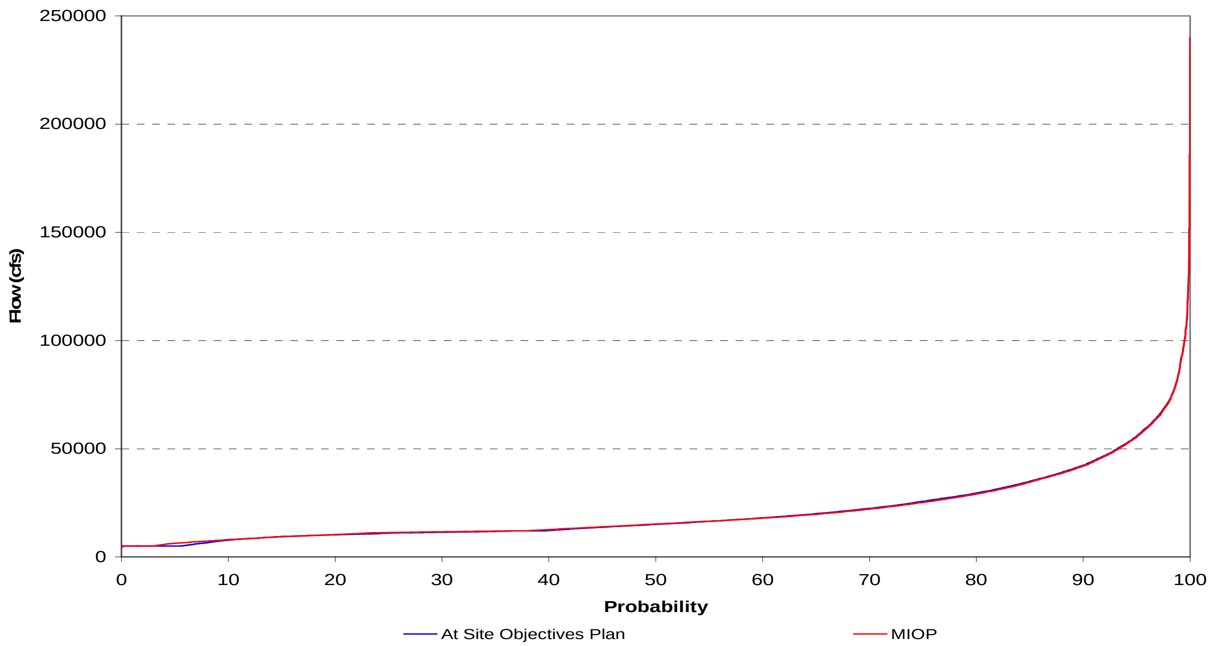

Figure 6. Flow at the Chattahoochee gage under MIOP as compared to flow under the "At Site Objectives" Operating plan.

