

FEDERAL ENERGY REGULATORY COMMISSION
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FEDERAL ENERGY
REGULATORY COMMISSION

OFFICE OF ENERGY PROJECTS

Project No. 2237-013-Georgia
Morgan Falls Hydroelectric Project
Georgia Power Company

Magalie R. Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: Findings and Recommendations of the Study Dispute Resolution Panel for the Morgan Falls Hydroelectric Project (P-2237-013)

Dear Ms. Salas:

On December 16, 2004, the U.S. Department of the Interior (Interior) filed with the Federal Energy Regulatory Commission (Commission) a Notice of Study Dispute (Notice) concerning Commission staff's November 26, 2004, Study Plan Determination (SPD) on Georgia Power's Geology and Soils, Fish and Aquatic Resources, and Recreation and Land Use Revised Study Plans (RSPs). In its Notice, Interior referenced eight National Park Service (NPS) and U.S. Fish and Wildlife Service (FWS) study requests that Interior believes were not adequately accommodated by Georgia Power's RSP and Commission staff's SPD. On January 10, 2005, Georgia Power filed timely comments in response to Interior's Notice. On January 14, 2005, Interior reduced the number of studies for dispute resolution to include only FWS' "IFIM Study" and "Sediment Contaminants Study," filed on May 20, 2004.¹

As directed by 18 C.F.R. § 5.14(d), Commission staff, in response to Interior's Notice, convened a three-person Dispute Resolution Panel (Panel)² on January 5, 2005.

¹ In their May 20, 2004, filing, FWS adopts by reference as its "IFIM Study," the flow study of the NPS entitled, "Effects of Project Operations on Instream Flow and Habitat Availability for Selected Aquatic Biota," which NPS filed with the Commission on May 12, 2004.

² The Panel members are: Nicholas Jayjack, Commission (Panel Chair); Gerald Thornton, Interior; and Douglas A. Nieman, Normandeau Associates.

On January 19, 2005, the Panel held a technical conference in Roswell, Georgia pursuant to 18 C.F.R. § 5.14(j). The conference included representatives from Georgia Power, Interior (FWS and NPS), Commission staff, Georgia Division of Environmental Protection, Sandy Springs Conservancy, Cobb County/Marietta Water Authority, Atlanta Regional Commission, Upper Chattahoochee River Keeper, City of Atlanta, GeoSyntec Consultants, WDS Consultants, Troutman Sanders, and other individuals.

Following the technical conference, additional comments and information regarding the disputes were filed by the FWS on January 25, 2005; Interior on January 26 and 27, 2005; and Georgia Power on January 28, 2005, and February 1, 2005.

After careful review of the record of information for the project and in consideration of the procedures set forth under 18 C.F.R. § 5.14(k), we present to the Director of the Commission's Office of Energy Projects, our recommendations with regards to the matters in dispute. We unanimously recommend that:

(1) Georgia Power's Geology and Soils RSP, as modified and approved by Commission staff's SPD, be further modified to include the "Sediment Contaminants Study," filed by FWS on May 20, 2004; and

(2) Interior's request for FWS' "IFIM Study" be denied and Georgia Power be directed to implement its Fish and Aquatic Resources RSP as modified and approved by Commission staff's SPD.

Attachments A and B, which serve as the bases for our recommendations, include our findings concerning the extent to which Interior's proposed alternative studies meet or do not meet the study criteria specified by 18 C.F.R § 5.9.

If you have any questions, please contact Nicholas Jayjack at (202) 502-6073.

Sincerely,

A handwritten signature in black ink, appearing to read "Nicholas Jayjack", written in a cursive style.

Nicholas Jayjack
Chair, Dispute Resolution Panel

**cc: John Kevin Tanaka, Attorney-Advisor
U.S. Department of the Interior
Office of the Solicitor
1849 C Street NW
Washington, D.C. 20240**

**Charles H. Huling, Director
Georgia Power
Environmental Affairs Division
241 Ralph McGill Boulevard NE – Bin 10221
Atlanta, GA 30308-3374**

ATTACHMENT 1

Dispute Resolution Panel's Findings With Regards to the U.S. Department of the Interior's Proposed Sediment Contaminants Study

I. Introduction

In its Revised Study Plan (RSP) filed on October 26, 2004, Georgia Power proposes to conduct a one-year study characterizing existing erosion and sedimentation within the project boundary and evaluating potential effects of continued project operation on erosion and sedimentation in the project area. In general, the plan provides for shoreline reconnaissance and the gathering of existing information to fulfill its study objectives.

In its Study Plan Determination (SPD) issued on November 26, 2004, Commission staff largely approved Georgia Power's Geology and Soils RSP but directed Georgia Power to expand the study area beyond the project boundary to include the area downstream of Morgan Falls dam. In response to requests by the U.S. Fish and Wildlife Service (FWS) and National Park Service (NPS) for staff to revise the RSP to include a provision to test the reservoir sediments for various contaminants, Commission staff responded that they would not do so, because they recognized no nexus between project operations and sediment contamination. Staff further concluded that: (1) the project waters meet state water quality standards enacted to protect aquatic life; (2) recent fish tissue samples taken by Georgia Department of Natural Resources (DNR) do not alert the need for further testing; and (3) Georgia Power's proposal is sufficient to provide information that would give a general indication of fish health in the project area.

