

CRS Report for Congress

Apalachicola-Chattahoochee-Flint (ACF) Drought: Federal Water Management Issues

Updated March 5, 2008

Nicole T. Carter, Coordinator
Resources, Science, and Industry Division

M. Lynne Corn, Amy Abel, Stan Mark Kaplan,
and Eugene H. Buck
Resources, Science, and Industry Division

Cynthia Brougher and Kristina Alexander
American Law Division



**Prepared for Members and
Committees of Congress**

Key Policy Staff

Legislative Issues	Name/Title	Tel.
Water projects, Army Corps of Engineers	Nicole T. Carter Specialist in Natural Resources Policy	7-0854
Endangered species	M. Lynne Corn Specialist in Natural Resources Policy	7-7267
	Eugene H. Buck Specialist in Natural Resources Policy	7-7262
	Kristina Alexander Legislative Attorney	7-8597
Fisheries and fisheries management	Eugene H. Buck Specialist in Natural Resources Policy	7-7262
Fishing industry and disaster assistance	Harold F. Upton Analyst in Natural Resources Policy	7-2264
Agricultural water use and conservation	Jeffrey A. Zinn Specialist in Natural Resources Policy	7-7257
Agricultural disaster assistance	Ralph M. Chite Specialist in Agricultural Policy	7-7296
Drought forecasts and climate	Peter Folger Specialist in Energy and Natural Resources Policy	7-1517
Electricity infrastructure	Amy Abel Specialist in Energy Policy	7-7239
Electric power generation	Stan Mark Kaplan Specialist in Energy and Environmental Policy	7-9529
Water quality	Claudia Copeland Specialist in Resource and Environmental Policy	7-7227
Environmental law, National Environmental Policy Act	Kristina Alexander Legislative Attorney	7-8597
Water resources litigation	Cynthia Brougher Legislative Attorney	7-9121

Apalachicola-Chattahoochee-Flint (ACF) Drought: Federal Water Management Issues

Summary

Drought in the Southeast has brought congressional attention to an ongoing interstate conflict among Alabama, Florida, and Georgia over water allocation in the Apalachicola-Chattahoochee-Flint (ACF) river system. Drawdown of Lake Lanier, the uppermost federal reservoir in the ACF basin, in fall 2007 to support minimum flows in the lower basin's Apalachicola River escalated the conflict. The Atlanta metropolitan area's municipal and industrial water users are concerned about drawdown of their principal (in some cases, their only) water supply. They question the justification for the minimum flow requirements. Lower basin stakeholders are concerned about sustaining river flows to meet their municipal, electricity, and ecosystem needs and are questioning the sufficiency of Georgia's municipal, industrial, and agricultural water conservation efforts.

The issue for the U.S. Army Corps of Engineers (Corps) is how to manage ACF federal reservoirs to equitably meet upper and lower basin multipurpose water needs, especially during drought. The challenge is to meet these needs while maintaining compliance with federal law (e.g., the Endangered Species Act (ESA)); minimizing harm to the ACF river and Apalachicola Bay species, ecosystems, and oyster industry; and providing flows for hydropower and thermoelectric cooling, while also providing municipal and industrial water supply security. The Corps' operational challenge has increased as water demands in the basin have increased (e.g., water supply to support the growing Atlanta metro area, agriculture's increased reliance on irrigation, and ecosystem and species needs), creating conflicts between maintaining water in storage and maintaining flows for in-stream purposes.

In November 2007, the Corps began managing five federal ACF reservoirs under an Exceptional Drought Operations (EDO) amendment to its previous operating plan (which consisted of a 2006 interim plan amending a draft 1989 comprehensive plan). The EDO lowered the minimum flow requirement for the Apalachicola River, thereby reducing the rate of storage drawdown if drought persists and allowing reservoirs to refill before normal operations resume, thus improving upper basin water supply security. Four species protected by the ESA depend on these flows. The immediate and long-term species impacts of the EDO continue as subjects of study and debate. The EDO does not appear to cause significant immediate harm to electricity generation or grid reliability. The EDO was approved by the U.S. Fish and Wildlife Service (FWS) through June 1, 2008. During the 2007-2008 winter, the Corps began revising its operating plans for the ACF reservoirs. When Administration efforts to broker a tri-state agreement by March 1, 2008, failed, the Corps revision acquired additional significance as a mechanism for determining future operations in the absence of a tri-state agreement and in the midst of litigation.

Is the ACF a harbinger of conflicts between ESA implementation and other water uses across the nation? Is the ACF a testing ground for both federal river management and resource allocation during drought in multi-state basins with riparian water laws? ACF drought management may set a precedent for federal drought responses on other rivers regulated by federal dams.

Contents

Balancing Storage and In-Stream Flow Tradeoffs	1
ACF Primer	3
Federal Dams Regulate for Multiple Uses	3
Reservoir Drawdown and Minimum Flows	3
Tri-State Water Conflict	4
Federal and State Roles in the ACF	5
ACF Reservoir Operations	6
Corps Operating Plans	6
Exceptional Drought Operations: Lower Minimum Flows and More Reservoir Refill	7
What Next for Operations?	8
Water Supply Issues: Municipal and Industrial (M&I) and Agricultural	9
Consumptive Uses	9
Municipal and Industrial Water Supply	10
Atlanta Area Water Supply	10
Agricultural Water Supply	13
Georgia’s Emergency Conservation Measures	14
Drought Management Plan	14
Flint River Drought Protection Program	15
Ecosystem and Species Issues	16
Bay Ecosystem and Industry	16
Protected Species	17
A Sturgeon and Three Mussels	17
EDO ESA Consultation	19
Biological Assessment of the EDO	19
Biological Opinion for the EDO	20
Incidental Take Statement and Reasonable and Prudent Measures ...	20
ESA Legislation Prompted by ACF Drought	21
ACF in the Federal Water Policy Context: Conclusions	22
Appendix A. ACF Compact and Lawsuits	23
Appendix B. NEPA and Current ACF Operations	30
Appendix C. ACF Electric Power Generation Issues	34

List of Figures

Figure 1. ACF Dams and Selected Power Plants	2
--	---

Apalachicola-Chattahoochee-Flint (ACF) Drought: Federal Water Management Issues

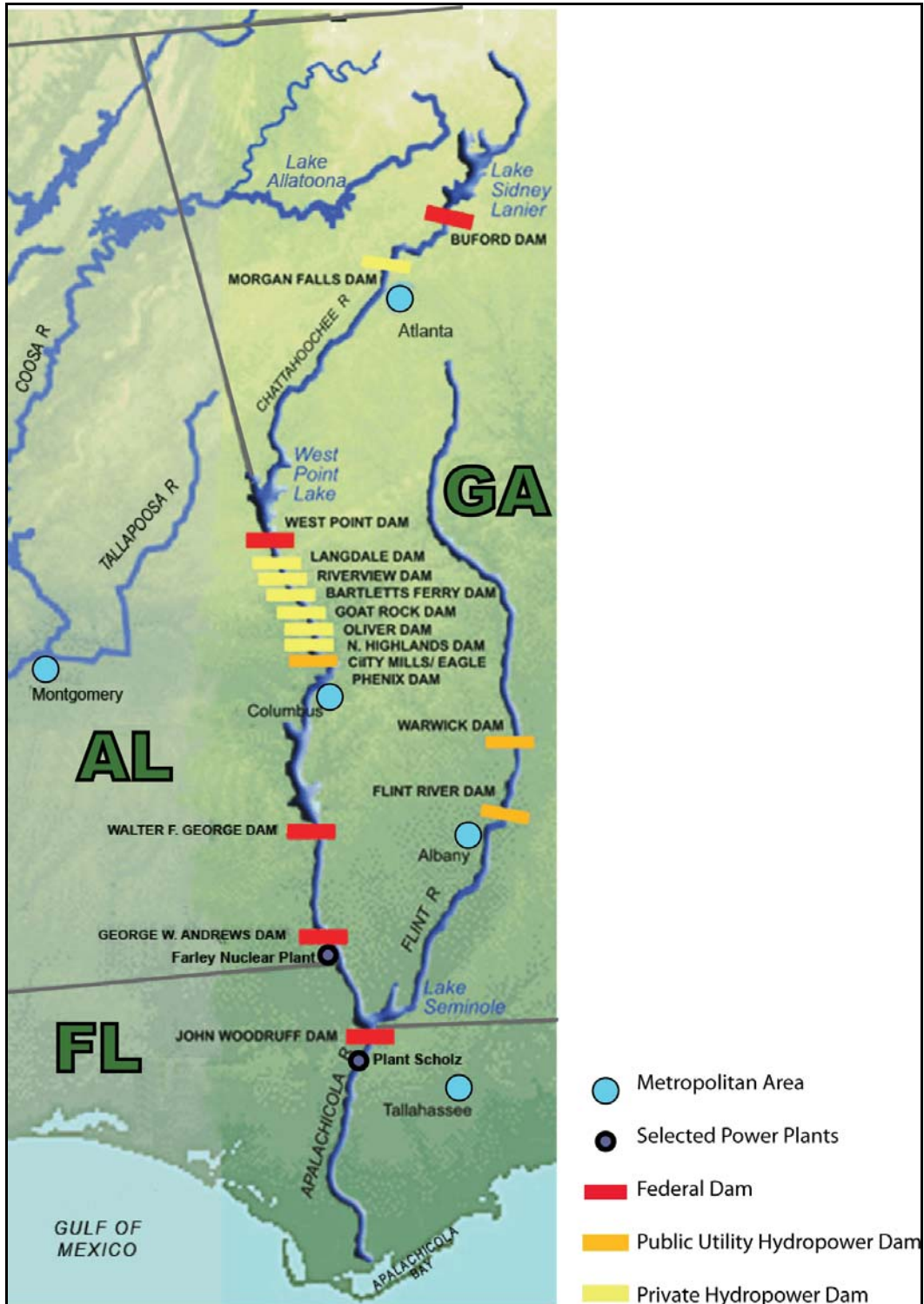
Balancing Storage and In-Stream Flow Tradeoffs

Recent drought in the Southeast has intensified a tri-state water conflict involving Alabama, Florida, and Georgia over water allocation and management in the Apalachicola-Chattahoochee-Flint (ACF) river basin (see **Figure 1**). The water at stake is vital for the basin's municipalities and industries. These include the Atlanta metropolitan area's populace, industry, and recreational economy; hydropower dams and cooling of thermoelectric power plants throughout the basin; lower basin navigation interests; agriculture, including irrigators; and the regionally significant Apalachicola Bay oyster industry. The water also is vital to threatened and endangered species and basin ecosystems. Management of the current drought may shape long-term ACF management, set precedents for future federal drought responses, and affect the role of the Endangered Species Act (ESA) in water resources management.

Drought has escalated competition for the water in federal ACF reservoirs. A central issue for the U.S. Army Corps of Engineers (Corps) is how to manage its reservoirs to meet municipal and industrial (M&I) water needs equitably in the upper and lower basin, while complying with federal law (e.g., ESA) and minimizing harm to river and bay ecosystems. The operation of federal reservoirs shapes both the quantity of stored water and the river flows. Predictions for a continued drought have Georgia's upper basin municipal and industrial users concerned about depletion of their principal (and, in some cases, their only) water supply — Lake Lanier — which is slow to refill because of the limited drainage area feeding into it. Lower basin interests (including those in southwest Georgia) are concerned about current and future river flows to meet their municipal, electricity, and ecosystem needs.

This report provides an introductory analysis of federal water management issues in the ACF, particularly during drought. The report underscores that decision-makers are faced with the tradeoff of the current harm that reduced flows may cause aquatic species against the benefits of maintaining water in storage for future multi-purpose use later. The first section briefly introduces the basin's water resources and related federal issues. The second section summarizes current federal reservoir operations. The third section discusses how the municipal, industrial, and agricultural uses of ACF waters affect federal reservoir management. The fourth section covers how species protections affect Corps operations and how Corps operations may affect protected species. The report concludes with comments about the ACF in the broader context of federal water policies and projects. Many aspects of the complex ACF management issues are not discussed in detail (e.g., ACF navigation and recreation issues, the influence of the Alabama-Coosa-Tallapoosa (ACT) basin).

Figure 1. ACF Dams and Selected Power Plants



Source: Adapted from a Corps map at [<http://www.sam.usace.army.mil/Drought2007/droughtacf.htm>].

