Southern Company Generation
241 Ralph McGill Boulevard, NE
BIN 10193
Atlanta, GA 30308-3374
404 506 7219 tel

September 23, 2021

FERC Project No. 2354
North Georgia Project Non-Capacity Related License Amendment

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C.

Dear Secretary Bose:

Georgia Power Company (Georgia Power) is the Federal Energy Regulatory Commission (FERC) licensee for the North Georgia Project (FERC No. 2354). Pursuant to the requirements of 18 CFR Section 4.201, Southern Company on behalf of Georgia Power, files the attached Application for a Non-Capacity Related Amendment for the North Georgia Project (Project). The Project consists of six separate developments: Burton, Nacoochee, Mathis-Terrora, and Tallulah Falls on the Tallulah River; and Tugalo and Yonah on the Tugaloo River.

Georgia Power's application for amendment includes a proposal to replace and upgrade four (4) generating units in the Tugalo powerhouse, including refurbishing the turbines, replacing the turbine runners, rewinding the generators, and replacing spillway gates and intake trash racks.

The proposal does not change any of the Project features or operations and will not impact water control capabilities of the Tugalo powerhouse. The unit modifications are expected to increase the rating for each unit by about 4.75 MW each and increase each unit's efficiency. The installed capacity would increase by 19 MW total. The existing nameplate rated capacity is 11.25 MW for each unit and following the upgrade, the units will be approximately 16 MW each (17 MW each at full gate).

The full gate discharge of each unit is expected to marginally increase from 1240 cubic feet per second (cfs) to approximately 1400 cfs (12.9 percent increase) below the 15 percent FERC criterion for a capacity related amendment. The increase in hydraulic capacity would have an insignificant effect on water quality, including dissolved oxygen and temperature. The proposed replacement of trash racks at the Terrora intake would also result in a decrease of approach velocities at both best and full gate settings.

The Project will continue to operate under the terms of its current FERC license and applicable Water Quality Certification. No environmental resources are adversely affected by the proposed upgrade and all existing protection, mitigation, and enhancement measures required by the Project license would not change.

Pursuant to the consultation requirements in 18 CFR 4.38(a)(7), Georgia Power consulted with the following entities on this non-capacity amendment during June and July 2021: U.S. Forest Service; U.S. Fish and Wildlife Service; Georgia Department of Natural Resources - Environmental Protection Division; Georgia Department of Natural Resources -Wildlife Resources Division; Georgia Historic Preservation Division; South Carolina Department of Natural Resources (SCDNR); South Carolina Department of Health and Environmental Control; South Carolina Department of Archives and History; and Indian tribes. Georgia Power provided the Draft Non-Capacity Related Amendment Application for agency review and comment

on August 6, 2021.

Following an initial consultation meeting, on July 30, 2021, SCDNR requested that Georgia Power provide a desktop entrainment study to evaluate potential adverse effects of increased cross-sectional area spacing of proposed new trash racks. Georgia Power conducted a desktop entrainment study and provided the analysis to the consulting agencies on September 14, 2021.

All comments from consultation have been included in the documents that are being submitted with this license amendment application. Georgia Power is submitting a revised Exhibit A and Exhibit F, as those are the only Exhibits that require adjustment due to this proposal. There are no proposed changes to operations (Exhibit B), environmental resources (Exhibit E), or the project boundary (Exhibit G).

Attachments submitted with this letter include the following:

Attachment A - Application for Non-Capacity Related Amendment of License
Attachment B – Consultation Record
Attachment C – Desktop Fish Entrainment Memo and Agency Consultation on the results of this analysis
Attachment D – Tracked Change Version of Revised Exhibit A
Attachment E – Clean Version of Revised Exhibit A
Attachment F- Draft Memorandum of Agreement
Attachment G – Proposed Revisions Needed for Exhibit F (Exhibit F, Sheet 14, FERC Drawing 2354-74) - *Submitted as CEII*

Georgia Power respectfully requests that FERC conduct an expedited review and approval of the Tugalo upgrade application because there are no agency objections to the upgrade and it will not impact environmental resources. We have been in consultation with agencies already 60 days. If you have any questions about the Non-Capacity Related Amendment Application and/or revised license exhibits, or if you require additional information, please contact me on my cell phone at 404-797-9432 or by email at cromara@southernco.com.

Sincerely,

Courtenay R. O'Mara

Courtenay R. O'Mara, P.E.
Hydro Licensing & Compliance Supervisor

cc: Wayne King – FERC, Atlanta Regional Office
Kelly Houff – FERC, DHAC
Jennifer Polardino – FERC, DHAC

Attachment A

Application for Non-Capacity Related Amendment of License

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Georgia Power Company) FERC Project No. 2354

APPLICATION FOR NON-CAPACITY RELATED AMENDMENT OF LICENSE

Pursuant to Section 4.200 of the Federal Energy Regulatory Commission's (Commission or FERC) regulations,[1] Georgia Power Company (Georgia Power), hereby submits this Application for Non-Capacity Related Amendment of License (Application) for the North Georgia Project, FERC Project No. 2354 (Project). In filing this Application, Georgia Power seeks to amend the license[2] by upgrading and rehabilitating project turbines in the Tugalo powerhouse, rewinding and refurbishing the generators, replacing the control room panels, intake trash racks and spillway gates.

INITIAL STATEMENT

1. Georgia Power Company (Georgia Power) applies to the Federal Energy Regulatory Commission (FERC or Commission), under 18 CFR § 4.201, for a non-capacity amendment of the North Georgia Project (Project) license, a major existing waterpower project over 5 megawatts (MW), as described in the attached exhibit. This application is for a non-capacity amendment to upgrade and rehabilitate the four project turbines in the Tugalo powerhouse, rewinding and refurbishing the generators, replacing the control room panels, intake trash racks and spillway gates. The existing nameplate rated capacity[3] is 11.25 MW each for units 1 through 4 and following the upgrade, the units will be approximately 16 MW each. Existing hydraulic capacity at nameplate rated capacity is approximately 1240 cubic feet per second (cfs) for each unit and refurbished units will be approximately 1400 cfs each.

2. The exact name and business address and telephone number of the applicant are:

   Georgia Power Company
   241 Ralph McGill Boulevard, NE
   BIN 10193
   Atlanta, Georgia 30308-3374

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[1] 18 C.F.R. § 4.200.
[2] Accession Number 19961008-0044.
[3] Nameplate rated capacity is "best gate".

Communication and correspondence pertaining to this application should be addressed to:

Courtenay O'Mara
241 Ralph McGill Boulevard, NE
BIN 10193
Atlanta, Georgia 30308-3374
404-506-7219

3. Georgia Power is a domestic corporation and is licensee for the waterpower project, designated as Project No. 2354 in the records of the Federal Energy Regulatory Commission, issued on the 3rd day of October 1996.
4. The amendments of license proposed and the reason(s) why the proposed changes are necessary, are:
    a. CURRENT CONDITIONS

    The Tugalo Development is the fifth of six hydroelectric developments that comprise the North Georgia Project and is located just downstream of the confluence of the Tallulah and Chattooga Rivers. The development consists of the Tugalo Dam and powerhouse and the impoundment, Lake Tugalo. The Tugalo Development is located in Oconee County in South Carolina and Rabun County in Georgia.

    The Tugalo Dam is an 840-foot-long, 160-foot high concrete gravity dam with a 73-foot-long overflow section, a 357-foot-long gated spillway section, a 20-foot-long center non-overflow section, a 165-foot long intake section, and a 225-foot-long right non-overflow section. The crest elevation of the non-overflow sections is 905.0 feet above mean sea level; there is a bridge over the spillway at this same elevation. The spillway crest elevation is 885.0 feet.

    Lake Tugalo is a 597-acre reservoir with a gross storage capacity of 43,000 acre-ft, and a useable storage capacity of 14,000 acre-feet at a full pond elevation of 891.5 ft msl. Lake Tugalo extends up the Chattooga River about three miles from the Tallulah/Chattooga confluence.

    Four steel penstocks, each about 308 feet long and 13 feet in diameter, carry water from the intake section through the dam, then under a substation located between the dam and powerhouse, and finally into the generating units. The penstocks are encased in concrete.

    The Tugalo powerhouse sits about 130 feet downstream of the toe of the dam; a substation is situated in the space between. The powerhouse is a steel, reinforced concrete, and masonry building 204'4" long and 64'4" wide, with a 40' by 37'10" control room extending out from the upstream side. The powerhouse is 109.5 feet high at its downstream face. It contains four generating units, a control room, and a machine shop.

    Tugalo's four generating units are rated at 11.25 MW each, for a total capacity of 45 MW. Each unit has a vertical Francis-type turbine rated 22,850 horsepower at 143 feet of head, and a vertical, alternating current generator rated 18,293 KVA, 17,041 KW at 171.4 rpm.

    The generating units supply power at 6600 volts. Voltage at the powerhouse is increased to 46-kilovolt (kV) via transformers located at the powerhouse. A short

line connects Tugalo powerhouse to the transmission substation located between the powerhouse and the dam.

The tailrace is 200-feet long and 150-feet-wide and is separated from the main channel on its left by a concrete wall about 70 feet long and on its right by a concrete wall about 200 feet long.

The plant is operated to help meet the demand of the Georgia Power system during peak periods of the day. Operation is modified run-of-river; Lake Tugalo stores inflow over short periods of time, which is utilized to provide generation from Tugalo powerhouse during peak power demand hours. The reservoir is kept at or near full pool elevation throughout the year. Tugalo powerhouse discharges directly into the downstream Lake Yonah.

b. PROPOSAL

Tugalo's electrical and mechanical systems need rehabilitation and refurbishment. Georgia Power is planning to modernize the electrical systems and provide refurbishment to extend the life of the Tugalo turbines, generating units, instrumentation, and controls, so that the plant can continue to meet the operational requirements of its existing license. Units 1 through 4 are driven by vertical, Francis type turbines. The turbines and runners have been in operation for approximately 95 years. There are four generating units in the Tugalo powerhouse; the units will be modernized in 2022-2025, one unit each year. The turbines must be completely disassembled to facilitate the upgrade.

The proposed scope of work for Tugalo includes the following.