On December 16, 2004, the U.S. Department of the Interior (Interior) filed a notice of study dispute with the Commission staff's SPD and Georgia Power's RSP for geology and soils. Interior argued that the RSP and SPD would not ensure the collection and analysis of data necessary to inform FWS's³ decision with regards to the need to prescribe fishways for the project under section 18 of the Federal Power Act (FPA), because the RSP and SPD rely on outdated sediment testing data for the reservoir and surrounding area. As an alternative, Interior recommends that Georgia Power conduct

³ In the same filing, Interior also argued that the RSP and SPD did not adequately incorporate the study requests necessary to inform the decisions of the NPS with regards to lands that it manages in the project area, and therefore, sought relief through the Formal Study Dispute Resolution Process (18 C.F.R. § 5.14). On January 14, 2005, Interior withdrew its request for dispute resolution related to NPS' information needs.

the sediment contaminants study filed by the FWS on May 20, 2004.

Below we describe the Geology and Soils RSP and Interior's study proposal⁴ and then analyze Interior's request based on the study criteria stipulated by 18 C.F.R. § 5.9(b).⁵ We conclude by explaining our bases for our recommendation to the Commission's Director of the Office of Energy Projects.

II. Geology and Soils RSP

The goals of the Geology and Soils RSP are to develop information for characterizing erosion and sedimentation in the reservoir and to "[i]ncorporate as appropriate initial information gathering and study requests filed by the stakeholders..." In order to meet these goals, the RSP has established protocols for: (1) characterizing the distribution, sources, and rate of sediment deposition within the reservoir based on field reconnaissance and review of existing information; (2) using existing information, evaluate whether sedimentation in the reservoir has reached a state of equilibrium such that sediment transport equals or nearly equals sediment deposition; (3) evaluating the effect of future sedimentation on usable storage capacity and the ability of the project to re-regulate Buford dam flow releases; (4) characterizing the surface sediment quality in the project area based on a review of existing sediment data for the Chattahoochee River and reservoir; and (5) evaluating the feasibility and costs of dredging, transporting, and disposing of sediment.

The RSP methodology for the disputed contaminants analysis provides for compiling and reviewing existing data for the Chattahoochee River available from the U.S. Army Corps of Engineers (Corps), Atlanta Sand and Supply Company, United States Geological Survey (USGS), and the U.S. Environmental Protection Agency's (EPA's) STORET database. The data would be used to characterize the distribution and concentration of trace elements and organic compounds in the reservoir surface sediments and the surrounding watershed area. The results of the analysis would be provided in a "Geology and Soils Study Progress Report" to be provided to the participants for review.

III. Interior's Alternative Study Proposal

Interior's alternative study proposal provides for using an Ekman or Ponar dredge to extract reservoir surface sediments from 10 locations distributed throughout the

⁴ We do not describe Commission staff's SPD with regards to sediment contaminants, because staff made no change to Georgia Power's Geology and Soils RSP.

⁵ 18 C.F.R. §5.9(b) includes seven criteria of which we find six applicable to Interior's study request. These criteria are §5.9(b)(1), (2), and (4)-(7).

reservoir from the dam to the headwaters of the reservoir, including sites at the mouths of major reservoir tributaries. The sediments would be analyzed for total organic carbon, grain size, organochlorines, metals, and polyaromatic hydrocarbons (PAHs). The contamination results would be used as a screen for determining if further testing (presumably chemical, sediment toxicity, or sediment bioaccumulation testing) would be necessary. The screening would be conducted by comparing the contamination results against known sediment criteria published by other states or the EPA.

A. Description of the goals and objectives of the study proposal and the information to be obtained (§ 5.9(b)(1)).

Interior adopts the study proposal of the FWS, which states that the overall goal of the sediment contaminants study is to determine presence/absence, levels, and distribution of contaminants in the surface sediments within the project boundary. Interior explains that the study results would assist FWS in implementing section 18 of the FPA by giving it an important part of the information it needs to make its decision on whether to prescribe fishways at the project. Interior states that one of the criteria FWS applies to its fishway decisions is the status of the habitat upstream of the dam. Under the FWS proposal, sediments would be analyzed for total organic carbon, grain size, organochlorines, metals (including mercury, copper, and lead), and PAHs. Interior states that the resulting data will aid in the understanding of the presence or absence of contaminants, threats to the aquatic community within the project boundary, and the distribution (and possibly the source) of contaminants. Summarizing, the goal of Interior's study is to inform its section 18 decision-making about whether the upstream habitat is compromised by any contaminants trapped in the sediments of the project reservoir.

Interior is very specific about the objectives of its proposed study and the nature of the information to be obtained through the study.

Because Interior has clearly stated its goals and objectives and described the information to be obtained, we find that Interior's proposed study adequately meets the requirements of this section.

B. Relevant resource management goals of Interior over the resource to be studied (§ 5.9(b)(2))

The resource to be studied is fish habitat (reservoir sediments as a substrate). In its December 16, 2004, filing, Interior states that the results of the study would assist the FWS in implementing section 18 of the FPA. In its January 25, 2005, filing, FWS notes that the sediments, if contaminated, could bioaccumulate through the food chain and cause cancer and reproductive and physiological effects on aquatic resources. FWS adds that the relevant type of information that they need to inform a fish passage decision

includes project effects on fish and fish habitat, status of habitats upstream of the project, quality or potential to restore habitats upstream of the project, and the possibility for restoration of fish runs.

In this instance, Interior and FWS have identified the need to know the condition (sediment quality) of the upstream habitats in order to decide whether fish passage should be implemented at the project. We agree that this information would be helpful to inform a fish passage decision, and conclude that Interior's proposed study meets the requirements of this section.

