



United States Department of the Interior
Office of the Solicitor
1849 C Street NW
Washington, D.C. 20240

December 16, 2004

Electronically Filed

Magalie R. Salas, Secretary
Federal Energy Regulatory Commission
888 First St, NE
Washington, DC 20426

Re: Morgan Falls Hydroelectric Project, FERC No. 2237 – Notice of Study Dispute

Dear Ms. Salas:

Pursuant to Federal Energy Regulatory Commission (Commission) regulations implementing the Commission's Integrated Licensing Process, 18 C.F.R. § 5.1 *et seq.* (2004), hydropower license applicants must prepare and implement a Commission-approved study plan. In accordance with those regulations, the United States Fish and Wildlife Service (FWS) and the National Park Service (NPS), both component bureaus of the Department of the Interior (Department), submitted initial study requests for the Morgan Falls Hydroelectric Project (Project) relicensing, FERC No 2237-013, on May 14, 2004 and May 11, 2004, respectively. Similarly, the Upper Chattahoochee Riverkeeper Fund, Inc. (UCR) submitted an initial study request on May 14, 2004, which included a request for an erosion and sedimentation study.

On June 26, 2004, Georgia Power issued a Proposed Study Plan (PSP) for the Project relicensing proceeding. Georgia Power also held public meetings to discuss the PSP on July 28, 29 and 30, 2004; the NPS and FWS participated in those meetings. The FWS submitted comments on the PSP on September 23, 2004, while the NPS submitted its comments on September 24, 2004. The UCR submitted its comments on September 27, 2004, including a revised erosion and sedimentation request. One month later, on October 26, 2004, Georgia Power filed a Revised Study Plan (RSP) for the Project relicensing proceeding. The Department, on behalf of the FWS and NPS, filed comments on Georgia Power's RSP on November 10, 2004. A short time later, November 26, 2004, the Commission issued a Study Plan Determination (SPD) for the Project relicensing.

The Department does not believe that its comments and concerns, including requests, comments, and concerns submitted by NPS and FWS earlier in the process, have been sufficiently addressed in the Commission's SPD. As more fully explained below, the Secretary

of the Interior (Secretary), through the FWS and NPS, has mandatory conditioning authority pursuant to sections 18 and 4(e) of the Federal Power Act (FPA), respectively, in this relicensing proceeding. Further, the Department seeks dispute resolution over studies that pertain directly to the Secretary's section 4(e) and section 18 authorities.

Consequently, pursuant to 18 C.F.R. § 5.14(a), the Department, on behalf of the FWS and NPS, notifies the Commission of study disputes and requests dispute resolution regarding the following studies, found in the RSP and approved in the Commission's SPD:

1. Geology and Soils Study,
2. Water Resources, and
3. Recreation and Land Use.

These three studies do not adequately replace the studies requested by the NPS and/or FWS earlier in this relicensing proceeding, in particular:

1. May 11, 2004 NPS Study Request No. 1: "An Assessment of Shoreline Affects Resulting from the Operation of Morgan Falls Dam;"
2. May 11, 2004 NPS Study Request No. 3: "Inventory of riparian areas/wetlands and sediment processes in the Chattahoochee River corridor;"
3. May 11, 2004 NPS Study Request No. 5: "Comprehensive Recreational Study;"
4. May 11, 2004 NPS Study Request No. 6: "The effects of dredging upon native aquatic organisms;"
5. May 11, 2004 NPS Study Request No. 8: "Effects of project operations on instream flow and habitat availability for selected aquatic habitat;"
6. May 14, 2004 FWS Study Request No. 1: "IFIM Study (submitted by National Park Service);"
7. May 14, 2004 FWS Study Request No. 7: "Erosion and Sedimentation of Bull Sluice Lake (submitted by Upper Chattahoochee Riverkeeper);"¹
8. May 14, 2004 FWS Sediment Study Request No. 8: "Sediment Contaminants Study."²

In the spirit of cooperation, and for the sake of simplicity, the Department has organized the disputed components of these previously submitted study requests into three areas: (1) Geology and Soils: a comprehensive study regarding the presence, distribution rates, and contaminant toxicity of sediments in Bull Sluice Lake, (2) Water Resources: a Site-Specific Instream Flow Incremental Methodology (IFIM) study, and (3) Recreation and Land Use: a study

¹ The FWS, in its May 14, 2004 request for studies, expressly requested that Georgia Power conduct the erosion and sedimentation study requested by UCR. Although the FWS did not submit an identical study request, the Commission's regulations do not prohibit agencies from requesting studies through reference to another requester's study request. 18 C.F.R. § 5.14(a) provides, "any Federal agency with authority to provide mandatory conditions on a license pursuant to FPA section 4(e), 16 U.S.C. § 797(e), or to prescribe fishways pursuant to FPA section 18, 16 U.S.C. § 811 . . . [to] file a notice of study dispute with respect to *studies pertaining directly to the exercise of their authorities.*" (Emphasis added). The only requirement of section 5.14(a) is that the study request pertain to the exercise of an agency's mandatory authority. Consequently, to the extent the UCR's study relates to the Secretary's 4(e) and 18 authorities, the Department can request dispute resolution regarding such request.

² All pertinent study requests are attached as Appendix B.

concerning recreation below the Project dam.

Additionally, in accordance with 18 C.F.R. § 5.14(b), the Department hereby names Mr. Gerald Thornton, Esq., Department of the Interior, Office of the Solicitor, as the Department's, including FWS' and NPS', representative for all disputed studies. (Contact information included in Appendix A). To date, Mr. Thornton has had no involvement in this relicensing proceeding and meets the requirements of 18 C.F.R. § 5.14(d)(2). Additionally, the Department recommends that the studies for which it seeks dispute resolution be resolved by a single panel. As stated in 18 C.F.R. § 5.14(d), "[w]ithin 20 days of a notice of study dispute, the Commission will convene one or more three-person Dispute Resolution Panels, as appropriate to the circumstances of each proceeding." The Department believes that a single three-person panel, informed by subject matter experts at the requisite technical conference(s), will provide the most effective means of resolving the study disputes.

I. The Department, through NPS and FWS, is a Federal agency with authority to provide mandatory conditions pursuant to section 4(e) and to prescribe fishways pursuant to section 18.

The Commission's regulations allow "any Federal agency with authority to provide mandatory conditions on a license pursuant to FPA section 4(e), 16 U.S.C. § 797(e), or to prescribe fishways pursuant to FPA section 18, 16 U.S.C. § 811 . . . [to] file a notice of study dispute with respect to studies pertaining directly to the exercise of their authorities." 18 C.F.R. § 5.14(a). As explained more fully below, the Secretary, through the NPS and FWS, has both section 4(e) and 18 authority in this licensing proceeding.

A. The Secretary's section 18 authority.

Section 18 of the FPA reads, "[t]he Commission shall require the construction, maintenance, and operation by a licensee at its own expense of such . . . fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as necessary." 16 U.S.C. § 801. By the FPA's plain terms, the Secretary, through the FWS, has the authority to prescribe fishways at the Project pursuant to section 18. As noted above and detailed below, the FWS has requested certain studies in accordance with 18 C.F.R. § 5.9(b) that directly pertain to the Secretary's section 18 authority.

B. The Secretary's section 4(e) authority.

Section 4(e) of the FPA authorizes the Commission to issue licenses to operate hydropower projects in waterways that fall under Federal jurisdiction, on public lands and Federal reservations, and for the purpose of utilizing surplus water or power from a Federal dam. 16 U.S.C. § 797(e). Absent specific Congressional authority, the FPA prohibits the issuance of licenses to operate hydropower projects within the boundaries of National Parks and National Monuments. 16 U.S.C. § 797a. This general prohibition does not extend, however, to National Recreation Areas under the Secretary's jurisdiction, which along with National Parks and

National Monuments, are part of the National Park System.³

To the extent the Commission is authorized to issue a hydropower license for the operation of a project within a National Recreation Area, section 4(e) of the FPA, 16 U.S.C. § 797(e),⁴ authorizes the Secretary to determine conditions necessary for the protection and utilization of the National Recreation Area. *See City of Seattle, Washington, Skagit River Project*, 71 FERC ¶ 61,159 n. 29 (1995) (referring to Ross Lake National Recreation Area and stating, “these lands constitute a ‘reservation’ within the meaning of Section 3(2)”); 75 FERC § 61,319 n. 13 (1996) (stating, “[b]oth the Recreation Area and the National Park are federal reservations within the meaning of Section 3(2) of the FPA”); *Seattle City Light, Newhalem Creek Hydroelectric Project*, 78 FERC ¶ 62,097 (1997) (ordering 4(e) conditions for the protection and utilization of Ross Lake National Recreation Area and including them in Appendix B to the license issued).

In determining whether the Secretary has section 4(e) authority, the critical question is whether “any” or “some” project works are within a reservation administered by the Secretary. In *Escondido Mutual Water Co. v. La Jolla Band of Mission Indians*, 466 U.S. 765, 780-84 (1984), the Supreme Court concluded that the Commission must only include conditions necessary for the protection and utilization of reservations in which project works are located. In so doing, the Court stated, “Congress intended the obligation of the Commission and the conditioning authority of the Secretary to apply only with respect to the specific reservation upon which *any project works* were to be located and not to other reservations that might be affected by the project.” *Id.* at 782 (emphasis added). Later, the Court reiterated the same point, “Congress concluded that reservations were not entitled to the added protection provided by the proviso of § 4(e) unless *some of the licensed works* were actually within the reservation.” *Id.* at 784. Thus, as long as “any” or “some” part of a project is within a reservation under the Secretary’s administration, the Secretary has 4(e) authority to determine conditions necessary for the protection of the reservation.

In this case, the Project lies within the authorized boundary of the Chattahoochee River National Recreation Area (CRNRA). *See Georgia Power, Pre-Application Document*, at X (Summary). The CRNRA includes a “forty-eight-mile segment of the Chattahoochee River and certain lands in the State of Georgia from Buford Dam downstream to Peachtree Creek” and consists of “the river and its bed together with the lands, waters, and interests therein within the boundary” of the CRNRA.. 16 U.S.C. § 460ii. Congress established the CRNRA on August 15, 1978 in order to protect and preserve “the natural scenic, recreation, historic, and other values” of

³ The National Park Systems includes, “any area of land and water now or hereafter administered by the Secretary of the Interior through the National Park Service for park, monument, historic, parkway, recreational, or other purposes.” 16 U.S.C. § 1c.

⁴ Section 4(e) of the FPA, 16 U.S.C. § 797(e), provides in pertinent part:

licenses . . . shall be subject to and contain such conditions as the Secretary of the department under whose supervision such reservation falls shall deem necessary for the adequate protection and utilization of such reservation.

the area designated as the CRNRA. *Id.* The CRNRA is part of the National Park System, 16 U.S.C. § 1c, and is administered by the NPS, on behalf of the Secretary, “for the conservation and management of historic and natural resources, including fish and wildlife.” 16 U.S.C. § 460ii-2.5

Consistent with the CRNRA’s enabling legislation, 16 U.S.C. § 460ii *et seq.*, and the geographic scope of the CRNRA, NPS’ authority within the CRNRA extends to the “river and its bed” as well as the “lands, waters, and interests therein” within the boundary of the CRNRA. Thus, NPS’ administration of the CRNRA generally extends to all lands and waters within the recognized boundary of the CRNRA. This includes sixteen NPS land units, defined in or acquired by the United States pursuant to the CRNRA’s enabling legislation, along the Chattahoochee River upstream, downstream, adjacent to, or within the boundaries of the Project. *See Georgia Power, Pre-Application Document* § 3.3. The sixteen units of the CRNRA total approximately 6,800 acres, of which the United States owns ownership interests in over 3,900 acres. Three of these CRNRA units - Gold Branch, Vickery Creek, and Island Ford - abut the Project. *Id.* Two of those CRNRA units, wherein the United States holds ownership interests – Vickery Creek and Island Ford – extend into the project.⁶ *Id.* Thus, it is indisputable that the Project occupies NPS lands within the CRNRA that are owned by the United States, so the Project is within a Federal reservation⁷ for FPA purposes. Any license the Commission issues to Georgia Power for the operation of the Project is subject to the Secretary’s section 4(e) authority.⁸

⁵ For a detailed discussion of the Secretary’s and NPS’ authority over and responsibilities at the CRNRA, please see NPS letters to the Commission dated May 11, 2004 and September 23, 2004.

⁶ Georgia Power has estimated that the United States (*i.e.*, NPS) holds ownership interests in approximately 47 acres of lands within the Project boundary. *See* Letter from Georgia Power to the Commission (Nov. 15, 2004). These lands are located within the Vickery Creek and Island Ford units of the CRNRA.

⁷ The FPA, 16 U.S.C. § 796(2), defines “reservations” as:

national forests, tribal lands embraced within Indian reservations, military reservations, and other lands and interests in lands owned by the United States, and withdrawn, reserved, or withheld from private appropriation and disposal under the public land laws; also lands and interests in lands acquired and held for any public purposes; but shall not include national monuments or national parks.

⁸ In determining whether the Secretary has 4(e) authority, it is irrelevant whether a licensee holds flowage interests over a reservation. *See Wisconsin Valley Improvement Co. v. FERC*, 236 F.3d 738, 742 (D.C. Cir. 2001). In *Wisconsin Valley*, the project inundated one-half acre (1/2 acre) of the Lac Vieux Desert Indian Reservation, which is administered by the Department, through the Bureau of Indian Affairs. *Id.* at 741. The Department conditioned a wild rice enhancement plan to provide for the continued presence of wild rice along the project’s reservoir on reservation lands. The D.C. Circuit upheld the condition, reasoning that “the United States need not even hold land in fee simple absolute for it to operate a ‘reservation.’ It is enough that the government own an ‘interest’ in the land.” *Id.* at 742 (citing *Escondido*, 466 U.S. at 781). The D.C. Circuit also identified other orders in which the Commission concluded that lands owned by the United States but subject to a citizen’s easement remain lands of the United States and reservations for FPA purposes. *Id.* at 742-43 (citing *South Carolina Elec. & Gas Co.*, 75 FERC ¶ 61,038 n. 9 (1996) and *Town of Estes Park*, 75 FERC ¶ 61,245 (1995)). Accordingly, to the extent Georgia Power asserts a flowage easement over reservation lands in this proceeding, it is irrelevant as to whether the Secretary has section 4(e) authority to ensure the protection and utilization of the CRNRA.

II. The Department, on behalf of the NPS and FWS, as an agency with mandatory authority pursuant to section 4(e) and section 18 of the FPA, can file notice of study dispute in accordance with 18 C.F.R. § 5.14.

18 C.F.R. § 5.14(a) states that “any Federal agency with authority to provide mandatory conditions on a license pursuant to FPA section 4(e), 16 U.S.C. § 797(e), or to prescribe fishways pursuant to FPA section 18, 16 U.S.C. § 811 . . . may file notice of study dispute with respect to studies pertaining directly to the exercise of their authorities under section 4(e) and 18.” Section 5.14(a)’s express language makes clear that “any Federal agency” with mandatory authority in a given proceeding can request dispute resolution over a study that pertains directly to its mandatory authority. Section 5.14(a) makes no exception for those instances where the Secretary’s 4(e) authority arises from NPS lands administered as part of a National Recreation Area. In this case, as outlined above, the Secretary has section 4(e) authority to determine conditions necessary for the protection and utilization of the CRNRA, as well as, section 18 authority to prescribe fishways for the purpose of providing safe, timely, and effective fish passage at the Project.