- All turbine components will be removed and refurbished/upgraded.
- Replace the existing generators.
- Instrumentation and controls replacement to cover control systems for the units and the plant. It will also address communications systems local to the plant, river system or area and Corporate networks for remote connectivity.
- Electrical balance of plant systems including replacement of line breakers, generator breakers, excitation, protective relaying, station service transformers, cable bus, switchgear, and AC and DC panels. Demolition and removal of existing conduit tray and abandoned cable will be planned as necessary to accommodate new cable and equipment. Existing electrical components that are being replaced or abandoned will be demolished.
- Mechanical balance of plant systems including replacement of cooling water, service water bearing lube oil, thrust bearing high pressure oil lift, governor oil hydraulic pumping unit, service air, powerhouse HVAC, automatic grease system, unit drainage systems, new rotor jacking system.
- Demolition and removal of equipment and skid to be replaced or abandoned is planned, as necessary. Rehabilitation of surfaces in demolished areas will be implemented, as necessary.
- Civil infrastructure as applicable including trash racks and spillway gate replacements.

Table 1 shows the rated generating and maximum hydraulic capacities of the existing units with the expected performance of the upgraded units. Performance of the upgraded units may vary slightly based on final design, head conditions, and fabrication.

TABLE 1 – TUGALO EXISTING AND PROPOSED HYDRAULIC CAPACITIES AND RATED CAPACITY

UNIT	Existing Rated (Best Gate/Most Efficient) Capacity (MW)	Existing Rated (Best Gate /Most Efficient) Hydraulic Capacity (CFS)	Proposed Rated (Best Gate/Most Efficient) Capacity (MW)	Proposed Rated (Best Gate /Most Efficient) Hydraulic Capacity (CFS)	Proposed Full Gate/Max Capacity after Upgrade (MW)	Proposed Max Hydraulic Capacity (CFS) after Upgrade (Full Gate)
1	**11.25**	**1240**	**16**	**1400**	**17**	**1500**
2	**11.25**	**1240**	**16**	**1400**	**17**	**1500**
3	**11.25**	**1240**	**16**	**1400**	**17**	**1500**
4	**11.25**	**1240**	**16**	**1400**	**17**	**1500**

Each upgraded unit will increase rated capacity from 11.25 TO 16 MW (at best gate). Following the upgrade there will be an increase of approximately 1240 cfs to 1400 cfs at best gate hydraulic capacity for an increase of 12.9 percent at Tugalo. Georgia Power will operate the Tugalo powerhouse with no change to existing lake levels at Lake Tugalo.

5. (i) The statutory or regulatory requirements of the state(s) in which the project would be located that affect the project as proposed with respect to bed and banks and to the appropriation, diversion, and use of water for power purposes are as follows:

    1) Georgia Power is a public electric utility serving retail customers in the State of Georgia and as such, is required to operate and exist under the general laws of the State of Georgia regulating public utilities as codified in the Official Code of Georgia Annotated (O.C.G.A.) Title 46 Chapter 3A. Specifically, § 46-3A-2 which requires utilities to file an Integrated Resource Plan (IRP) with the Georgia Public Service Commission.

    2) Section 401(a) of the Clean Water Act (CWA) of 1977 requires that an applicant for a federal license to construct or operate facilities, which may result in any discharge into navigable waters, must provide the federal agency with a certificate from the state in which the discharge originates or from the appropriate interstate water pollution control agency. In Georgia, Water Quality Certifications (WQC) are issued by the Georgia Environmental Protection Division (Georgia EPD) as part of the Georgia Department of Natural Resources wetland regulatory program via O.C.G.A. Title 12 Chapter 5-21. The existing license for North Georgia includes a 401 Water Quality Certificate issued by Georgia Environmental Protection Division (EPD) on August 15, 1991. Although the Tugalo development is located partially in South Carolina, all discharges originate in Georgia. Therefore, only a water quality certification from Georgia is required by Section 40l(a) of the CWA. South Carolina

waived its 401 authority to the state of Georgia during relicensing[4].The proposed refurbishment does not affect lake levels, only the discharge, and the powerhouse is located in Georgia.

3) Section 7 of the Endangered Species Act requires consultation pertaining to the potential impact to threatened or endangered species. Georgia Power reviewed the U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (ECOS) Information for Planning and Consultation (IPaC) tool and also discussed the proposed upgrade with the USFWS, U.S. Forest Service (USFS), Georgia Department of Natural Resources (Georgia DNR), and South Carolina Department of Natural Resources (South Carolina DNR).Georgia DNR is authorized by O.C.G.A. Title 27 Chapter 3 Article 3 (§ 27-3-132) as well as Rule 391-4-10 and the Endangered Wildlife Act of 1973 to make decisions, approve permits and determine potential impacts to any resident species as endangered, threatened, rare or unusual species.

4) Section 106 of the National Historic Preservation Act (NHPA) requires FERC to consider any adverse effects to historic properties before issuing the Order approving a license amendment. Tugalo powerhouse is eligible for listing on the National Register of Historic Places (NRHP) and, therefore, a historic property per the NHPA. Georgia Power has consulted with the Georgia Department of Community Affairs, Historic Preservation Division (Georgia HPD), the South Carolina Department of Archives and History (SC DAH), and sent information packages to Indian tribes.

(ii) The steps which the Applicant has taken, or plans to take to comply with each of the laws cited above, are:

1) Per the Integrated Resource Plan (IRP) Act, the IRP must be filed every 3 years, with the most recent being submitted on January 31, 2019.

   The January 2019 IRP included modifications and plans for modernization of the Terrora, Tugalo and Nacoochee plants in the North Georgia Project, including those upgrades to the Tugalo Development as discussed in this application. This IRP was approved by the Public Service Commission on July 29, 2019. Money approved by the Public Service Commission is only available in the years approved. Therefore, it is essential that FERC review this application in an expeditious manner to meet the schedule required by the Public Service Commission. The schedule outlined for the three North Georgia Projects are as follows:

   - Terrora – Modernization work is in progress and will be completed in 2021
   - Tugalo – First Unit in 2022, Second Unit in 2023, Third Unit in 2024, and Fourth Unit in 2025
   - Nacoochee – Unit 2 in 2024

   The year stated is the year for actual turbine runner replacement and generator rewinds. Detailed scoping and engineering for each project occurs in years prior to the installation. Once sufficient engineering work is complete for each unit, agency consultation can begin, and license amendments submitted to FERC. As noted, FERC issued the order approving the license amendment related to the Terrora project on

[4] See Accession No 19961008-0044, footnote 12. FERC notes that "Although the dams for Yonah and Tugalo developments are located partially in South Carolina, all discharges originate in Georgia. Therefore, only a water quality certification from Georgia is required by Section 401(a) of the Clean Water Act."

February 2, 2021. Additional license amendments will be submitted to FERC for the remaining projects as the information becomes available.

2) Georgia Power was issued a 401 Water Quality Certification (WQC) for the North Georgia Project on August 15, 1991 and has been operating in compliance with the WQC since the license order was granted. According to FERC's guidance for license amendments in the *Hydroelectric Project Handbook for Filings Other than Licenses and Exemptions* (Section 4.1), "Evidence of a new request for water quality certification is only required if the amendment would result in a material adverse effect on the water quality in the discharge from the project or proposed project." Georgia Power consulted with the Georgia EPD and received confirmation that the existing and proposed unit modifications would continue to meet water quality criteria. Although, South Carolina waived its 401 authority to the state of Georgia during relicensing in the early 1990s, as a courtesy Georgia Power reached out to the South Carolina Department of Health and Environmental Control (DHEC) on June 21 and July 12, 2021 via email and telephone, respectively. Georgia Power did not receive a response.

   Based on the calculations provided and discussed with the Georgia EPD there will be no material adverse effect on the water quality; therefore, Georgia EPD stated that a new 401 water quality certification would not be necessary.

3) Section 7 of the Endangered Species Act requires consultation pertaining to potential impacts of proposed actions to federally threatened or endangered species. There may be listed species in the area of the Tugalo Development. Georgia Power reviewed the USFWS' IPaC tool in May 2021 and found that the Gray bat (*Myotis grisescens*), the Northern Long-eared bat (*Myotis sepentrionalis*), and the Bog turtle (*Clemmys muhlenbergii*) may be present in the Tugalo Development area. The majority of the upgrade activities occur in the powerhouse and do not require any ground disturbance or cutting of trees; therefore, there would be no effect on the bats. The Bog turtle generally occupies open-canopy, herbaceous sedge meadows and fens bordered by wooded areas; Georgia Power does not anticipate any effect on this species. Finally, there are five federally-listed flowering plants and one federally-listed lichen, but no effect is anticipated because the proposed upgrade does not involve ground distributing activities. The USFWS' IPaC tool also listed 6 migratory birds that may use the project vicinity; however, Georgia Power does not anticipate any effect on these species. In addition, Georgia Power consulted with the Georgia DNR and South Carolina DNR on state listed species. Three aquatic species are described for the greater facility area (Tallulah River HUC10 watershed [0306010201]) based on review of Georgia WRD's web-based Natural Heritage Inventory on May 18, 2020. Highscale Shiner (*Notropis hypsilepis*), primarily found in tributary streams, is State listed as Rare. Smokey Dace (*Clinostomus funduloides*) and Brassy Jumprock (*Moxostoma sp*. 4) are neither federal nor state listed. The facility upgrades are not expected to have any impact on current flow, lake levels, or aquatic life and agencies concurred.

4) The proposed replacement of the trash racks at the Tugalo intake would result in a decrease of approach velocities. The approach velocities expected with new trashracks are estimated to be 1.73 and 1.86 foot per second (ft/s) at best and full gate flows, respectively. This is a decrease of 0.02 and 0.55 ft/s from the estimated approach velocities at best and full gate flow with the existing trashracks and existing

units.

5) Per request on July 30, 2021 from South Carolina DNR, Georgia Power conducted a desktop entrainment study to evaluate potential adverse effects of the increased cross-sectional area of the proposed trash racks. Georgia Power provided the analysis to all consulting agencies on September 14, 2021. The agencies concurred with the results of the analysis and noted that decreased velocities may provide a beneficial effect.

6) The Tugalo upgrade proposal includes replacing the existing spillway gates and generators, and Georgia Power consulted with the Georgia HPD and SC DAH specifically for Section 106; all other agencies were also consulted on replacement of spillway gates. Georgia Power received edits on the Draft Memorandum of Agreement from Georgia HPD and SC DAH that were included in the initial consultation package mailed to these agencies. All comments received have been incorporated into the Draft Memorandum of Agreement (MOA) included in this license amendment application. Additionally, and with permission of FERC staff, Georgia Power sent an outreach package to the Eastern Band of Cherokee Indians, the Catawba Nation, the Cherokee Nation, and the United Keetoowah Band of Cherokee Indians. The Catawba Nation responded that they had no comments on the undertaking but want to be notified if artifacts or remains are found. The Draft MOA incorporates this request. No other of the aforementioned tribes provided any comments.