C. Existing information concerning the subject of the study proposal and the need for additional information. (§ 5.9(b)(4))

Section 5.1 of Georgia Power's Pre-Application Document (PAD) identifies past and existing dredging and sand mining operations in the reservoir, provides the results of chemical analyses of reservoir sediments collected by the Corps in March 1980 (Corps 1981), and identifies sediment quality monitoring conducted upstream and downstream of the project during the 1990s. Section 5.2.2 provides an overview of water quality in the project area and reports that the Georgia Division of Environmental Protection (Georgia DEP) (2002) detected PCBs in fish tissue in the 12-mile segment of the Chattahoochee River between the project dam and the confluence with Peachtree Creek. Section 5.7.7 of the PAD identifies land uses within 2,000 feet of the project boundary and section 3.1 cites a report of population growth in the area increasing as much as 123 percent between 1990 and 2000.

Attachment 4 of Appendix B of the Metropolitan Atlanta Area Water Resources Management Study (Corps 1981) provides: (1) 1976 and 1980 reservoir sediment gradation curves; (2) 1980 sediment test results for pesticides and herbicides, heavy metals, nitrogen, and carbon; and (3) 1968 and 1973 reservoir soil boring data.

On January 28, 2005, Georgia Power filed a number of documents relating to a 1996 dredging permit application of the Atlanta Sand and Supply Company. The documentation includes sediment quality data from four locations in the impoundment collected in 1989 (Law Environmental, Inc. 1990).

Frick et al. (1998) report on the results of reservoir sediment contaminants testing on the Chattahoochee River upstream of Morgan Falls (Lake Sidney Lanier) and three locations downstream (West Point Lake, Lake Harding, and Walter F. George Reservoir). The most recent data are for 1994. The reported results include reservoir core concentrations of total phosphorus given as a percentage of dry weight and lead, zinc, chromium, copper, organochlorine-pesticide (chlordane and sum DDT), and total PCBs in micrograms per kilogram.

According to the RSP, EPA's STORET Database includes "bed" data from four stations on the Chattahoochee River (includes three water intakes in Cobb, Gwinnett, and DeKalb Counties and one station near Roswell at Highway 141), and one station on Big Creek (City of Roswell water intake). Georgia Power did not file this data; however, we searched the database for the station at Highway 141, which is just upstream of the project, and found the results of fish tissue and bottom sediment analyses conducted by the Georgia DNR in 1990 for PCBs, pesticides, and insecticides.

Georgia Power references the Apalachicola-Chattahoochee-Flint River Basin NAWQA study in its RSP. We located 1992 and 1993 bed sediment and Asiatic clam tissue data from this study on the USGS website (<http://water.usgs.gov/nawqa>) (Georgia Power did not file the study). Data includes analyses for metals, PAHs, and pesticides. Study locations in the project area included the Chattahoochee River at Norcross (upstream of the project) and the Chattahoochee River near Whitesburg (downstream of the project) as well as Willeo Creek near Roswell (project reservoir tributary).

The RSP also references Georgia DNR's (2004) fish consumption guidelines. The guidelines were developed after testing a variety of fish species throughout Georgia for 43 separate contaminants, including metals, organochlorines, and pesticides. For the reach of the Chattahoochee River from Buford dam downstream to Morgan Falls dam, the guidelines recommend eating no more than 1 meal per week of largemouth bass due to mercury contamination. For the reach of the Chattahoochee River downstream of Morgan Falls dam to Peachtree Creek, the guidelines recommend eating no more than 1 meal per month of carp due to PCB contamination.

CH2MHILL's (2003) District-Wide Watershed Management Plan provides the Metropolitan North Georgia Planning District with strategies and recommendations for effective watershed management and control of stormwater runoff, including implementation schedules and funding guidance. An overall goal of the plan is to ensure that streams and waterbodies in the district meet and maintain water quality standards and designated uses. The study provides estimates of existing and predicted (with and without implementation of the plan) sediment loadings in the Chattahoochee River basin.

The consistent element with all of the existing sediment contamination information identified by the PAD is that all of it was conducted prior to the early 1990's. As Frick et al. (1998) report, elevated levels of mercury, copper, lead, zinc, PAHs, phthalates, and DDT were present in the sediments in the Chattahoochee River basin upstream of Atlanta (near the project) in the early 1990s. As the PAD notes, since then, substantial population growth has occurred in the area of the project; therefore, we believe a reasonable conclusion is that the Morgan Falls reservoir sediments, which haven't been tested since 1989, might contain elevated levels of some contaminants. We, therefore, find that pre-1990s data is insufficient to characterize the existing sediment quality.

Georgia Power argues (e.g., letter filed January 10, 2005) that recent water quality and fish tissue test results for metals and organics do not indicate the need for additional sediment testing. We disagree. The absence of detectable concentrations of contaminants in the water column sampled at a point in time does not necessarily equate to the absence of contaminants in fine sediments, where contaminants preferentially bind. With regards to fish tissue testing, the absence of contaminants from muscle tissue does not equate to an absence of the contaminants in other parts of the fish, including the liver and fatty areas, where contaminants tend to concentrate.

In conclusion, we find that the existing information together with the results of Georgia Power's Geology and Soils RSP would not provide the information necessary to adequately and reliably characterize the existing quality of the reservoir surface sediments.

D. Nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements (§ 5.9(b)(5))

In its December 16, 2004, filing, Interior states that the long-term deposition and concentration of any contaminants within the reservoir are due to the presence of the project. Interior follows by stating that Morgan Falls dam is causing sediment to settle out of the water column and accumulate in the reservoir and that because contaminants bind to fine sediments, it follows that contaminants could be accumulating in the reservoir. Interior states that gaining an understanding of the presence/absence and level of sediment contamination would assist the FWS in determining the need for conditioning the license to provide safe, timely, and effective fish passage at the project.

In its January 10, 2005, filing, Georgia Power counters that although operation of the project could influence the deposition of sediment into the reservoir, the release of contaminants into the Chattahoochee River is not due to project operation but suburban land uses, and therefore, there is no nexus between project operations and sediment chemical loading into the Chattahoochee River.

In its November 26, 2004, SPD, Commission staff did not require further surveys of sediment contamination within the reservoir, because staff did not identify a nexus between project operations and contamination of sediments within the reservoir.

We find that Interior and Georgia Power have identified a nexus between project operations and potential accumulation of sediments in the reservoir. We note that Georgia Power acknowledges that operation of the project could influence the deposition of sediment into the reservoir. By virtue of the fact that contaminants bind to fine sediments, it can only follow that project operation affects contaminant deposition into

the reservoir. The fact that the project does not contribute to chemical loading of the river does not have a bearing on the issue of nexus in this instance.

Because Interior explains that the results of the contaminants study would be used to determine whether it would be prudent to attempt to re-establish extant fish populations upstream of the project and because a nexus has been established between the results of Interior's proposed study and project operations, we conclude that Interior's proposed study meets the requirements of this section.

E. Consistency of study methodology with generally accepted practice in the scientific community (§ 5.9(b)(6))

Interior's recommended study methodology provides for the collection of one sediment sample from each of ten locations in the reservoir: two samples at the upstream and downstream bounds of the project boundary; one sample at each of three reservoir tributary mouths (Willeo Creek, Sullivan Creek, and Big Creek); two samples immediately upstream of the dam; and three samples evenly distributed throughout the mainstem of the reservoir. An Ekman or Ponar dredge would be dropped from a boat to acquire the samples. Sediments would be deposited in containers, labeled, and then transported to a nearby laboratory for analysis. This methodology is consistent with accepted sampling procedures. Analyses for the contaminants listed by Interior would be performed by a local (Atlanta) laboratory following standard methods that are routine in the scientific community. Thus, the criterion of this section is met.

F. Consideration of level of effort and cost and why the proposed alternative study would not meet the stated information needs (§ 5.9(b)(7))

In its December 16, 2004, filing, Interior states that field work, sample transport to a laboratory, laboratory analysis, and summary reporting would define the level of effort and associated costs. Lab analysis fees would be \$600.00 to \$700.00 per sample for a total of \$6,000.00 to \$7,000.00. Georgia Power could either contract the field work or use in-house staff. Transport of samples to the lab would be about \$100.00. A summary report would include a map of the project boundary with GPS coordinates of each sample site, lab results, and a discussion of the results as they relate to presence/absence of each contaminant, relative levels, and distribution within the project boundary.

In its December 16, 2004, filing, Interior states that the existing information would not meet its needs, because it is outdated and of questionable accuracy. We agree. Existing information and the results of Georgia Power's Geology and Soils RSP would not provide the information necessary to adequately and reliably characterize the existing quality of the reservoir surface sediments. This information would be helpful for Interior and Commission staff to assess whether upstream habitats would be suitable for re-establishing extirpated fish populations, and therefore, whether fishways at the project

would be justified. The benefit of this information would come at a relatively small cost. Thus, we conclude that the effort and costs associated with Interior's proposed study are justified.

IV. Recommendation

We agree with Interior that there is sufficient information of record to indicate that there could be recent trapping of contaminants in the sediments retained by Morgan Falls dam owing to increased urbanization of the watershed. We also agree that if contaminants are present, they could be a factor informing fish passage considerations. Land development (e.g., urbanization) and the introduction of pollutants are generally well-correlated, and sediments are preferential media for the detection of many contaminants.

We observe that various contaminants have been detected upstream of Atlanta in the project area, including mercury, copper, lead, zinc, PAHs, phthalates, and DDT, and that the surveys wherein these contaminants were detected date back more than a decade from the present. In that time, considerable watershed development and suburbanization have continued, creating a reasonable likelihood that contamination in the project area, including the project reservoir, could likewise have occurred. Current knowledge of any trend in sediment contamination accrual (or the converse) would be informative to Interior regarding its section 18 of the FPA obligations.

In consideration of the record of information before us, the procedures set forth under 18 C.F.R. §5.14(k), and the criteria of 18 C.F.R. §5.9(b), we recommend to the Director that Georgia Power's Geology and Soils RSP, as modified and approved by Commission staff's SPD, be further modified to include FWS' proposed "Sediment Contaminants Study," filed on May 20, 2004. The results of FWS' "Sediment Contaminants Study" should be included in the Final Study Report that the Geology and Soils RSP schedules to be completed by April 1, 2006.

Literature Cited

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ATTACHMENT 2

Dispute Resolution Panel's Findings With Regards to the U.S. Department of the Interior's Proposed IFIM Study

I. Introduction

In its Revised Study Plan (RSP) filed on October 26, 2004, Georgia Power proposes to conduct a study to characterize existing fish and aquatic resources in both the Morgan Falls reservoir and the Chattahoochee River downstream of the dam. Georgia Power's RSP generally directs the collection of fish species in the project reservoir and select locations downstream of the dam. The data would be compiled and analyzed together with pre-existing information, including habitat-discharge relationships for the reach previously developed for trout.