ACF Primer

Federal Dams Regulate for Multiple Uses

The ACF basin drains areas of northern and western Georgia, southeastern Alabama, and northwest Florida. (See **Figure 1.**) The basin extends from the Blue Ridge Mountains to the Gulf of Mexico at Apalachicola Bay. Congress authorized construction of federal facilities for water resources development of the ACF in 1945 and 1946.¹ The Corps now operates five dams — four on the Chattahoochee and one on the Apalachicola River at the confluence of Chattahoochee and Flint Rivers. Four of these dams store water: Buford Dam forming Lake Lanier (62% of the Corps' ACF storage capacity), West Point (18%), W. F. George (14%), and Woodruff forming Lake Seminole (6%). Woodruff's limited storage is primarily for flow regulation and does not function as a water storage reservoir for ACF operational purposes. These four facilities and other nonfederal dams in the ACF also house hydroelectric facilities. The fifth federal dam — Andrews Dam — is operated for navigation and has no storage capacity. No water storage facilities have been built on the Flint River.²

Water resource use in the ACF has changed since the planning and construction of the reservoirs, which originally were justified based on their navigation, hydropower, and flood control benefits. For example, the Atlanta metro area has developed into a significant economic and population center; basin agriculture has become more dependent on irrigation; and environmental quality and species concerns receive greater public attention and federal protections. These and other factors have increased competition for ACF waters and produced conflicting interests in maintaining water in storage and maintaining river flows for in-stream purposes.

Reservoir Drawdown and Minimum Flows

It is often difficult to recognize when a drought is starting, and it is challenging to make decisions that entail tradeoffs between current and future costs and benefits based on expectations about when a drought may end.³ The current drought is already eclipsing conditions experienced by Georgia during the mid-1950s, which is considered the state's most severe drought on record.

¹ Rivers and Harbors Act of 1945 (59 Stat. 10); and of 1946 (60 Stat. 634, 635).

² In the 1960s and 1970s, three Corps dams were considered on the Flint River; they were never built and were later deauthorized in §1002 of the Water Resources Development Act (WRDA) of 1986 (P.L. 99-662.)

³ While this report does not specifically discuss climate change, questions often are raised about the relationship between climate change and the possibility for increased drought and other changes to the hydrologic cycle. Increasing temperatures from climate change are expected to result in future hydrologic changes, but there are major uncertainties in making detailed projections of those changes at the scale of drainage basins, such as the ACF basin. (See, for example, the Intergovernmental Panel on Climate Change, Working Group II Report (p. 201), at [<http://www.ipcc-wg2.org/>].)

The year 2007 was the second-driest on record for Atlanta, following 2006, which also was dry. As runoff in the basin fell below the flows necessary to meet both consumptive demand (i.e., M&I and agricultural uses) and in-stream flow requirements (e.g., for species and thermoelectric power plant cooling purposes), water stored in the reservoirs was released to meet these needs. The lower basin reservoirs were drawn down first. In late summer 2007, Lake Lanier was the only reservoir with significant remaining storage. When the Corps released water from Lake Lanier in the upper basin to provide minimum flows in the Apalachicola River in the lower basin, the lake experienced significant drawdown, surpassing the reservoir's previous record low and triggering urgent concern from lake Lanier water users and recreational interests.

Lake Lanier water storage is of critical concern because it provides 72% of the water supply for the Atlanta metro area and more than 62% of the storage space in federal ACF reservoirs, but refills slowly. The drainage area feeding the lake is only 5% of the ACF basin.⁴

Lake Lanier's drawdown escalated the conflict between the three states. Without a water allocation agreement or decision to guide distribution of available supply between the states, lower basin stakeholders began questioning the sufficiency of Georgia's municipal, industrial, and agricultural long-term and emergency water conservation and demand management efforts. Upper basin stakeholders questioned the justification for the minimum flow requirements in the Apalachicola River and cited the Corps' operating procedures, which had been adopted in 2006 to protect threatened and endangered species, as significantly increasing the risk of depleting ACF reservoirs by allowing their drawdown and insufficient opportunity for refill.

Tri-State Water Conflict

In the 1970s and 1980s, Georgia officials became increasingly concerned with water supply for the Atlanta metro area's growing needs. The Corps in 1989 agreed to provide storage space for roughly twice as much M&I water in Lake Lanier by reallocating space from hydropower to water supply; this decision resulted in Alabama and Florida suing the Corps based on the impact that the reallocation would have on the lower basin and for a failure to comply with National Environmental Policy Act (NEPA) (42 U.S.C. §§ 4321 et seq.).⁵ (See **Appendix A** for an introduction to selected ACF suits in federal courts and the history of efforts to establish an ACF Compact. For a discussion of how NEPA relates to current ACF operations, see **Appendix B**). The reallocation question has yet to be resolved. Since this first suit, ACF waters have been the foundation of multiple ongoing legal

⁴ Testimony by Brigadier General Joseph Schroedel, Corps South Atlantic Division Commander, before the U.S. Senate Committee on Agriculture, Nutrition, and Forestry, at a hearing on the Effect of Corps' Operation of the ACF and ACT River Basins on Georgia's Agricultural Community, October 24, 2006.

⁵ J. W. Hull, *The War Over Water*, Southern Legislative Conference (October 2000), at [<http://trendsinafrica.org/pubs/Documents/slc-0010-warwater.pdf>]; J. Clemons, *Water-Sharing Compact Dissolves*, *Water Log* (2003), at [<http://www.olemiss.edu/orgs/SGLC/MS-AL/Water%20Log%20PDF/23.3.pdf>].

disputes and the subject of a tri-state water compact that failed when the states could not agree on how to allocate basin waters.

When states are the parties disputing water allocation, the conflict may be resolved by agreement in an interstate compact,⁶ through apportionment by the courts,⁷ or through allocation by Congress.⁸ The water rights doctrines operating in the ACF states makes allocation particularly challenging. Alabama, Florida, and Georgia, like most eastern states, generally follow a riparian water rights doctrine, which permits those whose lands border waters to use them in a way that is reasonable relative to other users. When the water quantities are insufficient to meet all reasonable needs, all users are to reduce their usage proportionally.⁹ In contrast, most western states follow a prior appropriation doctrine, which provides a superior right to those who first put the water to use. When quantities are insufficient to meet all needs, those with the superior right receive their allocation first, and others receiving their share in order of priority. Because the ACF states follow the riparian rights doctrine, their relative rights to use the water are not determined by priority during drought. How to resolve water allocation during drought in a riparian context has few precedents, thus contributing to the challenge of the three states in successfully negotiating a water allocation compact. The three states most recently failed at such an effort in 2003 (see **Appendix A**).

Federal and State Roles in the ACF

The federal government has authority under the Commerce Clause of the U.S. Constitution to manage the nation's water resources, but it recognizes the states' authority to allocate and use water within their jurisdictions. Federal laws often require federal agencies engaged in water resources management to defer to state laws or cooperate with state officials in implementing federal laws. Although a state generally has broad authority over waters within its border, exercise of its intrastate authority cannot entirely dismiss the interests of other states. In the case of the ACF, although the three states have authority over their waters, federal investments were built and are operated for multiple purposes, thus affecting the states' water use.

⁶ Generally, interstate compacts, which create a binding agreement between two or more states, require congressional approval in addition to approval by the states involved in the agreement. (U.S. Const., Art. I, § 10, cl. 3.)

⁷ The U.S. Supreme Court has original jurisdiction to hear disputes between states. (U.S. Const., Art. III, § 2, cl. 1.) In the case of the ACF litigation, no state has sued another state, and therefore the cases must be heard first by lower courts.

⁸ Congress may apportion interstate waters under its power to regulate interstate commerce. (See U.S. Const., Art. I, § 8, cl. 3; *Arizona v. California*, 373 U.S. 546 (1963).) Although Congress has the authority to act in the interest of interstate commerce, congressional allocation in such conflicts is rare.

⁹ The riparian system of water rights generally applies to individuals' use of water from shared waterways. The Supreme Court has established a federal common law method of resolution known as equitable apportionment when disputes between states come before the Court. Equitable apportionment decisions attempt to balance the benefits and right to use the water among the states involved. *See Kansas v. Colorado*, 206 U.S. 46 (1907); *Colorado v. New Mexico*, 459 U.S. 176 (1982).

That is, the basin's federal dams regulate the flows of the Chattahoochee and Apalachicola Rivers, thereby shaping the states' water use. Federal laws also shape dam operations. Most recently, protection of species protected under the federal ESA has become a significant factor in ACF dam operations. Additionally, certain federal actions must be reviewed under NEPA.

ACF Reservoir Operations

Corps Operating Plans

As a consequence of the extensive ACF litigation and the absence of an agreement on allocating water among the three states, the Corps operates the ACF dams based on piece-meal guidance that has not received comprehensive analysis, review, or comment. That is, current operations are conducted under a 2007 exceptional drought modification to a 2006 interim plan for Woodruff Dam, that amended the 1989 draft plan for the entire ACF, as explained below.

In June 1990, the Corps began operating the ACF under its October 1989 *Draft Apalachicola-Chattahoochee-Flint Basin Water Control Plan* (WCP). The 1989 WCP has not been finalized due to litigation and expectations before 2003 for a negotiated agreement on tri-state water allocation. Under the WCP, the Corps largely operated the reservoirs to meet the multiple uses in the basin while maximizing the quantity of stored water. The WCP established operational zones for the federal reservoir; these operational zones signaled to the Corps how to manage reservoir releases based on changing storage volumes over the course of the year.

With the failure of the compact negotiations, the Corps had to address the ESA issues in the lower basin without a tri-state water allocation agreement. After years of informal communications and months of formal consultation with the U.S. Fish and Wildlife Service (FWS), the Corps adopted the Interim Operations Plan (IOP) for Woodruff Dam in October 2006.¹⁰ The plan is *interim* until an updated comprehensive ACF water control plan is adopted. The IOP added new in-stream Apalachicola River flow requirements for protection of threatened and endangered species to the Corps' ACF operational decision criteria. The IOP established minimum flows in the Apalachicola River based on different inflow rates into ACF reservoirs. The IOP, therefore, left in place the operational zones of the 1989 WCP but constrained the Corps' operations by requiring it to meet minimum flow requirements in both normal and dry conditions. Under the IOP, the Corps would make releases from reservoir storage to meet in-stream flow requirements if inflow into the reservoirs was insufficient to support the minimum flows.¹¹ In sum, the IOP

¹⁰ The IOP is integrated into the agency's *Environmental Assessment Interim Operations Plan for Support of Endangered and Threatened Species, Jim Woodruff Dam* (October 2006), available at [http://www.sam.usace.army.mil/ACF%20Water%20Resources%20Management/JWDSect7/JWD_IOP_FONSI_EA/IOPFinalEA.pdf].

¹¹ The use of inflow into reservoirs, rather than unimpaired runoff in the basin, to guide operations is contentious because inflow does not account for consumptive uses that might
(continued...)

resulted in both the 1989 WCP operational zones and the IOP minimum flows guiding Corps' ACF operations during 2007.

The IOP is the subject of litigation (see **Appendix A**) and of upper basin interests' criticisms of the Corps' reservoir management during 2007. They argue that the Lake Lanier drawdown in 2007 under the IOP created an unnecessary risk of system storage depletion in an effort to provide minimum flows that have not been scientifically justified. Others argue that system storage should be used to support species during dry conditions because the ACF ecosystems and species have been compromised by the cumulative long-term impacts of federal reservoir management and the basin's municipal, industrial, and agricultural water use.

Exceptional Drought Operations: Lower Minimum Flows and More Reservoir Refill. On November 15, 2007, the Corps began operating under an Exceptional Drought Operations (EDO) modification to the IOP. The Corps proposed the EDO on November 1, 2007, and requested an expedited ESA consultation and Biological Opinion by the FWS. The November 15, 2007, Biological Opinion (hereafter referred to as the BiOp for the EDO) approved the EDO through June 1, 2008, with some stipulations.¹² (See further discussion on p. 19.) The significance of the EDO is that by reducing the minimum flow requirement for the Apalachicola River more water could be stored in basin reservoirs. The EDO also largely lifted operational guidelines of the IOP until reservoir storage significantly refilled. The EDO, therefore, would reduce the rate of drawdown if dry conditions persisted and would allow the reservoirs to refill more quickly as climate conditions improved. One justification provided for the lower minimum flows was to lessen the risk of much lower flows in later months or years, if the drought continues. In effect, the EDO risks some harm to the species now, to reduce the risk of greater harm later.¹³ The effects of the lower flows on electricity generation have been raised as a concern and are discussed in detail in **Appendix C**; as discussed there, the EDO does not appear to cause significant immediate harm to electricity generation or grid reliability.

¹¹ (...continued)

occur above a reservoir, such as irrigation in the Flint River sub-basin above Lake Seminole.

¹² FWS, *Amended Biological Opinion and Conference Report on the U.S. Army Corps of Engineers, Mobile District, Exceptional Drought Operations for the Interim Operating Plan for Jim Woodruff Dam and the Associated Releases to the Apalachicola River* (FWS, Panama City, FL: Nov 15, 2007), hereafter referred to as BiOp for the EDO, available at [http://www.sam.usace.army.mil/ACF%20Water%20Resources%20Management/ACFDrought_Consultation2007/2007-1115ACF_EDO_BO_Final.pdf].