6. As the project is constructed and operating under the above described laws and rules as well as its existing FERC license and plans no changes in operation associated with the non-capacity license amendment, it will remain in compliance with the above cited rules and regulations. Future FERC license amendments will be submitted for the Nacoochee project separately once mechanical and electrical design work is further completed. In accordance with 18 CFR §4.201(c), only the following applicable exhibit(s) that require revision are made part of this Application:

   Exhibits A, F, and G were incorporated into the License Order for Project No. 2354.

   Georgia Power notes that the proposed upgrade will not change 1) project operations (Exhibit B), 2) the existing Project boundary (Exhibit G), or 3) the Recreation Plan; therefore, no revisions are needed for the other license exhibits and plans and therefore, not applicable to this amendment.

   Exhibit A (Project Description) requires an update; therefore, Georgia Power is attaching a revised Exhibit A in track change and a fully accepted changed version.

   Georgia Power will provide any updates to Exhibit F after the as-builts drawings are complete. A draft Exhibit F is provided includes edits for new dimensions for generators to show the proposed changes of this license amendment; spillway replacement does not affect existing Exhibit F drawings because replacement gates are same dimensions. The draft Exhibit F is filed under a Critical Energy Infrastructure Information (CEII) designation.

7. Commission regulations under 18 CFR § 4.38(a)(7) require Georgia Power to consult with resource agencies and Indian tribes, to the extent that the proposed amendment would affect their interests. Georgia Power has consulted and received input, which has been incorporated into this license amendment application with the following agencies/Tribes (Initial Meeting dates in parenthesis):

- U.S. Forest Service (June 24, 2021)
- U.S. Fish and Wildlife Service (June 25, 2021)
- Georgia Department of Natural Resources - Environmental Protection Division (June 14, 2021)
- Georgia Department of Natural Resources -Wildlife Resources Division (June 24, 2021)
- Georgia Department of Community Affairs, Historic Preservation Division (July 1, 2021)
- South Carolina Department of Natural Resources (July 15, 2021)
- South Carolina State Department of Archives and History (July 1, 2021)
- Catawba Nation (July 20, 2021)

Additional information on consultation with agencies and tribes is provided in 5 (ii) 2, 3, 5 and 6 above and documentation of consultation is provided in attachments.

Georgia Power submitted a summary of the upgrade to the aforementioned agencies and provided an opportunity to meet and discuss the proposed upgrade in June and July 2021. As follow-up to the June and July meetings, an information package was mailed to the agencies and feedback was incorporated into the Draft License Amendment Application. Georgia Power provided the draft Non-Capacity Related License Amendment Application for agency review and comment on August 6, 2021 and has incorporated input from agencies in this License Amendment application. As noted above in 5 (ii) 5), at the request of SC DNR in July 2021, Georgia Power conducted a desktop entrainment study and distributed the analysis memo to all the agencies in September 2021. Therefore, Georgia Power has been consulting for over 60 days with the applicable agencies and we are requesting a waiver of the 60-day review of the application and request expedited FERC review.

8. This application package also includes the following attachments to assist the Commission in their review:
   Attachment B – Consultation Record
   Attachment C – Desktop Fish Entrainment Memo and Agency Consultation on the results of this analysis
   Attachment D – Tracked Change Version of Revised Exhibit A
   Attachment E – Clean Version of Revised Exhibit A
   Attachment F- Draft Memorandum of Agreement
   Attachment G – Proposed Revisions Needed for Exhibit F (Exhibit F, Sheet 14, FERC Drawing 2354-74) - *Submitted as CEII*

SUMMARY

This Non-Capacity Related License Amendment would allow for turbine upgrades and associated modernization efforts described herein at the Tugalo development for continued operation of the generating units. The Tugalo upgrade is the second plant in the North Georgia modernization projects for which Georgia Power is seeking FERC approval. Future project schedules will be affected by the Tugalo completion dates. Money approved by the Public Service Commission is only available in the years approved (see (ii)1).

Therefore, it is essential that FERC review this application in an expeditious manner to meet the schedule required by the Public Service Commission.

Attachment B

Consultation Record

U.S. Fish and Wildlife Service

Written Correspondence with USFWS

From:	O"Rouke, Patrick Michael
To:	Bauer, Eric F
Cc:	Munn, Laura S.
Subject:	Tugalo Modernization
Date:	Friday, June 25, 2021 3:33:43 PM
Attachments:	Agency Brief Tugalo Unit UpgradesFinal.pdf 2021 06 25 USFWS Consult Form Final.docx

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Eric:

We appreciate your time on our call this morning. I've attached the agency briefing that we're providing to everyone as well as a follow-up form with notes from the call today that we'll file with FERC. Please let me know if you have any questions or need any additional clarifications on this.

Thank you,
Patrick

Patrick O'Rouke
Fisheries Biologist
Georgia Power

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Atlanta, GA 30308
(404) 506-5025 (Office)
(470) 426-5322 (Cell)

Georgia Power

North Georgia Hydroelectric Project

FERC Project #2354

Communication Date: June 25, 2021

Communication Type: Teams Web-Meeting

List and attach pertinent written correspondence:

Map of Dams/River

Agency Briefing Card

List persons attending from Southern Company/Georgia Power:

Southern Company: Courtenay O'Mara, P.E. and Laurie Munn, P.E.

Georgia Power Company (GPC): Patrick O'Rouke

List organization name and persons attending from other organization:

U. S. Fish and Wildlife Service (USFWS)

Eric Bauer

Subject: Consultation on the Modernization of the North Georgia Project Tugalo Powerhouse

Comments/Discussions/Requests:

Consultation occurred via Teams virtual meeting on June 25, 2021 and follow-up via email on June 25, 2021.

June 25, 2021 Consultation

On June 25, 2021 Southern Company/Georgia Power met via Teams with Eric Bauer of U. S. Fish and Wildlife Service (USFWS) and discussed the upgrades that Georgia Power has planned for the Tugalo Powerhouse and Dam. The following items were discussed:

- Overview of modernization program at Tugalo Dam
- The timeframe is 2022 through 2025 and includes plant upgrades and spillway gate replacement.
- The location map and agency briefing card were reviewed.
- Patrick O'Rouke (GPC) stated that velocities will decrease slightly but will basically be the same. Also, Patrick stated that the change in temperature in the tailrace would vary slightly, but basically remain unchanged. Operations will remain the same, and bulkheads would be used for the spillway gate replacement. The lake levels will not need to be lowered.
- Eric Bauer (USFWS) asked how the units would be changed out. Courtenay O'Mara explained that the assembly of new turbines and generators occur inside the building. Eric just wanted to confirm that Georgia Power would not be removing any part of the roof or structure that could have bat nests nestled inside of a crack within the structure. Courtenay O'Mara did share that there would most likely be some crane use on the spillway gate work, but Eric did not think that would be an issue. He also asked if any tree clearing would be needed and Georgia Power stated there would not be.
- Patrick O'Rouke explained that GPC has consulted with various agencies. David Vinson with U. S. Forest Service will be contacting USFWS to coordinate. Eric asked if we would contact USFWS Fisheries. Patrick explained that we have reached out to Georgia Dept. of Natural Resources Wildlife Resource Division for consultation on all sport fisheries. Eric concurred that is appropriate for this project.
- Patrick O'Rouke will follow up with an email.

Attachment to Georgia Power's 6/25/21 Email to USFWS

Georgia Power

North Georgia Project (FERC No. 2354) License Amendment
Tugalo Unit Upgrade

- From upstream to downstream, the Tugalo development is the fifth of six hydroelectric developments in the Federal Energy Regulatory Commission (FERC) licensed North Georgia Project (FERC No. 2354). Water for generation at Tugalo comes from rainfall in the Tallulah River basin (first coming through Tallulah Falls powerhouse) and the Chattooga River basin. These rivers converge in Lake Tugalo upstream of Tugalo powerhouse. Operation is modified run-of-river; Lake Tugalo stores inflow over short periods of time, which is utilized to provide generation from Tugalo powerhouse during peak power demand hours. Tugalo powerhouse discharges directly into the downstream Lake Yonah.

- Georgia Power is proposing to amend the North Georgia Project license to upgrade the four generating units in the Tugalo powerhouse. This upgrade includes replacing the turbine runners, generators and intake trashracks. We also will be replacing spillway gates beginning in 2022. Work will be completed behind bulkheads, so no drawdowns will be necessary for spillway gate replacement. Powerhouse work will begin in 2022, with a generator/turbine unit replaced each year in 2022, 2023, 2024, and 2025.

- Tugalo Park will be closed for staging materials beginning October 1, 2021. This is a temporary deviation to the Recreation Plan, not a license amendment, and is in advance of the modernization schedule. This item is being consulted on separately through the FERC ARO. Pursuant to Article 418, GPC is consulting Chattahoochee-Oconee National Forest, Francis Marion-Sumter National Forest, Georgia DNR (Wildlife Resources Division, Law Enforcement Division, State Parks & Historic Sites Division), and the National Park Service on this temporary modification to the Recreation Plan.

- The table below compares the rated generating and maximum hydraulic capacities of the existing units with the expected performance of the upgraded units.

UNIT	Existing Rated (Best Gate/Most Efficient) Capacity (MW)	Existing Rated (Best Gate /Most Efficient) Hydraulic Capacity (CFS)	Proposed Rated (Best Gate/Most Efficient) Capacity (MW)	Proposed Rated (Best Gate /Most Efficient) Hydraulic Capacity (CFS)	Proposed Full Gate/Max Capacity after Upgrade (MW)	Proposed Max Hydraulic Capacity (CFS) after Upgrade
1	11.25	1240	16	1400	17	1500
2	11.25	1240	16	1400	17	1500
3	11.25	1240	16	1400	17	1500
4	11.25	1240	16	1400	17	1500

*Max Flow from 1 unit tested in field on June 8, 2020. Best gate flow was 1240 cfs per unit

- Following the upgrade, Georgia Power will operate the Tugalo powerhouse with no change to existing lake levels at Lake Tugalo and Lake Yonah.

- The approach velocities expected with new trashracks are estimated to be 1.73 and 1.86 foot per second (ft/s) at best and full gate flows, respectively. This is a decrease of 0.05 and 0.04 ft/s increase from the estimated approach velocities at best and full gate flow with the existing trashracks and existing units.

- By design, the expected range of temperature change in the tailrace due to the upgraded turbine coolers will be -0.01° F to 0.36° F.

- Georgia Power is preparing a non-capacity license amendment application to file with FERC. The application will conform with 18 C.F.R. §4.201 (c). Georgia Power will consult with state and federal agencies prior to filing. Non-capacity amendment applications typically have few, if any, effects on environmental, recreational, and

cultural resources; however, any potential issues would be disclosed in the application to FERC and in the pre-filing consultation.