In its Study Plan Determination (SPD) issued on November 26, 2004, Commission staff largely approves Georgia Power's Fish and Aquatic Resources RSP but makes some minor modifications with regards to the number of reservoir sampling locations, sample sizes for key sport fishes, and sampling methodology.

On December 16, 2004, Interior filed a notice of study dispute with Commission staff's SPD and Georgia Power's Fish and Aquatic Resources RSP. Interior believes that Georgia Power's RSP and Commission staff's SPD would not ensure the collection and analysis of data necessary to inform its decision with regards to the need to prescribe fishways for the project under section 18 of the Federal Power Act (FPA), because the RSP and SPD rely on outdated habitat-discharge study data. As an alternative, Interior recommends that Georgia Power conduct an "IFIM Study" consistent with that recommended by the National Park Service (NPS) and U.S. Fish and Wildlife Service (FWS) on May 12, 2004, and May 20, 2004, respectively. Interior provided further clarification of its fish and aquatic resources study dispute on January 14, 2005, and FWS provided clarification on January 25, 2005.

Below we describe the Fish and Aquatic Resources RSP, Commission staff's SPD, and Interior's study proposal and then analyze Interior's study proposal based on the study criteria stipulated by 18 C.F.R. § 5.9(b).⁶ We conclude by explaining our bases for our recommendation to the Commission's Director of the Office of Energy Projects.

⁶ 18 C.F.R. §5.9(b) includes seven criteria of which we find six applicable to Interior's study request. These criteria are §5.9(b)(1), (2), and (4)-(7).

II. Fish and Aquatic Resources RSP

To accomplish the goal of characterizing existing fish and aquatic resources in both the Morgan Falls reservoir and the Chattahoochee River downstream of the dam, Georgia Power would conduct two seasonal surveys of the reservoir, tailrace area, and two representative locations in the Chattahoochee River downstream of the project. The study methodology outlined in the RSP provides for boat electrofishing as the primary sampling method; however, seining, passive trapping, and backpack electrofishing would be utilized in shallow reservoir and riverine habitats where it would be safe for field personnel to wade. Sampling events would occur in the spring and fall to capture seasonal variation in species composition, relative abundance, and life-stage composition. Up to five sampling locations would be determined for the reservoir and three locations in the Chattahoochee River between Morgan Falls dam and the confluence with Peachtree Creek. Physical habitat in the reservoir would be visually assessed and documented with regards to substrate type, depth, bank features, fish cover, aquatic vegetation, and riparian zone condition. Visual assessment of physical habitat in the river would follow standard Georgia Department of Natural Resources (DNR) operating procedures for assessing riffle/run prevalent streams.

The RSP also directs a comparison of observed trends in flows downstream of the project to the habitat-discharge relationships developed for trout and angling by Nestler et al. (1986). Georgia Power would use any accessible flow and habitat data concurrently being collected by the United States Geological Survey (USGS) as part of a separate Instream Flow Incremental Methodology (IFIM) study in the reach to verify or refine habitat-discharge relationships computed by Nestler et al. (1986) for trout as they relate to shoal bass. To further verify and/or refine the use of the Nestler et al. (1986) habitat-discharge relationships for assessing flow effects on shoal bass habitat, Georgia Power would also conduct a literature review to relate known shoal bass habitat use in other rivers in Georgia and Florida (e.g. Wheeler and Allen (2003)) to the habitat-discharge relationships developed by Nestler et al. (1986).

At the conclusion of the study, a fish and aquatic resources study report would be prepared by Georgia Power and distributed to the participants for review and comment.

III. Commission Staff's Study Plan Determination

In its SPD issued on November 26, 2004, Commission staff made a number of modifications to Georgia Power's fish and aquatic resources study plan. First, staff determined that a minimum as opposed to a maximum of five locations should be sampled in the reservoir to ensure that all habitat types are covered. The SPD directs Georgia Power to divide the reservoir shoreline into five sections and then select one sample location in each of the sections. The SPD further directs Georgia Power to

conduct its electrofishing runs for a minimum of 30 minutes at each location; measure and record lengths and weights for any trout, black bass, bluegill, redear sunfish, yellow perch, and chain pickerel that are sampled; use a minimum sample size of 100 fish of stock-size and larger to determine length-frequency distributions; conduct three quadrant hauls in each of the shoreline sections used for establishing boat electrofishing locations; and consult with Georgia DNR, FWS, and NPS prior to selecting fish sampling locations downstream of the dam. The SPD also directs Georgia Power to provide raw benthic macroinvertebrate data collected by the Chattahoochee River National Recreation Area as described on page 62 of Georgia Power's Pre-application Document (PAD).

IV. Interior's Alternative Study Proposal

The focus of Interior's dispute is the habitat-discharge assessment element of the RSP. Interior contends: (1) the habitat-discharge relationships developed by Nestler et al. (1986) are outdated based on its assertion that appreciable channel changes may have occurred in the reach since the 1980s; (2) too few transects were used by Nestler et al. (1986) to characterize the habitat; (3) Nestler et al. (1986) focused too heavily on shoal areas and not enough on non-shoal areas and the species that inhabit them, including striped bass; and (4) Nestler et al. (1986) did not include a water temperature analysis as part of its overall flow-habitat analysis. To counter these alleged deficiencies, Interior proposes an IFIM-based assessment using Physical Habitat Simulation System (PHABSIM) computer modeling recommended by the NPS in a letter filed on May 12, 2004. The assessment would be conducted over the course of two field seasons to ensure that a sufficient amount of useable data would be collected for analysis.