¹³ While this tradeoff in time — some risk now, to lower a species' risk later — is not especially common in the ESA consultation process, it has occurred before (e.g., spotted owls and the Northwest Forest Plan). On the other hand, tradeoffs in general are very common in the consultation process. Examples would include direct habitat protection (less in one area, more acquired in another); greater intrusion outside a nesting season and less intrusion during it; more public access if access is more carefully controlled, etc. At issue with the EDO is not a tradeoff per se, but the degree to which the current clear harm to species is balanced by potential future benefits.

As stipulated by the BiOp for the EDO, the Corps and FWS subsequently agreed upon triggers for how the Corps was to reduce flows from the previous low of 5,000 cfs (cubic feet per second) in the Apalachicola River, to 4,750 cfs, then 4,500 cfs. The Corps and FWS reportedly will consider triggers for reductions to 4,150 cfs in late spring 2008 when data are available and if the situation warrants. As of mid-January 2008, flows in the Apalachicola River had yet to be reduced below 4,750 cfs due to winter rains. Although the rains have helped to refill the lower basin reservoirs, they have had little impact on Lake Lanier, largely due to its small drainage area.

What Next for Operations? What may happen in June 2008 when the EDO expires remains highly uncertain and will depend on multiple factors including climate conditions and additional species information. It could take years for reservoir storage to refill to the level set in the EDO for returning to IOP operations.¹⁴

Another variable that may influence Lake Lanier is a request by the Georgia Department of Natural Resources (DNR) for the Corps to temporarily deviate from its existing operations for Lake Lanier's Buford Dam.¹⁵ The Corps makes releases from Lake Lanier to meet multiple purposes and criteria, including the Georgia Water Quality Control Rules, which include a water quality requirement for a flow of 750 cfs in the Apalachicola River at Peachtree Creek, south of Atlanta. Georgia DNR is requesting that the Corps deviate from the 750 cfs target through the end of April 2008; Georgia DNR submitted data indicating that a flow of 550 cfs may be sufficient to meet water quality criteria. The Corps is reviewing the request. Reduced releases under this deviation may maintain more water in storage when the Peachtree Creek minimum flow requirement is the factor determining Buford Dam releases.

During the 2007-2008 winter, the Corps began revising its water control manual for the ACF reservoirs. The omnibus Consolidated Appropriations Act, 2008 (P.L. 110-161), in §134, Division C, Title I, prohibits the implementation of a new water control manual (but not its development) and requires the Corps to provide data on basin withdrawals, use, and stream flow by September 2008. When Administration efforts to broker a tri-state agreement by March 1, 2008, failed, the Corps revision acquired additional significance as a mechanism for determining future operations in the absence of a tri-state agreement and in the midst of litigation.

¹⁴ For example, Florida Department of Environmental Protection (DEP) stated that "the Corps' modeling shows the EDO in place through 2010" in a letter from Florida DEP to FWS Field Office in Panama City, FL, and to Corps District Office in Mobile, AL, on ESA Section 7 Consultation on Proposed "Exceptional Drought Operations" of November 8, 2007, hereafter referred to as Florida DEP November 8 Letter.

¹⁵ Carol A. Coach, Director, Georgia DNR, letter to Colonel Byron G. Jorns, District Commander, U.S. Army Corps of Engineers, February 11, 2008, available at [<http://www.sam.usace.army.mil/pd/notices/GA-EPDtoColByronJorns-2-11-08.pdf>].

Water Supply Issues: Municipal and Industrial (M&I) and Agricultural

Consumptive use of water reduces the amount of water available in the basin for other uses, including in-stream flows. Efforts to reduce water consumption through conservation and efficiency programs often fall into two categories: programs to reduce water use without reducing services by improving efficiency and reducing waste; and short-term emergency measures that cut services. Municipal, industrial, and agricultural water use are the primary consumptive uses in the ACF basin. This section provides a brief discussion of these consumptive uses and their management during the current drought, including short-term emergency conservation measures. Depletion or inability to access municipal drinking water sources can represent a significant public health threat, and reductions in M&I and agricultural water supply can have significant economic impacts.

Consumptive Uses

Georgia dominates consumptive water use in the ACF basin. Georgia's municipal and industrial consumptive use annually averages roughly 290 million gallons per day (mgd, or 450 cfs). The Atlanta metro area is the largest M&I consumer, but Columbus and other basin communities also demand ACF surface water and groundwater.¹⁶ Georgia's agricultural sector has highly variable demand over the course of the year (with use concentrated from May through September) and depending on precipitation and soil conditions. Georgia agriculture's consumptive use of surface water and groundwater affecting ACF river flows can exceed 650 mgd (1,000 cfs) during a dry summer's growing season, can fall to close to nothing during winter months of a normal year, and averages 170 mgd (260 cfs) during a normal year.¹⁷ Alabama consumes considerably less ACF water than Georgia, consistently averaging less than 50 mgd annually from the Chattahoochee River, primarily for municipal and industrial use.¹⁸ Florida has few consumptive withdrawals (less than 10 mgd total) directly from the Apalachicola River. There are permits for less than 3 mgd of average daily withdrawal from the Chipola River, an Apalachicola River tributary, in Florida via the St. Joe Canal; the amount withdrawn from the St. Joe Canal in recent years has been less than 0.5 mgd.¹⁹ In 2006, the water management

¹⁶ In the United States, *mgd* is the standard unit for municipal water supplies, whereas *cfs* is the standard unit for streamflow. A flow of 1.55 cfs is approximately 1 mgd. Additional estimates are available in Army Corps of Engineers, Mobile District, *Extended Unimpaired Flow Report January 1994 — December 2001 for the Alabama-Coosa-Tallapoosa and Apalachicola Chattahoochee Flint (ACT/ACF) River Basin* (April 2004).

¹⁷ Additional information on water use in the Flint River sub-basin, where ACF agricultural water withdrawals are concentrated, is available in Georgia Department of Natural Resources, Environmental Protection Division, *Flint River Regional Water Development and Conservation Plan* (March 20, 2006), available at [<http://www.gadnr.org/frbp/Assets/Documents/Plan22.pdf>].

¹⁸ Data derived from information provided to CRS by the Alabama Department of Economic and Community Affairs.

¹⁹ Kelly Layman, Chief of Staff, Florida Department of Environmental Protection, letter to (continued...)

district in this region of Florida adopted a rule limiting consumptive water withdrawals by largely reserving the water in the Apalachicola and Chipola Rivers for fish and wildlife of the rivers, the associated floodplains, and the bay.²⁰

Municipal and Industrial Water Supply

M&I water supplies are withdrawn from the ACF rivers and tributaries, the federal reservoirs on those rivers, locally-owned surface storage, and aquifers. The original authorized purposes of the federal investments in the ACF were navigation, hydropower generation, and flood control. Subsequent laws expanded what the Corps considers when making operating decisions. The Corps now operates ACF reservoirs for fish and wildlife protection, water quality protection, and recreation as well as for the original authorized purposes. Lake Lanier and its releases also supply water to the Atlanta metro area; to what degree the Corps operates the reservoirs for water supply is the subject of litigation (see **Appendix A**).

The Corps principally cites the Water Supply Act of 1958 (43 U.S.C. §390b) as its authorization to make water supply storage space at Corps facilities available for M&I purposes. The act does not authorize the Corps to sell or allocate quantities of water. The contracts are for space in the reservoir and do not guarantee a fixed quantity of water. The Corps delivers the water if it is available in the storage space without significantly affecting the authorized purposes of the Corps project. The act also does not authorize the Corps to make significant modifications to its projects in order to provide for M&I water supply.

The majority of the M&I water being provided from Lake Lanier is being delivered under temporary “holdover contracts” because earlier contracts expired in 1990. The Corps has proposed replacing these with interim storage contracts that would make more M&I water storage space available as part of a Settlement Agreement (see **Appendix A**). A February 2008 court decision held that the increased storage space provided in the agreement constitutes a change that requires congressional authorization before the Corps could proceed with the contracts.²¹

Atlanta Area Water Supply. The 28-county Atlanta metropolitan area is home to more than 5 million people and represents 75% of Georgia’s economic activity. In 2000, the 16-county Metropolitan North Georgia (which is a subset of the 28-county metropolitan statistical area (MSA) Atlanta metro region, plus one

¹⁹ (...continued)

Mr. Daniel P. Mulhollan, Director, Congressional Research Service, Feb. 28, 2008.

²⁰ Florida Administrative Code, *Rules of the Northwest Florida Water Management District, Chapter 40A-2, Consumptive Uses of Water*, (Feb. 27, 2006) p. 10, available at [<http://www.nwfwmd.state.fl.us/permits/rules/ch40a2.pdf>].

²¹ See *Southeastern Federal Power Customers v. Geren*, 2008 U.S. App. LEXIS 2501 (D.C. Cir. 2008), available at [<http://pacer.cadc.uscourts.gov/docs/common/opinions/200802/06-5080a.pdf>]. A discussion of the court’s opinion and related judicial actions can be found in **Appendix A** of this report.

additional county outside of the MSA) served 4 million people; under some projections, it may grow to 8 million by 2030.²²

Atlanta's origins as a rail center, rather than a waterway commerce economy, contributed to its unusual status as a major metropolitan area in the headwaters of a river system. Metropolitan North Georgia gets more than 99% of its water from surface water supplies.²³ Lake Lanier and the Chattahoochee River supply 72% of that water.²⁴ The Atlanta metropolitan area's surface water dependency makes its water supply particularly vulnerable to regional drought and to changes in Buford Dam operations that may reduce water stored at Lake Lanier, such as those prescribed in the IOP. A significant amount of the water withdrawn for M&I use is not consumed; it returns to the ACF water bodies. The return flows represent a significant percentage of the upper Chattahoochee River's flow below the metro area in the upper basin.

Metropolitan North Georgia's second-largest source is the Corps-operated Lake Allatoona reservoir on the Etowah River. It is a tributary of the Alabama-Coosa-Tallapoosa river basin immediately west of the ACF, which also is affected by the current drought. The ACT's Etowah basin provides 12% of Metropolitan North Georgia's water supply.²⁵ Almost all of Metropolitan North Georgia's other supplies are surface water supplies from other basins.

Today groundwater makes up less than 1% of Metropolitan North Georgia's water supply. However, groundwater was a major water supply source for the region prior to the 1940s; the region shifted to surface water supplies as the demands surpassed aquifers' yield.²⁶ Aquifers in northwest Georgia are relatively small, so that no single well provides significant yields as a long-term water source. The possibility of diversifying existing surface water supplies by expanding groundwater use (e.g., supply augmentation during drought) has received some attention and exploration. Groundwater, however, is not anticipated to provide a significant long-term supply.

²² Metropolitan North Georgia Water Planning District, *Water Supply and Water Conservation Management Plan*, (Atlanta, GA: September 2003), p. ES-8, hereafter referred to as MNG Water Supply Plan.

²³ MNG Water Supply Plan, p. 3-1. The 16 counties range from rural to urban. Although agriculture is practiced in many of the counties, few farms irrigate.

²⁴ Data from *Water Supply* website of the Atlanta Regional Commission, available at [http://www.atlantaregional.com/cps/rde/xchg/arc/hs.xsl/273_ENU_HTML.htm].

²⁵ *Ibid.*

²⁶ L. J. Williams, "Overview of Geology, Ground-Water Availability, and Ground-Water Exploration and Development in the Greater Atlanta Region," in *Methods Used to Assess the Occurrence and Availability of Ground Water in Fractured-Crystalline Bedrock: An Excursion into Areas of Lithonia Gneiss in Eastern Metropolitan Atlanta, Georgia* (USGS Guidebook 23 Atlanta, GA: October 2003) p. 11, available at [http://ga.water.usgs.gov/pubs/other/guidebook23/Guidebook23_press.pdf].

Future Demand and Long-Term Conservation Measures. The Metropolitan North Georgia Water Planning District's *Water Supply and Water Conservation Management Plan* concluded, given estimates of population growth and water conservation that it chose, that the Atlanta metro area's average annual demand would exceed its available supplies between 2013 and 2020 unless water supplies in Lake Lanier and Lake Allatoona can be reallocated for M&I use.²⁷ The Pacific Institute²⁸ prepared for the Florida Department of Environmental Protection *A Review of Water Conservation Planning for the Atlanta, Georgia Region*. The review was critical of the plan's choice of population projections and of the level and breadth of conservation measures it considered. The review stated that the plan overestimated future demand and underestimated the potential for cost-effective demand management as a tool for meeting demand through 2030 with existing supplies (i.e., without reallocations).