Apparently, there has been some confusion over this point. In a November 15, 2004 letter to the Commission, Georgia Power incorrectly states that the Commission’s 2004 regulations prohibit the NPS from requesting study dispute resolution pursuant to 18 C.F.R. § 5.14 even if the Secretary, through the NPS, has 4(e) authority in this relicensing. Georgia Power’s confusion stems from the Commission’s July 23, 2003 Final Rule and Tribal Policy Statement, which states:

141. Interior [the Department] contends that the National Park Service should be eligible for formal dispute resolution with respect to study recommendations that relate to potential project impacts on a unit of the National Park System or other areas of special management concern, such as National Recreation Areas. Interior [the Department] offers no basis for distinguishing these studies related to FPA Section 10(a) recommendations from those of other entities, and we see none.

However, the provision above does not state – under any rule of interpretation - that the Secretary or NPS is barred from requesting dispute resolution pursuant to 18 C.F.R. § 5.14 in those instances where the Secretary has 4(e) authority to determine conditions necessary for the protection and utilization of a NPS National Recreation Area. Instead, the provision above simply states that NPS study requests that fall under and pertain to section 10(a) of the FPA, 16 U.S.C. § 803(a), should be treated the same as section 10(a) study requests from other entities. Furthermore, to be clear, *neither the Department nor the NPS at anytime during the Commission’s rulemaking process stated that the Secretary or NPS would not have section 4(e) authority when a license is sought to operate a hydropower project within a National Recreation Area.*

Rather, the Department, in its April 21, 2003 comments on the Commission’s draft rule,

urged the Commission to extend study dispute resolution to NPS study requests that do not directly pertain to section 4(e) authority. On page 28 of those comments the Department proposed the following amendment to what became 18 C.F.R. § 5.14(a):

any Federal agency with authority to provide mandatory conditions . . . or *the National Park Service for units of the National Park System, Heritage Areas or National Historic Landmarks that are [1] affected by an upstream or downstream project and [2] are not subject to FPA Section 4(e) authority*

(Additional language proposed was italicized in original comments). Thus, it is clear that the Department and NPS were requesting that the Commission provide dispute resolution in those instances where (1) the Secretary, through NPS, requests studies that pertain to section 4(e), and (2) in those instances where the NPS requests studies that pertain only to section 10(a) of the FPA.

There are NPS areas, such as CRNRA and Ross Lake National Recreation Area, where NPS lands are occupied by project works, so the Secretary has section 4(e) authority to determine necessary conditions. There are also NPS areas that are impacted by a project's operations but are not occupied by project works and are not subject to the Secretary's section 4(e) authority, including some National Recreation Areas. The NPS often participates in relicensing proceedings and requests studies pursuant to section 10(a) when NPS areas are affected by project operations but are not subject to the Secretary's 4(e) authority. Ultimately, however, the Commission restricted study dispute resolution to agencies with mandatory conditioning authority and did not extend it to NPS study requests that pertain to section 10(a). The Commission did not, under any reasonable interpretation of 18 C.F.R. § 5.14, prohibit the Secretary or NPS from requesting study dispute resolution over a study request that pertains to the Secretary's 4(e) authority.

III. The Department's Study Disputes

A. General concerns with Georgia Power's RSP and the Commission's SPD

The Department believes that Georgia Power's RSP and the Commission's SPD fail to ensure the collection and analysis of data necessary to fully characterize the project's impacts and aid in the development of appropriate protection, mitigation, and/or enhancement measures. Likely impacts include the trapping of sediments behind Morgan Falls Dam, which alters the natural river substrate above the dam and depletes the river of sediments below the dam; shoreline erosion resulting from current project operations, including channel widening and bank failure due to ramping; and the alteration of flows (i.e., both upstream and downstream of the dam). Clearly, one of the ways of mitigating these impacts is to increase the operational flexibility of the project. This can be accomplished by increasing the total storage capacity of Bull Sluice Lake (i.e., by dredging sediment accumulations from within the reservoir). As acknowledged by the applicant in the PAD, storage capacity has decreased significantly since the dam's construction 100 years ago. Total storage decreased by an estimated 1/3 between 1960 and 2001 (PAD, 2004). Although Georgia Power maintains that sedimentation "now appears to

be approaching or have reached equilibrium within the Morgan Falls impoundment,” we do not see the relevancy of this statement. The extent to which 100 years of sediment accumulations limit total storage, and therefore the ability of the project to re-regulate flows from Buford remains unknown.

Regardless of whether sedimentation has reached or is reaching equilibrium, the Morgan Falls impoundment is responsible for trapping untold amounts of sediment which would have otherwise been transported downstream well beyond the project area. The presence of these sediment accumulations constrains the operational flexibility of the project. Therefore, it is possible that by increasing reservoir storage, operations at Morgan Falls could be re-designed such that pulse flows from Buford Dam could be further regulated; thus, enhancing ecosystem integrity and recreational use throughout the project area and beyond, and in particular, within areas owned and managed by the CRNRA.

Before sediment removal can be evaluated as an alternative mitigation measure, it is necessary to fully characterize the extent, distribution, and quality of the sediments, as well as the potential for biotransfer of sediment-borne contaminants trapped by Morgan Falls Dam. Studies proposed by NPS, FWS, as well as other stakeholders (including UCR), are designed to provide this information. With sediment removal as a potential alternative to increasing operational flexibility, our focus then shifts to mitigating flows below the dam. If we assume that increased storage capacity increases operational flexibility by some incremental amount, it then becomes essential to assess exactly how increased flexibility can result in improved flows below the dam. The instream flow study proposed by NPS and supported by others (including FWS, UCR) is designed to provide this information. Georgia Power proposes to use existing instream flow information to address this need; however, as discussed below, there is reason to believe that existing flow studies are dated and lack the ability to accurately “inform the development of license requirements,” as required 18 C.F.R. § 5.9(b)(5).

The Department does not believe that Georgia Power’s RSP or the Commission’s SPD adequately address these matters. Hence, the Department requests that the Commission reassess its SPD and work with the Department to come to a reasonable resolution of the Department’s study disputes.

B. Geology and Soils - Sediment and Erosion Studies

1. NPS Study Requests submitted on May 11, 2004

On May 11, 2004, NPS requested that Georgia Power conduct three discrete studies relating to sediment and erosion within the project boundary and in downstream areas also likely to be affected by project operations.

1. NPS Study Request No. 1: “An Assessment of Shoreline Affects Resulting from the Operation of Morgan Falls Dam;”
2. May 11, 2004 NPS Study Request No. 3: “Inventory of riparian areas/wetlands and sediment processes in the Chattahoochee River corridor;”

3. May 11, 2004 NPS Study Request No. 6: “The effects of dredging upon native aquatic organisms.”

In addition, NPS consulted with UCR in the development of its study request titled “Study Request to Analyze the Effects of Dam Operation on Erosion and Sedimentation in the Morgan Falls Project Area,” which was modified on September 27, 2004 by the UCR. NPS voiced support for this study request in its May 14, 2004 filing, and still supports the UCR’s request. The UCR’s study request is similar to and directly related to those submitted by the NPS on May 11, 2004. Both the NPS studies and UCR studies were filed in accordance with 18 C.F.R. § 5.9(b). These proposed studies, among others, were subsequently discussed in stakeholder meeting July 28-30, 2004 and in official filings on September 23, 2004 and November 10, 2004.

In principle, the three NPS studies requested that Georgia Power “assess the effects of the Morgan Falls Dam operation is having upon shoreline processes within Bull Sluice Lake and the Chattahoochee River downstream to the confluence of Peachtree Creek. This assessment would look at issues such as bank failure, erosion, sedimentation, riparian processes.” Further, NPS requested that Georgia Power “assess the nature and degree of sediment accumulation and related impacts to riparian zones and adjacent wetlands resulting from the presence of Morgan Falls Dam.” Finally, NPS requested that Georgia Power “assess the effect that basin dredging and other such potential activities may have upon park aquatic resources.” In addition, the sediment study proposed by UCR, among other things, sought to “Evaluate the impact of the sedimentation on the Lake’s storage capacity and how the decrease in storage capacity affects downstream flows.”

As noted above, the NPS is responsible for administering the entire CRNRA, which includes the Chattahoochee River, the River bed, and NPS lands units along the River. Three of those NPS units abut the Project reservoir, and two of those unites are within the project boundary and are inundated by the reservoir – where sedimentation is occurring. Furthermore, as stated in the NPS’ Draft General Management Plan and Environmental Impact Statement, some NPS goals and objectives at the CRNRA are to “implement measures to restore native species and natural habitats,” and “protect and restore natural aquatic and floodplain habitats in the park.” Furthermore, “sedimentation, coupled with the surge pattern of releases, have had major effects on the abundance, diversity, and production of aquatic life in the river.” Thus, the ability to quantify and mitigate these effects, particularly within the project boundary of the CRNRA from Island Ford to Morgan Falls Dam and beyond, is paramount to achieving these mandates.

2. FWS Study Requests Submitted on May 14, 2004

On May 14, 2004, FWS requested a study of the nature and extent of sediment-borne contaminants with Bull Sluice Lake and an assessment of biotransfer and/or bioaccumulation of sediment contaminants.

1. FWS Study Request No. 7: “Erosion and Sedimentation of Bull Sluice Lake (submitted by Upper Chattahoochee Riverkeeper);”

2. FWS Sediment Study Request No. 8: "Sediment Contaminants Study."

These two studies were not included in the Georgia Power's PSP or RSP, but were discussed during the July 28-30, 2004 stakeholder meetings. The UCR requested a study to analyze the effects of project operation on erosion and sedimentation in the Morgan Falls Project area. This study proposed, among other things, to "...evaluate the impact of the sedimentation on the Lake's storage capacity and how the decrease in storage capacity affects downstream flows." This study request involved evaluating dredging alternatives within the project area. Studying the effect of Morgan Falls Dam on erosion and sedimentation, and in turn the effect of these parameters on storage capacity, operational flexibility, and downstream flows, highlights the importance of evaluating dredging alternatives. By increasing storage capacity and operational flexibility of the project, dredging could provide the opportunity for improving flows downstream for the current aquatic community, as well as other diadromous fishes that could be in the project area during the license term. Dredging alternatives could result in the applicant's ability to enhance flows for these species in the downstream reach and encourage successful migration of fish upstream of the project. Therefore, the information gathered from this study, as it relates to downstream flows, will assist to develop resource goals and objectives and determine need and feasibility for fish passage for the project. The understanding of project effects on current downstream habitat, the amount and quality of downstream habitat, and enhancing flows for these species in the downstream reach to the extent possible become important to encourage successful migration of fish upstream of the project. This study is applicable to the evaluation of whether or not a fishway is appropriate at this project by addressing the effects of the project on fish, and determining existing habitat constraints and available habitat.

The FWS study request sought an assessment of sediment-borne contaminants that would "determine the presence/absence, levels, and distribution of contaminants in the surface sediments within the project boundary," and "aid in the understanding of the presence/absence of contaminants, threats to the aquatic community within the project boundary, and the distribution, and hence possibly the source, of the contaminants." Information from the sediment contaminants study assist the FWS in determining the need for current or future fish restoration and fish passage at a Project, as one of the factors the FWS considers is the status of upstream habitat. Determining Project effects on aquatic habitat, and in turn the condition and safety of that habitat if re-opened to the downstream fishery, helps develop the management goals and objectives for fish passage in that particular river system. Therefore, evaluating sediment contamination concentrated behind a dam in one of the fastest growing, most highly developed areas of the United States, such as Morgan Falls, is critical in determining project effects on the safety of the current aquatic community, as well as any species that could be passed upstream.

A sediment contaminants study would help the FWS determine whether the sediments settling out within Bull Sluice Lake are a source of contamination, are present at dangerous levels to bioaccumulate in the food chain, and cause cancer and reproductive and physiological effects to aquatic species. The study would identify the threats to the aquatic community that exist within the project boundary, the status of habitats upstream, and the quality or potential to restore habitats upstream. This information is appropriate to request in order to evaluate the potential for providing safe, timely and effective fish passage at the project.

3. Inadequacies of Current Information

In rejecting the Department's study requests, Georgia Power contends that the State of Georgia does not have criteria for contaminated sediments and that without applicable criteria, data from sediment sampling would not provide useful information for informing the development of license requirements. However, wildlife criteria for contaminated sediments are readily available in other states. The Department is willing to assist Georgia Power in determining appropriate criteria from the existing literature.

Georgia Power also asserts that the State of Georgia protects aquatic life from impacts from organochlorines, metals, and PAH's through promulgated water quality criteria and fish tissue testing, rather than sediment criteria. However, fish tissue sampling is fillet-only and is conducted to protect human health, not assess risk to the fish and wildlife community. The typical areas of high concentration that are consumed by fish and wildlife (e.g., liver, other areas of high fat content) are not analyzed; therefore, the level of contamination and associated effects to the fish and wildlife community is unknown in the project area. Also, Georgia Power is currently conducting water quality sampling, but this is restricted to the water column and does not include sediments. However, contaminants that tend to bioaccumulate are more often concentrated in fine sediments than in the water column. Thus, current testing sampling is inadequate.

4. Recommended Solution – Comprehensive Sedimentation and Erosion Study

The Department believes that the sediment, contaminants, and erosion-related study requests remain valid identified above. However, the Department only seeks a reasonable solution that meets its resource management goals and objectives. The department, therefore, proposes to combine the aforementioned study requests into a single *Comprehensive Sedimentation and Erosion Study*. The Department believes this approach is consistent with the Commission's regulations, in particular 18 C.F.R. 5.14, and the cooperative approach which lies at the heart of the Commission's ILP regulations. The Department has formatted this proposed solution in accordance with 18 C.F.R. § 5.9(b).

a) Description of Goals and Objectives

- Determine how project operations under various flow conditions affect shoreline erosion upstream and downstream of the dam, including an analysis under different alternatives including, but not limited to, a dredging alternative;
- Characterize sedimentation in the impoundment including the types/classes of sediments, age of sediments, contamination of sediments, movement of sediments within the impoundment, and variability in the rate of accumulation including past sedimentation and future anticipated sedimentation;

- Determine whether and to what degree sedimentation and/or scour downstream of Morgan Falls is exacerbated (or otherwise affected) by operations of Morgan Falls.
- Calculate the estimated volume of sediment in the impoundment using various field measurements and observations;
- Prepare a sediment map of the reservoir and compare with past data, to the extent relevant and available, to determine how ongoing project operations influence the geomorphology of the impoundment area, including cross-sectional surveys;
- Characterize bedload transport of sediment both upstream and downstream of the dam, taking into consideration future sedimentation, and the dredging alternative;
- Characterize the sediment loading occurring from tributaries that enter the Chattahoochee in the project area or upstream of the project area and relevant impacts of past, current, or future upstream dredging activities;
- Evaluate the impact of the sedimentation on the impoundment's storage capacity and how the decrease in storage capacity affects downstream flows;
- Evaluate and analyze the long-term (30-50 year) consequences of sediment accumulation on aquatic habitats, downstream uses, and dam safety, taking into account the projected future sedimentation based on a population doubling in the Metro Atlanta area by 2030;
- Evaluate the effect of sedimentation on the aquatic, recreational, and socio-economic values of the Bull Sluice Lake/the impoundment, including the impact of contaminated sediments (e.g., nutrients, metals, herbicides, pesticides);
- Explore alternatives in project operations, dredging or other means that would mitigate for the environmental, recreational, and socio-economic impacts of the sedimentation caused under the current license; and outline the potential costs and benefits for each alternative;
- Evaluate various dredging scenarios that would create greater bathometric diversity (e.g., mounds and pools) within the impoundment and their influence on improving the native aquatic assemblage within the impoundment.

b) Explanation of Relevant Resource Management Goals

As noted above, the Department believes its prior, related study requests are directly related to the Secretary's section 4(e) and 18 authorities. As this study request is a derivative of those requests, it is also directly related to the Secretary's section 4(e) and 18 authorities. Protection and utilization of the CRNRA and determining the appropriateness for fish passage at the Project are some of the Department's resource management goals.