A. Description of the goals and objectives of Interior's study proposal and the information to be obtained ((§ 5.9(b)(1))

Interior adopts the flow study proposal of the NPS, which states that the goal of the instream flow study is to quantify how project operation affects instream flow habitat availability in the 12-mile reach of the Chattahoochee River between Morgan Falls dam and the Peachtree Creek confluence. Interior asserts that the study results would inform a decision by the FWS on the need for a fishway at the project by aiding FWS' understanding of project effects on downstream habitat, the amount and quality of the existing habitat, and the flows needed to encourage successful migration of fish upstream of the project. Thus, the over-all goal of the proposed study is to acquire information regarding the relationship between fish habitat and flow regimes downstream of the project dam to inform FWS regarding its fish passage decision-making. We conclude that because Interior has stated its goals and objectives and the information to be obtained, it has met the requirements of this section.

Although we have concluded that Interior has met the requirements of this section, we are concerned that Interior has not set forth a cogent study design or plan to analyze

habitats generally or for any specific species or guilds. There are multiple approaches to habitat analyses encompassed within the broad concept of IFIM. With particular regards to using the PHABSIM as part of an IFIM study, proper scoping of the issues to be addressed by the PHABSIM is important to the development of a PHABSIM analysis. Consider that PHABSIM is a collection of models used to determine the relative value of a targeted habitat for a particular species over a range of flows (Bovee et al. 1995). The selection of the appropriate PHABSIM habitat model depends on the ecological hypotheses to be tested. For instance, one might use PHABSIM's HABTAV microhabitat model as opposed to the HABTAE microhabitat model if one's study objective would be to determine the flow in a study reach that would optimize feeding habitat for a particular species (Bovee et al. 1995). We, therefore, find that it is insufficient to request an IFIM study without being more specific about what field studies are to be done, how sites are to be selected, and how the data will be analyzed to answer specific questions that would inform fish passage decisions. Furthermore, we conclude that PHABSIM output is but one of many tools available for addressing Interior's questions.

B. Relevant resource management goals over the resource to be studied (§ 5.9(b)(2))

The resource to be studied is fish habitat (depth, flow, and substrate) downstream of the dam. In its December 16, 2004, filing, Interior notes its section 18 fishway prescription authority under the FPA and states that its proposed flow study would assist the FWS in determining the appropriateness of providing fish passage at the project. In its January 25, 2005, filing, FWS adds that the relevant type of information that it needs to inform a fish passage decision includes project effects on fish and fish habitat, status of habitats downstream of the project, quality or potential to restore habitats downstream of the project, and the possibility for restoration or improvement of fish runs.

In this instance, Interior and FWS have identified the need to know the condition of the downstream habitats in order to decide what types of fishway measures should be implemented at the project. We agree that this information would be helpful to inform its goal of making a fish passage decision, and conclude that Interior's proposed study meets the requirements of this section.

C. Existing information concerning the subject of Interior's study proposal, and the need for additional information (§ 5.9(b)(4))

The PAD provides water temperature data collected in the reservoir in February, May, and August 2003 and in the river downstream of the project at 30-minute intervals from July 3 to November 6, 2003. The PAD also notes that water temperature data are collected by the USGS in the project tailrace (gage no. 02335815). Although not the subject of this dispute, Georgia Power's Water Resources RSP directs quarterly water

quality monitoring, including water temperature monitoring, at four locations in the project reservoir during the year 2005. Additionally, the RSP directs continuous water temperature monitoring at 13 locations scattered both within, upstream, and downstream of the project, including tributaries to the reservoir, from May through October 2005. Together the existing and collected water temperature information could be compared to known temperature preferences for a particular species of interest to determine whether any temperature barriers to movement would be present in the project area.

Table 11 of the PAD lists fish species known to be present in the project area, including the 12-mile reach downstream of Morgan Falls dam. The Fish and Aquatic Resources RSP directs fish surveys in the project tailrace area and two other locations in the Chattahoochee River between Morgan Falls dam and the confluence with Peachtree Creek. The downstream surveys would be useful to assess whether particular fish or groups of fish (e.g., groupings by swimming ability, body type, etc.) that may be targeted for passage are distributed throughout the reach, including the project tailrace. Absence of the species from certain locations could trigger an investigation into whether fish passage barriers (e.g., shallow shoal depths) exist.

Nestler et al. (1986) provides the results of an IFIM analysis using PHABSIM in the 48-mile reach of the Chattahoochee River from Buford dam to the confluence of Peachtree Creek. The study area includes the 12-mile reach downstream of the project dam. The purpose of the study was to predict the effects on trout habitats (adult brook trout, brown trout, and rainbow trout and juvenile brown trout) and recreation uses (wade fishing, power and non-power boat fishing and tube fishing) due to a proposed dam to be used to re-regulate Buford dam flow releases. Nestler et al. (1986) identified three discrete trout habitat types within the 48-mile reach: pools, shoals, and runs to establish study transect locations.