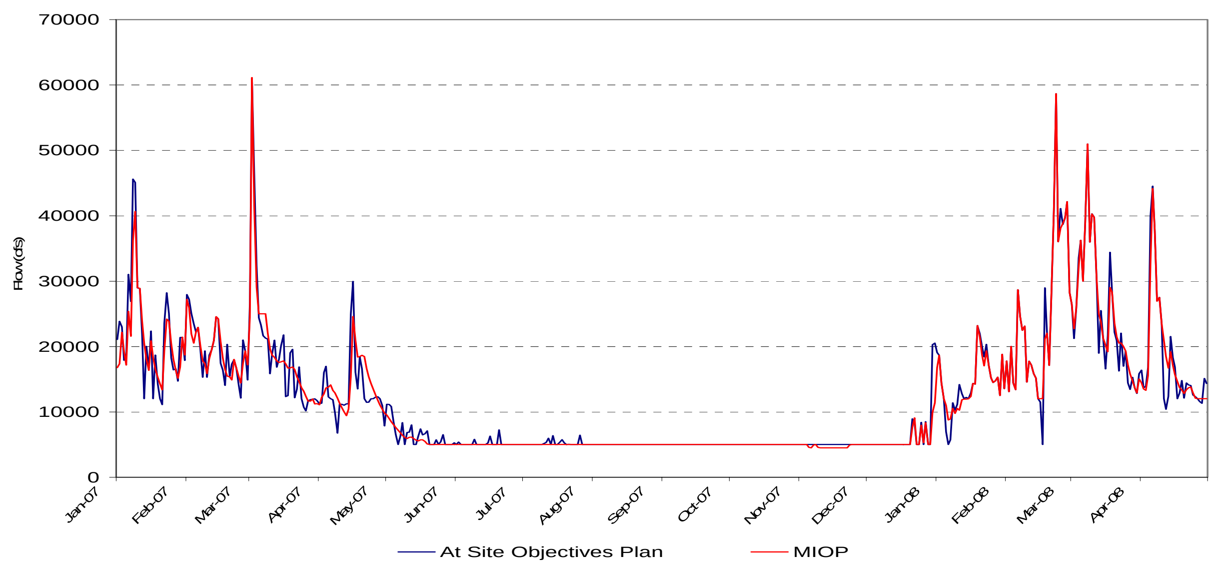

Figure 7. Simulated flow under MIOP and At-Site Objectives Operating Plan from January 2007 to April 2008

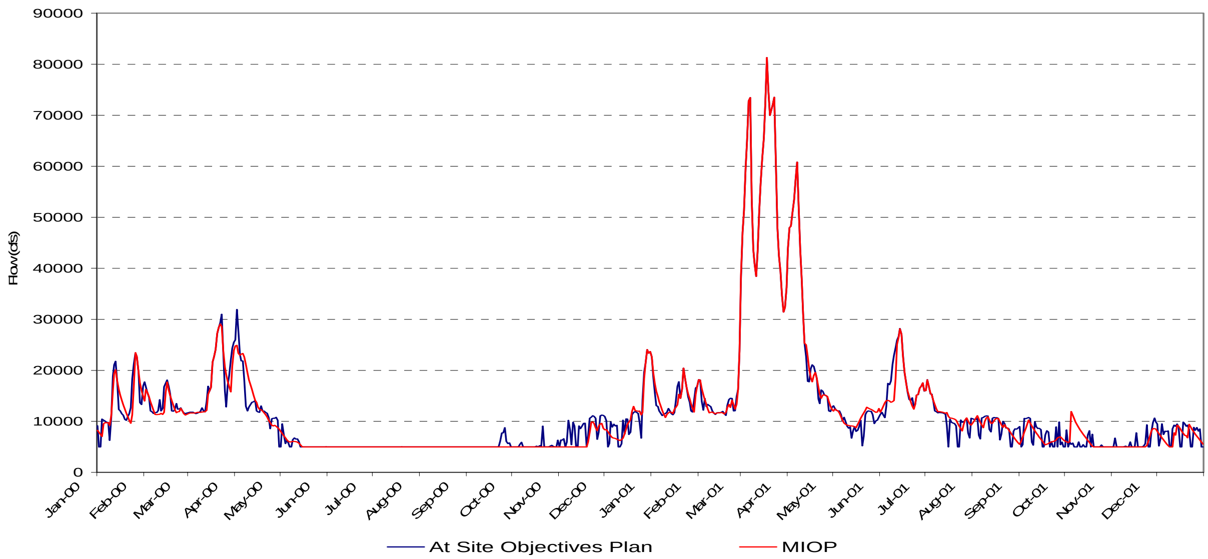

Figure 8. Simulated flow under MIOP and At-Site Objectives Operating Plan from December 1999 to December 2000