Additionally, the sediment study will assist the NPS in meeting resource objectives and responsibilities established in the NPS Organic Act, 16 U.S.C. § 1, and the CRNRA's enabling legislation, 16 U.S.C. § 460ii *et seq.* In the CRNRA's enabling legislation, 16 U.S.C. § 460ii, Congress stated:

The Congress finds the natural, scenic, recreation, historic and other values of a forty-eight-mile segment of the Chattahoochee River and certain adjoining lands in the State of Georgia from Buford Dam downstream to Peachtree Creek are of special national significance, and that such values should be preserved and protected from developments and uses which would substantially impair or destroy them... The [Chattahoochee River National] recreation area shall consist of the river and its bed together with the lands, waters and interests therein within the boundary...

In 16 U.S.C. § 460ii-2, Congress provided:

The secretary shall administer, protect, and develop the recreation area in accordance with [Title 16], and in accordance with other statutory authorities available to him for the conservation and management of historic natural resources, including fish and wildlife.

And, in 16 U.S.C. § 460ii-4, Congress required the development and implementation of a General Management Plan. Currently, the NPS administers the CRNRA in accordance with a 1989 GMP, and is in the process of developing a revised GMP.

Aside from NPS management goals, the comprehensive study will assist FWS in implementing section 18 of the FPA and the Fish and Wildlife Coordination Act. The results of the sediment contaminants study will enable the resource agencies to make the best management decisions for protecting the aquatic community in the project boundary. These contaminants can cause carcinogenesis, bioaccumulation through the food chain, energy loss associated with detoxification, and reproductive and neurological effects. Therefore, the presence/absence, levels, and distribution of contaminants associated with these sediments need to be understood, as they factor into the decision-making process.

c) Public Interest (for non-agencies)

NA.

d) Existing Information and the Need for Additional Information

As previously mentioned, Georgia Power's states that "sediment deposition now appears to be approaching or have reached equilibrium within the Morgan Falls impoundment" (PAD, p. 23). Whether an accurate assessment of a 40-year trend can be made from three data points is highly questionable. Although the degree to which sedimentation has reached equilibrium within Bull Sluice Lake is of minor consequence, existing information provided by Georgia Power presumes that sedimentation is a uniform curvilinear process, that is, sedimentation occurs at a

constantly declining rate. The applicant provides no evidence to support this claim, and it seems presumptuous at best.

It would seem logical that the rate of sedimentation is more variable—coinciding with rapid increases in development, climate cycles, operations at Buford Dam, etc. Further, Georgia Power provides no description of the error associated with this estimate. The assessment was based on only three data points, using aerial photography of uncertain accuracy. The status of sedimentation in the Morgan Falls impoundment needs to be examined using field methods that will allow for a more accurate analysis of the sedimentation process. The study should provide a map that delineates the type and sources of sedimentation so that an informed decision can be made regarding potential PM&E measures.

Regardless of whether of sedimentation has reached equilibrium, sediment accumulations in Bull Sluice Lake have a significant effect in limiting the operational flexibility of the project. Georgia Power admits that total storage capacity has declined by 33% since 1960. They provide no estimate for the loss of total storage since the dam's construction in 1904. It is conceivable that if total storage were increased to its 1960 level, or even its 1904 level, this could have marked effects toward improving fish and wildlife habitat in the project area and throughout the CRNRA, including areas downstream of the dam. The applicant cites (RSP, p. 8) that if the impoundment was dredged to the 1960 volume of 3,150 acre-feet, only 6 additional hours of storage would be made available at the average annual river flow rate. This additional storage would not affect Morgan Falls' ability to re-regulate flows for water supply." While this may be true for water supply, the applicant provides no evidence as to how this additional storage (which is an increase or 30-50% over current capacity) influence fisheries below the dam. Further, in the spirit of mitigating ongoing impacts of the project, the applicant should also consider its ability, and the effects thereof, for increasing storage to pre-1960 levels.

Regardless of the storage value of Bull Sluice Lake for power production, the amount of sedimentation in the lake impacts aesthetics and the lake's role as a recreational amenity. Anecdotal evidence suggests that home values on Bull Sluice Lake are also declining due to lake sedimentation.

Georgia Power proposes to do a literature study on sedimentation in the Lake. However, this would provide insufficient analysis. A literature study would have little value due to the limited/nonexistent literature on the effects of erosion and sedimentation on the impoundment area. More importantly, in order to understand what is happening in the field, field studies yielding hard data are needed.

A model of riverine and reservoir sediment transport for this reach of the Chattahoochee River is available from Georgia Environmental Protection Division. This model can and should be used to evaluate alternative management of releases and redesigns of Morgan Falls Dam. The effects of alternative release strategies (e.g., passive spillway overflow, active control using variable discharge through hydroelectric generators, and active control using bottom-discharge (sluice) gates) should be evaluated using this tool.

According to the PAD, the last sediment analysis within the project boundary was conducted by the Army Corps of Engineers in 1980. Lab techniques and detectability have changed in the 24 years that have elapsed since this time. Additionally, land use has dramatically changed since 1980. In the 1990's, the population grew rapidly in the counties that lie between Lake Lanier and Morgan Falls (county population growth ranged from 26 to 123 percent). Subsequently, these counties drain (at least in part) into the Chattahoochee River.

The licensee is currently conducting water quality sampling, but within the water column. It is instead the fine surface sediments that need to be sampled to determine the presence of these contaminants. Although the State of Georgia does not have wildlife criteria for contaminated sediments, these criteria exist in published literature and are readily available. We would gladly work with the applicant to determine appropriate bioaccumulation and toxicity criteria from the literature.

Fish tissue sampling currently conducted by the State of Georgia is fillet only and is conducted to protect human health, not assess risk to the fish and wildlife community. The typical areas of high concentration that are consumed by fish and wildlife (e.g., liver, other areas of high fat content) are not analyzed; therefore the level of contamination and associated effects to the fish and wildlife community is unknown in the project area.

e) Nexus to the Project

Georgia Power alleges there is no nexus between relicensing of the Morgan Falls Project and contamination of sediments. The applicant further states, "[a]lthough operation of a project could influence deposition of sediment, sediment chemical loads are not directly related to hydropower operations." The Department disagrees. Clearly, the long-term deposition and concentration of any contaminants within the reservoir is directly related to the presence of the Morgan Falls Project.

Since the CRNRA consists of the river and its bed, and that the operation of the Morgan Falls Dam has a known direct and indirect affect upon the river and its bed, NPS has a justified interest in the operation of Morgan Falls Dam and any resulting effects that the dam may have upon this park resource. Erosion, sedimentation and other shoreline impacts resulting from the operation of Morgan Falls Dam, or resulting from indirect effects of the dam (i.e., recreational use of the reservoir) are clearly consistent within the scope of interest, goals and purposes for which CRNRA was created. Morgan Falls Dam is causing sediment to settle out of the water column and accumulate in the impoundment. Because contaminants bind to fine sediment, if they are present, contaminants will also accumulate in the impoundment and be concentrated instead of being gradually flushed downstream.

A thorough and detailed study of erosion and sedimentation attributed to the existence and operation of Morgan Falls Dam, including the study goals and objectives provided above, is an essential step toward characterizing affects of the dam and thus providing a sound scientific basis for license conditions. This study will provide information not presently available as to how project operations directly, indirectly, and cumulatively influence shoreline erosion,

allowing Georgia Power to analyze different regimes to offset these impacts. It will provide information on the cumulative effects of increased population growth/development combined with project operations on the sedimentation of the impoundment and, again, enable Georgia Power, FERC, DOI, and other stakeholders to explore an array of feasible operational alternatives to mitigate these effects.

The study will provide information on possible contamination of sediments at different levels in the impoundment informing future actions such as dredging. Although DOI does not necessarily support dredging as the preferred alternative, we believe a thorough analysis is essential to the relicensing process and to satisfied the requirements of NEPA. Dredging can provide greater flexibility in the dam's operations by allowing greater storage capacity to minimize large release, slow water to deter shoreline erosion and many other direct effects of project operations.

The results of the study would inform the development of license requirements in the following manner:

- Analysis will establish whether current project operations have a negligible or significant impact on environmental, recreational, or economic resources within the project area and the greater CRNRA. If negligible, there is greater evidence to support the licensee's request to maintain current operations. If significant, alternative operations scenarios will inform potential alternative operations.
- Dredging alternatives will directly inform the Department and other stakeholders about different possible operation alternatives including their impacts, costs, and benefits.
- Science-based study will determine if alternative dam discharge structures required for operation would mitigate the effects of sediment accumulation within the reservoir pool. Specifically, whether bottom-discharge (or sluice) gates or other release structures would provide improved environmental protection as well as increase reservoir storage capacity.

f) Proposed Methodology and Justification

The Comprehensive Sediment and Erosion Study should consist of the following four study components:

i) Sedimentation Extent and Distribution

The sedimentation extent and distribution component should use existing technologies, such as borings, grab samples, and acoustic imaging, to determine sediment quality and distribution. Parameters such as density, texture, and percent organic matter should be collected as a function of depth. Completion of this study will inform decision-makers on the extent and distribution of sediments as well as their potential mobility under various flow regimes.

ii) Sediment Contaminants

The sediment contaminants component should determine the extent of contaminated sediments and, if necessary based on screening results, the potential ecological risk to aquatic organisms and wildlife, with exposure estimates for each of the management alternatives: current operations (no action), flushing to downstream; dredging and creation of local spoil mounds for habitat improvement; dredging and removal. Sediment analysis and corresponding ecological risk assessment are widely accepted practices for determining the presence, fate, transport, and risk of adverse ecological risk from contaminated sediments. An Ekman or Ponar dredge, commonly used sampling equipment, should be used to obtain benthic grab samples. Sampling should not be conducted immediately after a reservoir drawdown or a rain event, so that there is time for the sediments (and associated contaminants) to settle. Samples can be obtained in one sampling event, at any time of the year. A statistically-sound sampling methodology should be used to determine the number of samples taken at each site. Multiple samples can be homogenized within a site if necessary, but not among sites. Ten sample sites should be established to adequately sample the approximately 7-mile project boundary. To assess the distribution of contaminants, we recommend the following site locations:

- 1) The upstream project boundary demarcation;
- 2) The downstream project boundary demarcation (tailrace);
- 3) The depositional area of the mouth of Big Creek into the impoundment;
- 4) The depositional area of the mouth of Willeo Creek into the impoundment;
- 5) The depositional area of the mouth of Sullivan Creek into the impoundment;
- 6) The area of the impoundment just upstream of the dam;
- 7) The area of the impoundment just upstream of the dam;
- 8) Distributed evenly with samples 9 & 10 throughout the mainstem impoundment;
- 9) Distributed evenly with samples 8 & 10 throughout the mainstem impoundment;
- 10) Distributed evenly with samples 8 & 9 throughout the mainstem impoundment.

Sediments should be analyzed for TOC (total organic carbon), grain size, organochlorines (including PCBs-polychlorinated biphenyls-and pesticides), metals (including mercury, copper, lead), and PAHs (polyaromatic hydrocarbons). A screening level ecological risk analysis should be performed to determine if any contaminants exceed toxicity thresholds. Dependent on the outcome of this screening assessment, an assortment of appropriate target species representing various trophic guilds (e.g., benthic invertebrates, fishes, wading birds, and semi-aquatic mammals) should be established for the purposes of further estimating sediment exposure and corresponding ecological risk if screening criteria are exceeded.

iii) Shoreline Erosion

A shoreline erosion model needs to be developed in order to demonstrate the amount of shoreline erosion attributable to the project as opposed to other sources (e.g., Buford Dam). The shoreline erosion model should include areas within the project boundary upstream to include the Island Ford Unit of CRNRA and downstream to Peachtree Creek. Since the applicant admits the Morgan Falls has the capacity to re-regulate flows in order to meet minimum flow requirements at Peach Tree Creek, it is logical to assume that the project has a quantifiable affect on shoreline

erosion well downstream of the project area. The model should use dependent variables such as existing shoreline conditions, the extent of riparian vegetation, topography, and soil quality, and use peaking operations at Buford and Morgan Falls as independent variables to assess the influence of each on shoreline erosion.

iv) Evaluation of Potential PM&E Measures

Studies should be undertaken to determine how topographic complexity (e.g., dredging spoil mounds, pools, etc.) could be used to improve instream habitat, wetlands, and storage capacity. Ecological studies should be conducted to identify the optimal size, height, and connectivity of dredging spoil islands for purposes of wildlife habitat, as well as the optimal size, depth and connectivity of dredging pools to provide deep-water habitat for aquatic species. Studies are needed to determine if alternative reservoir discharge structures (e.g., bottom-discharge, or "sluice" gates) would increase sediment through-flow. An active (or dynamic) bottom-discharge structure would provide the ability to control reservoir storage and mitigate the effects of upstream flow variability by closing during peak inflow periods, and opening during low inflow periods.

g) Consideration of Effort, Cost, and Insufficiency of Alternative Studies

We believe that conducting a Comprehensive Sediment and Erosion Study, as proposed herein, provides a scientifically-sound, cost-effective, timely means of obtaining all information necessary toward informing a license decision. Sediments should be analyzed for TOC (total organic carbon), grain size, organochlorines (including PCBs-polychlorinated biphenyls-and pesticides), metals (including mercury, copper, lead), and PAHs (polyaromatic hydrocarbons). The contaminants that are listed above to be analyzed can have many negative effects, so it is important to understand their status within the project boundary. TOC and grain size need to be analyzed because their relative levels are used to calibrate the concentrations of the contaminants among samples. Specifically, with regard to the sediment contaminant study, the following discussion of effort and costs is provided. Costs would be comprised of fieldwork, transport, labwork, and summary reporting:

Fieldwork - Fieldwork would require a team of two people for one day, a boat, a Ponar or Ekman dredge, and sediment holding containers. The licensee has a field crew and boat, but it is unknown if they own sediment sampling equipment and have personnel trained for collecting sediments, or if they would contract this work to a consultant.

Transport - It is likely that there are laboratories in Atlanta that could process these samples, so transport would consist of the cost of fuel and personnel to shuttle samples. Estimated cost is \$100.00.

Labwork - The lab analysis fee per sample site (if the samples are homogenized) for the contaminants listed above is approximately \$600-700.00 (Keith Hastie, Contaminants Specialist, FWS, 2004, pers. comm.). Therefore, ten samples would be approximately \$6000-7000.00.

Summary Reporting: A summary report would include a map of the project boundary with Georgia Power's points representing the sample sites, lab results, and a discussion of the results as they relate to the objectives of the study: presence/absence, relative levels (comparison of these results to State standards and any known levels that cause effects in the aquatic community), and distribution within the project boundary. Once again, cost is hard to ascertain as the expenditure of effort can vary.

C. Water Resources - Instream Flow Study

In accordance with 18 C.F.R. § 5.9, on May 11, 2004, NPS requested that Georgia Power conduct an instream flow study: NPS Study Request No. 8: "Effects of project operations on instream flow and habitat availability for selected aquatic habitat." On May 14, 2004, the FWS, by reference on May 14, 2004, submitted the same IFIM study request as the NPS: FWS Study Request No. 1: "IFIM Study (submitted by National Park Service)."

The purpose of the study was to "quantify how the operation of Morgan Falls Hydroelectric project affects instream flow habitat availability and use by selected aquatic biota in the Chattahoochee River from Morgan Falls Dam to its downstream confluence with Peachtree Creek." In particular, the NPS requested "An IFIM study" that "would entail mapping major habitat types in the study reach, measuring the amount of each habitat type as they fluctuate with instream flow, obtaining or developing habitat suitability indices (HSI) for selected aquatic biota, and modeling the response of suitable habitat in relation to instream flow, which is regulated by discharge from Morgan Falls Dam."