- Georgia Power is consulting with the following agencies on this license amendment application:
    - Georgia Wildlife Resources Division/South Carolina Department of Natural Resources – lake levels, trashrack velocity changes, and species affects
    - US Fish and Wildlife Service – lake levels, trashrack velocity changes/species affects
    - US Forest Service – adjacent property owner; lake levels/species affects
    - Georgia State Historic Preservation Office and South Carolina State Historic Preservation Office – spillway gate replacements/generator replacements
    - GA Environmental Protection Division –lake levels and affects to existing 401 water quality certificate
- FERC typically issues a notice of the application receipt and may ask Georgia Power for additional information prior to its analysis of the proposed upgrade. Georgia Power may request FERC to conduct an expedited review to facilitate equipment procurement and work at the Tugalo powerhouse.

From: Bauer, Eric F
To: O"Rouke, Patrick Michael
Cc: Munn, Laura S.; Maholland, Peter D
Subject: Re: [EXTERNAL] Tugalo Modernization
Date: Tuesday, June 29, 2021 9:56:04 AM

EXTERNAL MAIL: Caution Opening Links or Files

Patrick,

Thank you for the opportunity to comment on the North Georgia Project (FERC No. 2354) License Amendment Tugalo Unit Upgrade. Given the stated work and operations plan for this upgrade that includes no ground disturbance, temporarily closure of Tugalo Park (5 years), minimal changes in lake levels, continued run-of-river operations, replacement of one generating unit per year, minimal changes to approach velocity and temperature as well as the lack of known occurrences of federally listed or state protected aquatic species, the Service does not anticipate significant impacts to fish or aquatic resources during this upgrade. The Service also recommends that disturbance to stream banks and riparian areas be minimized during project work and a 50 ft.
undisturbed buffer be maintained. For any staging areas, the storage of materials and equipment should not occur in buffer areas or other environmentally
sensitive areas whenever practicable. Therefore, we recommend that the equipment staging that will occur in Tugalo Park be kept to previously disturbed or impervious surface portions of the park and avoid disturbing native vegetation. If disturbing native vegetation is required, a survey for State and Federally protected plant species should be conducted because of known occurrences of the federally listed persistent trillium (*Trillium persistens*) and state listed sweet pinesap (*Monotropsis odorata*) within 1 mile of the park. The recommended survey period for persistent trillium is March 15 - April 15 but should be confirmed using a nearby reference site to confirm local flowering period. Surveys for sweet pinesap should be coordinated with GADNR.

-Eric

Eric F. Bauer, PhD
(he/him/his)
Fish and Wildlife Biologist
Georgia Ecological Services
US Fish and Wildlife Service
RG Stephens, Jr. Federal Building
355 East Hancock Avenue, Room 320, Box 7
Athens, GA 30601
Office #: 706-613-9493

From: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Sent: Friday, June 25, 2021 3:33 PM
To: Bauer, Eric F <eric_bauer@fws.gov>
Cc: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Subject: [EXTERNAL] Tugalo Modernization

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Eric:

We appreciate your time on our call this morning. I've attached the agency briefing that we're providing to everyone as well as a follow-up form with notes from the call today that we'll file with FERC. Please let me know if you have any questions or need any additional clarifications on this.

Thank you,
Patrick

Patrick O'Rouke
Fisheries Biologist
Georgia Power

pmorouke@southernco.com
241 Ralph McGill Blvd.
Atlanta, GA 30308
(404) 506-5025 (Office)
(470) 426-5322 (Cell)

Written Correspondence with Agencies

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Friday, August 6, 2021 12:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <Kelly.Schaeffer@KleinschmidtGroup.com>
Subject: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

Good afternoon,

We are close to submitting the license amendment application to FERC for the Tugalo Hydro Plant, which is 1 of 6 plants that Georgia Power operates as its North Georgia Project (FERC Project Number 2354). We appreciate all of the feedback and consultation that has been ongoing since June 2021 with you. As you may recall, our proposal is for a non-capacity upgrade of four generating units in the Tugalo powerhouse, and includes replacing the turbine runners, generators, intake trash racks, and spillway gates.

South Carolina Department of Natural Resources has requested a desktop entrainment study. We are currently preparing that, and we will distribute the study to the group as soon as it is completed, hopefully in the next 2-3 weeks. In the meantime, we wanted to provide you some time to take a look at our Draft License Amendment application so that you could provide any comment, if needed. Your comments are sufficient via reply email. We will take your comments and also provide them to the FERC when we make the application. FERC in turn will also provide an additional opportunity for comment after they receive our application, but we thought your early review would help resolve any outstanding issues.

The draft application consists of the following attachments:
Attachment A – Initial Statement and Application for a Non-Capacity License Amendment
Attachment B - Documentation of our Consultation with Agencies
Attachment C – Marked up version of the existing Exhibit A, showing changes that would be required to this part of our existing FERC license by the proposal

If possible, we would like your review by Friday, August 20, 2021.

Thanks so much.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



From: Munn, Laura S.
To: Bauer, Eric F
Cc: O"Mara, Courtenay R.; Kelly Schaeffer; O"Rouke, Patrick Michael
Subject: RE: [EXTERNAL] Georgia Power FERC License Amendment Application for Tugalo Hydro Plant
Date: Tuesday, August 10, 2021 1:38:00 PM
Attachments: image001.gif

Eric,
Thanks for your time and review. We appreciate your input.
Laurie

From: Bauer, Eric F <eric_bauer@fws.gov>
Sent: Tuesday, August 10, 2021 11:51 AM
To: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Subject: Re: [EXTERNAL] Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

EXTERNAL MAIL: Caution Opening Links or Files

Hi Laura,

The service doesn't have any comments at this time. I look forward to seeing the entrainment study.

-Eric

Eric F. Bauer, PhD
(he/him/his)
Fish and Wildlife Biologist
Georgia Ecological Services
US Fish and Wildlife Service
RG Stephens, Jr. Federal Building
355 East Hancock Avenue, Room 320, Box 7
Athens, GA 30601
Office #: 706-613-9493

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Friday, August 6, 2021 1:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov <ER@dca.ga.gov>; Santiago.Martinez@dca.ga.gov <Santiago.Martinez@dca.ga.gov>; EJohnson@scdah.sc.gov <EJohnson@scdah.sc.gov>; HIGHTOCW@dhec.sc.gov

<HIGHTOCW@dhec.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <kelly.schaeffer@kleinschmidtgroup.com>
Subject: [EXTERNAL] Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

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If possible, we would like your review by Friday, August 20, 2021.

Thanks so much.

Laurie Munn, P.E.
Sr. Engineer

Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



U.S. Forest Service

Written Correspondence with USFS

From: O"Rouke, Patrick Michael
To: Vinson, David -FS
Cc: Munn, Laura S.
Subject: Tugalo Modernization
Date: Friday, June 25, 2021 3:33:33 PM
Attachments: Agency Brief Tugalo Unit UpgradesFinal.pdf
2021 06 24 USFS Consult Form Final.docx

David:

We appreciate your time on our call yesterday. I've attached the agency briefing that we're providing to everyone as well as a follow-up form with notes from the call yesterday that we'll file with FERC. Please let me know if you have any questions or need any additional clarifications on this.

Thank you,
Patrick

Patrick O'Rouke
Fisheries Biologist
Georgia Power

pmorouke@southernco.com
241 Ralph McGill Blvd.
Atlanta, GA 30308
(404) 506-5025 (Office)
(470) 426-5322 (Cell)

Georgia Power

North Georgia Hydroelectric Project

FERC Project #2354

Communication Date: June 24, 2021

Communication Type: Teams Web-Meeting

List persons attending from Southern Company/Georgia Power:

Southern Company: Courtenay O'Mara, P.E. and Laurie Munn, P.E.

Georgia Power Company (GPC): Patrick O'Rouke

List organization name and persons attending from other organization:

United States Forest Service (USFS) -

David Vinson

Subject: Consultation on the Modernization of the North Georgia Project Tugalo Powerhouse

Comments/Discussions/Requests:

Consultation occurred via Teams virtual meeting on June 24, 2021 and follow-up via email on June 25, 2021.

June 24, 2021 Consultation

On June 24, 2021 Southern Company/Georgia Power met via Teams with David Vinson of United States Forest Service (USFS) and discussed the upgrades that Georgia Power has planned for the Tugalo Powerhouse and Dam. The following items were discussed:

- Overview of modernization program at Tugalo Dam
- The timeframe is 2022 through 2025 and includes turbine runner replacement, generator rewind, trashgate replacement, and spillway gate replacement.
- The project is planning to begin in January 2022, but Tugalo Park will be closed as a laydown area beginning in October 2021 and will remain closed for the entire construction process.
- Patrick O'Rouke stated that bulkheads would be used for the spillway gate replacement, and lake levels will not need to be lowered. Seasonal elevation restrictions for spawning protections will remain in place.
- David Vinson stated that it appears that there might be a very small portion of USFS land that touches the project near Panther Creek, but does not think there is any additional property. He will coordinate with the USFS land coordinator, Kurt Reardon, and make the determination if there are any species in the area. He will provide written feedback to GPC. Courtenay O'Mara stated that GPC is also reaching out to the land office for USFS regarding the park closure.

Georgia Power

North Georgia Project (FERC No. 2354) License Amendment
Tugalo Unit Upgrade

- From upstream to downstream, the Tugalo development is the fifth of six hydroelectric developments in the Federal Energy Regulatory Commission (FERC) licensed North Georgia Project (FERC No. 2354). Water for generation at Tugalo comes from rainfall in the Tallulah River basin (first coming through Tallulah Falls powerhouse) and the Chattooga River basin. These rivers converge in Lake Tugalo upstream of Tugalo powerhouse. Operation is modified run-of-river; Lake Tugalo stores inflow over short periods of time, which is utilized to provide generation from Tugalo powerhouse during peak power demand hours. Tugalo powerhouse discharges directly into the downstream Lake Yonah.

- Georgia Power is proposing to amend the North Georgia Project license to upgrade the four generating units in the Tugalo powerhouse. This upgrade includes replacing the turbine runners, generators and intake trashracks. We also will be replacing spillway gates beginning in 2022. Work will be completed behind bulkheads, so no drawdowns will be necessary for spillway gate replacement. Powerhouse work will begin in 2022, with a generator/turbine unit replaced each year in 2022, 2023, 2024, and 2025.

- Tugalo Park will be closed for staging materials beginning October 1, 2021. This is a temporary deviation to the Recreation Plan, not a license amendment, and is in advance of the modernization schedule. This item is being consulted on separately through the FERC ARO. Pursuant to Article 418, GPC is consulting Chattahoochee-Oconee National Forest, Francis Marion-Sumter National Forest, Georgia DNR (Wildlife Resources Division, Law Enforcement Division, State Parks & Historic Sites Division), and the National Park Service on this temporary modification to the Recreation Plan.