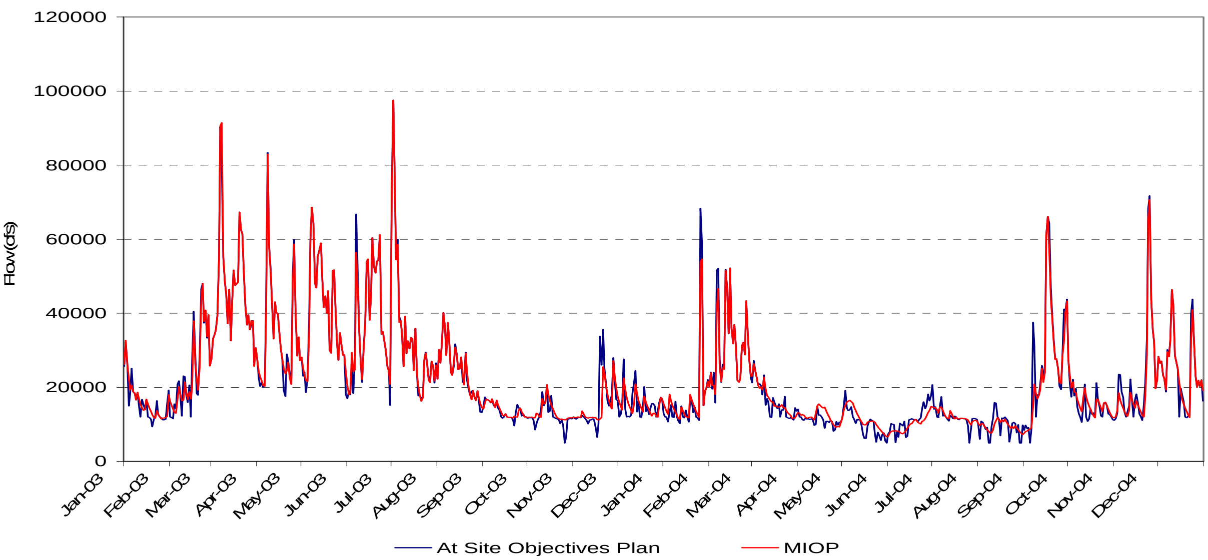

Figure 9. Simulated flow under MIOP and At-Site Objectives Operating Plan from January 2003 to December 2004

2.2 Lanier Should Not be Drawn Down Excessively Because Lanier Takes a Very Long Time to Refill

A second consequence of the geography of the ACF Basin—with Lake Lanier at headwaters, controlling just 5.6% of the drainage area of the basin—is that it takes a very long time to refill Lake Lanier once it is drawn down.

Figure 10 shows the average annual inflow (acre-feet per year) into each of the three storage reservoirs. 0 provides similar statistics in a different form. The table shows, for example, that the drainage-to-storage ratio for West Point is 100 times greater than that for Lake Lanier. 0 further shows that it would take 279 days to fill Lake Lanier *if the entire flow of the river (based on the annual average flow) were captured and stored.* This statistic is provided for purposes of comparison only—in reality it would take much longer than 279 days to refill Lanier because it will never be possible to capture and store 100% of the inflow to this reservoir.

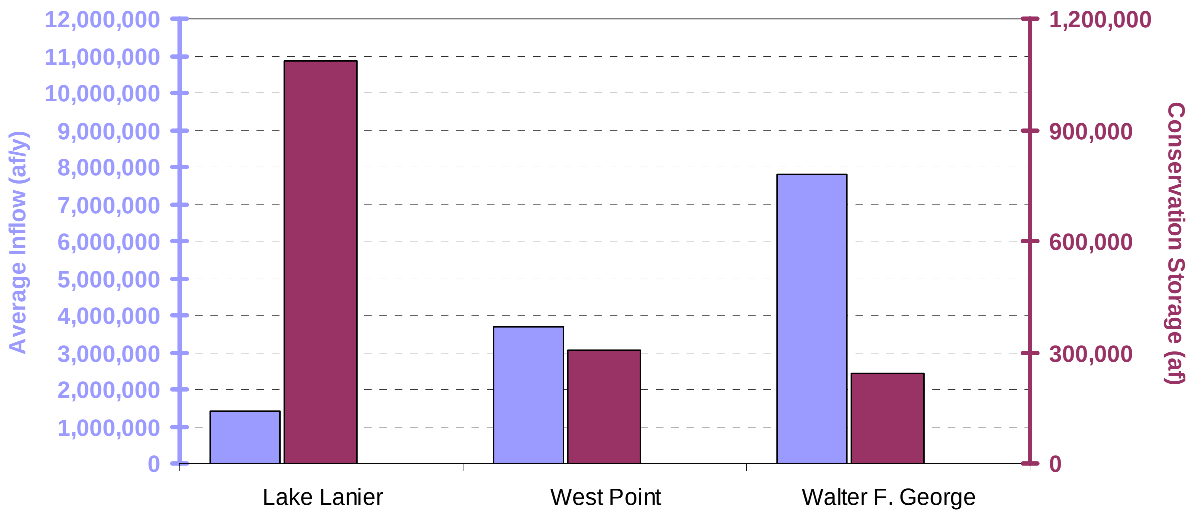

Figure 10. Average daily inflow (acre-feet per year) and conservation storage for ACF Reservoirs.