Interior contends that the habitat-discharge relationships developed by Nestler et al. (1986) are outdated based on a determination that appreciable channel changes have occurred in the reach since the 1980s. To support its finding, Interior includes with its notice of study dispute, cross-sectional profiles of the Chattahoochee River taken by the USGS in April 1980 and August 2001 at gage no. 02336000, which is located at about river mile (RM) 305. The profiles show a reduction in the cross-sectional area at one point in the river of about 11 percent. At our technical conference on January 19, 2005, Georgia Power pointed out that the transect endpoints were missing from Interior's cross-sectional profiles. Georgia Power re-plotted the data with the missing endpoints and determined that the channel area reduction was 8.9 percent. We don't view the difference between Interior's and Georgia Power's cross-sectional area estimates to be significant (in both cases, the reduction is about 10 percent).

We note that the degree of *temporal* change at this cross-section is very likely well within the range of *spatial* variation within sections of a channel that one-

dimensional (transect-based) PHABSIM hydraulic models assume are uniform through space and time. Recognizing that channels are never completely uniform, consider that two transects spaced one foot apart are likely to be more similar than two spaced ten feet apart, and so on (concept of distance decay). The “habitat mapping” technique used by Nestler et al. (1986) attempts to limit this variation in distance by recognizing distinct habitat features within the reach, like riffles, runs, and pools, to a precision wherein the variation *between* these different habitat-types is perceived by the observer to be less than variation *within* a habitat-type. Nevertheless, because channels are never completely uniform, variation will still exist.

PHABSIM has long been applied to even active alluvial rivers by using the concept of a dynamic equilibrium mosaic (one that assumes that large-scale channel properties are stable even though any one location changes over time). This concept is assumed appropriate where the export of sediment from the reach balances deposition, and means essentially that a change in one direction and location (e.g., local scouring of a bank) is offset by an opposing change somewhere else. We, therefore, might pause to question whether the hydraulic modeling conducted by Nestler et al. (1986) would be representative of conditions today if there was evidence that sediment deposition was exceeding sediment export (aggradation) in the reach or sediment export was exceeding supply (degradation). This situation of instability would ultimately lead to changes in channel dimension, pattern, and profile (Rosgen 1986), which would lead to changes in the hydraulics of the channel. Georgia Power’s plots of stage versus cross-sectional area at USGS gage no. 02336000 for the period 1974-1984 and 1985-2001 shows that the relationship between depth and area has not changed. Further, Georgia Power’s plots of the April 1980 and August 2001 profiles shows that the channel width likewise has remained unchanged. These observations lead us to conclude that although the channel changes shape, the channel has remained stable with no convincing evidence of aggradation or degradation, and therefore, that the hydraulic portion of the study is representative of conditions today.⁷

Interior also dismisses the flow study by Nestler et al. (1986) by stating that there were too few study transects. Unfortunately, Interior neither offers what it considers to be a suitable number of transects nor explains the technical reasons for why the Nestler et al. (1986) transects do not adequately characterize the habitat in the reach. Although additional transects could add more precision to the analysis (Bovee and Bartholow

⁷ In a letter filed on January 25, 2005, Interior asserts that the channel is unstable, because the USGS has needed to make 79 adjustments of its stage-discharge relationship at gage no. 02336000 over the last 20 years. However, it is precisely because the stream channel is dynamic that the USGS needs to frequently adjust the gage to maintain extremely precise flow readings at virtually any point in time. In no way does this situation imply a condition of instability.

1995), we have been offered no compelling reason for why additional precision is needed in this instance to inform fish passage decisions.

As it relates to testing the hypothesis of whether existing or alternative flow regimes affect fish passage through the reach, the main value that we see with the Nestler et al. (1986) study is that the cross-sectional and hydraulic information⁸ can be useful for conducting a general assessment of the ability of certain fish species to navigate through shoals in the reach. As an example, Bulak and Jöbsis (1989) recommend a channel slot depth of at least 18 inches deep by 10 feet wide for passage of striped bass in South Carolina. This information could be cross-checked against the channel profiles for shoals generated by Nestler et al. (1986) to determine the ability of striped bass and other species of interest to navigate shoals at different flows. As noted by Georgia Power, it would also have available the PHABSIM data presently being collected for NPS by USGS at two shoal locations between Morgan Falls Dam and Peachtree Creek.

On pages 4 through 8 of the Fish and Aquatic Resources RSP, Georgia Power provides an extensive list of other fishery inventories, investigations, creel surveys, etc., that have been conducted or are currently being conducted (e.g., ongoing USGS IFIM study). Most of this information has not been filed with the Commission or is otherwise not easily accessible to us; however, it is clear to us that the Chattahoochee River in the project area has received an extensive amount of attention with regards to understanding its aquatic resources.

To conclude this section, we note that Georgia Power releases from Morgan Falls dam, on a daily basis, 37 to 42 percent of annual average discharge and is contractually obligated to release sufficient minimum flow to provide 750 cfs at Peachtree Creek. During 2004, the minimum flow releases varied between 849 cfs and 1,164 cfs. Morgan Falls dam modulates the extreme fluctuations of the river above the project reservoir caused by releases from Buford dam that vary from 600 cfs to over 10,000 cfs on a daily basis. The result of these facts is that there is almost always a volume of flow between Morgan Falls dam and Peachtree Creek providing the depths and channel widths necessary for passage of even very large fishes. For instance, Nestler (1986) reported that at the shoal at RM 305.55 (Devil's Race Course), four miles above the end of the 12-mile reach, the average depth at 1,000 cfs was 1.4 feet. In the run/gravel bar at RM

⁸ We have been unable to locate the actual data collected by Nestler et al. (1986); however, John Nestler provided us with a more detailed version of his report which we are filing concurrently with our recommendations and findings. The report contains cross-section geometry for 16 transects, along with water surface elevations for 1,000; 1,500; and 2,000 cubic feet per second (cfs). While these data are presented only graphically, they could easily be quantified with reasonable accuracy, because they are drawn to scale.