- The table below compares the rated generating and maximum hydraulic capacities of the existing units with the expected performance of the upgraded units.

UNIT	Existing Rated (Best Gate/Most Efficient) Capacity (MW)	Existing Rated (Best Gate /Most Efficient) Hydraulic Capacity (CFS)	Proposed Rated (Best Gate/Most Efficient) Capacity (MW)	Proposed Rated (Best Gate /Most Efficient) Hydraulic Capacity (CFS)	Proposed Full Gate/Max Capacity after Upgrade (MW)	Proposed Max Hydraulic Capacity (CFS) after Upgrade
1	11.25	1240	16	1400	17	1500
2	11.25	1240	16	1400	17	1500
3	11.25	1240	16	1400	17	1500
4	11.25	1240	16	1400	17	1500

*Max Flow from 1 unit tested in field on June 8, 2020. Best gate flow was 1240 cfs per unit

- Following the upgrade, Georgia Power will operate the Tugalo powerhouse with no change to existing lake levels at Lake Tugalo and Lake Yonah.

- The approach velocities expected with new trashracks are estimated to be 1.73 and 1.86 foot per second (ft/s) at best and full gate flows, respectively. This is a decrease of 0.05 and 0.04 ft/s increase from the estimated approach velocities at best and full gate flow with the existing trashracks and existing units.

- By design, the expected range of temperature change in the tailrace due to the upgraded turbine coolers will be -0.01° F to 0.36° F.

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    - US Forest Service – adjacent property owner; lake levels/species affects
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    - GA Environmental Protection Division –lake levels and affects to existing 401 water quality certificate
- FERC typically issues a notice of the application receipt and may ask Georgia Power for additional information prior to its analysis of the proposed upgrade. Georgia Power may request FERC to conduct an expedited review to facilitate equipment procurement and work at the Tugalo powerhouse.

From: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Sent: Wednesday, July 14, 2021 8:23 AM
To: Ramey, Barbara - FS <barbara.ramey@usda.gov>
Cc: Charles, Joseph D. <JCHARLES@southernco.com>
Subject: RE: [External Email]Tugalo Modernization

OK, thank you. Does that cover everything you need for the Tugalo review that David is handling?

Less pressing, but let's figure out the question about the special use permit when we get a chance. We've only started Rabun and Tugalo in this modernization process and the others in the North Georgia project should be coming over the next several years. I want to make sure we understand what the conditions of this permit may be before we start any others.

Thank you,
Patrick

From: Ramey, Barbara - FS <barbara.ramey@usda.gov>
Sent: Tuesday, July 13, 2021 4:30 PM
To: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Cc: Charles, Joseph D. <JCHARLES@southernco.com>
Subject: RE: [External Email]Tugalo Modernization

EXTERNAL MAIL: Caution Opening Links or Files

Actually I did look and it is not that one it at Lake Rabun/Lake Seed. We are so small sections on the forest on Lake Rabun, Seed Lake, and Lake Burton. It's just like the majority of Village Road is on us and we have issues with people throwing electronic gates on us there and many other small road areas like that.

For your current project area our district property line starts at ½ mile north of the boat ramp at Tallulah Gorge State Park and a small piece at Chattooga River east of the boat ramp at the park that goes just below it. On the South Carolina side I know at 753 road and Tugaloo Lake Road on the northeast end is the line for that part on the south end it's the Tugaloo Lake and Battle Creek south is where it is forest again. So it does miss ours.

Barb

Barb Ramey, Natural Resource Specialist (Recreation)
District Recreation, Lands, & Special Uses Program Manager

Forest Service
Chattahoochee-Oconee NF, Chattooga River Ranger District

p: 706-754-6221 x105
c: 770-519-7831
f: 706-754-1021
barbara.ramey@usda.gov

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Lakemont, GA 30552
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[usda.gov] [twitter.com] [facebook.com]

Caring for the land and serving people

From: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Sent: Tuesday, July 13, 2021 3:24 PM
To: Ramey, Barbara - FS <barbara.ramey@usda.gov>
Cc: Charles, Joseph D. <JCHARLES@southernco.com>
Subject: RE: [External Email]Tugalo Modernization

Barb, just following up on this…

All Forest Service property near Tugalo appears to be outside the project boundary (on the Georgia side the USFS property begins above Camp Creek; on the South Carolina side the USFS line is just below Opossum Creek but well above the boat ramp). All other ownership is limited to the State of Georgia, the State of South Carolina, Georgia Power, and one small private in-holding on the upper end of the lake. The FERC license also indicates that there are no lands of the United States enclosed within the project boundary. So there shouldn't be any special use permits that apply to Tugalo.

It shouldn't be Lake Seed, either. All of the property on Lake Seed is either privately held or owned by Georgia Power to my knowledge. Are you potentially thinking of Rabun? The Forest Service boat ramp and beach area are actually on the lake, however the license does not indicate that they're within the project boundary. I've asked our hydro license coordinator, Joey Charles, if he's aware of any special use permits in place at North Georgia and he isn't. If there is something on the books at USFS, that would be good for us to figure out.

Thank you for any additional information you can provide on this.

Patrick

Patrick O'Rouke
Fisheries Biologist
Georgia Power

pmorouke@southernco.com
241 Ralph McGill Blvd.
Atlanta, GA 30308
(404) 506-5025 (Office)
(470) 426-5322 (Cell)

From: O'Rouke, Patrick Michael
Sent: Thursday, July 08, 2021 4:20 PM
To: Ramey, Barbara - FS <barbara.ramey@usda.gov>
Subject: RE: [External Email]Tugalo Modernization

I actually was not aware that we operated under any special use permits at the North Georgia Project. Can you forward that to me so I can do some digging?

Thank you,
Patrick

From: Ramey, Barbara - FS <barbara.ramey@usda.gov>
Sent: Thursday, July 08, 2021 3:38 PM
To: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Subject: FW: [External Email]Tugalo Modernization

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Mr. O'Rouke,

Is this the Georgia Power Hydroelectric plant that is operating under a Special Uses Permit with the Forest Service or is it a different one? Hard to tell at the general information in the permit if it is that one or the one at Seed Lake.

Barb Ramey

Barb Ramey, Natural Resource Specialist (Recreation)
District Recreation, Lands, & Special Uses Program Manager

Forest Service
Chattahoochee-Oconee NF, Chattooga River Ranger District

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Caring for the land and serving people

From: Vinson, David -FS <david.vinson@usda.gov>
Sent: Thursday, July 8, 2021 9:16 AM
To: Ramey, Barbara - FS <barbara.ramey@usda.gov>
Subject: FW: [External Email]Tugalo Modernization

David Vinson
Wildlife Biologist

Forest Service
Chattahoochee-Oconee National Forest

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c: 706-490-2797
f: 706-754-1021
david.vinson@usda.gov

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[gcc02.safelinks.protection.outlook.com] [gcc02.safelinks.protection.outlook.com]

Caring for the land and serving people

From: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Sent: Friday, June 25, 2021 3:34 PM
To: Vinson, David -FS <david.vinson@usda.gov>
Cc: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Subject: [External Email]Tugalo Modernization

[External Email]
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David:

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Georgia Power

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Attachment to USFS's 7/16/21 Email to Georgia Power

From: Vinson, David -FS
To: Ramey, Barbara - FS
Cc: O"Rouke, Patrick Michael; Munn, Laura S.
Subject: GA Power-Lake Tugalo Upgrades 2021 USFS BE
Date: Friday, July 16, 2021 4:29:10 PM
Attachments: image001.png
image002.png
image003.png
image004.png
tugalo dam be 2021_page01_signed.pdf
tugalo dam be 2021_page02_signed.pdf

EXTERNAL MAIL: Caution Opening Links or Files

Not sure why when I scanned this document it divided it to 2 pages.

David Vinson
Wildlife Biologist

Forest Service
Chattahoochee-Oconee National Forest

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c: 706-490-2797
f: 706-754-1021
david.vinson@usda.gov

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BIOLOGICAL EVALUATION
GA POWER – LAKE TUGALO UPGRADES
CHATTOOGA RIVER RANGER DISTRICT
CHATTAHOOCHEE-OCONEE NATIONAL FOREST

INTRODUCTION

The purpose of this biological evaluation is to document any potential effects of management activities on Proposed, Endangered, Threatened and Sensitive (PETS) species and their habitats, and to ensure that land management decisions are made with the benefit of such knowledge.

PROJECT AREA DESCRIPTION, LOCATION AND PROJECT DESCRIPTION

From upstream to downstream, the Tugalo development is the fifth of six hydroelectric developments in the Federal Energy Regulatory Commission (FERC) licensed North Georgia Project (FERC No. 2354). Water for generation at Tugalo comes from rainfall in the Tallulah River basin (first coming through Tallulah Falls powerhouse) and the Chattooga River basin. These rivers converge in Lake Tugalo upstream of Tugalo powerhouse. Operation is modified run-of-river; Lake Tugalo stores inflow over short periods of time, which is utilized to provide generation from Tugalo powerhouse during peak power demand hours. Tugalo powerhouse discharges directly into the downstream Lake Yonah.

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SPECIES EVALUATED AND POTENTIAL EFFECTS ON SPECIES AND HABITATS

The project area was evaluated through the USFWS IPAC/ECOS GIS webpage, it returned these PETS and/or habitat may be present: Gray Bat, Northern Long-eared Bat, Bog Turtle, Persistent Trillium, Small Whorled Pogonia, Smooth Coneflower, Swamp Pink, White Fringeless Orchid, & Rock Gnome Lichen. No records of PETS species were recorded in the project area on GA DNR and USFS databases. Furthermore, there were no known bat roost trees, caves or hibernaculum for Gray bat, Northern long-eared bat, or other RFSS or locally rare bat within ¼ mile of the project area.

All actions taking place on National Forest lands will not disturb any live or dead (standing snag) trees. Access to the project area will be from the access road at the end of Tugalo Village Rd through GA Power property. All material and equipment used will be unloaded in the parking area at the Tugalo Dam and transported directly to the dam on private property. Since no trees will be cut or felled, and no soil disturbance will occur on adjacent federal lands or within one mile downstream on federal lands, the proposed action will have no impact on PETS species.