Table 2. Drainage-to-storage and inflow-to-storage ratios for the ACF Storage Projects. The Inflow-to-storage ratio is the total conservation storage divided by average daily inflow in acre-feet.

	Lake Lanier	West Point	Walter F. George	George Andrews	Lake Seminole
Drainage-to-storage ratio	.0001	.0112	.0305	n/a	.2578
# of Days to Fill Conservation Storage Assuming Zero Releases and Inflow Equal to Average Annual Inflow	279	30	11	n/a	n/a

The events of 2007 illustrate the effect on Lanier's very small drainage-to-storage ratio. Figure 11 through Figure 13 show the actual, recorded levels for West Point, Walter F. George and Lake Lanier from June 2007 to May 2008. These Figures show that West Point and W.F. George responded almost immediately to the rains that began in November 2007. Even with reduced releases from Buford Dam, these reservoirs, which had been at the bottom of Zone 4, refilled completely by mid-January. In fact, both reservoirs are now *over* full, as defined by the "top of conservation" line in the graphs. In sharp contrast, Lanier is still fifteen feet below rule-curve—a record low for this time of year—and the level is projected to fall even further for the rest of the year.

Figure 11. West Point Lake Levels from June 2007 to May 2008

Figure 12. Walter F. George Lake Levels from June 2007 to May 2008

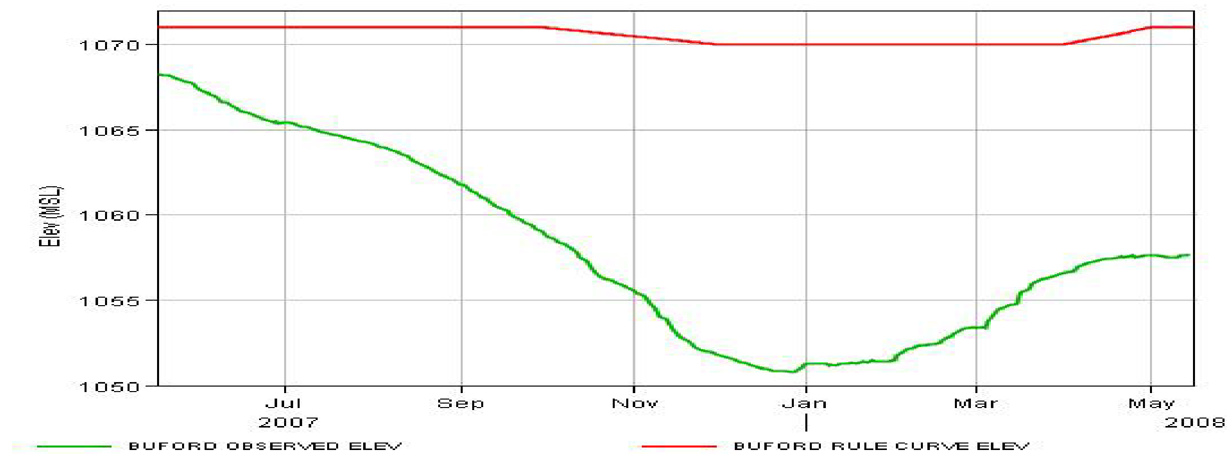

Figure 13. Lake Lanier Lake Levels from June 2007 to May 2008

2.3 The Costs to North Georgia Far Outweigh the Limited Benefits that Can be Achieved by Draining Lake Lanier to Manipulate Flows in the Apalachicola River

The very long time it takes to refill Lake Lanier, coupled with the limited benefits that can be achieved, weigh heavily against any attempt to use storage in Lake Lanier to manage flows in the Apalachicola River.

2.3.1 Low Lake Levels Have a Substantial, Lasting, Adverse Impact on North Georgia

Low lake levels at Lake Lanier have a profound, negative impact on the economy and general well-being of North Georgia. In the absence of any significant sources of groundwater, the vast majority of the metropolitan area relies on Lake Lanier and on another federal reservoir—Lake Allatoona, in the Alabama-Coosa-Tallapoosa (ACT) River Basin—to meet water needs. Lake Lanier supplies most of the region. Therefore approximately 3.5 million people rely exclusively on Lake Lanier, and on the Corps, to provide water supply for municipal and industrial purposes.