303.88, at 1,000 cfs, the average depth was 1.8 feet. It may be inferred that depths in the thalweg of the river were deeper than the average.

Thus, even in times of drought, when releases from Morgan Falls dam may drop towards the minimum flow of 750 cfs (that is, if the Corps decides not to make peaking flow releases at Buford dam), there are very likely to be channels of sufficient depth and width to allow movement of any river species up or down the river. Most of the year, the volumes of flow and river depths and channel widths will be much larger. The prevailing flows and channel dimensions have supported a vibrant put-grow-take trout fishery for decades, and it is of record that striped bass have already migrated upstream to the tailrace of Morgan Falls dam from a downstream reservoir. These data are strong indicators that flow depths, velocities and substrates are not a limiting factor to migration of fishes in the Chattahoochee River. Interior has not provided a rationale for why these and other existing data, coupled with the ongoing NPS/USGS study and the studies proposed by Georgia Power in the RSP will not be sufficient to inform its fish passage decision-making.

D. Nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied and how the study results would inform the development of license requirements (§ 5.9(b)(5))

Sections 4.2.2 and 4.2.3 of Scoping Document 1 for the project (issued by the Commission on March 11, 2004) identifies project flow effects on water quality and fishery resources as issues to be assessed in Commission staff's environmental assessment. Project flows alone or in conjunction with water withdrawals could enhance or adversely affect fish passage in the reach downstream of Morgan Falls dam; therefore, direct and cumulative nexuses exist among project operations, water withdrawals, and fish passage.

Interior has not set forth a cogent study design or plan to analyze habitats generally or for any specific species or guilds. Although Interior has broadly identified the issue of whether existing or alternative flow regimes would affect fish passage through the reach, Interior has not stated what field studies are to be done, how sites are to be selected, and how the data will be analyzed to answer specific questions that would inform fish passage decisions; therefore, it's not clear how the results of Interior's proposed study would inform the development of fish passage license requirements any better than the existing data or the data that would be acquired through implementation of Georgia Power's RSP, as modified by the SPD (see also our related discussion in section C).

E. Consistency of Interior's study methodology with generally accepted practice in the scientific community (§ 5.9(b)(6))

The use of the IFIM and PHABSIM has wide application and acceptance for investigating alternative management options involving flow and riverine habitats. However, Interior has not clearly identified the PHABSIM study methodology or even a clear frame work for establishing such a methodology. We, therefore, are unable to assess with any certainty whether Interior's application of the PHABSIM would be consistent with that which is generally accepted in the scientific community.

F. Consideration of level of effort and cost and why Interior's proposed alternative study would or would not meet the stated information needs (§ 5.9(b)(7))

In its letter filed May 12, 2004, NPS estimates that the IFIM study of the magnitude it proposes would cost around \$250,000. We hesitate to put much confidence in this estimate because of the information gaps associated with the study methodology.

Interior has not set forth a cogent study design or plan to analyze habitats generally or for any specific species or guilds. Although Interior has broadly identified the issue of whether existing or alternative flow regimes affect fish passage through the reach, Interior has not stated what field studies are to be done, how sites are to be selected, and how the data will be analyzed to answer specific questions that would inform fish passage decisions; therefore, it's not clear what Interior's proposed study would cost (in terms of dollars or effort) or how it would meet Interior's stated information needs any better than the studies required by the RSP and SPD. Thus, the Panel finds that the study proposed by Interior is not cost-effective in providing an information return that will inform license conditions.

V. Findings and Recommendations of the Panel

Interior has proposed that Georgia Power be required to conduct an "IFIM Study;" however, Interior has failed to provide much in the way of a study scope (e.g., ecological hypotheses, species or guilds to be targeted, etc.). During discussions at the technical conference regarding information on the need for the study and the species to be tested, Interior stated generally that the study is needed to inform their decision-making on fish passage but did not identify the specific species or guilds that they want to be studied, and more particularly, precisely how (see Technical Conference transcripts at pp. 75-77 and 89-90, filed on January 19, 2005).

In this instance, we find the lack of any specificity with regards to the scope of Interior's proposed study to be problematic. The lack of precision with regards to the proposed flow study does not allow us to discern with any reasonable certainty the costs or effort that would be associated with the study, whether the study's use of the

PHABSIM would be consistent with generally accepted practice, and how the information would be used to further inform a fish passage decision. We also find that the existing data, coupled with the ongoing NPS/USGS study and the studies proposed by Georgia Power in the RSP, as modified by the SPD, would be sufficient to inform Interior's fish passage decision-making, and we conclude that Interior has not provided sufficient rationale to indicate otherwise.

In consideration of the record of information before us, the procedures set forth under 18 C.F.R. §5.14(k), and the criteria of 18 C.F.R. §5.9(b), we recommend that the Commission's Director of the Office of Energy Projects deny Interior's request for FWS' "IFIM Study," and instead direct Georgia Power to implement its Fish and Aquatic Resources RSP, as modified and approved by Commission staff's SPD.

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