The *Water Supply and Water Conservation Management Plan* argues for and relies heavily on the reallocation of water storage in the ACF's Lake Lanier and in the ACT's Lake Allatoona from either hydropower or flood control to water supply in order to have sufficient supplies to meet demand through 2030. Contracts for the reallocated supply are considered "essential to guarantee water supply for the district for the next 30 years and beyond."²⁹ The District also is proceeding with efforts to complete the permitting process of new nonfederal reservoirs and options for indirect potable reuse. The management plan also calls for water conservation measures; it estimated that these measures had the potential to reduce demand by 11%, thus extending existing supplies to 2020.³⁰

A major concern for lower basin ACF stakeholders and environmental groups is that increased M&I water use will further and more consistently reduce in-stream flows, particularly in the Apalachicola River. Upper basin interests argue that the operations of federal reservoirs should recognize the economic benefits of M&I water supply and reservoir recreation. The analysis produced by these interests to support this argument estimated the economic benefit for reallocation of Lake Lanier storage at \$19.3 billion; the analysis included the M&I and recreation benefits and losses to hydropower.³¹ Lower basin interests criticize the analysis for ignoring the ecosystem

²⁷ Estimated using data in MNG Water Supply Plan, p. ES-9.

²⁸ The Pacific Institute is an independent, nonpartisan think-tank studying the intersection of development, environment, and security, including water conservation and use. For more information, see [http://www.pacinst.org/about_us/]. The report was included in testimony submitted by Collen M. Castille, Secretary of Florida DEP, on September 15, 2006, before the U.S. Senate Committee on Environment and Public Works, at a hearing on Oversight of the Army Corps of Engineers' Management of the ACT and ACF River Basins, on August 8, 2006.

²⁹ MNG Water Supply Plan, p. ES-10.

³⁰ MNG Water Supply Plan, pp. ES-9 and ES-12.

³¹ G.F. McMahon, et al., *Lake Lanier National Economic Development Update: Evaluation of Water Supply, Hydropower, and Recreation Benefits* (Atlanta Regional Commission: Atlanta, GA, February 2004), available at [<http://www.atlantaregional.com/cps/rde/xbcr/arc/>]

and species costs of reallocation, losses to lower basin uses, and the value of ecosystems services.

Agricultural Water Supply

Agricultural water supply is not an authorized purpose of the federal ACF reservoirs; however, it is a significant consumptive use in the ACF's Flint River sub-basin, representing more than 90% of the sub-basin's annual withdrawal.³² The Flint River joins with the Chattahoochee River to form the Apalachicola River; therefore, agricultural consumptive water use in the Flint River sub-basin may shape ACF reservoir operations when operations are dictated by sustaining minimum Apalachicola River flows. This influence likely is greatest during the May to September months of a drought year when agricultural consumption peaks.

A 1998-2002 drought brought attention to the effect of agricultural uses on reducing in-stream flows in the Flint River and various creeks in the lower basin. The current drought and adoption of the IOP have increased interest in better understanding how irrigation is affecting water availability in the Flint River and other smaller tributaries feeding into Lake Seminole (e.g., Spring Creek). Generally, in normal to wet years, irrigation's impact on stream flow and aquifer levels is insufficient to jeopardize availability of water in the sub-basin or stream ecology.³³ That is not the case during dry conditions.

Irrigation greatly increases crop yields, crop quality, crop diversity, gross and net return, land values, etc. Cotton, peanuts, corn, and vegetables are the most extensively irrigated crops in the sub-basin. For some crops, such as vegetable, container nurseries, and ornamental horticulture, irrigation is a prerequisite.³⁴ Agricultural irrigation in southwest Georgia, particularly in the lower Flint River sub-basin, has markedly increased since the late 1970s, with 40% of the harvested cropland in the sub-basin being irrigated.³⁵ Although some of irrigation water is from surface water, the majority is withdrawn from aquifers hydraulically connected to surface waters. Agricultural irrigation and its peak water use during dry conditions compound the effect of climatic drought on low stream flows in the Flint River sub-basin.³⁶ Converting to more water-intensive crops could increase agricultural water demand.

Irrigation water conservation measures are encouraged for all holders of Georgia agricultural surface water and groundwater withdrawal permits. Starting January 2006, conservation measures that can reduce the demand and improve the efficiency

³¹ (...continued)
ned_rept_f.pdf].

³² Flint River Basin Regional Water Plan, p. 37.

³³ Ibid., pp. 51-52.

³⁴ Ibid., p. 151.

³⁵ Ibid., p. 151. Harvested acreage has remained relatively steady since the early 1980s.

³⁶ Ibid., p. 22.

of water use are a required condition for all new or modified permits.³⁷ Agricultural water conservation practices range from source water management, to use of reclaimed water, to more efficient irrigation. The USDA with state and private partners has been funding the adoption of water conservation efforts, particularly irrigation efficiency measures, in the Flint River basin through the voluntary Environmental Quality Incentives Program (EQIP), which provides participating farmers with cost-sharing assistance and technical assistance.³⁸

Georgia's Emergency Conservation Measures³⁹

Drought Management Plan. The 1998-2002 drought raised awareness in Georgia regarding drought impacts and interest in drought planning and management. The first *Georgia Drought Management Plan* was adopted in 2003.⁴⁰ The current drought is the first test of the plan. The plan includes innovative elements; most notably, the plan uses unique drought indicators for different geographic regions of the state. These indicators were developed using a participatory approach involving stakeholders in each region. This approach is being used as a model and is being adapted to other states' drought management plans.

According to the National Drought Mitigation Center, a successful drought plan contains three basic elements — a monitoring and communication/information-sharing program, a risk/impact/vulnerability analysis, and response and mitigation measures. Few state plans fully utilize all these elements. Georgia's plan covers the first and the third, but it does not include a vulnerability analysis. For comparison, Alabama currently is operating under a draft drought management plan that focuses on monitoring and communication. Florida has no state drought management plan because it has long-standing regional water management districts that are responsible for comprehensive water resources management, including drought planning.

Georgia's plan incorporates a process to inform state decision-makers that have the ability to enact and enforce drought conservation measures. Most of the measures are short-term actions to reduce water demand during a drought, rather than long-term demand management. The plan does not encompass measures to control long-term water demand related to population growth, nor does it contain significant measures to manage the demand of the industrial and agricultural sectors. This is a limitation typical of state drought plans. Consequently, with continued population and agricultural growth in Georgia, the state's drought risk is increasing, even though the adoption and implementation of the drought plan is an improvement from 2000.

³⁷ *Ibid.*, p. 33.

³⁸ Nationally the demand for EQIP funds exceeds the available funds, resulting in a backlog of interest in participating in the program. For more information on EQIP and its backlog, see CRS Report RS22040, *Environmental Quality Incentives Program (EQIP): Status and Issues*, by Jeffrey A. Zinn and Carol Canada.

³⁹ The focus of this section is on Georgia's drought management activities because, of the three states, its consumptive uses have the greatest influence on in-stream flows.

⁴⁰ The report is available at [http://gaepd.org/Files_PDF/gaenviron/drought/drought_mgmtplan_2003.pdf].

Some ACF stakeholders have criticized Georgia for not taking more emergency conservation actions and for not fully complying with its Drought Management Plan. The plan generally calls for a meeting to be held once indicators for a region are shown to have moved into the next drought level (there are four tiers, 1 to 4, with 4 being the most severe) for two consecutive months. The meetings are for informing decision-makers that then choose to act. During the current drought, the following milestones occurred:

- Level 1 drought declared for entire state on June 21, 2006, and placed hourly restrictions on residential outdoor watering;
- Level 2 drought declared for entire state on April 18, 2007, and limited residential outdoor water use to mornings only;
- Level 3 drought was not declared. It would have further restricted residential outdoor watering;
- Level 4 drought declared for 61 north and western counties (primarily along the Chattahoochee River, and a few but not most of the Flint River counties) on September 28, 2007, and prohibited most outdoor residential water use; and
- Governor Perdue went beyond the Drought Management Plan's Level 4 actions on October 23, 2007, by calling for a 10% cut in withdrawals by groundwater and surface water permit holders in 61 counties.

Data on the plan's drought indicators show that multiple indicators for increasing the level to 4 had been met for the counties along the Chattahoochee River in July 2007, months before the Level 4 was declared; on the other hand, the indicators had not been as clear regarding initiation of Level 3.⁴¹ Criticisms of Georgia's actions are countered by those arguing that the plan and its implementation are evolving and that they have performed well during this initial test. Upper basin stakeholders instead place the blame for the low storage levels and resulting adoption of the lower flows under the EDO on the IOP for allowing the reservoir drawdown. They also note that in addition to the Drought Management Plan, Georgia's Environmental Protection Division has drafted the first comprehensive statewide water management plan which is anticipated to be considered by the Georgia legislature in 2008.⁴²

Flint River Drought Protection Program. In 2000, Georgia enacted the Flint River Drought Protection Act in response to drought conditions' effects on flows in the Flint River and other creeks in the sub-basin.⁴³ The act created a program to preserve in-stream flows in the Flint River by requiring the Environmental Protection Division to conduct an auction to pay irrigators who voluntarily participate to temporarily cease irrigating during declared severe

⁴¹ Georgia Department of Environmental Protection, Water Resources and Hydrological Analysis Unit, *Drought Monitoring Status, September 27, 2007*, available at [http://www.conservewatergeorgia.net/pdf/Drought_Monitoring_Status_Sept_2007.pdf].

⁴² *Georgia's Water Resources: A Blueprint for the Future, Revised Draft* is available at [<http://www.georgiawaterplan.org/PDFs/WholePlanDec5.pdf>].

⁴³ O.C.G.A. §§ 12-5-540 to-550

droughts, thus improving stream flows for aquatic species in the sub-basin.⁴⁴ The program is implemented if by March 1 of any year, the Director of Georgia's Environmental Protection Division has issued a severe drought declaration for the Flint River basin. The program was implemented in 2001 and 2002; it is estimated to have reduced irrigation by up to 130 mgd (roughly 200 cfs) during the 2001 growing season.⁴⁵ Both auctions had problems that raised concerns regarding the effectiveness of the program (e.g. the two auctions failed to remove the highest water use cropland from irrigation).⁴⁶ The Director did not issue a severe drought declaration in 2006 or 2007; therefore, the program was not activated in those years. The forecasts, stream flows, and groundwater levels in the lower Flint River sub-basin reportedly did not support the designation.

Ecosystem and Species Issues

Bay Ecosystem and Industry

Apalachicola Bay oysters constitute an important part of northwestern Florida's economy. More than 1,000 people are employed by the oyster industry in Florida's Franklin County, which harvests approximately \$10 million in oysters annually. Historically, this county harvests more than 90% of Florida's oysters and 10% of the entire nation's supply of this seafood. Within Franklin County, oysters account for almost one-third of the value of all commercial marine landings.⁴⁷

In Apalachicola Bay, oyster distribution is controlled by both salinity and sea-floor geology. Oyster beds generally occur in areas where the salinity is 5 to 25 parts per thousand, on three types of shallow bars formed by different geologic processes.⁴⁸ Any decrease in freshwater inflow into the bay from the Apalachicola River may result in increased salinity in the bay.⁴⁹ The potential effects of such increased salinity on oysters in the bay would depend upon several factors, including how freshwater and saltwater mix within the bay, how rapidly and to what extent salinity increases, and the amount of oyster habitat in the bay that might be exposed to salinities exceeding oyster tolerance (as well as the amount of time these oysters were exposed to excessive salinities). Although some studies have found that Gulf

⁴⁴ The program was not designed to maintain Apalachicola River flows.

⁴⁵ Georgia Department of Natural Resources, Letter from Director of Environmental Protection Division Harold F. Reheis, "Re: Flint River Drought Protection Act," May 4, 2001.

⁴⁶ Flint River Basin Regional Water Plan, p. 47.

⁴⁷ Apalachicola Bay Chamber of Commerce, at [<http://www.apalachicolabay.org/eastpointhome.php>].

⁴⁸ D. Twichell, "Habitat Mapping to Assess Health of Oyster Fishery in Apalachicola Bay, Florida," *Sound Waves* (USGS, June 2005).