NPS requested a current site-specific flow study to evaluate the effect of the operation of Morgan Falls Dam on federal lands within its jurisdiction pursuant to FPA section 4(e), 16 U.S.C. § 797(e). FWS requested a current site-specific flow study to generate data that will provide more accurate information on the habitat that is available to the current aquatic community, as well as other diadromous species that could be in the project area during the license term pursuant to FPA section 18, 16 U.S.C. § 811. The Department has provided comments like a study request submitted pursuant to section 5.9(b) of the Commission's regulations.

§5.9(b) (1) Describe the goals and objectives of each study proposal and the information to be obtained

The goal of this study request is to quantify how the operation of Morgan Falls Hydroelectric project affects instream flow habitat availability and use by selected aquatic biota in the Chattahoochee River from Morgan Falls Dam to its downstream confluence with Peachtree Creek (study reach). The information to be obtained from this study includes:

1. Map of major habitat types (e.g., runs, pools, shoals) within the study reach
2. Availability of major habitat types in relation to flow
3. Relationship between flow and suitable habitat for selected aquatic biota (requires knowledge of habitat suitability for the selected biota)

4. The effect of various flow regimes on the amount of suitable habitat for selected aquatic biota (to be determined in consultation at a later date)

§5.9(b) (2) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied

The NPS preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

The CRNRA was established by Congress in 1978 to preserve and protect the “natural, scenic, recreation, historic, and other values of a forty-eight-mile segment of the Chattahoochee River and certain adjoining lands in the State of Georgia from Buford Dam downstream to Peachtree Creek” and that the boundaries of CRNRA “shall consist of the river and its bed together with the lands, waters, and interests therein” 16 U.S.C. § 460ii. The purpose of CRNRA is to lead the preservation and protection of the 48 mile Chattahoochee River corridor from Buford Dam to Peachtree Creek, and its associated natural and cultural resources, for the benefit and enjoyment of the people.

§5.9(b) (3) If the requester is a not resource agency, explain any relevant public interest considerations in regard to the proposed study

The requestor is a resource management agency.

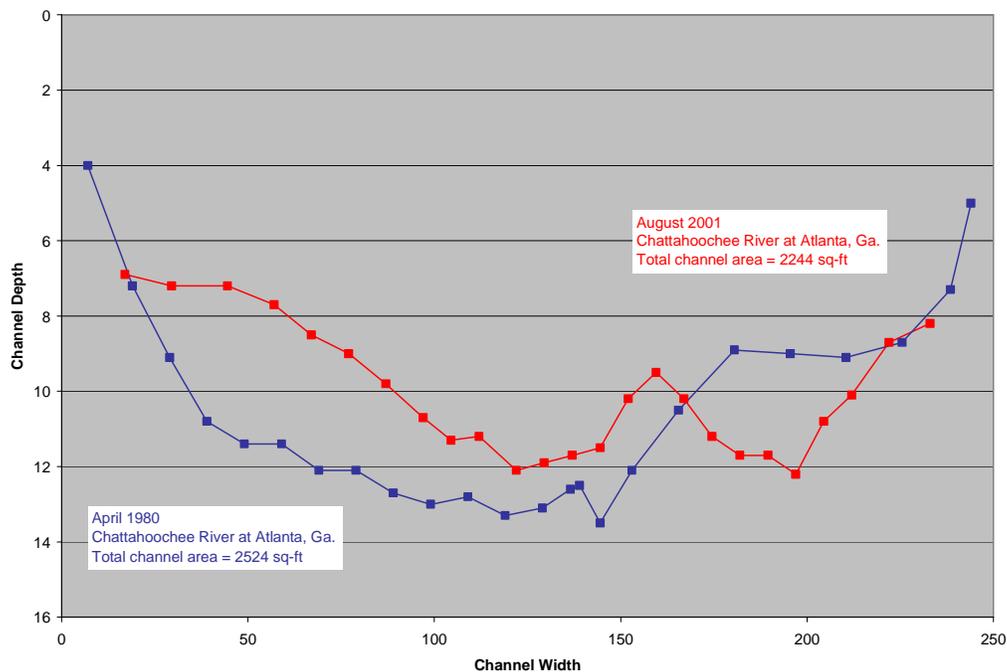
§5.9(b)(4) Describe existing information concerning the subject of the study proposal, and the need for additional information

Georgia Power declined the request to conduct an IFIM study in their Proposed Study Plan, and instead intend to rely solely on existing information: 1) “the comprehensive flow study conducted by the Corps (Nestler et al., 1986), using the PHABSIM modeling of IFIM, provided cross-sectional data for five reaches in this segment of river”, 2) “cross-sectional data compiled by USGS for the Atlanta gage (No. 023355700) for the period 1984 to 2004 did not find any indication of significant change in channel width with respect to gage height over this period.”, 3) the river channel has likely not changed because “the riparian corridor has remained protected by vegetative buffer zone standards and impervious setback requirements established under MRPA”, and 4) “the project minimum flow release already meets the objectives of GEPD’s instream flow protection strategy”.

Georgia Power’s reasoning, and FERC staff’s concurrence in their study determination, for declining the IFIM study was flawed for several reasons. First, although Nestler et al. (1986) provided data for five reaches below Morgan Falls Dam, the cross-sectional data used to represent three of those reaches were based on existing US Army Corps of Engineers (1973) data, while the remaining two reaches were characterized with field measurements in only three representative cross sections, each in a different habitat (one shoal, one pool, and one run). As a

consequence, not only are the data collected by Nestler et al. (1986) 18 years out-of-date, much of the data they used is now 31 years out-of-date. Second, the assertion that Georgia Power found no “substantial change in channel morphology” (Proposed Study Plan, Tab 4, page 20, first bullet) cannot be verified independently because they presented no cross-sectional data in the PAD, Proposed Study Plan, or Revised Study Plan that would allow for external review. It is interesting to note that FERC staff took the position in favor of Georgia Power in their Study Determination (page 18) by stating “Georgia Power’s recent review of USGS data from the period 1984 to 2004 for the USGS gage located below Morgan Falls Dam (gage no. 02336000) indicated there was not any substantial change in channel morphology over this period” and further stated that “NPS and FWS have not provided any data to support their statement that the stream morphology below Morgan Falls Dam has changed significantly since the Nestler study.” In fact, NPS was the only entity to provide any data to be verified by an external entity, which was included as Figure 2 in the original study request filed on May 11, 2004, and is reproduced in this document.

Figure 2.—Differences in the channel profile at one site between 1980 (blue) and 2001 (red).



Third, although the Metropolitan River Protection Act (MRPA) was enacted to reduce the amount of erosion and alteration of the channel in the Chattahoochee River (e.g., by establishing riparian buffers), it has not been 100% successful. Staff at CRNRA documented in 2003-2004 that virtually every homeowner with property abutting the river exhibited at least one MRPA violation (e.g., eliminating woody vegetation to the streambank), indicating that MRPA has yet to succeed in its objective of truly protecting the river corridor. Fourth, any discussion of the flow releases from Morgan Falls Dam meeting the objectives of GEPD’s interim instream flow policy is irrelevant because that policy relates to instream flow as a result of water withdrawals,

not hydropower releases. The most relevant state policy relevant to instream flows as a result of hydropower releases is contained within a report by Evans and England (1995), which explicitly states that “Peaking Hydropower Projects” require “Site-specific IFIM studies to determine flow requirements”. Even though Morgan Falls Dam has limited capacity as a peaking facility, the flow regime below it is still highly modified from the upstream hydropower peaking operation of Buford Dam, making this policy the most relevant to evaluating downstream instream flows due to discharges from Morgan Falls Dam. Georgia Power even acknowledged the lack of relevance with the GEPD instream flow policy in its reply to the NPS letter in their Revised Study Plan (Tab 10, Response 16, page 10): “GEPD’s policy explicitly excludes the Chattahoochee River from its minimum flow protection requirements until a consensus approach is identified for streams highly regulated by federal reservoirs (i.e., Buford Dam).” Because a consensus approach for hydropower peaking streams has not been developed, the site-specific IFIM approach as recommended by Evans and England (1995) is needed and recognized as scientifically credible (Annear et al. 2004).

§5.9(b)(5) Explain any 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

A site-specific IFIM study is necessary because the Morgan Falls Dam operation currently impacts upstream and downstream aquatic biota and their habitat that is managed by the NPS and because changes in the capacity of Morgan Falls Dam to re-regulate flows from Buford Dam exists, especially if dredging in the reservoir becomes a mitigation tool as suggested by FERC staff in their Study Determination (page 15):

Staff finds that deferring a decision on whether dredging should be conducted and included immediately as an alternative, is an appropriate decision at this time because the results of the temperature monitoring should help determine whether dredging would be needed to reduce temperatures in the reservoir. Staff does not recommend that dredging alternative be included as part of the water resources study plan as a reasonable alternative to be considered. Any discussion of project operation alternatives or mitigation, such as dredging, would be addressed in the Commission’s EA for the Project.

The Department is concerned that information necessary for an analysis of dredging alternatives may not be adequate and could delay the relicensing process if information needs are not addressed during the study phase. Should dredging become a viable alternative, then operational flexibility would be increased and a site-specific IFIM study would be necessary. Moreover, the instream flow guidance issued by Evans and England (1995) require that site-specific instream flow studies be conducted in rivers affected by peaking hydropower discharge to determine their instream flow requirements and that the most widely accepted method for this assessment is the IFIM. In addition, a site-specific IFIM study prior to development of the

Commission's EA would also help guide a determination on dredging as an alternative and would complement the temperature monitoring study.

NPS requires instream flow information to guide their joint-GADNR restoration of shoal bass (*Micropterus cataractae*) in the Chattahoochee River below Morgan Falls Dam. Shoal bass is a recently described species of black bass that is endemic to the Chattahoochee River basin (Williams and Burgess 1999), has been largely extirpated from the Chattahoochee River with CRNRA except below Morgan Falls Dam, and is currently being stocked below Morgan Falls Dam in an attempt to restore its former abundance and establish a fishery to complement the trout in this section of the river. Past instream flow studies in the Chattahoochee River have not examined this important species, which is considered vulnerable to extinction throughout its range due to habitat modifications (Warren et al. 2000). Moreover, the purpose of the NPS is to conserve all wildlife species within parks (16 USC 1), of which shoal bass is one. However, shoal bass is a species that embodies the characteristics of many of the native species that have been impacted by dams in the Chattahoochee River and is therefore an indicator species for much of the native aquatic fauna.

FWS requests a current site-specific flow study to generate data that will provide more accurate information on the habitat that is available to the current aquatic community, as well as other diadromous species that could be in the project area during the license term. The information will assist to develop resource goals and objectives and determine need and feasibility for fish passage for the project. The understanding of project effects on current downstream habitat, the amount and quality of downstream habitat, and enhancing flows for these species in the downstream reach to the extent possible become important to encourage successful migration of fish upstream of the project. Therefore, this study is applicable to the evaluation of whether or not a fishway is appropriate at this project by addressing the effects of the project on fish, and determining existing habitat constraints and available habitat.

§5.9(b) (6) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and duration) is consistent with generally accepted practice in the scientific community

Currently, FERC staff has approved Georgia Power's intent to use the IFIM results from Nestler et al. (1986) to evaluate the effects of the continued project operations of Morgan Falls Dam by:

applying trends observed in the flow characteristics of the river and the habitat-discharge relationships developed for trout and angling by Nestler et al. (1986). The models developed by Nestler et al. (1986) represent the best available habitat simulations for the Chattahoochee River and were used by Freeman et al. (1997) as a basis for assessing relative effects of alternative flow scenarios on riverine biota in the upper Chattahoochee River as part of the ACF

Comprehensive Study (Corps, 1998). These models are, therefore, scientifically acceptable in accordance with ILP requirements. The IFIM study data generated by USGS for NPS may also be useful for verifying or refining trends in habitat-discharge relationships as they relate to shoal bass, which like trout, are also most commonly associated with shoal habitats. A literature review will be completed to relate known habitat use of shoal bass in the Ocmulgee and Flint Rivers, Georgia, and Chipola River, Florida, to trends in habitat availability and habitat-discharge relationships observed by Nestler et al. (1986) for the shoal areas downstream of Morgan Falls. Literature sources will include Allen and Wheeler (2002), Wheeler and Allen (2003), EA Engineering, Science, and Technology, Inc. (1990), and a study currently being conducted for Crisp County Power Commission on the Flint River, Georgia.

Based on the information given, it is unclear exactly how this study will proceed, lacking detail as required by the ILP regulations (18 CFR § 5.11 (b) (1)). Furthermore, although Georgia Power stated that they will use some IFIM study data that is being gathered by USGS for the NPS, it is unclear how those data will be used. Possibly, those data could be used to examine differences in channel morphology that might exist between when the Nestler et al. (1986) occurred and present, but FERC staff rejected the GADNR request that this occur (FERC Study Determination, page 19, “Staff does not recommend Georgia Power revise the fish and aquatic resources study plan to incorporate GADNR’s proposed amendment to conduct re-validation soundings of the bottom contours for the two river transects used by the Nestler study.”). Additionally, it is unclear how Georgia Power intends to extend the Nestler et al. (1986) study to include shoal bass, a species of concern below Morgan Falls Dam and a focus of a joint NPS-GADNR restoration project. Ideally, shoal bass habitat suitability indices (HSI) should be developed and put into the PHABSIM model used for the Nestler et al. (1986) IFIM study. Additionally, information relative to the effects of a depressed temperature regime should be incorporated into a shoal bass HSI, as this was identified as important in the original NPS study request (“...an IFIM study does not normally take into account the effects of water temperature, which we believe has a significant effect on aquatic biota. The ability to incorporate temperature into the IFIM modeling effort would be a benefit for this project.”). The inclusion of water temperature as a variable in any IFIM effort has never been addressed by Georgia Power.

§5.9(b)(7) Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs

The proposed alternative to conducting a site-specific IFIM is not sufficient because:

- NPS presented data suggesting that the river channel morphology has changed substantially since the Nestler et al. (1986) study, and
- The Nestler et al. (1986) used very few transects to characterize the riverine habitat below Morgan Falls Dam, and

- The Nestler et al. (1986) study focused on shoal areas, with little attention paid to non-shoal areas and the species that inhabit them (e.g., striped bass), and
- The PHABSIM model used by Nestler et al. (1986) did not incorporate water temperature, which NPS believes to be an important factor in determining the amount of suitable habitat available to fish and other aquatic biota below Morgan Falls Dam.

Therefore, we re-submit our original study request to have a site-specific IFIM study be completed in the Chattahoochee River below Morgan Falls Dam to the confluence with Peachtree Creek. We recommend that the IFIM be conducted over the course of two field seasons to allow adequate coordination and collaboration and avoid need for formal revision of study plan and/or additional studies under §5.15(d) and §5.15(e) respectively.

D. Recreation and Land Use - Recreation Study

On May 11, 2004, NPS requested that Georgia Power conduct a Comprehensive Recreation Study that would in part “create, describe and analyze a baseline for recreational use within Bull Sluice Lake and the Chattahoochee River from Morgan Falls downstream to the confluence with Peachtree Creek.” The proposed study satisfied the criteria set forth in 18 CFR, Part 5, §5.9(b). This study, among others, was subsequently discussed in stakeholder meeting July 28-30, 2004 and in official filings on September 23, 2004 and November 10, 2004.

While the Department appreciates the detail added to the methodology by Georgia Power in its revised study plan, the applicant failed to satisfy the Department’s repeated request to extend its field surveys downstream to Peachtree Creek. The applicant cites a “lack of nexus between project operations and its effects on recreational opportunities in the reach. Georgia Power neither owns nor operates any recreation access facilities in the reach extending downstream to Peachtree Creek (18CFR §5.9(5)).” FERC staff apparently concurred with this argument and did not address the issue in its Study Plan Determination.