Low lake levels threaten the security of the water supply for 3.5 million people and for the businesses and industries within the ACF River Basin. This risk is very real, and the magnitude of the potential catastrophe resulting from an empty reservoir can hardly be over-stated.

In addition, costs to North Georgia have already been and will continue to be extremely high. Water restrictions have already had a catastrophic effect on the urban agricultural industry, a large part of Georgia's economy with more than 7,000 businesses employing a workforce of some 80,000 Georgians. Urban agriculture contributes more than $8 billion in annual sales to the state's economy. Numerous business have failed and thousands of jobs have been lost within this industry alone. According to research by the University of Georgia, losses to Georgia's urban agriculture industry due to the recent drought—and in large part due to water restrictions necessitated by the mismanagement of Lake Lanier—are approximately $262 million per month. This translates to an annual loss of $3.14 billion if current conditions and restrictions continue.

The $5.5 billion recreation economy supported by Lake Lanier has suffered as well. Low water levels have led to out-of-service boat ramps, unusable beaches, impassable channels and unusable private docks. These impacts are real and have economic implications for residents, business and governments of Gwinnett, Forsyth, Hall and surrounding counties, and for millions of visitors who normally come to Lake Lanier as a recreation destination.

Local governments are suffering as well. Water utilities have had to adopt extreme response measures on an emergency basis to respond to the precipitous decline in levels at Lake Lanier. In addition to disrupting the lives and businesses of their customers, these emergency measures have cost the metropolitan area Water Supply Providers over $60 million to date. This lost revenue has created substantial difficulties for local governments and authorities whose rate structures and bond financing depend upon predictable revenues.

In sum, the costs to North Georgia, both immediate and potential, far outweigh the trivial benefits that can be achieved by attempting to use Lake Lanier to manipulate flows in the Apalachicola River 350 miles downstream.

2.3.2 The Corps Should Not Rely on Dead Storage to Supply Basic Needs

Florida suggests Lake Lanier should be drawn down below the level of "inactive storage." This is unconscionable. The Corps should not gamble with the health and safety and well-being of 3.5 million people. Lanier should <u>never</u> be drawn down into the dead pool, or even near it.

2.3.3 Contrary to Florida's Allegations, Water Use in the Metro Area is Not the Cause of Any Problems that Might Be Occurring in the Apalachicola River

The State of Florida has complained that the Corps has not done enough to limit depletions in the upper part of the basin. Once again, however, Florida's accusations have little basis in reality, which is that depletions in the upper basin are too small to have any significant impact on the flow of the Apalachicola River.

Notwithstanding our near-total reliance on Lake Lanier for water supply, the entire metropolitan area consumptive use is just 250 cfs per day on average, which is just 1.2% of the average annual flow of the Apalachicola River at the Chattahoochee gage (at the Florida-Georgia line). Metro-area consumption rises in relation to river flow in drought years—but even then the net loss to the basin is just 2% of the annual flow. In other words, if all consumption stopped, and if the river were allowed to pass through North Georgia without any withdrawals or diversions of any kind, the flow of the river at the Florida line would increase at most 2%.

This is a function of the geography discussed above. Because Lake Lanier controls only 9% of the total flow of the basin above the Florida line, 91% is geographically inaccessible to the metro area. In reality, of course, we use only a fraction of the flow that is actually accessible to us, and we return the majority of the water withdrawn. That is why our total impact is on the order of just 1 to 2%.

To put this in perspective, metropolitan Atlanta's average consumptive use of 250 cfs corresponds to approximately 1.8 inches in river stage at the Chattahoochee gage in the Apalachicola River at the river's lowest flow. This in a river that fluctuates wildly, often as much as 2 feet per day as a result of hydropower operations. *See* Figure 14.