⁴⁹ Some basin stakeholders argue that, rather than trying to keep salinities low in Apalachicola Bay by managing Apalachicola River flows, the Corps should close the Bob Sikes Cut in St. George Island.

coast oyster landings may be inversely related to periods of freshwater inflow — i.e., oyster landings increase with periods of lower freshwater inflow,⁵⁰ the Florida Department of Environmental Protection has raised concerns that a sustained low freshwater inflow could precipitate a catastrophic collapse of the oyster industry in Apalachicola Bay.⁵¹

Apalachicola Bay is the site of the Apalachicola National Estuarine Research Reserve, one of 27 research sites designated by the National Oceanographic and Atmospheric Administration.⁵² The bay also is an exceptionally important nursery area for Gulf of Mexico commercial fish species. More than 95% of all species harvested commercially and 85% of all species harvested recreationally in the open Gulf spend a portion of their lives in estuarine waters (e.g., blue crabs may migrate as far as 300 miles to spawn in Apalachicola Bay). In addition, Apalachicola Bay is a major forage area for such offshore fish species as gag grouper and gray snapper.⁵³ Changes in Apalachicola Bay salinity could affect the suitability of this habitat for forage and nursery use.⁵⁴ In particular, higher salinity levels in Apalachicola Bay could prevent juvenile and adult Gulf sturgeon from entering the bay in fall/winter, blocking access to productive feeding habitat. In contrast to oysters, short-term reductions in freshwater flow are generally associated with a decline in some coastal fisheries and with overall harm to biota.⁵⁵

Protected Species

A Sturgeon and Three Mussels. A focal point of recent debate on ACF water management during this drought has been protection of four species listed

⁵⁰ R. E. Turner, “Will Lowering Estuarine Salinity Increase Gulf of Mexico Oyster Landings?,” *Estuaries and Coasts*, vol. 29, no. 3 (June 2006), pp. 345-352.

⁵¹ Florida DEP November 8 Letter. The letter also cited expected increases in salinity, and noted a potential increase in disease and predation with resulting adverse effects on the oyster and seafood industries.

⁵² The Apalachicola Bay also has been designated by the State of Florida as an aquatic preserve and an Outstanding Florida Water, worthy of special protection because of its natural attributes. It also is designated by the United Nations as an International Biosphere Reserve.

⁵³ Florida Department of Environmental Protection, *About the Apalachicola National Estuarine Research Reserve and Associated Areas*, available at [<http://www.dep.state.fl.us/coastal/sites/apalachicola/info.htm>].

⁵⁴ A letter from Florida Fish and Wildlife Conservation Commission to FWS Field Office in Panama City, FL, on ESA Section 7 Consultation of November 7, 2007 (hereafter referred to as Florida FWCC November 7 Letter) included data from Florida’s most recent annual survey of sport fish in the Apalachicola River. The commission cited data on strong production of sport fish in years with high flows that inundate the river floodplain, and data on low production for the low flow years of 2006 and 2007. The commission also noted higher salinities associated with low flows as diminishing fish habitat and food supplies. It also cited studies showing that while previous droughts had produced temporary surges in mussel populations, they were followed by rapid decreases in subsequent years.

⁵⁵ K. F. Drinkwater and K. T. Frank, “Effects of River Regulation and Diversion on Marine Fish and Invertebrates,” *Aquatic Conservation: Marine and Freshwater Ecosystems*, v. 4, no. 2 (1994), pp. 135-151.

under the federal ESA:⁵⁶ Gulf sturgeon (*Acipenser oxyrinchus desotoi*), fat threeridge mussel (*Amblema neislerii*), Chipola slabshell mussel (*Elliptio chipolaensis*), and purple bankclimber mussel (*Elliptoideus sloatianus*). Water flow, temperature, dissolved oxygen, and other aspects of water quality are important to all four.

The threatened Gulf sturgeon are anadromous, migrating upriver from the Gulf of Mexico in the springtime to spawn near the headwater of rivers. These fish then spend the summer in the mid- to lower river before migrating back into the Gulf. Gulf sturgeon seldom feed while in rivers, conserving energy needed for spawning.⁵⁷ Major limiting factors for the population include barriers (e.g., dams) to historical spawning habitats, loss of habitat, poor water quality, and overfishing.⁵⁸ The Woodruff Dam prevents sturgeon from reaching previous spawning habitat; sturgeon were once found in both the Chattahoochee and Flint Rivers. (See **Figure 1.**) The sturgeon was listed as threatened under the federal ESA on September 30, 1991, and its critical habitat was designated on March 19, 2003.

The endangered fat threeridge mussel, threatened purple bankclimber and Chipola slabshell live in the sand and gravel bottoms of streams and rivers. Larvae of these mussels are parasites on the gills and fins of freshwater fishes (e.g., darters, minnows, and bass), using these host fish for dispersal and causing them little or no harm. These mussels require good water quality, stable stream channels, and flowing water. Major limiting factors include habitat modification by manmade structures (e.g., dams and channel alterations) that destroy free-flowing water habitats and restrict species from dispersing, resulting in small, isolated populations. These three species also are threatened by point source pollution, such as discharge from factories and sewage treatment plants, and by nonpoint source pollution, such as runoff containing fertilizers, herbicides, and pesticides from various land-use practices.⁵⁹ These species usually move very little, but a muscular “foot” helps them burrow and allows slow and limited movement if disturbed by floods or droughts. All three

⁵⁶ The ESA protects species identified as endangered or threatened with extinction and attempts to protect the habitat on which they depend. It is administered primarily by the Fish and Wildlife Service and also by the National Marine Fisheries Service for certain marine and anadromous species. Dwindling species are listed as either endangered or threatened according to assessments of the risk of their extinction. Once a species is listed, legal tools are available to aid its recovery and to protect its habitat. The ESA defines an endangered species as “any species which is in danger of extinction throughout all or a significant portion of its range ...” and a threatened species as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” For more information on the ESA, see CRS Report RL31654, by M. Lynne Corn, Eugene H. Buck, Kristina Alexander.

⁵⁷ U.S. Department of the Interior, Geological Survey (USGS), *Gulf Sturgeon Facts*, available at [http://cars.er.usgs.gov/Marine_Studies/Sturgeon_FAQs/sturgeon_faqs.html].

⁵⁸ U.S. Department of Commerce, National Marine Fisheries Service, *Gulf Sturgeon Recovery/Management Plan*, available at [http://www.nmfs.noaa.gov/pr/pdfs/recovery/sturgeon_gulf.pdf].

⁵⁹ FWS, *Endangered and Threatened Mussels in the Apalachicola-Chattahoochee-Flint Basin*, available at [<http://www.fws.gov/southeast/october07/Mussels-FactSheet-ACFBasin.pdf>].

species were listed under the federal ESA on March 16, 1998. Critical habitat was designated on November 15, 2007,⁶⁰ and took effect on December 17, 2007. Of the four species (Gulf sturgeon and three mussels), concern related to the EDO has been greatest for the three mussels. According to FWS, not only is flow rate, per se, important to the mussels, but so are the effects of flow rates on other aspects of the species' biology.

EDO ESA Consultation

On November 1, 2007, the Corps requested expedited consultation with FWS under §7 of the Endangered Species Act to consider its proposed EDO.⁶¹ In support, the Corps submitted a Biological Assessment of the EDO (BA of the EDO) to FWS.⁶² FWS conducted an expedited review and responded on November 15, 2007.

Biological Assessment of the EDO. In the BA of the EDO, the Corps proposed to reduce flows from the Jim Woodruff Dam below the 5,000 cfs minimum established in the IOP. The EDO, as previously noted, proposed to incrementally reduce flows to a minimum flow of 4,150 cfs — first to 4,750 cfs, then 4,500 cfs, and finally the target of 4,150 cfs. The IOP had a minimum of 5,000 cfs, and had considered 6,500 cfs as “desirable.” The EDO would maintain a 0.25 ft/day maximum fall rate, until 4,150 cfs was achieved.

According to the BA of the EDO, “adverse impacts to listed species (especially the listed mussel species) are reasonably certain to occur as flows on the Apalachicola River drop below 5,000 cfs.”⁶³ Among the issues mentioned in the rationale for adopting the EDO's lower minimum flows was reducing “the demand for storage in order to ... have greater assurance of future ability to sustain flows for listed species during a severe multi-year drought, as currently being experienced in

⁶⁰ 72 *Federal Register* 64286.

⁶¹ Under the ESA, federal agencies must insure that their actions are “not likely to jeopardize the continued existence” of any endangered or threatened species, nor to adversely modify critical habitat. If federal actions or actions of non-federal parties that require a federal approval, permit, or funding might affect a listed species, the federal action agencies must complete a biological assessment. To be sure of the effects of their actions, the action agency must consult with the appropriate Secretary. This is referred to as a § 7 consultation. “Action” includes any activity authorized, funded, or carried out by a federal agency, including permits and licenses.

⁶² Army Corps of Engineers, *Biological Assessment: Temporary Modifications to the Interim Operating Plan for Jim Woodruff Dam and the Associated Releases to the Apalachicola River*, Document #CESAM-PD-E1, available at [http://www.sam.usace.army.mil/ACF%20Water%20Resources%20Management/ACFDrought_Consultation2007/FinalBiologicalAssessment_1_Nov_2007.pdf]. The BA was amended on November 7, 2007; the amendment is available at [http://www.sam.usace.army.mil/ACF%20Water%20Resources%20Management/ACFDrought_Consultation2007/BA_AmendmentLetter11_7_2007.pdf]. Hereafter the two documents collectively are referred to as the BA of the EDO.

⁶³ *Ibid.*, p. 6.

the ACF basin.”⁶⁴ In essence, the proposal was that the listed species would face a reduced water flow this year to reduce risks in later years, if the drought continues.

Biological Opinion for the EDO. In its November 15, 2007, BiOp on the EDO, FWS concluded there would be no appreciable effect on the survival and recovery of the Gulf sturgeon and no appreciable effect on the ability of its designated critical habitat to provide its intended conservation role.⁶⁵ In addition, FWS concluded that for the three mussels, the Corps’ EDO would have a measurable — but not appreciable — impact on survival and recovery. While critical habitat primary constituent elements for these mussel species may be adversely affected by reducing minimum releases to 4,500 cfs, FWS did not anticipate that the EDO’s adverse impact would alter or affect the critical habitat to the extent that it would appreciably diminish the habitat’s intended conservation role.⁶⁶ The BiOp for the EDO required that the Corps supply FWS with triggers for making the incremental reductions.

The effects of a reduction to 4,500 cfs on the listed species are outlined in the BiOp.⁶⁷ Sturgeon spawning habitat is highly dependent on the proper water depth; the reduction would reduce habitat of proper depth by 1-3 acres, down from 13 acres. The reduction was judged “probably not significant” but the BiOp noted a paucity of data. FWS commented on lack of data to permit drawing long-term conclusions about the EDO’s effects. To that end, it limited its opinion to June 1, 2008, and to an initial reduction to 4,750 cfs, to be followed by a reduction to not less than 4,500 cfs, then to 4,150 cfs.⁶⁸ Moreover, the BiOp for the EDO did not determine a minimum flow that would avoid jeopardy indefinitely.

Incidental Take Statement and Reasonable and Prudent Measures. FWS’ Incidental Take Statement (ITS) related to the BiOp included non-discretionary measures to determine the appropriate triggers for these incremental reductions. It directed that the Corps ensure that the measures become binding conditions of any contract or permit issued to carry out the EDO. Mandatory terms and conditions were attached to the ITS to ensure its implementation. These terms and conditions included reporting requirements, monitoring, and assuming responsibility for certain studies, among other things. These studies include measurements of take of the listed species resulting from lower flows, changes in mussel distribution, and life history studies to provide information to better inform

⁶⁴ Ibid., p. 6.

⁶⁵ Note that FWS does not state in the BiOp for the EDO that no harm would come to these species. Rather, it concludes that the Corps’ action would not be sufficient to jeopardize the continued existence of the species, provided that certain reasonable and prudent alternatives are carried out. Any future consultation would occur in light of a pre-existing harm that, if not appreciable, was still measurable according to the BiOp.

⁶⁶ BiOp for the EDO, pp. 56-57.

⁶⁷ Ibid., pp. 39-48.

⁶⁸ Ibid., p. 58.

future decisions. The ITS also warned that failure to carry out the terms and conditions could invalidate the ITS.⁶⁹

In addition to mandatory terms and conditions, the ITS also made discretionary recommendations to the Corps. For example, the ITS recommended that the Corps work with states and other stakeholders to reduce depletions to ACF stream flow, particularly in the Flint River; its examples included incentives to reduce agricultural demands. It also recommended that the Corps, with other stakeholders, “evaluate ways to ensure that listed mussel mortality due to low flows does not become a chronic or annual source of mortality.”⁷⁰

ESA Legislation Prompted by ACF Drought

While the ESA plays an important role in protecting species, it also can become a surrogate in quarrels whose primary focus is the allocation of scarce or diminishing water, lands, or other resources. Indeed, a stated purpose of the ESA is to “provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.”⁷¹ Because other laws commonly lack ESA’s strict substantive provisions, the ESA often becomes a surrogate battleground in such disputes, as it has in the ACF basin. The current ESA debate in the basin relates to the Corps’ consultation with FWS under 16 U.S.C. § 1536 on the effects of the operation of dams in the watershed and how these operations may affect the Gulf sturgeon and three species of mussels.

In the 110th Congress, identical bills, H.R. 3847 and S. 2165, have been introduced to address conflicts with the ESA arising from recent operations of the federal ACF dams. These bills would suspend the entire ESA for both federal and state agencies managing a federal river basin if either the Corps or a basin governor determines that there is a drought in such a river basin and that the drought threatens the region’s health, safety, or welfare. The bills would end the suspension if the Corps or the governor determines that the drought is no longer in effect in the basin.