The Department believes that its study request remains valid, particularly with regard to expanding the geographic scope of field surveys down to Peachtree Creek and surveying non-users to determine why they are not using the resource. As cited by the applicant, 18 CFR §5.9(b)(5) requires an explanation of “any 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.” The original study request met this requirement by stating in part that “the operation of Morgan Falls Dam has a direct ability to affect recreational opportunities and values,” in the entire reach downstream to Peachtree Creek.

By the applicant’s own admission, the Morgan Falls project “re-regulates Buford releases to the maximum extent practicable” in order to meet minimum flow requirements at Peachtree Creek. This fact alone demonstrates a direct nexus of project operations with flows at Peachtree Creek. Logic would follow that if the project affects flows at Peachtree Creek, the project likely affects recreational use there as well. Further, we believe this expanded geographic scope is needed in order to provide the information necessary to “inform license requirements” 18CFR §5.9(b)(5), particularly if license requirements result in operational changes, as discussed above.

Because CRNRA is responsible for managing recreational use along a 48-mile segment of the river from Buford Dam to Peachtree Creek, it is conceivable the recreational changes in the upstream project area may result in cascading effects on the reach below the project. Therefore, field survey locations need to extend below the project to Peachtree Creek. We recommend that the recreation study be conducted over the course of two field seasons to allow adequate coordination and collaboration and avoid need for formal revision of study plan and/or additional studies under §5.15(d) and §5.15(e) respectively.

If you have any questions, I can be reached at (202)-208-5269. Respectfully submitted this 16th day of December, 2004.

/s/

John Kevin Tanaka
Attorney – Advisor

Cc: FERC Service List No. 2237

Attachments

APPENDIX A

DOI Dispute Resolution Panelist

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DOI Office of the Solicitor
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APPENDIX B

Disputed Study Requests

National Park Service Requests

1) Project Title: **An Assessment of Shoreline Affects Resulting from the Operation of Morgan Falls Dam**

A) Describe the goals and objective of the study and the information to be obtained.

This proposed study would accurately assess the effects of the Morgan Falls Dam operation is having upon shoreline processes within Bull Sluice Lake and the Chattahoochee River downstream to the confluence of Peachtree Creek. This assessment would look at issues such as bank failure, erosion, sedimentation, riparian processes. This assessment should address not only the direct impacts of the dam's operation, but indirect and associated impacts as well. Indirect and associated impacts include, but not limited to, shoreline soil compaction and vegetation loss due to recreational bank fishing, and dock management.

B) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

Chattahoochee River National Recreation Area was authorized by Congress in 1978 (16 U.S.C. 460). In this enabling legislation, Congress stated that *"The Congress finds the natural, scenic, recreation, historic and other values of a forty-eight-mile segment of the Chattahoochee River and certain adjoining lands in the State of Georgia from Buford Dam downstream to Peachtree Creek are of special national significance, and that such values should be preserved and protected from developments and uses which would substantially impair or destroy them... The [Chattahoochee River National] recreation area shall consist of the river and its bed together with the lands, waters and interests therein within the boundary..."*

This federal law also states that *"The Federal Energy Regulatory Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act (16 U.S.C. 791a et seq.), on or directly affecting the recreation area, and no department or agent of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such area is established, except where such project is determined by the State of Georgia to be necessary for water supply or water quality enhancement purposes and authorized by the United States Congress"* (16 U.S.C. 460ii-3a).

In addition the Act states that *"Each agency or instrumentality of the United States conducting Federal action upon federally owned lands of waters which are administered by the Secretary and which are located within the authorized boundary of the recreation area shall not commence*

such action until such time as the Secretary has concurred in such action.”

C) If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

The requester is a resource agency.

D) Describe existing information concerning the subject of the study proposal, and the need for additional information.

Specific information concerning the shoreline impacts caused by the operation of Morgan Falls Dam is not known to exist in sufficient detail to meet the management needs of the National Park Service.

E) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) in the resource to be studied.

Since the park consists of the river and its bed, and that the operation of the Morgan Falls Dam has a known direct and indirect affect upon the river and its bed, the National Park Service has a justified interest in the operation of Morgan Falls Dam and any resulting effects that the dam may have upon this park resource.

Erosion, sedimentation and other shoreline impacts resulting from the operation of Morgan Falls Dam, or resulting from indirect effects of the dam (such as recreational use of the reservoir) are clearly consistent within the scope of interest, goals and purposes of Chattahoochee River National Recreation Area.

F) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally acceptable practices in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

Using standard methodologies, the scope of the proposed study should include a field inventory and assessment of site specific bank and shoreline impacts that are actively occurring from, and including, Bull Sluice Lake downstream to the confluence with Peachtree Creek. From this baseline study, further monitoring (beyond the scope of this baseline study) that is correlated with river conditions and releases from Morgan Falls Dam could be evaluated to assess the degree, nature and characteristics of shoreline impacts resulting from the operation of Morgan Falls Dam.

G) Describe consideration of cost and practicality, and why any proposed alternatives would not be sufficient to meet the stated information needs.

While mention of shoreline processes is mentioned in the Scoping Document, no detail is provided, so therefore an assessment of adequacy to meet current need cannot be made.

3) Project Title: **Inventory of riparian areas/wetlands and sediment processes in the Chattahoochee River corridor**

A) Describe the goals and objective of the study and the information to be obtained.

This study would accurately assess the nature and degree of sediment accumulation and related impacts to riparian zones and adjacent wetlands resulting from the presence of Morgan Falls Dam. Antidotal evidence indicates that sediment is accumulating within the last decade in the shallow-water regions of Bull Sluice Lake as a result of Morgan Falls Dam. However Georgia Power states that data indicate that sediment within the reservoir is currently at a steady-state. However, Georgia Power's data consists of three individual data points taken over a span of forty years. With so few data points, the potential for dramatic misrepresentation is high. Even if one of data points is in error or is an outlier, the resulting deposition curve would be dramatically different than the presumed steady-state assumption. Clearly, these current three data points are insufficient, especially in light of all the noticeable antidotal evidence. This proposed study would fill-in this data gap.

B) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studies.

Chattahoochee River National Recreation Area was authorized by Congress in 1978 (16 U.S.C. 460). In this enabling legislation, Congress stated that *"The Congress finds the natural, scenic, recreation, historic and other values of a forty-eight-mile segment of the Chattahoochee River and certain adjoining lands in the State of Georgia from Buford Dam downstream to Peachtree Creek are of special national significance, and that such values should be preserved and protected from developments and uses which would substantially impair or destroy them... The [Chattahoochee River National] recreation area shall consist of the river and its bed together with the lands, waters and interests therein within the boundary..."*

This federal law also states that *"The Federal Energy Regulatory Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act (16 U.S.C. 791a et seq.), on or directly affecting the recreation area, and no department or agent of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such area is established, except where such project is determined by the State of Georgia to be necessary for water supply or water quality enhancement purposes and authorized by the United States Congress"* (16 U.S.C. 460ii-3a).

In addition the Act states that “*Each agency or instrumentality of the United States conducting Federal action upon federally owned lands of waters which are administered by the Secretary and which are located within the authorized boundary of the recreation area shall not commence such action until such time as the Secretary has concurred in such action.*”

C) If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

The requester is a resource agency.

D) Describe existing information concerning the subject of the study proposal, and the need for additional information.

We understand that the Upper Chattahoochee RiverKeeper is submitting a similar study request. After verbally discussing this study need with them, the National Park Service supports the details contained in their study request.

Please see this other proposal for details.

E) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) in the resource to be studied.

Since the park consists of the river and its bed, and that the operation of the Morgan Falls Dam has a known direct and indirect affect upon the river and its bed, the National Park Service has a justified interest in the operation of Morgan Falls Dam and any resulting effects that the dam may have upon the river and its bed, this includes sediment processes.

F) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally acceptable practices in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

We understand that the Upper Chattahoochee RiverKeeper is submitting a similar study request. After verbally discussing this study need with them, the National Park Service supports the details contained in their study request.

Please see this other study request for specific detail.

G) Describe consideration of cost and practicality, and why any proposed alternatives would

not be sufficient to meet the stated information needs.

We understand that the Upper Chattahoochee RiverKeeper is submitting a similar study request. After verbally discussing this study need with them, the National Park Service supports the details contained in their study request.

Please see this other study proposal for specific detail.

5) Project Title: **Comprehensive recreational study**

A) Describe the goals and objective of the study and the information to be obtained.

The first step in managing any recreation resource is to conduct a baseline study. Without an accurate and up-to-date study, determinations may only be made by conjecture and instinct.

This study would create, describe and analyze a baseline for recreational use within Bull Sluice Lake and the Chattahoochee River from Morgan Falls downstream to the confluence with Peachtree Creek. This section of the river receives heavy visitor use. Water-based recreation, such as fishing and boating, within this area is highly dependent upon river conditions, which in turn is affected by the operation of Morgan Falls Dam. An accurate baseline as to the type, frequency, and other characteristics of recreation use within area would be needed to accurately assess the potential impact that the management of Morgan Falls Dam may have upon this important resource. This study would fulfill this research need.

Specific research goals should include at least the following five items:

- 1) whether existing recreational facilities are adequate to meet public demand and whether current facilities may be enhanced;
- 2) whether impacts to recreational resources from project operation can be mitigated;
- 3) a description of recreational opportunities and limitations and visitor preferences and needs;
- 4) the economic contributions of recreation;
- 5) an inventory and assessment of potential land acquisitions that would mitigate identified important recreational needs.

While a wide range of intensity of study methodologies may be employed in recreational studies, this Morgan Falls Dam relicensing project appears not to require the high intensity studies. However, the varied recreational issues involved seems to elevate the project beyond the low-intensity thresholds. Therefore, a moderate approach appears to be appropriate. This moderate-scope approach would employ standardized techniques such as field reconnaissance, on-site use interviews, traffic counters, discussions with knowledgeable persons, and the use of existing data. During for the study should include different seasons, weather patterns, days of week and other cyclic parameters within the one-year study period.

B) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

Chattahoochee River National Recreation Area was authorized by Congress in 1978 (16 U.S.C. 460). In this enabling legislation, Congress stated that *“The Congress finds the natural, scenic, recreation, historic and other values of a forty-eight-mile segment of the Chattahoochee River and certain adjoining lands in the State of Georgia from Buford Dam downstream to Peachtree Creek are of special national significance, and that such values should be preserved and protected from developments and uses which would substantially impair or destroy them... The [Chattahoochee River National] recreation area shall consist of the river and its bed together with the lands, waters and interests therein within the boundary...”*

This federal law also states that *“The Federal Energy Regulatory Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act (16 U.S.C. 791a et seq.), on or directly affecting the recreation area, and no department or agent of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such area is established, except where such project is determined by the State of Georgia to be necessary for water supply or water quality enhancement purposes and authorized by the United States Congress”* (16 U.S.C. 460ii-3a).

In addition the Act states that *“Each agency or instrumentality of the United States conducting Federal action upon federally owned lands of waters which are administered by the Secretary and which are located within the authorized boundary of the recreation area shall not commence such action until such time as the Secretary has concurred in such action.”*

C) If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

The requester is a resource agency.

D) Describe existing information concerning the subject of the study proposal, and the need for additional information.

General visitor use information does exist for the river and for land-based recreation within the 48-mile long Chattahoochee River National Recreation Area. However, both of these are inadequate. The river-based recreational data is sparse at best and often antidotal. What does exist is old and usually focused on a much broader area than what is needed, or else is so site and time specific that it cannot be considered a valid sample that can be applied in a larger context.

Similarly, antidotal evidence appears to indicate that visitor use has dramatically changed within the last decade. For instance, Chattahoochee River National Recreation Area receives approximately 2.5 million visitors per year. Approximately ten years ago it was estimated that 75

percent of the park's visitors were water-based recreational users, while 25 percent used the park's trails. However now, rough estimates appear to indicate that it has reversed, whereas 75 percent of the park's visitors are trail users while only 25 percent participate in water-based recreation (this is based only upon unsubstantiated antidotal evidence). Within the time frame of this potential visitor use change, the dominant rafting concessions have gone out of business and other related businesses have sprung up. In addition, the State of Georgia changed the fishing season and implemented a delayed harvest fishing program within this section. Clearly, there has been enough change in visitor use, visitor opportunities, etc. that the little existing data is either obsolete or inadequate.

E) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) in the resource to be studied.

The park consists of the river and its bed. It was the intent of Congress for the National Park Service to manage the recreational use of the 48-mile section of the Chattahoochee River from Buford Dam to the confluence of Peachtree Creek. It was also the intent of Congress to having responsibilities along this section of the river to cooperate and work together to ensure that while exercising their responsibilities that these activities and associated impacts are consistent with the purposes of Chattahoochee River National Recreation Area. Recreation is an important resource attribute within the park and the operation of Morgan Falls Dam has a direct ability to affect recreational opportunities and values.

F) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally acceptable practices in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

The proposed study methodology is consistent with established practices and is considered standard practice within this discipline.

G) Describe consideration of cost and practicality, and why any proposed alternatives would not be sufficient to meet the stated information needs.

As stated earlier, there has been enough change in visitor use, visitor opportunities, etc. that the little existing data is either obsolete or inadequate.

6) Project Title: **The effects of dredging upon native aquatic organisms**

A) Describe the goals and objective of the study and the information to be obtained.

Due to the near-natural water temperatures below Morgan Falls Dam, as a result of the warming

influences of Bull Sluice Lake, the area below Morgan Falls Dam is the only area within the park that has the potential to restore and enhance native species. Federal law prohibits the National Park Service from allowing non-natural conditions (such as temperature) to affect native species when there are reasonable alternatives that would favor native species. Due to the operation of Buford Dam it is believed that there are no reasonable alternative of maintaining natural temperatures conducive to native warm water aquatic species, however reasonable alternative exists in the reach between Morgan Falls Dam and Peachtree Creek. Within this reach, the operation of Morgan Falls Dam has a dramatic ability to influence the success of maintaining these more natural water temperatures. This includes the depth and characteristics of the Bull Sluice Reservoir basin. Therefore, a study is needed to accurately and scientifically assess the potential of Morgan Falls Dam in maintaining these more natural river temperatures and to assess the effect that basin dredging and other such potential activities may have upon park aquatic resources.

B) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studies.

Chattahoochee River National Recreation Area was authorized by Congress in 1978 (16 U.S.C. 460). In this enabling legislation, Congress stated that *“The Congress finds the natural, scenic, recreation, historic and other values of a forty-eight-mile segment of the Chattahoochee River and certain adjoining lands in the State of Georgia from Buford Dam downstream to Peachtree Creek are of special national significance, and that such values should be preserved and protected from developments and uses which would substantially impair or destroy them... The [Chattahoochee River National] recreation area shall consist of the river and its bed together with the lands, waters and interests therein within the boundary...”*

This federal law also states that *“The Federal Energy Regulatory Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act (16 U.S.C. 791a et seq.), on or directly affecting the recreation area, and no department or agent of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such area is established, except where such project is determined by the State of Georgia to be necessary for water supply or water quality enhancement purposes and authorized by the United States Congress”* (16 U.S.C. 460ii-3a).

In addition the Act states that *“Each agency or instrumentality of the United States conducting Federal action upon federally owned lands of waters which are administered by the Secretary and which are located within the authorized boundary of the recreation area shall not commence such action until such time as the Secretary has concurred in such action.”*

Since the park consists of the river and its bed, and that the operation of the Morgan Falls Dam has a known direct and indirect affect upon the river and its bed, the National Park Service has a justified interest in the operation of Morgan Falls Dam and any resulting effects that the dam may have upon the river and its bed.

C) If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

The requester is a resource agency.

D) Describe existing information concerning the subject of the study proposal, and the need for additional information.