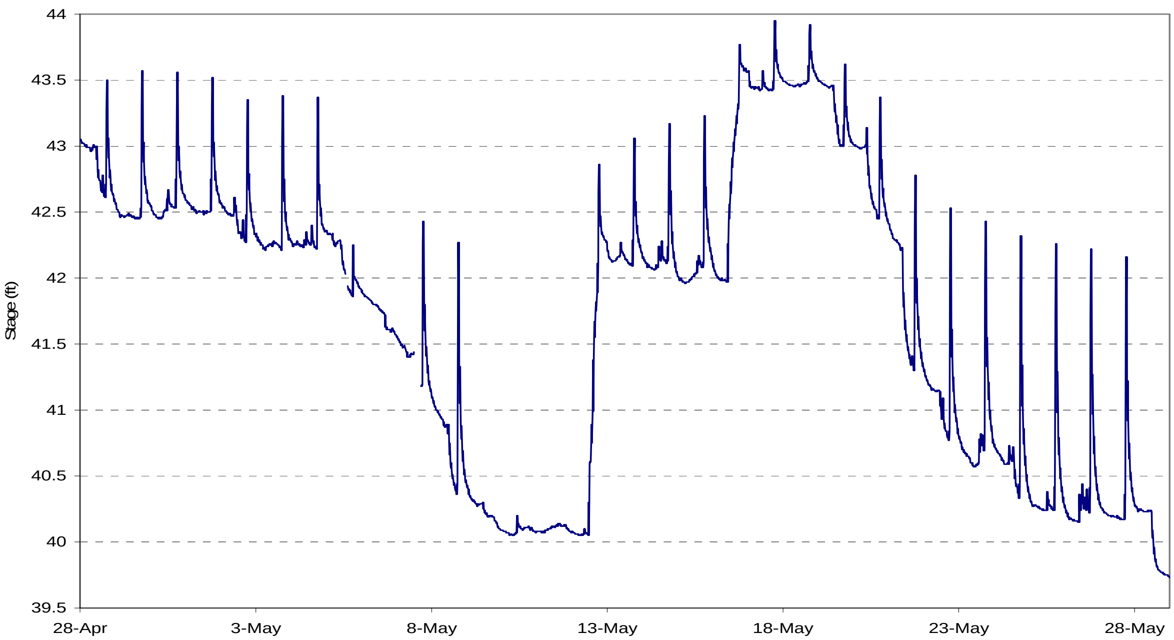

Figure 14. Apalachicola River stage at Chattahoochee gage from April 28, 2008 to May 29, 2008.

Furthermore, although it is true that our withdrawals vary seasonally, the average annual use is the appropriate point of comparison from which to assess impacts to the Apalachicola River, given the availability of reservoir storage in Lake Lanier. The use of storage helps to "smooth out" seasonal variations in withdrawals. Water that is withdrawn from storage affects stream flow when it is taken from the stream and placed into storage—usually in the winter or spring—and not when it is it is withdrawn from the reservoir.

Moreover, Metro Atlanta is not even biggest user in the ACF Basin. Consider the following:

- Depletions to the Flint River due to agricultural irrigation in South Georgia average approximately 268 mgd (415 cfs), which is about 66% more than metro Atlanta's net water consumption. Total agricultural withdrawals for irrigation are even higher. The number cited above is the total depletion of surface waters in the Flint River due to the combination of surface and groundwater withdrawals.

- Evaporation from the mainstem reservoirs alone causes depletions of approximately 135 mgd (209 cfs).

2.4 The State of Florida and the Corps Must Acknowledge and Address the Real Causes of Environmental Issues in the Apalachicola River and Bay

Instead of pointing fingers at the metro area, the State of Florida and other stakeholders should acknowledge that many of the issues in the Apalachicola River are being caused by factors unrelated to reservoir operations or water withdrawals.

To the extent Florida is concerned about salinity in Apalachicola Bay, for example, Florida and the Corps should be studying ways to solve the problems created by Sikes Cut, which is a major contributor to salinity in the bay. Florida should also study the issues created by inter-basin transfers out of the lower Chipola River, such as the Gulf County Canal that is used to transport water to Port St. Joe.