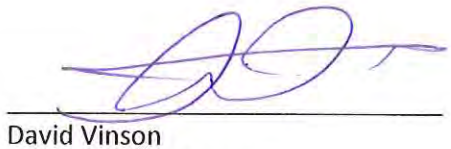
CUMULATIVE EFFECTS

The proposed action will have no impact on any PETS species. For all future projects, all high-risk sites will be surveyed for PETS plants and Biological Evaluations will be prepared to assess the potential habitat and impacts to all PETS plants and animals. Impacts to all Federally listed species will be avoided, and significant populations of Forest Sensitive species will be protected to insure their continued viability on the Forest. In addition, all activities will follow the MOU

between the USFS and USFWS for the Migratory Bird Treaty Act. Therefore, cumulative effects from past, present, and reasonably foreseeable future actions will not adversely affect PETS species.

DETERMINATION OF EFFECT

Therefore, it is my interpretation of the existing and future habitat that the proposed action for the GA Power – Lake Tugalo Upgrades Project will have a "*No Effect*" on federally listed species, "*No Impact*" on regional forester sensitive species, and "*Not Likely to Result in a Loss of Species Viability*" for locally rare species.



July 09, 2021
Date

David Vinson
Zone Wildlife Biologist
Blue Ridge & Chattooga River Ranger Districts
Chattahoochee-Oconee National Forest

Written Correspondence with Agencies

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Friday, August 6, 2021 12:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <Kelly.Schaeffer@KleinschmidtGroup.com>
Subject: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

Good afternoon,

We are close to submitting the license amendment application to FERC for the Tugalo Hydro Plant, which is 1 of 6 plants that Georgia Power operates as its North Georgia Project (FERC Project Number 2354). We appreciate all of the feedback and consultation that has been ongoing since June 2021 with you. As you may recall, our proposal is for a non-capacity upgrade of four generating units in the Tugalo powerhouse, and includes replacing the turbine runners, generators, intake trash racks, and spillway gates.

South Carolina Department of Natural Resources has requested a desktop entrainment study. We are currently preparing that, and we will distribute the study to the group as soon as it is completed, hopefully in the next 2-3 weeks. In the meantime, we wanted to provide you some time to take a look at our Draft License Amendment application so that you could provide any comment, if needed. Your comments are sufficient via reply email. We will take your comments and also provide them to the FERC when we make the application. FERC in turn will also provide an additional opportunity for comment after they receive our application, but we thought your early review would help resolve any outstanding issues.

The draft application consists of the following attachments:
Attachment A – Initial Statement and Application for a Non-Capacity License Amendment
Attachment B - Documentation of our Consultation with Agencies
Attachment C – Marked up version of the existing Exhibit A, showing changes that would be required to this part of our existing FERC license by the proposal

If possible, we would like your review by Friday, August 20, 2021.

Thanks so much.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



Georgia Department of Natural Resources

Environmental Protection Division

Written Correspondence with EPD

From: Munn, Laura S.
Sent: Wednesday, June 16, 2021 3:45 PM
To: Elizabeth.Booth@dnr.state.ga.us; Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>
Cc: Dodd, Anthony Ray <ARDODD@southernco.com>; O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; Kelly Schaeffer <kelly.schaeffer@kleinschmidtgroup.com>
Subject: Follow-up to Tugalo Modernization Water Quality Meeting between EPD and Georgia Power

Good afternoon,
Attached is a summary of our conversation on Monday as well as the monthly temperature assessment. Our conclusions are summarized below and also in the attached documents. We are looking for specific feedback from EPD on this with a reply email being ok for us to use in our FERC license amendment submittal. If possible, please respond by Friday, July 9th.

Conclusions:

- Georgia Power's calculations show that state water quality criteria is being and will continue to be met after Tugalo Powerhouse modernization activities are complete. A summary of calculated monthly temperature projections is presented below:

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NO
Design based cooling water maximum temperature (°F)	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.5
Design based maximum cooling water discharge (cfs)	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.9
Historical Monthly Measured Tugalo Tailrace Temp (°F)	35.96	44.24	51.44	60.80	68.00	77.00	73.40	74.84	75.20	58.64	57.7
Assumed Tugaloo River Flow (cfs)	100	100	100	100	100	100	100	100	100	100	10(
Calculated Mixed River Flow Temp in Tailrace (°F)	36.32	44.52	51.66	60.93	68.07	76.99	73.42	74.85	75.20	58.79	57.9
Delta Temp in Tailrace (°F)	0.36	0.28	0.22	0.13	0.07	-0.01	0.02	0.01	0.00	0.15	0.1

- Guidance language is provided by FERC on 401 water quality certifications during a FERC license amendment process. The language is from FERC's *Hydroelectric Project Handbook for Filings Other Than Licenses and Exemptions.* Section 4.1 states:

  "Evidence of a new request for water quality certification is only required if the amendment would result in a material adverse effect on the water quality in the discharge from the project or proposed project."

- Georgia Power believes that based on the calculations attached/summarized above that there will be no material adverse effect on the water quality and we do not believe a new 401 water quality certification would be necessary. However, we would like to have EPD's concurrence.

Please let us know if you need any additional information or if we need to get back together to answer any questions you may have. Thanks for your time on this.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



Georgia Power

North Georgia Hydroelectric Project

FERC Project #2354

Communication Date: June 14, 2021

Communication Type: Teams Web-Meeting

List and attach pertinent written correspondence:

Map of Dams/River

DO and Temperature Results from Water Quality Investigations for the North Georgia Hydro Facilities Group (1990)

Agency Briefing Card

Mixing Calculation Summary

List persons attending from Southern Company/Georgia Power:

Southern Company: Courtenay O'Mara, P.E. and Laurie Munn, P.E.

Georgia Power Company (Georgia Power): Tony Dodd

Kleinschmidt: Kelly Schaeffer

List organization name and persons attending from other organization:

Georgia Department of Natural Resources, Environmental Protection Division (Georgia EPD) -

Dr. Elizabeth Booth, Dr. Wei Zeng, Mr. Steve Wiedl

Subject: Consultation on the Modernization of the North Georgia Project Tugalo Powerhouse including Georgia EPD Information Needs and Calculations

Comments/Discussions/Requests:

Consultation occurred via Teams virtual meeting on June 14, 2021 and follow-up via email on June 16, 2021.

June 14, 2021 Consultation

On June 14, 2021 Southern Company/Georgia Power met via Teams with Dr. Elizabeth Booth, Dr. Wei Zeng, and Mr. Steve Wiedl of Georgia EPD and discussed the upgrades that Georgia Power has planned for the Tugalo Powerhouse and Dam.

- Overview of modernization program across at Tugalo Dam
- Specifically, for Tugalo, which is a part of the North Georgia Hydroelectric Project (FERC No. 2354) (1 of 6 dams), the timeframe is 2022 through 2025 and includes turbine runner replacement, generator rewind, cooling system upgrade, trash gate replacement, and spillway gate replacement.
- The location map was reviewed.
- There will be a slight increase in turbine discharge (1240 cfs to 1400 cfs at best gate), no lake elevation changes, and a power increase (45 MW to 64 MW).
- Georgia Power will file a FERC license amendment and will consult with the additional following agencies: U.S. Fish and Wildlife Service , Georgia Department of Natural Resources, Wildlife Resources Division, South Carolina Department of Natural Resources, U.S. Forest Service, Georgia State Historic Preservation Office and South Carolina State Historic Preservation Office.
- The existing 401 water quality certificate was discussed. Calculations on a monthly basis for temperature increases were performed as done on the Terrora amendment application. The temperature changes to the tailrace range from -0.01° F in July to 0.36 F in January. This calculation will be included in the information package distributed to EPD. Georgia Power will also include the seasonal water quality data that was collected during relicensing. Georgia EPD had issued a 401 water quality certificate based on that data.

Conclusions:

- Georgia Power's calculations show that state water quality criteria is being and will continue to be met after the Tugalo Powerhouse modernization activities are complete. A summary of calculated monthly temperature projections is presented below:

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Design based cooling water maximum temperature (°F)	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56
Design based maximum cooling water discharge (cfs)	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Historical Monthly Measured Tugalo Tailrace Temp (°F)	35.96	44.24	51.44	60.80	68.00	77.00	73.40	74.84	75.20	58.64	57.74	48.20
Assumed Tugaloo River Flow (cfs)	100	100	100	100	100	100	100	100	100	100	100	100
Calculated Mixed River Flow Temp in Tailrace (°F)	36.32	44.52	51.66	60.93	68.07	76.99	73.42	74.85	75.20	58.79	57.90	48.45
Delta Temp in Tailrace (°F)	0.36	0.28	0.22	0.13	0.07	-0.01	0.02	0.01	0.00	0.15	0.16	0.25

*References are included in attached document.

- Georgia Power believes that based on the calculations attached/summarized above that there will be no material adverse effect on the water quality and does not believe a new 401 water quality certification would be necessary. However, we would like to have EPD's concurrence.

Georgia Power

North Georgia Project (FERC No. 2354) License Amendment
Tugalo Unit Upgrade

- From upstream to downstream, the Tugalo development is the fifth of six hydroelectric developments in the Federal Energy Regulatory Commission (FERC) licensed North Georgia Project (FERC No. 2354). Water for generation at Tugalo comes from rainfall in the Tallulah River basin (first coming through Tallulah Falls powerhouse) and the Chattooga River basin. These rivers converge in Lake Tugalo upstream of Tugalo powerhouse. Operation is modified run-of-river; Lake Tugalo stores inflow over short periods of time, which is utilized to provide generation from Tugalo powerhouse during peak power demand hours. Tugalo powerhouse discharges directly into the downstream Lake Yonah.

- Georgia Power is proposing to amend the North Georgia Project license to upgrade the four generating units in the Tugalo powerhouse. This upgrade includes replacing the turbine runners, generators and intake trashracks. We also will be replacing spillway gates beginning in 2022. Work will be completed behind bulkheads, so no drawdowns will be necessary for spillway gate replacement. Powerhouse work will begin in 2022, with a generator/turbine unit replaced each year in 2022, 2023, 2024, and 2025.

- Tugalo Park will be closed for staging materials beginning October 1, 2021. This is a temporary deviation to the Recreation Plan, not a license amendment, and is in advance of the modernization schedule. This item is being consulted on separately through the FERC ARO. Pursuant to Article 418, GPC is consulting Chattahoochee-Oconee National Forest, Francis Marion-Sumter National Forest, Georgia DNR (Wildlife Resources Division, Law Enforcement Division, State Parks & Historic Sites Division), and the National Park Service on this temporary modification to the Recreation Plan.

- The table below compares the rated generating and maximum hydraulic capacities of the existing units with the expected performance of the upgraded units.