These bills raise several issues and questions, including their potential effect on ESA issues in other locations and situations. For example, as written, the bills may apply to species not directly affected by drought but which occur within the basin. Even terrestrial species in the basin could lose protections. It appears that the bills would suspend FWS’s obligation to consult with federal agencies even to help inform them about potential consequences of their actions. In regions of the country where water shortages are chronic, and conflicts concerning listed species are abundant, would the bills effectively allow governors to opt out of the ESA permanently?

⁶⁹ Ibid., pp. 58-59.

⁷⁰ Ibid., p. 64.

⁷¹ 16 U.S.C. §1531(b).

ACF in the Federal Water Policy Context: Conclusions

Although the drought has made reservoir management and endangered species protections the ACF basin's most active federal issues, the tri-state disagreement over water allocation and managing municipal, industrial, and agricultural demand will persist even when the drought subsides. The drought is drawing attention to how the Corps operates its ACF reservoirs under a draft water supply plan from 1989 that is being modified through interim plans for individual dams and exceptional drought waivers. This situation and the related lawsuits are increasing interest in having the three states devise a comprehensive long-term solution in order to avoid congressional or judicial resolutions on a piecemeal basis; however, the Administration's attempt to garner such a tri-state agreement failed to meet a March 1, 2008, deadline.

How the federal government responds to the current ACF drought may set precedents for the long-term management of the ACF basin and other basins whose stakeholders compete for water resources, as well as other basins where the demands on federal infrastructure have changed significantly since their original authorizations. Increasing pressures on the quality and quantity of available water supplies — due to growing population, environmental regulation, in-stream species and ecosystem needs, water source contamination, agricultural water demand, climate variability, and changing public interests — have resulted in heightened water use conflicts throughout the country. The federal government has a long history of involvement in water resource development and management to facilitate water-borne transportation, expand irrigated agriculture, reduce flood losses, and more recently restore aquatic ecosystems. Congress makes decisions that define the federal role in planning, constructing, maintaining, inspecting, and financing water resource projects. These decisions occur within the context of multiple and often conflicting objectives, competing legal decisions, and long-established institutional mechanisms (e.g., century-old water rights, contractual obligations, etc.).

The ACF is a prime example of the complexity of the river management issues in which the Corps and other federal water management and resource agencies are embroiled along with state and local governments and the general public. How the nation uses and values its rivers has changed over time. Rivers are now seen as not only providing economic benefits but also recreational opportunities and ecosystem services, such as species habitat, which also have economic dimensions. These changes have manifested themselves in law (e.g., ESA) and implementation of water resources statutes. This shift has caused a reexamination by the courts, agencies, and stakeholders of the distribution of economic and other benefits of river management alternatives. The debate over ACF management raises some fundamental questions about water resources management in the nation, such as whether some river uses should take priority over others (e.g., threatened and endangered species protection over inland waterway transportation), how to evaluate alternatives (e.g., balancing multiple uses, maximizing economic benefits, reducing short-term or long-term risk), and how to manage extreme conditions and changing water availability and use. Actions by federal agencies remain controversial on the Middle Rio Grande, San Joaquin, Colorado, Klamath, Columbia, Snake, Mississippi, and Missouri Rivers. Like the ACF, federal actions and facility operations on these rivers frequently are challenged in the courts and by state and local interests.

Appendix A. ACF Compact and Lawsuits

After almost 20 years of lawsuits about and attempts at allocating water among the basin states, the three basin states have been unsuccessful at resolving how to allocate water through a compact. There are several pending cases related to ACF waters, filed in various federal district courts.⁷² The first, *Alabama v. U.S. Corps of Engineers* (the Alabama case),⁷³ was the original case that led to a 1997 ACF Compact; it was revived after the ACF Compact expired in 2003. The second, *Southeastern Federal Power Customers, Inc. v. U.S. Army Corps of Engineers* (the D.C. case),⁷⁴ was filed in the district court for the District of Columbia in December 2000. The third case, *Georgia v. U.S. Army Corps of Engineers* (the Georgia I case),⁷⁵ was filed in the federal district court for the Northern District of Georgia in February 2001. The fourth case, *Georgia v. U.S. Army Corps of Engineers* (the Georgia II case),⁷⁶ was filed in the federal district court for the Northern District of Georgia in June 2006. The fifth case, *Florida v. U.S. Fish and Wildlife Service* (the Florida case),⁷⁷ was filed in the federal district court for the Northern District of Florida in September 2006. The sixth case, *City of Columbus v. U.S. Army Corps of Engineers* (the City of Columbus case),⁷⁸ was filed in the federal district court for the Middle District of Georgia in August 2007. The seventh case, *City of Apalachicola v. U.S. Army Corps of Engineers* (the City of Apalachicola case),⁷⁹ was filed in the federal district court for the Northern District of Florida in January 2008.

Many of these cases raise the same legal issues in differing contexts. In order to avoid repetitive litigation over very similar issues, many of the cases were consolidated in March 2007.⁸⁰ One of the recurring issues in the litigation is determination of the authorized purposes of Lake Lanier. This issue was addressed

⁷² These lawsuits are ongoing, interrelated, and contain voluminous filings and numerous orders. Accordingly, the precise legal posture of each case may be subject to rulings or filings that CRS has not obtained or reviewed and the analysis herein is necessarily general.

⁷³ *Alabama v. U.S. Corps of Engineers*, No. CV-90-H-01331-E (N.D. Ala., Eastern Division, filed June 29, 1990).

⁷⁴ *Southeastern Federal Power Customers, Inc. v. U.S. Army Corps of Engineers*, No. 1:OOCV02975 (D.D.C., filed on December 12, 2000).

⁷⁵ *Georgia v. U.S. Army Corps of Engineers*, No. CV 2:01-CV-26-RWS (N.D. Ga., Gainesville Division, filed on February 7, 2001).

⁷⁶ *Georgia v. U.S. Army Corps of Engineers*, No. 06-CV-1473 (N.D. Ga., Atlanta Division, filed June 20, 2006).

⁷⁷ *Florida v. U.S. Fish and Wildlife Service*, No. 06-CV-410 (N.D. Fla., filed September 6, 2006).

⁷⁸ *City of Columbus v. U.S. Army Corps of Engineers*, No. 07-CV-125 (M.D. Ga., Columbus Division, filed August 13, 2007).

⁷⁹ *City of Apalachicola v. U.S. Army Corps of Engineers*, No. 4:08-CV-23-RH/WCS (N.D. Fla., filed January 15, 2008).

⁸⁰ See *In re Tri State Water Rights Litigation*, 481 F.Supp.2d 1351, 1352 (Judicial Panel on Multidistrict Litigation 2007).

in the most recent decision relating to the ACF (see discussion of the D.C. case below). In February 2008, the Court of Appeals for the D.C. Circuit held that congressional authorization would be necessary in order to provide local water supply for municipalities near the reservoir.⁸¹ That opinion directly affected only the D.C. case, the sole case omitted from the consolidation. This appendix includes a discussion of each of the cases and the consolidation. It also discusses considerations for the future of the litigation, including Supreme Court jurisdiction and possible effects of the D.C. case on the remainder of the litigation.

ACF Cases

The Alabama Case and the ACF Compact. In 1990, Alabama and Florida filed suit (the Alabama case) against the Corps to stop the larger withdrawals it had approved for Georgia, based in part on the impact they would have on downstream users and a failure to comply with the National Environmental Policy Act (NEPA; 42 U.S.C. §§ 4321-4347).⁸² The suit alleged that the Corps exceeded its authority under the Water Supply Act of 1958⁸³ by reallocating storage in the ACF reservoirs. Under the Water Supply Act, a modification to reservoir projects “which would seriously affect the purposes for which the project was authorized ... or which would involve major structural or operational changes shall be made only upon the approval of Congress.”⁸⁴ The authorized purposes of Lake Lanier are disputed among the parties and have become a recurring issue in each of the lawsuits filed.⁸⁵ Generally, each of the parties except Georgia recognizes three authorized uses: flood control, hydropower, and navigation. Georgia has maintained that municipal and industrial use was also authorized.

The parties suspended the proceeding in 1992 to negotiate a settlement. Settlement negotiations ultimately resulted in an interstate compact (the ACF Compact) which was approved by Congress in 1997 (P.L. 105-104). Through the ACF Compact, the parties intended “to develop an allocation formula for equitably apportioning the surface waters of the ACF Basin among the states while protecting the water quality, ecology and biodiversity of the ACF.”⁸⁶ In other words, the Compact provided an agreement to agree on allocations at some future date.

⁸¹ See *Southeastern Federal Power Customers v. Geren*, 2008 U.S. App. LEXIS 2501, 18-20 (D.C. Cir. 2008).

⁸² *Alabama v. U.S. Corps of Engineers*, No. CV-90-H-01331-E (N.D. Ala., Eastern Division, filed June 29, 1990). Georgia joined the suit later as a defendant.

⁸³ 43 U.S.C. §390b.

⁸⁴ 43 U.S.C. §390b(d).

⁸⁵ The parties have cited various sources when alleging what purposes are authorized. See Rivers and Harbors Act of 1945; H.Doc. 342; Army Corps of Engineers, *Authorized and Operating Purposes of Corps of Engineers Reservoirs* (1992, revised 1994); 33 C.F.R. § 222.5. One scholar provides a summary of the confusion, noting that the Corps has, at various times, offered between three and six authorized purposes. See George William Sherk, “The Management of Interstate Water Conflicts in the Twenty-First Century: Is It Time to Call Uncle?,” 12 *N.Y.U. ENVTL. L.J.* 764, 771 (2005).

⁸⁶ P.L. 105-104.

Although the states negotiated for years, they never reached an agreement and, after many extensions of the 1998 date on which the ACF Compact was to terminate, the Compact expired on August 31, 2003. Since then, the litigation has resurfaced as the states attempt to secure their water rights (see discussion below).

The D.C. Case. The D.C. case involved a dispute brought by Southeastern Federal Power Customers (SeFPC), a non-profit corporate consortium of rural electric cooperatives and municipal electric systems. SeFPC alleged that the Corps contracts that provided for increased withdrawals from Lake Lanier exceeded the Corps' authority under the Water Supply Act of 1958. The increased withdrawals, they argued, consequently diminished the flow-through by which hydropower is generated. SeFPC claimed that its members were paying for Buford Dam hydropower at prices disproportionate to their residual share of water stored in Lake Lanier devoted to power generation.⁸⁷

The proceedings of the Alabama and D.C. cases are interrelated. In the Alabama case, Alabama and Florida sued to prevent withdrawals of water from Lake Lanier made to the detriment of downstream users. While the action was suspended pending negotiations, the D.C. case was filed. In January 2003, the parties in the D.C. case, including Georgia and the Corps, reached a settlement agreement and requested the court's approval. Because the parties to the D.C. case attempted to implement a settlement agreement that would affect the use of the water at issue in the Alabama case, Alabama and Florida revived the Alabama case to challenge the settlement agreement. Alabama and Florida also intervened in the D.C. case to oppose the approval of the agreement as a violation of the suspension of proceedings in the Alabama case. In October 2003, the federal district court in the Alabama case granted Alabama and Florida's motion for a preliminary injunction, enjoining the Corps and Georgia from implementing the agreement in the D.C. case.⁸⁸ In 2004, the district court in the D.C. case approved the settlement agreement, but required that the injunction entered in the Alabama case be dissolved before the agreement could be implemented.⁸⁹ In 2005, the 11th Circuit Court of Appeals vacated the Alabama district court's injunction order, finding that Alabama and Florida did not establish an imminent threat of irreparable harm or a substantial likelihood of prevailing on the merits of the case.⁹⁰

⁸⁷ *Southeastern Federal Power Customers, Inc. v. Caldera*, 301 F.Supp.2d 26, 30 (D.D.C. 2004). The Corps and Georgia were both named defendants in this suit.

⁸⁸ See *Alabama v. United States Army Corps of Engineers*, No. CV 90-BE-1332, Preliminary Injunction (N.D. Ala., entered October 15, 2003).

⁸⁹ 301 F.Supp.2d at 35. Alabama and Florida appealed the court's decision. The Court of Appeals for the D.C. Circuit dismissed the appeal for lack of jurisdiction, noting that because the district court's decision was conditional, it lacked the finality required to proceed with an appeal. See *Southeastern Federal Power Customers, Inc. v. Harvey*, 400 F.3d 1, 4 (D.C. Cir. 2005).

⁹⁰ *Alabama and Florida v. United States Army Corps of Engineers*, 424 F.3d 1117, 1133 (11th Cir. 2005).