There have been a few grab samples that assessed the potential buried sediment contaminants. However, these few samples were not adequate in number or spatial distribution to adequately characterize the entire Bull Sluice Reservoir basin.

As far as temperature is concerned, few data exists to adequately assess the impact of Bull Sluice Lake upon water temperature, or the influences upon temperature. It is for this reason that the National Park Service supports the temperature study proposed by Georgia Department of Natural Resources (believed to be titled "effects of project operations on water temperature").

E) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) in the resource to be studied.

We understand that the Georgia Department of Natural Resources is submitting a study request to accurately assess water temperature effects of the Morgan Falls Dam. After verbally discussing this study need with them, the National Park Service supports the details contained in their study request.

As for the potential contaminants we understand that the Upper Chattahoochee RiverKeeper is submitting a similar study request. After verbally discussing this study need with them, the National Park Service supports the details contained in their study request.

Please see these other proposals for additional information.

F) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally acceptable practices in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

We understand that the Georgia Department of Natural Resources is submitting a study request to accurately assess water temperature effects of the Morgan Falls Dam. After verbally discussing this study need with them, the National Park Service supports the details contained in their study request.

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G) Describe consideration of cost and practicality, and why any proposed alternatives would not be sufficient to meet the stated information needs.

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5) Project Title: **Comprehensive recreational study**

A) Describe the goals and objective of the study and the information to be obtained.

The first step in managing any recreation resource is to conduct a baseline study. Without an accurate and up-to-date study, determinations may only be made by conjecture and instinct.

This study would create, describe and analyze a baseline for recreational use within Bull Sluice Lake and the Chattahoochee River from Morgan Falls downstream to the confluence with Peachtree Creek. This section of the river receives heavy visitor use. Water-based recreation, such as fishing and boating, within this area is highly dependent upon river conditions, which in turn is affected by the operation of Morgan Falls Dam. An accurate baseline as to the type, frequency, and other characteristics of recreation use within area would be needed to accurately assess the potential impact that the management of Morgan Falls Dam may have upon this important resource. This study would fulfill this research need.

Specific research goals should include at least the following five items:

- 1) whether existing recreational facilities are adequate to meet public demand and whether current facilities may be enhanced;
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C) If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

The requester is a resource agency.

D) Describe existing information concerning the subject of the study proposal, and the need for additional information.

General visitor use information does exist for the river and for land-based recreation within the 48-mile long Chattahoochee River National Recreation Area. However, both of these are inadequate. The river-based recreational data is sparse at best and often antidotal. What does exist is old and usually focused on a much broader area than what is needed, or else is so site and time specific that it cannot be considered a valid sample that can be applied in a larger context.

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E) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) in the resource to be studied.

The park consists of the river and its bed. It was the intent of Congress for the National Park Service to manage the recreational use of the 48-mile section of the Chattahoochee River from Buford Dam to the confluence of Peachtree Creek. It was also the intent of Congress to having responsibilities along this section of the river to cooperate and work together to ensure that while exercising their responsibilities that these activities and associated impacts are consistent with the purposes of Chattahoochee River National Recreation Area. Recreation is an important resource attribute within the park and the operation of Morgan Falls Dam has a direct ability to affect recreational opportunities and values.

F) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally acceptable practices in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

The proposed study methodology is consistent with established practices and is considered standard practice within this discipline.

G) Describe consideration of cost and practicality, and why any proposed alternatives would not be sufficient to meet the stated information needs.

As stated earlier, there has been enough change in visitor use, visitor opportunities, etc. that the little existing data is either obsolete or inadequate.

6) Project Title: **The effects of dredging upon native aquatic organisms**

A) Describe the goals and objective of the study and the information to be obtained.

Due to the near-natural water temperatures below Morgan Falls Dam, as a result of the warming influences of Bull Sluice Lake, the area below Morgan Falls Dam is the only area within the park that has the potential to restore and enhance native species. Federal law prohibits the National Park Service from allowing non-natural conditions (such as temperature) to affect native species when there are reasonable alternatives that would favor native species. Due to the operation of Buford Dam it is believed that there are no reasonable alternative of maintaining natural temperatures conducive to native warm water aquatic species, however reasonable alternative exists in the reach between Morgan Falls Dam and Peachtree Creek. Within this reach, the operation of Morgan Falls Dam has a dramatic ability to influence the success of maintaining these more natural water temperatures. This includes the depth and characteristics of the Bull Sluice Reservoir basin. Therefore, a study is needed to accurately and scientifically assess the potential of Morgan Falls Dam in maintaining these more natural river temperatures and to assess the effect that basin dredging and other such potential activities may have upon park aquatic resources.

B) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studies.

Chattahoochee River National Recreation Area was authorized by Congress in 1978 (16 U.S.C. 460). In this enabling legislation, Congress stated that *“The Congress finds the natural, scenic, recreation, historic and other values of a forty-eight-mile segment of the Chattahoochee River and certain adjoining lands in the State of Georgia from Buford Dam downstream to Peachtree Creek are of special national significance, and that such values should be preserved and protected from developments and uses which would substantially impair or destroy them... The [Chattahoochee River National] recreation area shall consist of the river and its bed together with the lands, waters and interests therein within the boundary...”*

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and adverse effect on the values for which such area is established, except where such project is determined by the State of Georgia to be necessary for water supply or water quality enhancement purposes and authorized by the United States Congress” (16 U.S.C. 460ii-3a).

In addition the Act states that “Each agency or instrumentality of the United States conducting Federal action upon federally owned lands of waters which are administered by the Secretary and which are located within the authorized boundary of the recreation area shall not commence such action until such time as the Secretary has concurred in such action.”

Since the park consists of the river and its bed, and that the operation of the Morgan Falls Dam has a known direct and indirect affect upon the river and its bed, the National Park Service has a justified interest in the operation of Morgan Falls Dam and any resulting effects that the dam may have upon the river and its bed.

C) If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

The requester is a resource agency.

D) Describe existing information concerning the subject of the study proposal, and the need for additional information.

There have been a few grab samples that assessed the potential buried sediment contaminants. However, these few samples were not adequate in number or spatial distribution to adequately characterize the entire Bull Sluice Reservoir basin.

As far as temperature is concerned, few data exists to adequately assess the impact of Bull Sluice Lake upon water temperature, or the influences upon temperature. It is for this reason that the National Park Service supports the temperature study proposed by Georgia Department of Natural Resources (believed to be titled “effects of project operations on water temperature”).

E) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) in the resource to be studied.

We understand that the Georgia Department of Natural Resources is submitting a study request to accurately assess water temperature effects of the Morgan Falls Dam. After verbally discussing this study need with them, the National Park Service supports the details contained in their study request.

As for the potential contaminants we understand that the Upper Chattahoochee RiverKeeper is submitting a similar study request. After verbally discussing this study need with them, the

National Park Service supports the details contained in their study request.

Please see these other proposals for additional information.

F) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally acceptable practices in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

We understand that the Georgia Department of Natural Resources is submitting a study request to accurately assess water temperature effects of the Morgan Falls Dam. After verbally discussing this study need with them, the National Park Service supports the details contained in their study request.

As for the potential contaminants we understand that the Upper Chattahoochee RiverKeeper is submitting a similar study request. After verbally discussing this study need with them, the National Park Service supports the details contained in their study request.

Please see these other proposals for additional information.

G) Describe consideration of cost and practicality, and why any proposed alternatives would not be sufficient to meet the stated information needs.

We understand that the Georgia Department of Natural Resources is submitting a study request to accurately assess water temperature effects of the Morgan Falls Dam. After verbally discussing this study need with them, the National Park Service supports the details contained in their study request.

As for the potential contaminants we understand that the Upper Chattahoochee RiverKeeper is submitting a similar study request. After verbally discussing this study need with them, the National Park Service supports the details contained in their study request.

Please see these other proposals for additional information.

8) Project Title: **Effects of project operations on instream flow and habitat availability for selected aquatic biota**

Description of the goals and objectives and the information to be obtained

The goal of this study request is to quantify how the operation of Morgan Falls Hydroelectric project affects instream flow habitat availability and use by selected aquatic biota in the Chattahoochee River from Morgan Falls Dam to its downstream confluence with Peachtree Creek (study reach). The information to be obtained from this study includes:

5. Map of major habitat types (e.g., runs, pools, shoals) within the study reach
6. Availability of major habitat types in relation to flow
7. Relationship between flow and suitable habitat for selected aquatic biota (requires knowledge of habitat suitability for the selected biota)
8. The effect of various flow regimes on the amount of suitable habitat for selected aquatic biota (to be determined in consultation at a later date)

Relevant resource management goals of the National Park Service, Chattahoochee River National Recreation Area (CRNRA)

The National Park Service preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

CRNRA was established by Congress in 1978 to preserve and protect the “natural, scenic, recreation, historic, and other values of a forty-eight-mile segment of the Chattahoochee River and certain adjoining lands in the State of Georgia from Buford Dam downstream to Peachtree Creek” and that the boundaries of CRNRA “shall consist of the river and its bed together with the lands, waters, and interests therein” (Public Law 95-344 as amended, Public Law 95-34498-568, Public Law 95-344106-154).

The purpose of CRNRA is to lead the preservation and protection of the 48 mile Chattahoochee River corridor from Buford Dam to Peachtree Creek, and its associated natural and cultural resources, for the benefit and enjoyment of the people.

Existing information concerning the subject of the study proposal, and the need for additional information

Little information exists regarding the effects of instream flow on habitat availability for aquatic biota in the Chattahoochee River below Morgan Falls Dam. Nestler et al. (1986) provides the most comprehensive study that was conducted. They conducted an instream flow incremental methodology (IFIM) assessment using the computer software PHABSIM (physical habitat simulation) and examined how discharge from Buford Dam might affect recreational activities (fishing, wading, canoeing, rafting, and hanging-out) and trout (rainbow, brown, and brook) habitat.

CH2MHILL (2000) conducted an analysis of the effects of flow on recreational use in the Chattahoochee River from Buford Dam to its confluence with Peachtree Creek. They videographed eight sections of the river at 3 flows and asked expert user groups to rates them according to how it would affect their recreational activity. The expert user groups were later clustered into 2 larger groups: 1) wade/float fishing, rowing, and power boating and 2) kayaks, canoes, and rafts. The latter group preferred higher flows than the former group. At each of the eight river sections, hydrographic analyses were conducted to quantify the amount of suitable habitat available to these user groups in relation to flow. Based on those analyses, the study then compared the amount of time acceptable for use by these two user groups between a normal

“wet” year (1997) and a drought year (2000). The time available to group 1 users did not change between years whereas the time available to group 2 users decreased from 21 hours to 5 from the “wet” year to the drought year.

Currently, the US Geological Survey (USGS; Norcross, GA office; Brian Hughes, Principal Investigator) is conducting a small scale IFIM study for the NPS in response to water allocation formulas proposed under the tri-state water rights agreement among Alabama, Florida, and Georgia. Due to restricted funding, we asked USGS to focus on shallow water habitats that were identified by CRNRA. CRNRA identified five sites as critical for study and another five as alternates should funding allow for more than five sites to be examined (Figure 1). Work was scheduled to be conducted in 2003, but high flows impeded field work, which only just begun in 2004. The expected products from this study will be cross-sectional data at the five critical sites and limited simulation modeling with PHABSIM. Aquatic biota to be examined via PHABSIM has not yet been determined.

Additional information is needed because previous efforts were either done too far in the past to be useful in the present or done on too small of a scale. Additionally, other aquatic biota of importance has not yet been examined. The study conducted by Nestler et al. (1986) may not be valid in the present due to shifting sediments in the channel (Figure 2), thereby requiring that new channel transects be established. Moreover, their study only examined trout as aquatic biota and a new study that focuses on other species or guilds would be useful to best determine the effect of Morgan Falls Dam on habitat for aquatic biota. Furthermore, due to the fact the sediments in the Chattahoochee River may shift, and the extent of the shifting is unknown, refinements to an IFIM may be warranted and should be examined. The study presently being conducted by USGS for NPS is not adequate to replace a study that focuses on Morgan Falls Dam specifically, which would examine multiple habitat types rather than the limited ones that are specified in the USGS/NPS study.

Nexus between project operation 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

The Morgan Falls Hydroelectric Project has direct impacts on the flow and subsequent amount of suitable habitat for aquatic biota downstream of its operations because it regulates discharge in response to releases from upstream Buford Dam and for power generation. The project also has indirect impacts by regulating flow pulses from upstream Buford Dam and by influencing downstream water temperature as discharges vary, which also influences the downstream aquatic biota. This study will quantify the effects of flow, as regulated by discharge from Morgan Falls Dam, on the amount of habitat available to downstream aquatic biota. With this information, the National Park Service and other resource management agencies will be able to make informed management recommendations on how the Morgan Falls Hydroelectric Project should be operated during its new license period.

Proposed study methodology as consistent with generally accepted practices in the scientific community

We propose an IFIM study to examine the effect of flow regulation by the Morgan Falls Hydroelectric Project on downstream aquatic biota. An IFIM study would entail mapping major habitat types in the study reach, measuring the amount of each habitat type as they fluctuate with instream flow, obtaining or developing habitat suitability indices (HSI) for selected aquatic biota, and modeling the response of suitable habitat in relation to instream flow, which is regulated by discharge from Morgan Falls Dam. The selected aquatic biota (species or guilds) would be determined at a later date in consultation with the resource management agencies and GA Power.

We have already identified two issues that are problematic for an IFIM study that would need to be resolved prior to initiation. First, Figure 2 provides evidence that the bed of this river has changed over time, making instream habitat assessments difficult to use in the future (or applying past efforts to the current situation). It might be possible that this could be compensated for by measuring and comparing transects conducted in previous studies with new transects. This way, an assessment of which habitat types are susceptible to bed change and the degree to which they change over time can be made. Second, an IFIM study does not normally take into account the effects of water temperature, which we believe has a significant effect on aquatic biota. The ability to incorporate temperature into the IFIM modeling effort would be a benefit for this project. Another criticism of IFIM studies in general is that they are not able to assess the effect of instream flow on the life statistics (i.e., fecundity, mortality, etc.) of aquatic biota nor do they incorporate uncertainty. However, because IFIM studies are common and many species of aquatic biota have had HSIs developed, the methodologies are well-established and the results easily interpreted.

IFIM studies have been in use for a long time and the expertise to conduct an IFIM study is wide spread. IFIM studies are commonly used methods to assess the effects of dams on downstream aquatic habitat.

Consideration of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs

The level of effort for this study would consist of two years of research if favorable sampling conditions exist, including data collection, analysis, and report writing (or model development). IFIM studies are data-collection intensive, requiring numerous man-hours to survey various habitat types are several flows. We estimate that an IFIM study of this magnitude would cost approximately \$250,000. The PAD and SD-1 indicate that GA Power would rely on the IFIM study currently being conducted by USGS/NPS for this need, but that study is not adequate to address the issues at the Morgan Falls Hydroelectric Project because it is too narrow in scope. Namely, the USGS/NPS IFIM study contains only two reaches below Morgan Falls Dam, both in the same habitat type (i.e., shoals), and limited species modeling will be conducted (if at all).

References

CH2MHILL. 2000. Recreation flow preference report. Prepared for National Park Service,

Chattahoochee River National Recreation Area, Atlanta.

Nestler, J. M., J. Fritschen, R. T. Milhous, and J. Troxel. 1986. Effects of flow alteration on trout, angling, and recreation in the Chattahoochee River between Buford Dam and Peachtree Creek. Technical Report E-86-10, US Army Waterways Experiment Station, Vicksburg, MS.

Figure 1.—Critical and alternate study sites identified by Chattahoochee River National Recreation Area to be studied in an ongoing IFIM examination conducted by US Geological Survey.