Similarly, to the extent Florida and the Corps are concerned about the areal extent of flooding or the amount of certain types of habitat that are inundated, Florida and the Corps must acknowledge that real causes of these problems have more to do with channel degradation than with the quantity of flow in the river. USGS has documented the effect of channel degradation in the Apalachicola River, which has substantially lowered the bed of the river in key places, such as the sturgeon spawning area at River Mile 105.5. *See Figure 15.* This is highly significant because many of the environmental issues in the Apalachicola River, and especially those related the Gulf sturgeon and mussels, have more to do with the areal extent of flooding or inundation as opposed to the quantity of flow *per se*. As a result of the lowering of the channel, it now takes much more water to achieve any given river stage. At the principal spawning ground for the sturgeon, RM 105.5, USGS has determined that an additional 10,000 cfs is required to raise the river its former stage. This is *40 times* the average annual consumptive use of the entire metropolitan area (250 cfs). *See Helen R. Light, Water Level Decline in the Apalachicola River, Florida, from 1954 to 2004, and Effects on Floodplain Habitats (USGS Scientific Investigations Report 2006-5173) at 25, Figure 13.*

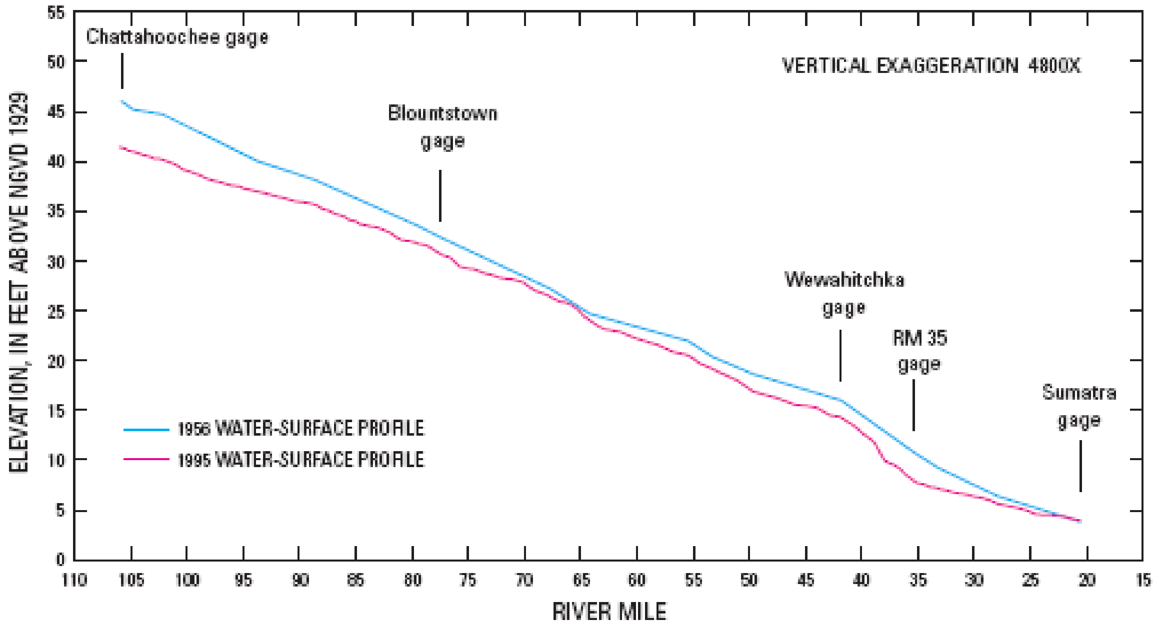

Figure 15. Channel degradation in the Apalachicola River, from Helen R. Light, Water Level Decline in the Apalachicola River, Florida, from 1954 to 2004, and Effects on Floodplain Habitats (USGS Scientific Investigations Report 2006-5173) at 9 (Figure 4).

Likewise, the Apalachicola River appears to be migrating to the Chipola Cut-off, a man-made diversion that is claiming up to 40% of the flow of the mainstem of the river, according to the most recent statistics. This diversion is partially responsible, along with other factors such as the build-up of sediment at the head of the slough—for the dewatering of Swift Slough in 2006 and 2007. Water-use in the metro area pales in comparison to the amount diverted by this artificial cut-off. *See Figure 16.*