UNIT	Existing Rated (Best Gate/Most Efficient) Capacity (MW)	Existing Rated (Best Gate /Most Efficient) Hydraulic Capacity (CFS)	Proposed Rated (Best Gate/Most Efficient) Capacity (MW)	Proposed Rated (Best Gate /Most Efficient) Hydraulic Capacity (CFS)	Proposed Full Gate/Max Capacity after Upgrade (MW)	Proposed Max Hydraulic Capacity (CFS) after Upgrade
1	11.25	1240	16	1400	17	1500
2	11.25	1240	16	1400	17	1500
3	11.25	1240	16	1400	17	1500
4	11.25	1240	16	1400	17	1500

*Max Flow from 1 unit tested in field on June 8, 2020. Best gate flow was 1240 cfs per unit

- Following the upgrade, Georgia Power will operate the Tugalo powerhouse with no change to existing lake levels at Lake Tugalo and Lake Yonah.

- The approach velocities expected with new trashracks are estimated to be 1.73 and 1.86 foot per second (ft/s) at best and full gate flows, respectively. This is a decrease of 0.05 and 0.04 ft/s increase from the estimated approach velocities at best and full gate flow with the existing trashracks and existing units.

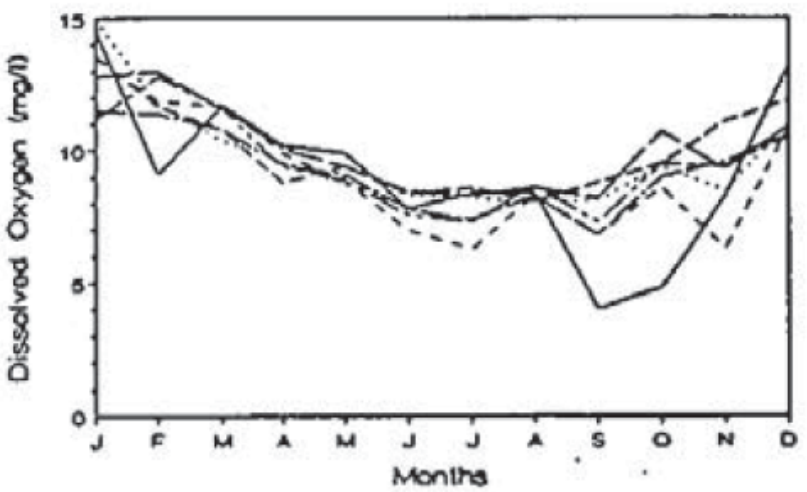
- By design, the expected range of temperature change in the tailrace due to the upgraded turbine coolers will be -0.01° F to 0.36° F.

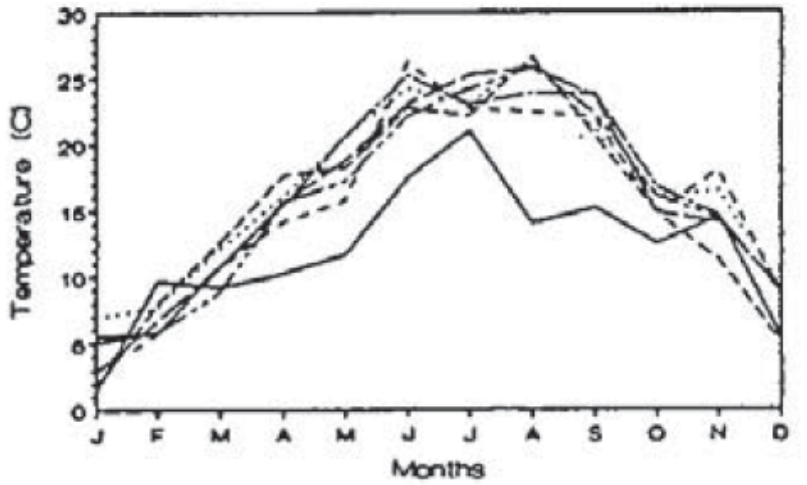
- Georgia Power is preparing a non-capacity license amendment application to file with FERC. The application will conform with 18 C.F.R. §4.201 (c). Georgia Power will consult with state and federal agencies prior to filing. Non-capacity amendment applications typically have few, if any, effects on environmental, recreational, and

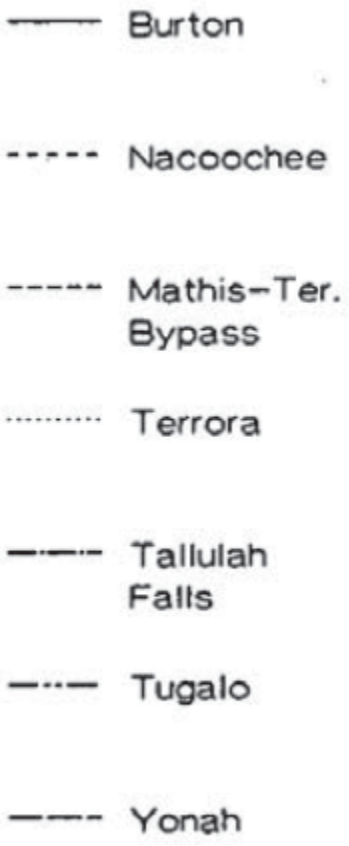
cultural resources; however, any potential issues would be disclosed in the application to FERC and in the pre-filing consultation.

- Georgia Power is consulting with the following agencies on this license amendment application:
    - Georgia Wildlife Resources Division/South Carolina Department of Natural Resources – lake levels, trashrack velocity changes, and species affects
    - US Fish and Wildlife Service – lake levels, trashrack velocity changes/species affects
    - US Forest Service – adjacent property owner; lake levels/species affects
    - Georgia State Historic Preservation Office and South Carolina State Historic Preservation Office – spillway gate replacements/generator replacements
    - GA Environmental Protection Division –lake levels and affects to existing 401 water quality certificate
- FERC typically issues a notice of the application receipt and may ask Georgia Power for additional information prior to its analysis of the proposed upgrade. Georgia Power may request FERC to conduct an expedited review to facilitate equipment procurement and work at the Tugalo powerhouse.

Monthly Dissolved Oxygen and Temperature Measured in the Tugalo Tailrace







* At the time of relicensing the North Georgia Hydroelectric Projects, warm season DO concentrations were detected below the State standard in the Burton Dam tailrace which was ultimately corrected by permanently closing a low-level sluice since the FERC license issuance in 1993. Subsequent monitoring demonstrated that the closure of the sluice corrected the low DO and that no other measures were necessary to achieve Georgia water quality standards.

Tugalo Temperature Assessment for Consultation with Georgia EPD

Southern Company's Hydro Services group conducted a temperature assessment to estimate temperature changes that would occur in the Tugalo Powerhouse tailrace after new coolers are installed. This assessment is comprised of a mixing calculation. The max temperature of the cooling water was provided from internal design information provided by Southern Company Engineers. The mixing calculation uses an assumed minimum discharge Tugalo Dam, monthly Tugalo tailrace temperatures, and the cooling water discharge temperature to determine the resulting tailrace temperature after plant and river flows mix. Parameters used in the assessment below are numbered and correspond with the numbered references on Page 3.

Calculation Parameters

1.	Permitted Maximum Cooling Water Flow Rate	900 GPM or 2.01 cfs
2.	Design based Max Cooling Water Flow Rate of New Units	408.5 GPM or 0.91 cfs
3.	Design based Max Temperature of Cooling Water Discharge	24.4°C / 76°F
4.	Minimum flow (Tailrace)[1]	100 ft^3/sec^2
5.	Measured Temperature of Tugalo Tailrace	Varies Monthly

[1] The temperature mixing calculation considers a unit motoring condition in which the only discharges from the plant are cooling water discharges.
[2] The current leakage flow from Tugalo is 133 cfs taken from USGS measurements on 2/2/2016. Downstream Yonah Dam has a minimum flow of 300 cfs, so water is drawn from the tailrace area to meet that requirement. A value of 100 cfs is used as a conservative value.

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Design based cooling water maximum temperature (°F)	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56	75.56
Design based maximum cooling water discharge (cfs)	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Historical Monthly Measured Tugalo Tailrace Temp (°F)	35.96	44.24	51.44	60.80	68.00	77.00	73.40	74.84	75.20	58.64	57.74	48.20
Assumed Tugaloo River Flow (cfs)	100	100	100	100	100	100	100	100	100	100	100	100
Calculated Mixed River Flow Temp in Tailrace (°F)	36.32	44.52	51.66	60.93	68.07	76.99	73.42	74.85	75.20	58.79	57.90	48.45
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* References listed on the following page

References:

1. **Permitted Maximum Cooling Water Flow Rate**

   2016 NPDES Permit Application

2. **New Cooler Rating**

   Internal Design Information provided by Southern Company Engineers

3. **Temperature of Cooling Water Discharge:**

   Internal Design Information provided by Southern Company Engineers

   This represents the temperature of the cooling water after it has cooled the turbine/thrust bearing equipment.

4. **Flow of River Flowing Past Tugalo Powerhouse (receiving stream daily average flow (Tailrace)**

   Assumed river flow. Current flow below the powerhouse is a minimum of 133 cfs. We assume that the flow will continue to be around 100 cfs.