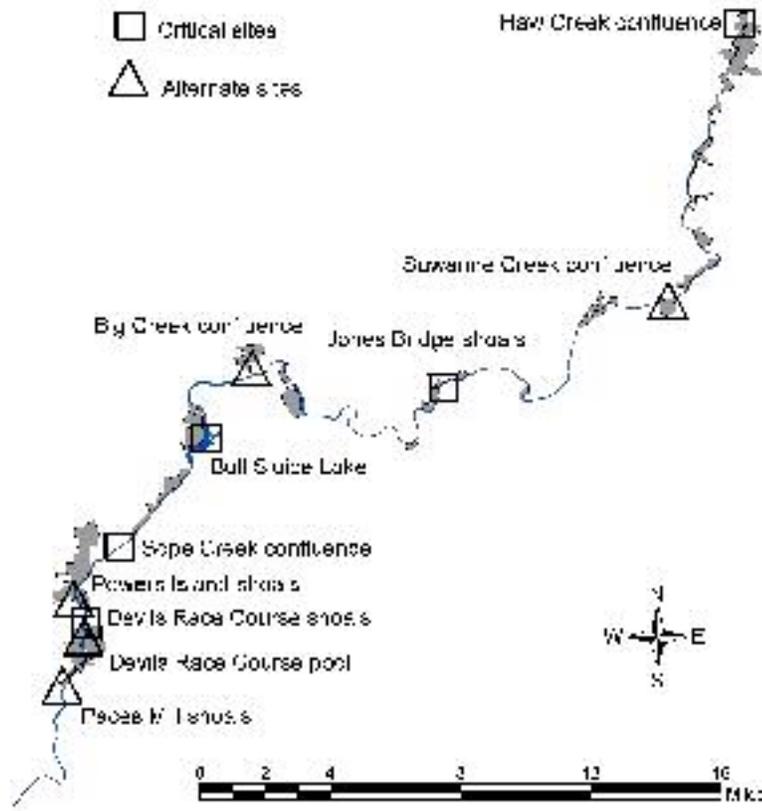
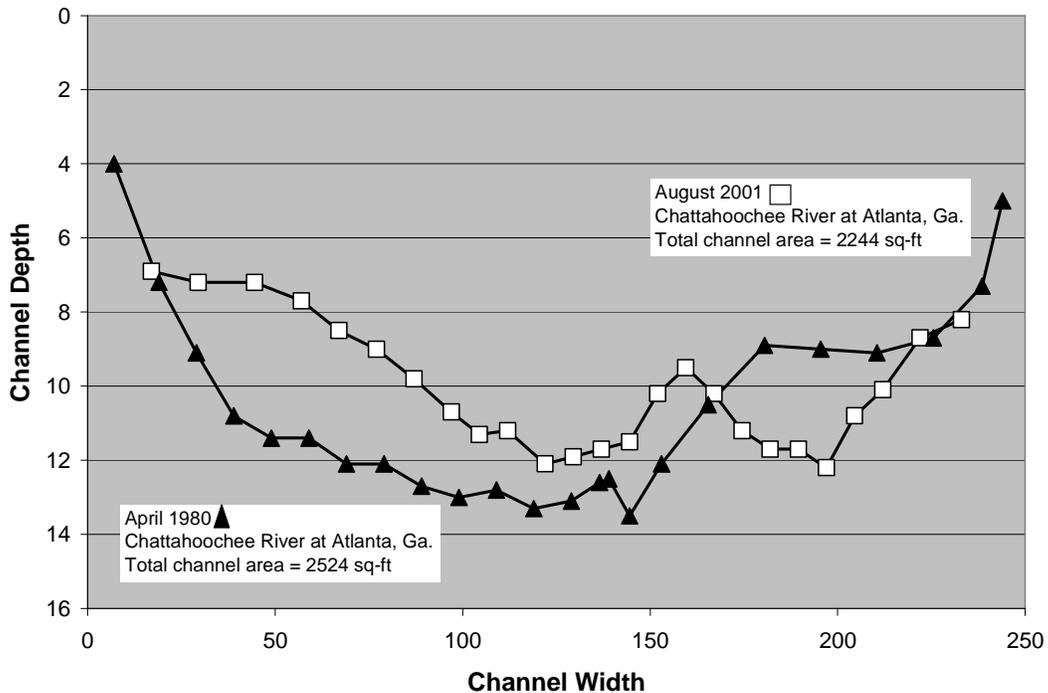


Figure 2.—Differences in the channel profile at one site between 1980 and 2001.



9) Project Title: **Comprehensive survey of aquatic biota in Bull Sluice Lake and the Chattahoochee River downstream of Morgan Falls Dam to the confluence at Peachtree Creek**

Description of the goals and objectives and the information to be obtained

The goal of the study is to survey Bull Sluice Lake within the boundary of the Morgan Falls Hydroelectric Project and the Chattahoochee River downstream of the project to the confluence at Peachtree Creek. This survey should be habitat-based so that the effects of project operation, such as instream flow that is regulated by discharge from Morgan Falls Dam, on habitat for aquatic biota can be assessed. The information to be obtained would consist of habitat-specific inventories and relative abundance estimates for:

1. Fish
2. Benthic macroinvertebrates (e.g., crayfish, insects)
3. Aquatic plants

Relevant resource management goals of the National Park Service, Chattahoochee River National Recreation Area (CRNRA)

The National Park Service preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

CRNRA was established by Congress in 1978 to preserve and protect the “natural, scenic, recreation, historic, and other values of a forty-eight-mile segment of the Chattahoochee River and certain adjoining lands in the State of Georgia from Buford Dam downstream to Peachtree Creek” and that the boundaries of CRNRA “shall consist of the river and its bed together with the lands, waters, and interests therein” (Public Law 95-344 as amended, Public Law 95-34498-568, Public Law 95-344106-154).

The purpose of CRNRA is to lead the preservation and protection of the 48 mile Chattahoochee River corridor from Buford Dam to Peachtree Creek, and its associated natural and cultural resources, for the benefit and enjoyment of the people.

Existing information concerning the subject of the study proposal, and the need for additional information

Fish—Although GADNR annually monitors trout in the mainstem Chattahoochee River, little published information exists regarding fish communities. Hess (1980) provides the only comprehensive study of fish communities in the Chattahoochee River within the project boundaries of the Morgan Falls Hydroelectric Project (Table 1). From Buford Dam to Morgan

Falls Dam, only 1 sampling station was within the project boundary, which was at the end of the Island Ford shoals and extended downstream approximately 0.8 km. Therefore, no published surveys of fish within Bull Sluice Lake proper are available. From Morgan Falls Dam to Peachtree Creek, 31 species were found, and 10 species were “abundant”. The “abundant” species in this latter stretch of the river were comprised of mostly of native warmwater species such as gizzard shad, quillback, greyfin redhorse (Appalachicola redhorse, an undescribed species), brown bullhead, redbreast sunfish, bluegill, and black crappie, whereas trout dominated the fish fauna above Morgan Falls Dam where only 17 species were found.

Table 1.—Fish species captured by Hess (1980) in the Chattahoochee River within the project boundary above Morgan Falls Dam, downstream of the dam to Peachtree Creek, or in both locations.

| Species | Location |
|----------------------|------------|
| Brook trout | Above |
| Warmouth | Above |
| Alabama hogsucker | Both |
| Rainbow trout | Both |
| Brown trout | Both |
| Common carp | Both |
| Spotted sucker | Both |
| Greater jumprock | Both |
| Greyfin redhorse | Both |
| Brown bullhead | Both |
| Redbreast sunfish | Both |
| Green sunfish | Both |
| Bluegill | Both |
| Redear sunfish | Both |
| Largemouth bass | Both |
| Black crappie | Both |
| Yellow perch | Both |
| Bowfin | Downstream |
| Gizzard shad | Downstream |
| Chain pickerel | Downstream |
| Silverjaw minnow | Downstream |
| Quillback | Downstream |
| White sucker | Downstream |
| Creek chubsucker | Downstream |
| Unidentified buffalo | Downstream |
| Snail bullhead | Downstream |
| Yellow bullhead | Downstream |
| Black bullhead | Downstream |

| | |
|---------------------|------------|
| Spotted bass | Downstream |
| Shoal bass | Downstream |
| Blackbanded darter | Downstream |
| Banded sculpin | Downstream |
| Undescribed sculpin | Downstream |

Freeman and Burgess (2000) surveyed the shoreline and marshes of Bull Sluice Lake for Asian rice eels and documented gizzard shad, common carp, largemouth bass, rainbow trout, bluegill, redbreast sunfish, white suckers, mosquitofish, yellow perch, and blackbanded darters. Additionally, they reported one Asian rice eel from a marsh adjacent to the lower pond exit at the Chattahoochee Nature Center. Many of these documented species have not been previously reported from the Chattahoochee River above Morgan Falls Dam, likely due to the unique habitat of Bull Sluice Lake that has yet to be comprehensively sampled.

Long (2003) sampled downstream of Morgan Falls Dam at the Cochran Shoals Unit of CRNRA and reported three redeye bass, which have not been reported from the mainstem Chattahoochee River previously. These individuals were verified by Dr. Bud Freeman, University of Georgia, were small, and likely were individuals that had been displaced from nearby tributaries after a series of large rain events that year.

Future and on-going fish surveys in the study area include a fish inventory survey scheduled to be conducted in 2004-2005 by Auburn University and a survey for Asian rice eels by University of Georgia. The survey by Auburn University is being conducted as part of the NPS Inventory and Monitoring program, but will likely focus most or all of their effort into surveys of tributaries and data mining for previous information. Actual on-the-ground surveys will likely not occur in the mainstem of the Chattahoochee River or in Bull Sluice Lake. The survey for Asian rice eels will survey in areas of Bull Sluice Lake, but only in selected, likely-suitable habitats.

Additional information is needed because few previous surveys have examined the fish fauna in the mainstem of the Chattahoochee River and the one that had occurred nearly 25 years ago. Other past and planned surveys lack the comprehensive scope that is needed to adequately describe the fish fauna in the study area.

Benthic macroinvertebrates—This group of aquatic biota can be grouped into crayfish and insects. Few studies are available for the study area. No known crayfish studies have been undertaken, but Hess (1999) found that they were the most frequent prey item in gut contents of striped bass. Chris Scalley, fishing guide and president of the Chattahoochee Cold-Water Tailrace Fishery Foundation, has been studying benthic insects since 2000 but results are not widely distributed and the level of identification has not yet been taken to species. Giff Beaton is currently studying the distribution of Odonata in the state and has included parts of the mainstem Chattahoochee River below Morgan Falls Dam as sampling locations. The Water Resources Management Plan for CRNRA (Kunkle and Vana-Miller 2000) contains a comprehensive review of benthic macroinvertebrates studies known to have occurred in the study area and it lists only one unreferenced study, which was in 1971 by the Georgia Water Quality Control Board that

examined benthic insects in the mainstem of the Chattahoochee River.

Additional information is needed on this group of aquatic biota because very little has been accomplished, especially in the mainstem of the Chattahoochee River. Furthermore, none of these studies have been linked with their habitats so the effects of project operations cannot be assessed.

Aquatic Plants—Hay and Parker (2004) provide the only aquatic plant survey known to be conducted in the study area. They surveyed the Chattahoochee River within the boundary of CRNRA including 6 sites within the Morgan Falls Hydroelectric Project boundary. The report is vague regarding samples taken in Bull Sluice Lake, although they report that they sampled the river at the Gold Branch Unit, which is adjacent to Bull Sluice Lake. They documented 43 species and obtained voucher specimens for 36 of those (Table 2).

Table 2.—Aquatic plant species identified in the Chattahoochee River within CRNRA that were vouchered.

| Species | Species |
|------------------------------------|----------------------------------|
| <i>Alisma subcordatum</i> | <i>Myriophyllum aquaticum</i> |
| <i>Alternanthera philoxeroides</i> | <i>Myriophyllum laxum?</i> |
| <i>Cabomba caroliniana</i> | <i>Nitella flexilis</i> |
| <i>Callitriche heterophylla</i> | <i>Peltandra virginica</i> |
| <i>Carex lurida</i> | <i>Pluchea camphorata</i> |
| <i>Cyperus strigosus</i> | <i>Podostemum ceratophyllum</i> |
| <i>Egeria densa</i> | <i>Polygonum densiflorum</i> |
| <i>Eleocharis obtusa</i> | <i>Polygonum hydropiperoides</i> |
| <i>Fontinalis novae-angliae</i> | <i>Polygonum punctatum</i> |
| <i>Gallium tinctorium</i> | <i>Polygonum sagittatum</i> |
| <i>Gratiola virginiana</i> | <i>Polygonum setaceum</i> |
| <i>Hydrolea quadrivalvis</i> | <i>Potamogeton diversifolius</i> |
| <i>Juncus effusus</i> | <i>Potamogeton pusillus</i> |
| <i>Lobelia cardinalis</i> | <i>Sagittaria latifolia</i> |
| <i>Ludwigia palustris</i> | <i>Saururus cernuus</i> |
| <i>Luziola fluitans</i> | <i>Scirpus cyperinus</i> |
| <i>Mimulus ringens</i> | <i>Sparganium americanum</i> |
| <i>Murdannia keisak</i> | <i>Vaucheria</i> sp. |

Additional information is needed on aquatic vegetation because current information is based on one study with no link to habitat and subjective data on abundance. Furthermore, study sites were limited to areas near land units operated by CRNRA, rather than a survey among all aquatic areas. Information on distribution, density, and habitat are needed so that the effects of project

operations on aquatic vegetation can be assessed, especially as they relate to exotic invasive species such as *Egeria densa*.

Nexus between project operation 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

As aquatic species that occur within the upstream project boundary and downstream areas that are affected by regulated flow from the Morgan Falls Hydroelectric Project, impacts to these species are directly affected. These study results will be used to examine how the operation of the Morgan Falls Hydroelectric Project will differentially affect various members of these relatively under-studied aquatic organisms. Based on these study results, recommendations on project operations can be objectively made.

Proposed study methodology as consistent with generally accepted practices in the scientific community

We propose that methodologies be used that would link habitat with species and their relative abundance so that the effects of project operation on their habitat can be used to evaluate the effects on species abundance, distribution, and other life history characteristics. To begin, maps of major habitats will have to be constructed so that probabilistic surveys may be designed. Sampling should then take place according to habitat types. For fish, surveys will likely entail the use of electrofishing, seining, and netting. Traps will likely have to be used for crayfish whereas Hess, Surber, and dredges will likely need to be used for benthic insects. Environmental variables at study locations will need to be measured and studies should be conducted across all seasons in a year.

Consideration of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs

This level of effort will likely entail two years of study if favorable sampling conditions exist: one year to map the major habitat types in the study area and a second year to sample. Costs will likely range between \$100,000 and \$150,000. As stated in earlier sections, the alternative studies that are being proposed in the Pre-Application Document and Scoping Document-1 are not sufficient to meet the data needs for assessing the effects of project operations on aquatic biota because those studies are either too old to be of current value or too narrow in scope to sufficiently address the issues.

U.S. Fish and Wildlife Service Study Request

Sediment Contaminants Study

1) Describe the goals and objectives of the study and the information to be obtained.

The overall goal of the study is to determine the presence/absence, levels, and distribution of contaminants in the surface sediments within the project boundary. Sediments should be analyzed for TOC (total organic carbon), grain size, organochlorines (including PCBs-polychlorinated biphenyls-and pesticides), metals (including mercury, copper, lead), and PAHs (polyaromatic hydrocarbons). The resulting data will aid in the understanding of the presence/absence of contaminants, threats to the aquatic community within the project boundary, and the distribution, and hence possibly the source, of the contaminants.

2) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

The results of the sediment contaminants study will enable the resource agencies to make the best management decisions for protecting the aquatic community in the project boundary. These contaminants can cause carcinogenesis, bioaccumulation through the food chain, energy loss associated with detoxification, and reproductive and neurological effects. Therefore, the presence/absence, levels, and distribution of contaminants associated with these sediments need to be understood, as they factor into the decision-making process.