In February 2008, the Court of Appeals for the D.C. Circuit reversed the district court's approval of the settlement agreement reached by the parties in the D.C. case.⁹¹ The settlement agreement, entered by Georgia and the Corps, provided for two 10-year contracts that allocated water to Georgia for municipal use. The court's opinion addressed only one of the statutory issues raised by the appeal — the Water Supply Act.⁹² The court held that “the Agreement's reallocation of Lake Lanier's storage space constitutes a major operational change on its face” and therefore, under the Water Supply Act, required prior congressional approval.⁹³ Because Congress did not authorize the change, the court ruled that the agreement could not be enforced.⁹⁴ Florida and Alabama also claimed that the agreement violated the Flood Control Act and NEPA, but the court did not reach those issues.

The Georgia I Case. In 2000, the Governor of Georgia made a written water supply request asking the Corps to commit to making increased releases of water from the Buford Dam until the year 2030 in order to assure a reliable municipal and industrial water supply to the Atlanta region. In 2001, after nine months without a reply to the request, Georgia sued the Corps to increase its water supply. While the Alabama and DC cases were being litigated, Florida and SeFPC filed motions to intervene in the Georgia I case, but the motions were denied by the district court.⁹⁵ After this denial, the Corps denied Georgia's request, claiming that it lacked the “legal authority to grant Georgia's request without additional legislative authority, because the request would involve substantial effects on project purposes and major operational changes.”⁹⁶

On appeal, the Court of Appeals for the 11th Circuit overturned the district court's decision. The court permitted Florida and SeFPC to intervene and returned the case to the district court for further adjudication.⁹⁷ The district court, noting the similarity of the parties and the subject matter, found the case to be parallel to the Alabama case.⁹⁸ The court suspended the proceedings in the Georgia I case pending resolution of the Alabama case.

The Georgia II Case. In 2006, the Corps issued an interim operations plan (IOP) for Woodruff Dam for the purpose of protecting federally protected species in the Apalachicola River. (See discussion on p. 6.) Georgia sued the Corps to challenge the IOP, claiming that it constituted a change from the only approved water

⁹¹ *Southeastern Federal Power Customers v. Geren*, 2008 U.S. App. LEXIS 2501 (D.C. Cir. 2008).

⁹² See 43 U.S.C. § 390b.

⁹³ *Id.* at 3.

⁹⁴ *Id.*

⁹⁵ See *Georgia v. United States Army Corps of Engineers*, 302 F.3d 1242, 1247-1250 (11th Cir. 2002).

⁹⁶ *Id.* at 1249.

⁹⁷ *Ibid.*, p. 1252, 1258.

⁹⁸ *Georgia v. United States Army Corps of Engineers*, 223 F.R.D. 691, 696-699 (N.D. Ga. 2004).

control plan (which was adopted in the late 1950s).⁹⁹ Georgia argued that, by releasing more water from reservoir storage to meet the in-stream requirements for the Apalachicola River in the IOP, the Corps was jeopardizing the state's future water supply. The releases allegedly did not account for dry weather conditions and did not reserve enough water to supplement the dry summer conditions in northern Georgia. The suit also alleged that water supply was a contemplated purpose of the Corps' water project.¹⁰⁰

The Florida Case. In 2006, FWS issued a biological opinion (BiOp) regarding the impact of the IOP for Woodruff Dam on protected species downstream (see discussion on p. 6). Florida filed a lawsuit to review the BiOp, which was issued pursuant to the ESA. The BiOp concluded that the Corps' operations under the IOP were not likely to jeopardize the species or their habitat. Florida sought review, claiming that operations had already caused significant damage. The BiOp, according to Florida, violated rational decision-making standards. Florida also alleged that the municipal and industrial uses for which Georgia sought water were not authorized purposes.

The City of Columbus Case. In 2007, the City of Columbus, Georgia, sued the Corps, challenging the validity of the IOP. Columbus asserted that the Corps failed to adopt a formally finalized water control plan for the ACF basin and that the Corps' current operation under the IOP violated its legal authority. The Corps was operating under a third revision of the IOP, each changing the flow levels in the rivers, at the time Columbus filed the lawsuit. Columbus claimed that the lack of reliable flow from the Chattahoochee River impaired its ability to discharge water that it used to provide services to the city in compliance with regulatory requirements. The city alleged that the IOP improperly revised the water control plan because it was published in final form without public comment and was put into effect for an indefinite period of time. According to Columbus, the IOP resulted in over-releases of water from the ACF reservoirs to the city's detriment.

The City of Apalachicola Case. In 2008, the City of Apalachicola, Florida, sued the Corps, challenging its management and operation of the ACF facilities. The lawsuit arose from the city's interest in maintaining the Apalachicola Bay ecosystem, which the city claims as a basis for its economy and livelihood. Apalachicola alleged that the Corps did not complete an adequate NEPA review when it issued the original IOP, the modified IOP, or the Exceptional Drought Operations modification (EDO) to the modified IOP. The city also claimed that the Corps did not comply with environmental assessments required under the Coastal Zone Management Act (CZMA).¹⁰¹ Apalachicola also alleged that various contracts entered by the Corps, which provide for withdrawals for purposes other than those authorized by law, and

⁹⁹ See 33 C.F.R. §222.5.

¹⁰⁰ Georgia cited a Corps document created in response to the WRDA 1990 (P.L. 101-640) and Corps regulations as sources indicating water supply as an authorized purpose. See Army Corps of Engineers, *Authorized and Operating Purposes of Corps of Engineers Reservoirs* (1992, revised 1994); 33 C.F.R. §222.5.

¹⁰¹ This case was the first to allege issues based on the CZMA. See 16 U.S.C. § 1456.

the Corps' application of the draft water control plan violate the Water Supply Act, Flood Control Act, and NEPA.

Consolidation of Cases. In March 2007, the Alabama, Georgia I, Georgia II, and Florida cases were consolidated and transferred to the federal district court for the Middle District of Florida “to serve the convenience of the parties and witnesses and promote the just and efficient conduct of the litigation.”¹⁰² The City of Columbus case was also included in this litigation after it was filed. Other cases filed since the consolidation that relate to the ACF dispute, including the City of Apalachicola case, are likely to be included in the consolidated proceedings. The D.C. case was excluded from this consolidation of proceedings because it had already reached the appellate court, whereas the cases that were consolidated remained in various federal district courts.¹⁰³

Considerations for Future Litigation Efforts

U.S. Supreme Court Review. The U.S. Supreme Court has not addressed the issues raised by the ACF litigation at this time. In June 2006, the Court declined to review an 11th Circuit decision in the Alabama case.¹⁰⁴ The underlying 11th Circuit opinion held that the action did not involve a controversy between states, which would have to be heard by the U.S. Supreme Court, but did involve a dispute between states and a federal agency, which was properly heard by the lower federal courts.¹⁰⁵ Therefore, the Court would only hear arguments regarding the ACF dispute if a new lawsuit is filed by one state against another state or if a party to one of the lawsuits appeals a circuit court's decision.

Anticipated Effects of the D.C. Case Decision. As discussed above, the various lawsuits involve many recurring issues, including authorized purposes of Lake Lanier, the effect of the Water Supply Act of 1958 on authorized purposes, and whether the environmental reviews that have been conducted satisfy the requirements of NEPA. The D.C. Circuit's decision holding that reallocation of water supply storage for municipal use would require congressional authorization addresses one of these issues. That decision may affect the future path of litigation in the other cases.

Although the court determined that the settlement agreement was unenforceable, the litigation of the D.C. case may continue at different levels. One or more of the parties may try to appeal the circuit court's decision to the U.S. Supreme Court. If the Supreme Court accepts the case for review, it may or may not uphold the D.C. Circuit's interpretation of the issue. The D.C. Circuit's decision addressed only one

¹⁰² *In re Tri-State Water Rights Litigation*, 481 F.Supp.2d 1351, 1352 (Judicial Panel on Multidistrict Litigation 2007).

¹⁰³ *Id.*

¹⁰⁴ See *Alabama and Florida v. United States Army Corps of Engineers*, 126 S. Ct. 2862 (2006).

¹⁰⁵ *Alabama and Florida v. United States Army Corps of Engineers*, 424 F.3d 1117, 1130 (11th Cir. 2005).

of the statutory challenges raised before the court. As a result, the case may also be remanded to the original court (the D.C. district court) for further review of other issues raised but not resolved in the higher courts.

If the case is remanded to the district court, it may be consolidated with the other cases. The D.C. case was omitted from the original consolidation because it was the only case not on the trial level. If it is remanded to the district court for further consideration, it would again be on the same level of review as the other cases and potentially be appropriate for consolidation.

Generally, the consolidated cases, being litigated in a different jurisdiction (a district court within the 11th Circuit), are not controlled by decisions in the D.C. Circuit.¹⁰⁶ That is, the 11th Circuit, or district courts within its jurisdiction (including Alabama, Florida and Georgia), may choose to interpret the issue of required congressional authorization differently than the D.C. Circuit did. However, other courts may be bound by the D.C. Circuit's decision under a legal principle known as collateral estoppel. The principle of collateral estoppel, also known as issue preclusion, prevents parties from raising issues that have already been resolved in previous legal proceedings in later cases under certain circumstances.¹⁰⁷ In order to raise the issue of collateral estoppel and prevent the consolidated cases from further litigating the issue decided by the D.C. Circuit, a party must show that:

- (1) the issue at stake is identical to the one involved in the prior proceeding;
- (2) the issue was actually litigated in the prior proceeding;
- (3) the determination of the issue in the prior litigation must have been "a critical and necessary part" of the judgment in the first action; and
- (4) the party against whom collateral estoppel is asserted must have had a full and fair opportunity to litigate the issue in the prior proceeding.¹⁰⁸

If a court determines that these four elements have been met, the ruling from the prior proceeding stands, meaning that the party raising the issue of collateral estoppel wins on that claim. If at least one element is not met, the court hearing the consolidated cases would be free to interpret the issue independent of the D.C. Circuit's decision.

¹⁰⁶ The federal court system is three-tiered: the trial court (federal district courts), the appellate court (federal circuit courts), and the U.S. Supreme Court. Under this system, district courts are bound only by decisions of the circuit court under which the district court sits and decisions of the U.S. Supreme Court. Circuit courts are bound only by their own prior decisions and decisions of the U.S. Supreme Court. The circuit courts may, but are not required to, follow decisions of other circuit courts when considering similar issues raised.

¹⁰⁷ See *Allen v. McCurry*, 449 U.S. 90, 94 (1980); *I.A. Durbin, Inc. v. Jefferson Nat'l Bank*, 793 F.2d 1541, 1549 (11th Cir. 1986).

¹⁰⁸ *Pleming v. Universal-Rundle Corp.*, 142 F.3d 1354, 1359 (11th Cir. 1998); *Christo v. Padgett*, 223 F.3d 1324, 1339 (11th Cir. 2000).

Appendix B. NEPA and Current ACF Operations

NEPA and the Exceptional Drought Operations

When a federal agency takes an action that could significantly affect the environment, it is required to conduct a review under the National Environmental Policy Act (NEPA) (42 U.S.C. §§ 4321 et seq.). The Corps submitted an environmental assessment (EA) of the Exceptional Drought Operations (EDO) modification to its operations of Woodruff Dam with a finding of no significant impact (FONSI). This EA-FONSI means the Corps determined that any adverse environmental effects were not so significant that an environmental impact statement (EIS) was required. Under NEPA, an agency is required to take a hard look at the environmental consequences of its action. The U.S. Supreme Court has said NEPA “merely prohibits uninformed — rather than unwise — agency action.”¹⁰⁹ The original case (see Alabama Case in **Appendix A**) raises a NEPA complaint.

Legal challenges to EAs are based on the following: timing, contents, and conclusions. The timing factor is whether the document informed the agency decision, rather than providing an after-the-fact rationalization of the agency action. Challenges based on the contents of a document argue that the document does not show the agency took a hard look at the relevant environmental effects. The conclusion that no EIS was required can also be a basis for a legal challenge.

Timing and Content

NEPA requires federal agencies to comply “to the fullest extent possible.”¹¹⁰ However, NEPA does not require any particular results, such as choosing the least harmful project. The U.S. Supreme Court has said NEPA “merely prohibits uninformed — rather than unwise — agency action.”¹¹¹ Accordingly, where courts have found that agencies took a hard look at the relevant areas of environmental impact and satisfied the other demands of Section 4332(2)(C), the courts have upheld the NEPA process.

To comply with NEPA the agency must show that the environmental review informed the decision-making process. NEPA regulations promulgated by the Council on Environmental Quality (CEQ) address the timing of an environmental review. The regulations all require the environmental review before the agency decision, indeed, as early as practical. A section discussing timing of environmental reviews says:

An agency shall commence preparation of an environmental impact statement as close as possible to the time the agency is developing or is presented with a proposal (Sec. 1508.23) so that preparation can be completed in time for the

¹⁰⁹ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351 (1989).