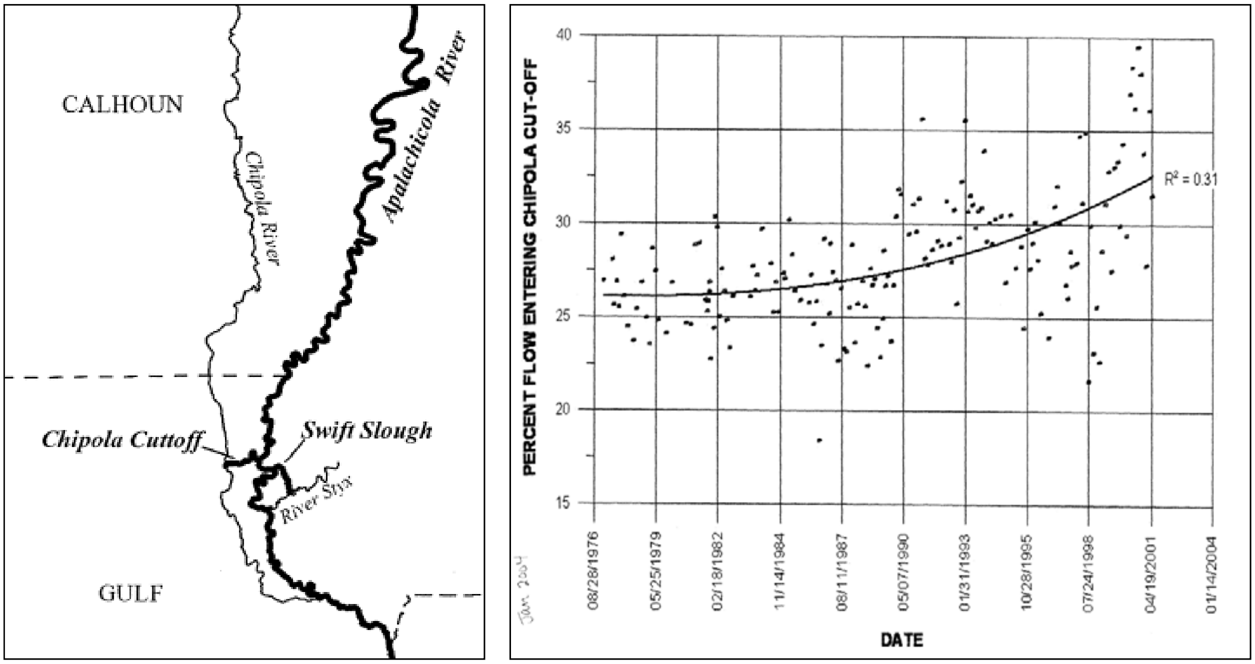

Figure 16. Percentage of the Main Channel of the Apalachicola River Entering Chipola Cutoff from 1976 to 2004. From Administrative Record in State of Georgia v. U.S. Army Corps of Engineers (M.D. Fla. 07-cv-1) GAII001733.

All parties should also acknowledge the role played by agricultural users in South Georgia. According to statistics prepared by the State of Georgia, the average annual streamflow depletion caused by agricultural irrigation is 415 cfs, compared to 250 cfs for the entire metropolitan area. *See* Exhibit E. Unlike the metro-area withdrawals, which are taken from storage, agricultural withdrawals from the Flint River Basin have an immediate effect on stream flows. Operating plans that require the Corps to meet a fixed, minimum flow at the Chattahoochee gage effectively require the Corps to use reservoir storage to compensate for such depletions. Without questioning whether the Corps is legally authorized to utilize reservoir storage to facilitate irrigation, it seems clear that the Corps cannot be *required* to do so under the Endangered Species Act.

These are all real problems that cannot be corrected by curtailing water withdrawals or by simply manipulating reservoir operations. These issues need to be acknowledged and addressed by the stakeholders and by the Corps.

3. Conclusion

In conclusion, we urge you to consider further modifications to the MIOP to eliminate its more apparent flaws. More generally, however, the IOP/MIOP is a misguided and futile effort to use reservoir storage to solve environmental issues in the Apalachicola River. The potential benefits of this effort to the Apalachicola River are negligible and are far outweighed by costs to users who rely on storage. Therefore the IOP/MIOP should be set aside at the first opportunity. It should not be the starting point for new ACF Water Control Plan.

Thank you once again for your efforts. Please do not hesitate to call if you have any questions about these comments or if we can assist in any way.

Sincerely,

Pat Stevens

Pat Stevens, Chief
Environmental Planning