3) If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

The requester is a resource agency.

4) Describe existing information concerning the subject of the study proposal, and the need for additional information.

According to the PAD, the last sediment analysis within the project boundary was done by the Army Corps of Engineers in 1980. Lab techniques and detectability have changed in the 24 years that have elapsed since this time. Additionally, land use has dramatically changed since 1980. In the 1990's, the population grew rapidly in the counties that lie between Lake Lanier and Morgan Falls (county population growth ranged from 26 to 123 percent). Subsequently, these counties drain (at least in part) into the Chattahoochee River.

The licensee is currently conducting water quality sampling, but within the water column. It is instead the fine surface sediments that need to be sampled to determine the presence of these contaminants. Although the State of Georgia does not have wildlife criteria for contaminated sediments, these criteria exist in published literature and are readily available. We would gladly work with the applicant to determine appropriate bioaccumulation and toxicity criteria from the literature.

Fish tissue sampling currently conducted by the State of Georgia is fillet only and is conducted to protect human health, not assess risk to the fish and wildlife community. The

typical areas of high concentration that are consumed by fish and wildlife (e.g., liver, other areas of high fat content) are not analyzed; therefore the level of contamination and associated effects to the fish and wildlife community is unknown in the project area.

5) Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied.

Morgan Falls Dam is causing sediment to settle out of the water column and accumulate in the impoundment. Because contaminants bind to fine sediment, if they are present, contaminants will also accumulate in the impoundment and be concentrated instead of being gradually flushed downstream.

6) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

Sediment analysis is a widely accepted, widespread sampling method. An Ekman or Ponar dredge, commonly used sampling equipment, should be used to obtain benthic grab samples. Sampling should not be conducted immediately after a reservoir drawdown or a rain event, so that there is time for the sediments (and associated contaminants) to settle. Samples can be obtained in one sampling event, at any time of the year. A statistically-sound sampling methodology should be used to determine the number of samples taken at each site. Multiple samples can be homogenized within a site if necessary, but not among sites. Ten sample sites should be established to adequately sample the approximately 7-mile project boundary. To assess the distribution of contaminants, we recommend the following site locations:

- 11) The upstream project boundary demarcation;
- 12) The downstream project boundary demarcation (tailrace);
- 13) The depositional area of the mouth of Big Creek into the impoundment;
- 14) The depositional area of the mouth of Willeo Creek into the impoundment;
- 15) The depositional area of the mouth of Sullivan Creek into the impoundment;
- 16) The area of the impoundment just upstream of the dam;
- 17) The area of the impoundment just upstream of the dam;
- 18) Distributed evenly with samples 9 & 10 throughout the mainstem impoundment;
- 19) Distributed evenly with samples 8 & 10 throughout the mainstem impoundment;
- 20) Distributed evenly with samples 8 & 9 throughout the mainstem impoundment.

7) Describe considerations of cost and practicality, and why any proposed alternatives would not be sufficient to meet the stated information needs.

The contaminants that are listed above to be analyzed can have many negative effects, so it is important to understand their status within the project boundary. TOC and grain size need to

be analyzed because their relative levels are used to calibrate the concentrations of the contaminants among samples.

Costs would be comprised of fieldwork, transport, labwork, and summary reporting:

Fieldwork:

Fieldwork would require a team of two people for one day, a boat, a Ponar or Ekman dredge, and sediment holding containers. The licensee has a field crew and boat, but it is unknown if they own sediment sampling equipment and have personnel trained for collecting sediments, or if they would contract this work to a consultant.

Transport:

It is likely that there are laboratories in Atlanta that could process these samples, so transport would consist of the cost of fuel and personnel to shuttle samples. Estimated cost is \$100.00.

Labwork:

The lab analysis fee per sample site (if the samples are homogenized) for the contaminants listed above is approximately \$600-700.00 (Keith Hastie, Contaminants Specialist, USFWS, 2004, pers. comm.). Therefore, ten samples would be approximately \$6000-7000.00.

Summary Reporting:

A summary report would include a map of the project boundary with GEORGIA POWERS points representing the sample sites, lab results, and a discussion of the results as they relate to the objectives of the study: presence/absence, relative levels (comparison of these results to State standards and any known levels that cause effects in the aquatic community), and distribution within the project boundary. Once again, cost is hard to ascertain as the expenditure of effort can vary.

Upper Chattahoochee Riverkeeper Study Request

Study Request to Analyze the Effects of Dam Operation on Erosion and Sedimentation in the Morgan Falls Project Area

These comments are in response to *Scoping Document I, Georgia Power Company, Morgan Falls Hydroelectric Project, Project No. 2237* ("Scoping Document"). They also reference the *Pre-Application Document, Morgan Falls FERC Project Number 2237, Georgia Power Company, January 2004* ("PAD").

- 1) Description of the goals and objectives and the information to be obtained from the study proposal.**

- a. Characterize the rate and pattern of sedimentation into Bull Sluice Lake as well as an estimate of the volume of sediment behind the dam (including projections of future sedimentation loading);
- b. Determine whether the sediment deposition is “reaching equilibrium” as suggested by GA power, or continuing to increase;
- c. Evaluate the impact of the sedimentation on the Lake’s storage capacity and how the decrease in storage capacity affects downstream flows;
- d. Evaluate and analyze the long-term (30-50 year) consequences of sediment accumulation on aquatic habitats, downstream uses, and dam safety;
- e. Evaluate the effect of sedimentation on the aquatic, recreational, and socio-economic values of the Lake, including the impact of contaminated sediments (e.g., nutrients, metals, herbicides, pesticides);
- f. Evaluate the impacts and relative contribution of sediment both downstream of Bull Sluice Lake, and upstream in the tributaries and the main stem of the River;
- g. Explore alternatives that would mitigate for the environmental, recreational, and socio-economic impacts of the lake sedimentation; and outline the potential costs and benefits for each alternative; and
- h. Evaluate dredging alternatives that would create topographic diversity (e.g., mounds and pools) within the reservoir.

The study must be primarily a field study to delineate wetland formations, mudflat development, fish habitat, and recreational use patterns. The alternatives analysis for addressing sedimentation should include, but not be limited to, a long-range (30-50 years) projection of the impacts on environmental, recreational, and socio-economic resources for: 1) current operations; 2) a range of dredging options; 3) protective policy measures to halt upstream sediment contributions; and 4) the possibility of dam decommissioning.

2) N/A

3) Explanation of the relevant public interest considerations in the proposed study.

Sedimentation in Bull Sluice Lake is an item of significant public interest and concern. Bull Sluice Lake is part of the Chattahoochee River National Recreation Area (CRNRA), a park visited by 2,728,848 people in 2003 alone. Other recreation areas bordering the park include Fulton County’s Morgan Falls Park, the City of Roswell and Fulton County’s Chattahoochee River Park, and the Chattahoochee Nature Center. There are several subdivisions bordering the project, the largest being Huntcliff, which has over 400 single family homes and over 4 miles bordering the Morgan Falls Project area. Additionally, the Atlanta Rowing Club calls this 580 acre lake its home. Recreational uses of the lake include fishing, kayaking, canoeing, and tubing. In summary, Bull Sluice Lake provides numerous recreational opportunities for the Atlanta community.

Sedimentation of Bull Sluice Lake, however, is significantly changing the face of the Lake and may be jeopardizing this valuable amenity. Homeowners who live near Morgan Falls remember

when it was possible to water ski on the Lake. As noted in the PAD, estimated usable storage capacity has dropped from 3,150 acre-feet in 1954 to 2,250 acre-feet in 2001 (p. 23). This estimated change in storage translates into a 29% loss of storage capacity as well as decreased depth and fewer opportunities for recreational use.

The loss of 29% of the storage capacity of the Lake may have additional impacts, such as increasing temperatures of the river downstream of the dam, and decreasing the effectiveness of the dam for re-regulation capability. In the PAD, Georgia Power expressed their belief that the re-licensing process will reveal “the important role the project plays in metropolitan Atlanta’s management of the Chattahoochee River for water supply and water quality.” (p. 28) This “role” is dependant on the storage capacity of the reservoir. Specifically, storage capacity in the Lake effects the ability of the reservoir to function as a regulation dam for Atlanta’s water supply intake, and to maintain 750 cfs flow as required for NPDES permits in this section of the river. A field study that accurately delineates sedimentation rates, and storage capacity, is needed in order to understand how the re-regulation function may change over the next 30 years.

4) Description of existing information and the need for additional information regarding the effects of erosion and sedimentation in the Morgan Falls Project Area.

In the PAD, Georgia Power’s states that “sediment deposition now appears to be approaching or have reached equilibrium within the Morgan Falls impoundment.” (p. 23) However, they did not provide the error associated with this estimate. Georgia Power’s assessment was based on only three data points, using aerial photography of uncertain accuracy. This appears to be an insufficient examination. The status of sediment deposition in the Morgan Falls impoundment needs to be examined using field methods that will allow for a more accurate analysis of Lake sedimentation, and provide a map that delineates the type and sources of sedimentation so that an informed decision can be made as to how respond to the sedimentation. Georgia Power claims that “the storage at Morgan Falls, even at the amount that existed in 1960 (Figure 6), has an insignificant effect on the total weekly flow that passes a point in the river immediately upstream of Peachtree Creek.” (p. 23) Georgia Power goes on to say that Buford Dam releases have been re-regulated to account for the limited storage of Bull Sluice Lake. (p. 24) ***If, in fact, the ability of Morgan Falls Dam to re-regulate flow for Peachtree Creek is so hindered, than its value must be reconsidered, and decommissioning of Morgan Falls needs to be included in the Study Process.***

Regardless of the storage value of Bull Sluice Lake for power production, the amount of sedimentation in the Lake impacts its role as a recreational amenity. Anecdotal evidence suggests that home values on Bull Sluice Lake are also declining due to lake sedimentation. A socio-economic study is needed to determine if there is, in fact, a decline in property values, outline what residents can expect in the future, and explore alternatives for dealing with the sedimentation problem.

Georgia Power proposes to do a literature study on sedimentation in the Lake. However, this would provide insufficient analysis. A literature study would have little value due to the limited/nonexistent literature on the effects of erosion and sedimentation on the impoundment area. More importantly, in order to understand what is happening in the field, field studies yielding hard data are needed.

A model of riverine and reservoir sediment transport for this reach of the Chattahoochee River is available from Georgia Environmental Protection Division. This model can and should be used to evaluate alternative management of releases and redesigns of Morgan Falls Dam. The effects of alternative release strategies (e.g., passive spillway overflow, active control using variable discharge through hydroelectric generators, and active control using bottom-discharge (sluice) gates) should be evaluated using this tool.

We support WRD's study request on temperature effects of Bull Sluice Lake on downstream aquatic habitats. Additional studies are needed of temperature effects resulting from construction of topographic diversity (mounds and pools) within the reservoir where shallow mudflats currently dominate.

5) Explanation of the nexus between project operations and effects (direct, indirect, and/or cumulative) on erosion and sedimentation in the Morgan Falls Project Area, and how the study results would inform the development of license requirements.

Project operations directly impact environmental resource- fish populations, recreational resources (and related economic benefits from those recreational opportunities), and possibly project power generation (and associated economic benefits). It is also believed that ongoing operations of the project will continue to adversely impact these resources. We believe that dam operations can be altered to negate or mitigate for the current impacts. Lake sediment affects the project's operation as a re-regulation dam and its ability to serve as a source of power. There is significant uncertainty about how the project's operations will continue to impact environmental, economic, and recreational resources and how alternatives to these operations will mitigate for, increase, or decrease the current impacts. In short, there is a need for a meaningful analysis so that thoughtful decisions can be made based on sound science.

The results of the study would inform the development of license requirements in the following manner:

- a. Analysis will establish whether current project operations have a negligible or significant impact on environmental, recreational, or economic resources. If negligible, there is greater evidence to support the licensee's request to maintain current operations. If significant, alternative operations scenarios will inform potential alternative operations.
- b. Dredging alternatives will directly inform FERC and participants about different possible operation alternatives including their impacts, costs, and benefits.

- c. Analysis will shed light on whether dam removal is a viable alternative to evaluate.
- d. Science based study will determine if alternative dam discharge structures required for operation would mitigate the effects of sediment accumulation within the reservoir pool. Specifically, whether bottom-discharge (or sluice) gates or other release structures would provide improved environmental protection as well as increase reservoir storage capacity.

6) Explanation of the consistency of the study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) with generally accepted practice in the scientific community.

Reservoir sedimentation studies should use existing technologies, such as borings and acoustic imaging, to determine the thickness of accumulated sediment. Parameters such as density, texture, percent organic matter, metals, herbicides, pesticides, should be collected as a function of depth. Total masses of all parameters should be estimated.

Studies should be undertaken to determine how topographic complexity (e.g., dredging spoil mounds, pools, etc.) could be used to improve wetland habitat. Ecological studies should be conducted to identify the optimal size, height, and connectivity of dredging spoil islands for purposes of wildlife habitat, as well as the optimal size, depth and connectivity of dredging pools to provide deep-water habitat for aquatic species.

Studies are needed to determine the effect of contaminated sediments on fish and wildlife, specifically for each of the management alternatives: flushing to downstream; dredging and creation of local spoil mounds for habitat improvement; dredging and removal.

Studies to determine alternative reservoir discharge structures (e.g., bottom-discharge, or “sluice” gates) would increase sediment through-flow. An active (or dynamic) bottom-discharge structure would provide the ability to control reservoir storage and mitigate the effects of upstream flow variability by closing during peak inflow periods, and opening during low inflow periods.

7) Description of the anticipated level of effort and cost of the proposed study plan, and why proposed alternative studies would not be sufficient to meet the stated information needs.

A study of sedimentation of Bull Sluice Lake would have three major components:

1. A field study delineating wetlands, mudflat formation, and Lake depths;
2. A socio-economic study of recreational use patterns, home values, and analysis of any correlation/relationship between sedimentation and these uses and values;
3. An analysis of at least four alternatives for dealing with Lake sedimentation: dredging of the entire lake; dredging of the Lake’s main channel; no dredging; and policy and

regulatory tools necessary to upstream to protect the Lake from further sedimentation. This study would of necessity include an analysis of lake sediments, any health or environmental risks involved with dredging if these sediments, and the cost of removing such sediments.

APPENDIX C

References:

- Allen, M. S., and A. P. Wheeler. 2002. Important microhabitats for shoal bass in the Chipola River, Florida. Final Report, submitted to Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.
- CH2MHILL. 2000. Recreation flow preference report. Prepared for National Park Service, Chattahoochee River National Recreation Area, Atlanta.
- EA Engineering, Science, and Technology, Inc. 1990. Final report, instream flow studies for the North Georgia (FERC Project No. 2354) and Lloyd Shoals (FERC Project No. 2336) hydroelectric facilities. Prepared for Georgia Power Company. February 1990.
- Evans, J. W. and R.H. England. 1995. A recommended method to protect instream flows in Georgia. Federal Aid in Sport Fish Restoration Final Report, Georgia Department of Natural Resources, Social Circle.
- Nestler, J. M., J. Fritschen, R. T. Milhous, and J. Troxel. 1986. Effects of flow alteration on trout, angling, and recreation in the Chattahoochee River between Buford Dam and Peachtree Creek. Technical Report E-86-10, US Army Waterways Experiment Station, Vicksburg, MS.
- Wheeler, A. P., and M. S. Allen. 2003. Habitat and diet partitioning between shoal bass and largemouth bass in the Chipola River, Florida. Transactions of the American Fisheries Society 132(3):438-449.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in these proceedings. Dated this 10th day of November, 2004.

Signature: _____ /s/ _____

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Submission Contents

DRRequest.doc..... 1-62