¹¹⁰ 42 U.S.C. § 4332. For a general discussion of NEPA, see CRS Report RS20621, *Overview of NEPA Requirements*, by Kristina Alexander.

¹¹¹ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351 (1989).

final statement to be included in any recommendation or report on the proposal. The statement shall be prepared early enough so that it can serve practically as an important contribution to the decisionmaking process and will not be used to rationalize or justify decisions already made.¹¹²

Although this section refers specifically to an environmental impact statement (EIS), the rationale of not using an environmental document to justify decisions already made applies to environmental assessments as well. After all, EAs are intended to be performed to see whether an EIS must be prepared. Therefore, since they precede an EIS (if an EIS is deemed necessary), they must also precede the agency decision on a course of action. A specific regulatory reference to EAs further supports that the document is intended to contribute to the discussion of choosing an action: “Agencies may prepare an environmental assessment on any action at any time in order to assist agency planning and decisionmaking.”¹¹³

Another section discusses the benefits of starting the environmental review at the earliest possible time: “Agencies shall integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values, and to avoid delays later in the process, and to head off potential conflicts.”¹¹⁴

Early in NEPA practice, the courts established that a NEPA review should occur before an agency action was decided upon: “That the filing of an EIS should precede rather than follow federal agency action has been consistently recognized by the courts.”¹¹⁵ The Fifth Circuit described the harm in reversing the order:

Whenever an agency decision to act precedes issuance of its impact statement, the danger arises that consideration of environmental factors will be pro forma and that the statement will represent a post hoc rationalization of that decision. NEPA was intended to incorporate environmental factors and variables into the decisional calculus at each stage of the process.¹¹⁶

The courts agree that a NEPA review is intended to inform the decision-making process. The Ninth Circuit addressed the timing of the environmental review in relationship to the agency decision. It said the purpose of the review is to provide “decisionmakers with an environmental disclosure sufficiently detailed to aid in the substantive decision whether to proceed with the project in light of the environmental consequences.”¹¹⁷ A reviewing court is likely to find that an agency failed to take a

¹¹² 40 C.F.R. § 1502.5

¹¹³ 40 C.F.R. § 1501.3(b).

¹¹⁴ 40 C.F.R. § 1501.2.

¹¹⁵ *Cady v. Morton*, 527 F.2d 786, 794 (9th Cir. 1975).

¹¹⁶ *Sierra Club v. Lynn*, 502 F.2d 43, 59-60 (5th Cir. 1974).

¹¹⁷ *Methow Valley Citizens Council v. Regional Forester*, 833 F.2d 810 (9th Cir. 1987). See also *Save Barton Creek Ass’n v. FHWA*, 950 F.2d 1129, 1137 (5th Cir. 1992) (purpose of NEPA is to inform the decision-maker).

hard look at the environmental consequences of its action when the decision on what action to take predates the consideration of the environmental effects.

The contents of a NEPA document may also influence a court as to whether an agency took a hard look at the environmental effects of the proposed action. The regulations provide a general description of the contents. EAs are intended to be concise, but are also required to consider the need for the project, the environmental impacts of the project and its alternatives, alternatives required by section 102(2)(E), and a list of the agencies and persons consulted.¹¹⁸ In the context of an action that could affect species listed under the ESA, the NEPA review and the biological assessment (BA) under the ESA can be synchronized. The statutory provision for a BA contemplates that it will be used in conjunction with the NEPA process, and in fact can be considered part of a NEPA review, although it does not mandate that the two go together.¹¹⁹

Another issue related to the contents of an EA is whether the document indicates that an EIS is needed or that there is no significant impact.¹²⁰ Reasonable people can disagree as to what conclusion the data in an EA justify. Deference is given to the agency's determination by courts, however. That judicial deference can be reduced under certain circumstances, including when a court finds the agency has pre-judged the environmental impacts.¹²¹ The environmental document must adequately support the conclusions within it in order for a court to uphold it.¹²² Also, the record must show how the agency reached its determination: "mere perfunctory or conclusory language will not be deemed to constitute an adequate record and cannot serve to support the agency's decision not to prepare an EIS."¹²³

If an EA with a finding of no significant impact is found to be inadequate, most courts will remand the action to the agency, where another EA could be prepared by the agency. In certain rare cases, courts have directed agencies to prepare an EIS, without leaving the matter to the agency's discretion.¹²⁴

¹¹⁸ 40 C.F.R. §1508.9(b).

¹¹⁹ 16 U.S.C. §1536(c)(1): "Such assessment may be undertaken as part of a Federal agency's compliance with the requirements of section 102 of the National Environmental Policy Act of 1969."

¹²⁰ See 40 C.F.R. §1508.9(a)(1).

¹²¹ *Davis v. Mineta*, 302 F.3d 1104, 1112 (10th Cir. 2002).

¹²² *O'Reilly v. U.S. Corps of Engineers*, 477 F.3d 225 (5th Cir. 2007) (EA-FONSI violated NEPA because Corps failed to consider cumulative adverse effects and properly document how mitigation would render adverse impacts insignificant).

¹²³ *Maryland-National Capital Park & Planning Comm'n v. U.S. Postal Serv.*, 487 F.2d 1029, 1039 & 1040 (D.C. Cir.1973).

¹²⁴ See *Middle Rio Grande Conservancy Dist. v. Babbitt*, 206 F. Supp. 2d 1156 (D.N.M. 2000) (court ordered agency to prepare EIS because agency delays had imperiled the species), *aff'd sub nom.*, *Middle Rio Grande Conservancy Dist. v. Norton*, 294 F.3d 1220 (10th Cir. 2002).

The Right to Sue Under NEPA

NEPA suits are brought under the Administrative Procedure Act (APA). Therefore, courts review whether an agency's action was arbitrary or capricious or otherwise not in accordance with law.¹²⁵ Parties have to show standing. That limits plaintiffs to those who could show they were adversely affected or aggrieved by the agency action and that NEPA intended to protect against that actual or threatened injury.¹²⁶ For example, an economic injury by itself is not the type of harm NEPA protects against and could not be the basis for a lawsuit. However, the reduced use of the river by a recreational kayaker could be the basis for standing. Plaintiffs could include individuals and groups, provided they were able to show they suffered an injury in fact that was different from the injury suffered by the community at large.¹²⁷

¹²⁵ 5 U.S.C. §706(2)(A).

¹²⁶ 5 U.S.C. §702.

¹²⁷ See *Massachusetts v. EPA*, 127 S. Ct. 1438, 1453 (2007) (a personal stake confers standing, even when there is “widespread harm”).

Appendix C. ACF Electric Power Generation Issues

ACF Power generation includes hydroelectric facilities operated by the Corps, Georgia Power, and private entities as well as coal-fired, gas-fired, and nuclear plants operated by Southern Company and its subsidiaries, Southern Nuclear and Gulf Power.

Hydroelectric Generation

Historically, hydropower at dams on the ACF provides power primarily during peak demand. An issue is the effect of decreased river flows on turbine operations, specifically whether lower reservoir levels would drop below the turbine's water intake. Currently, water levels are sufficient to generate peaking power for the region. According to the Corps, the two main units at Buford Dam can generate as long as water levels do not fall below 1035 feet. Even before the reduced flows under the EDO, the two main units at Buford were projected to be operational at least until summer 2008.¹²⁸

The Southeastern Power Administration (SEPA) markets the power generated at Corps-operated dams to its customers in the Southeast.¹²⁹ SEPA enters into five-year contracts with its preference customers (cooperatives and municipal power systems) with power delivery obligations based on 1981 drought levels. SEPA is obligated to meet its contract requirements whether or not sufficient hydroelectric power is available to meet its obligations. In the event of a hydropower shortfall, SEPA purchases power on the open market, generally at a cost greater than hydroelectric generation. The additional cost is passed on to SEPA's customers. SEPA does not own transmission lines and must contract with other utilities for use of the transmission system.¹³⁰

Nuclear Generation

Plant Farley, located in southeastern Alabama near the town of Dothan, is a 1,711 megawatt (MW) nuclear plant; water is used in the cooling system. (See **Figure 1**.) According to the SERC Reliability Corporation, in addition to being a large source of electricity, generation from Farley is also important for maintaining the stability of the local power system.¹³¹

¹²⁸ Corps BA, p. 51.

¹²⁹ Southeastern Power Administration. *Annual Report 2005*, available at [<http://www.sepa.doe.gov/files/2005%20SEPA%20Annual%20Report%205-3.pdf>].

¹³⁰ Personal communication between Amy Abel and Douglas Spencer, Southeastern Power Administration, November 5, 2007.

¹³¹ Personal communication between Stan Kaplan and Carter Edge, Director, Reliability Services, SERC Reliability Corp., November 6, 2007. SERC is the regional industry organization responsible for monitoring power grid reliability in the southeastern states.

Plant Farley requires a minimum water flow of 2,000 cfs to operate at full load under its current water permit.¹³² At lower flow, water discharges from the plant may have thermal or other impacts on the Chattahoochee River that could trigger regulatory action. Under the lowest flows in the EDO, the flow at Farley may drop to roughly 2,300 cfs, still above the plant's full load requirement.

Because of the plant's design, it appears unlikely that all of the generation from Farley could be lost due to low water conditions, at least in the foreseeable future. Farley is a two-unit plant. On September 28, 2007, Unit 1 went off-line for refueling, and through October and early November, water flows often dipped far below 2,000 cfs (e.g., to a flow of 1,048 cfs on November 3, 2007).¹³³ This indicates that the plant can operate with one unit at full load with much less water than required for two unit operation. However, according to Southern Company, during the period October to May, when other generation and transmission assets are taken off-line for maintenance, both Farley units are necessary for reliable operation of the local power system.¹³⁴

According to the SERC Reliability Corp., alternative, albeit more expensive, natural gas-fired generation could be used to compensate for reduced generation from Farley during off-peak seasons. However, these alternatives may be otherwise committed during summer peaks and very cold winter periods, in which case reliability risks would be greater if Farley generation is unavailable or reduced.¹³⁵

Coal-Fired and Natural Gas-Fired Generation

Coal-fired power plants, older (steam electric) gas-fired plants, and modern combined cycle gas plants are dependent on water for steam processing, and primarily cooling. Older power plants, those whose construction began prior to 1972, use a once-through system where the water is discharged back into the water source. Newer power plants do not discharge water, but use cooling towers to evaporate the water. In low water years, once-through plants may encounter issues with thermal discharge. The discharge from the power plant is typically warmer than the water source, and increases in the surrounding water temperature could affect the ability of fish and other aquatic species to survive. This effect is more pronounced with low stream flows. For both older and newer plants, water intakes for the plant must be below water level.

¹³² E-mail and attachment from Jerry L. Stewart, Southern Company, to Stan Kaplan, November 7, 2007.

¹³³ Daily reactor status is posted by the Nuclear Regulatory Commission at [<http://www.nrc.gov/reading-rm/doc-collections/event-status/reactor-status/2007/index.html>]; dam discharge data is posted at [<http://water.sam.usace.army.mil/acfframe.htm>].

¹³⁴ E-mail and attachment from Jerry L. Stewart, Southern Company, to Stan Kaplan, November 7, 2007.

¹³⁵ Personal communication between Stan Kaplan and Carter Edge, Director, Reliability Services, SERC Reliability Corp., November 6, 2007.

Although several large coal and gas-fired plants are located along the ACF rivers, only the coal-fired Plant Scholz in the Florida Panhandle has been mentioned as potentially being affected by low flow in the Apalachicola River. (See **Figure 1.**) This plant is considered a base load plant which generates power throughout the day. Although Scholz is small (capacity of 92 MW), the plant is a low-cost source of generation and is used in some situations to maintain the reliability of the local power system. Specifically, Scholz is needed during high-demand periods to help prevent overloading power lines under some circumstances, and during low demand periods to maintain voltage levels.¹³⁶

According to Southern Company affiliate Gulf Power, the plant's owner, the plant can operate with flows at 5,000 cfs. With the EDO flows, the plant should be able to continue operating without modifications for three months. The plant does not expect any issues with thermal discharge with the lower flows. Plant operators plan to make some modifications in its intake system to be able to continue operating into the summer of 2008.¹³⁷

If Scholz needs to shut down, there do not appear to be any transmission constraints in the area that would prevent power from being delivered from other generating plants. However, the cost of purchased power or generation from other Southern Company assets may be more expensive than generation from Scholz and Farley. Also, the reduction in reserve margins from taking Plant Scholz and other generating plants off line could create reliability concerns, especially during the peak summer season.

¹³⁶ E-mail and attachment from Jerry L. Stewart, Southern Company, to Stan Kaplan, November 7, 2007.

¹³⁷ Personal communication between Amy Abel and John Hutchinson, spokesperson for Gulf Power, November 5, 2007.