5. **Temperature Tugalo River**

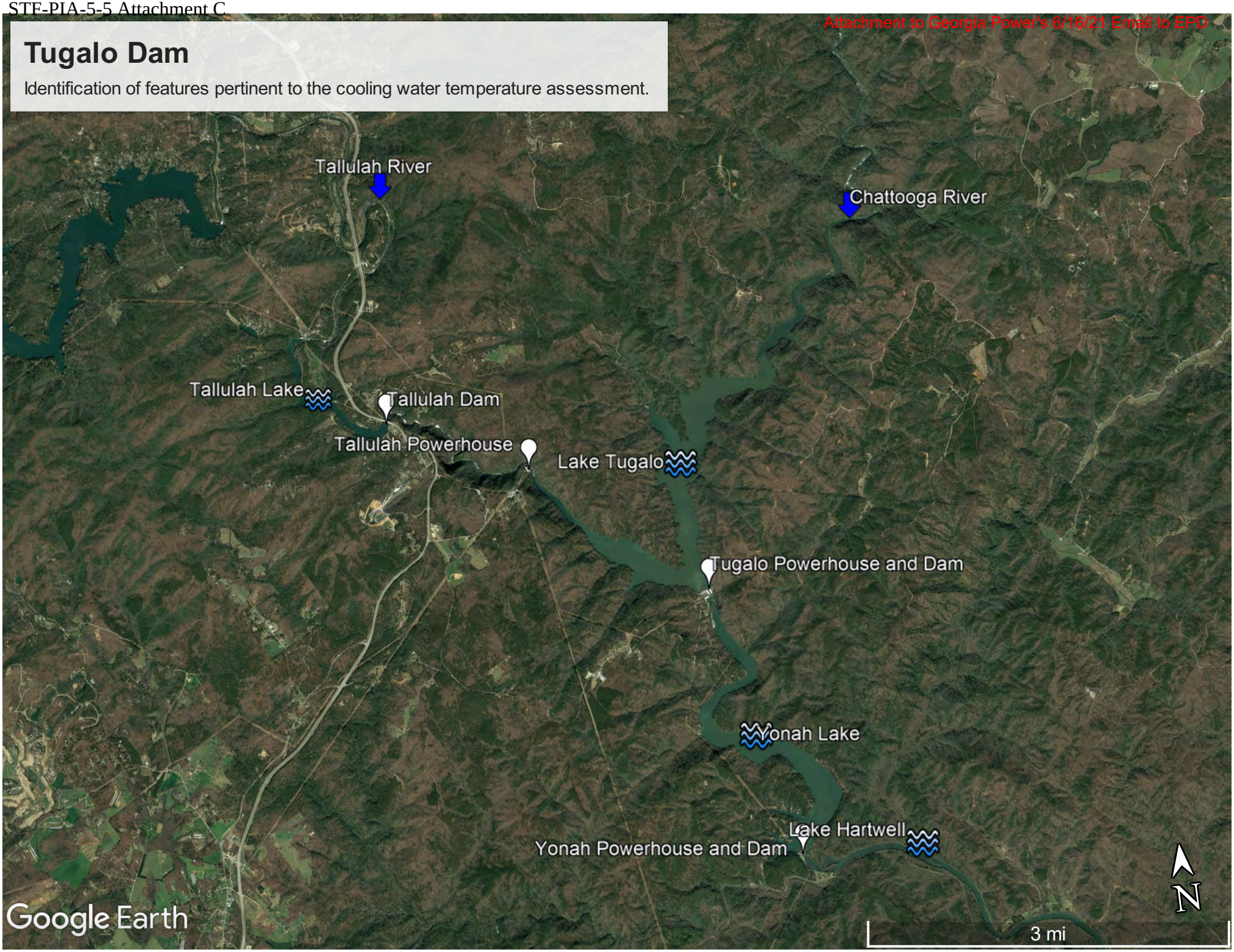
   Table A-38, 1990 Water Quality Investigations at the North Georgia Hydro Group Facilities

   This is the study completed in the last FERC relicensing of North Georgia Hydro where a 401 water quality certificate was issued by EPD.

Attachment to Georgia Power's 6/16/21 Email to EPD

Tugalo Dam

Identification of features pertinent to the cooling water temperature assessment.



From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Tuesday, July 13, 2021 11:39 AM
To: Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>
Cc: Dodd, Anthony Ray <ARDODD@southernco.com>; Kelly Schaeffer <Kelly.Schaeffer@KleinschmidtGroup.com>; Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>
Subject: RE: Follow-up to Tugalo Modernization Water Quality Meeting between EPD and Georgia Power - EPD Concurrence per No 401 WQC Required

Thank you so much for your time in reviewing the information and for your response. It is greatly appreciated.
Laurie

From: Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>
Sent: Tuesday, July 13, 2021 12:38 PM
To: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>; O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>
Cc: Dodd, Anthony Ray <ARDODD@southernco.com>; Kelly Schaeffer <kelly.schaeffer@kleinschmidtgroup.com>; Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>
Subject: RE: Follow-up to Tugalo Modernization Water Quality Meeting between EPD and Georgia Power - EPD Concurrence per No 401 WQC Required

EXTERNAL MAIL: Caution Opening Links or Files

Ms. Munn,

Based on project information conveyed in June, 2021 by Southern Company/Georgia Power Company via virtual meeting consultations, E-mail, and relevant associated electronic documents, the Georgia Environmental Protection Division's Wetlands (401) Unit concurs that state water quality criteria are currently being met in the relevant waterways and will continue to be met after Tugalo Powerhouse modernization activities are complete, and that indeed there will be no material adverse effect on water quality. We therefore provide response that no new 401 Water Quality Certification would be necessary for the subject Tugalo Powerhouse modernization.

Thank you for the information you have provided and for your coordination efforts on this project. Best wishes.

Stephen C. Wiedl, PWS
Manager – Wetlands Unit
Georgia Environmental Protection Division
7 Martin Luther King, Jr. Drive, Suite 450

Written Correspondence with EPD

Atlanta, GA 30334

404-452-5060
Stephen.Wiedl@dnr.ga.gov

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Wednesday, June 16, 2021 3:45 PM
To: Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>
Cc: Dodd, Anthony Ray <ardodd@southernco.com>; O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; Kelly Schaeffer <kelly.schaeffer@kleinschmidtgroup.com>
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CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon,
Attached is a summary of our conversation on Monday as well as the monthly temperature assessment. Our conclusions are summarized below and also in the attached documents. We are looking for specific feedback from EPD on this with a reply email being ok for us to use in our FERC license amendment submittal. If possible, please respond by Friday, July 9th.

Conclusions:

- Georgia Power's calculations show that state water quality criteria is being and will continue to be met after Tugalo Powerhouse modernization activities are complete. A summary of calculated monthly temperature projections is presented below:

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- Guidance language is provided by FERC on 401 water quality certifications during a FERC license amendment process. The language is from FERC's *Hydroelectric Project Handbook for Filings Other Than Licenses and Exemptions.* Section 4.1 states:

  "Evidence of a new request for water quality certification is only required if the amendment would result in a material adverse effect on the water quality in the discharge from the project or proposed project."

- Georgia Power believes that based on the calculations attached/summarized above that there will be no material adverse effect on the water quality and we do not believe a new 401 water quality certification would be necessary. However, we would like to have EPD's concurrence.

Please let us know if you need any additional information or if we need to get back together to answer any questions you may have. Thanks for your time on this.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



Written Correspondence with Agencies

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Friday, August 6, 2021 12:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <Kelly.Schaeffer@KleinschmidtGroup.com>
Subject: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

Good afternoon,

We are close to submitting the license amendment application to FERC for the Tugalo Hydro Plant, which is 1 of 6 plants that Georgia Power operates as its North Georgia Project (FERC Project Number 2354). We appreciate all of the feedback and consultation that has been ongoing since June 2021 with you. As you may recall, our proposal is for a non-capacity upgrade of four generating units in the Tugalo powerhouse, and includes replacing the turbine runners, generators, intake trash racks, and spillway gates.

South Carolina Department of Natural Resources has requested a desktop entrainment study. We are currently preparing that, and we will distribute the study to the group as soon as it is completed, hopefully in the next 2-3 weeks. In the meantime, we wanted to provide you some time to take a look at our Draft License Amendment application so that you could provide any comment, if needed. Your comments are sufficient via reply email. We will take your comments and also provide them to the FERC when we make the application. FERC in turn will also provide an additional opportunity for comment after they receive our application, but we thought your early review would help resolve any outstanding issues.

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Attachment C – Marked up version of the existing Exhibit A, showing changes that would be required to this part of our existing FERC license by the proposal

If possible, we would like your review by Friday, August 20, 2021.

Thanks so much.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



Written Correspondence with EPD

From: Munn, Laura S.
To: Wiedl, Stephen
Cc: Zeng, Wei; Booth, Elizabeth; O"Mara, Courtenay R.; Dodd, Anthony Ray; Kelly Schaeffer
Subject: RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant
Date: Friday, August 6, 2021 3:51:00 PM
Attachments: image001.gif

Thank you so much for your time and response. Have a great weekend!

From: Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>
Sent: Friday, August 6, 2021 3:43 PM
To: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Cc: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; Dodd, Anthony Ray <ARDODD@southernco.com>
Subject: RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

EXTERNAL MAIL: Caution Opening Links or Files

Laura,

In reaffirmation of with the message which EPD Wetlands Unit transmitted on 7-13-21, we advise that we have no further input regarding the upcoming Tugalo Hydro Plant Modernization. Best wishes.

Stephen C. Wiedl, PWS
Manager – Wetlands Unit
Georgia Environmental Protection Division
7 Martin Luther King, Jr. Drive, Suite 450
Atlanta, GA 30334

404-452-5060
Stephen.Wiedl@dnr.ga.gov

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Friday, August 6, 2021 1:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ardodd@southernco.com>; Peeples, Alan L.

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Thanks so much.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064

Georgia Department of Natural Resources

Wildlife Resources Division

From: O"Rouke, Patrick Michael
To: Gavrielides, George; Rabern, Anthony
Cc: Munn, Laura S.
Subject: Tugalo Modernization
Date: Friday, June 25, 2021 3:33:31 PM
Attachments: Agency Brief Tugalo Unit UpgradesFinal.pdf
2021 06 24 WRD Consult Form Final.docx

George and Anthony:

We appreciate your time on our call yesterday. I've attached the agency briefing that we're providing to everyone as well as a follow-up form with notes from the call yesterday that we'll file with FERC. Please let me know if you have any questions or need any additional clarifications on this.

Thank you,
Patrick

Patrick O'Rouke
Fisheries Biologist
Georgia Power

pmorouke@southernco.com
241 Ralph McGill Blvd.
Atlanta, GA 30308
(404) 506-5025 (Office)
(470) 426-5322 (Cell)

Georgia Power

North Georgia Hydroelectric Project

FERC Project #2354

Communication Date: June 24, 2021

Communication Type: Teams Web-Meeting

List and attach pertinent written correspondence:

Map of Dams/River

Agency Briefing Card

List persons attending from Southern Company/Georgia Power:

Southern Company: Courtenay O'Mara, P.E. and Laurie Munn, P.E.

Georgia Power Company (GPC): Patrick O'Rouke

List organization name and persons attending from other organization:

Georgia Department of Natural Resources, Wildlife Resources Division (WRD) -

Anthony Rabern, George Gavrielides

Subject: Consultation on the Modernization of the North Georgia Project Tugalo Powerhouse

Comments/Discussions/Requests:

Consultation occurred via Teams virtual meeting on June 24, 2021 and follow-up via email on June 25, 2021.

June 24, 2021 Consultation

On June 24, 2021 Southern Company/Georgia Power met via Teams with Anthony Rabern and George Gavrielides of Georgia Department of Natural Resources Wildlife Resources Division (WRD) and discussed the upgrades that Georgia Power has planned for the Tugalo Powerhouse and Dam. The following items were discussed:

- Overview of modernization program at Tugalo Dam
- The timeframe is 2022 through 2025 and includes turbine runner replacement, generator rewind, and spillway gate replacement.
- The location map and agency briefing card were reviewed.
- The trash gate design was discussed. Patrick O'Rouke (GPC) stated that velocities will decrease slightly but will basically be the same. Anthony Rabern (WRD) asked about the new design. Courtenay O'Mara stated that the new design is to accommodate standard bar sizes for gate materials.
- Anthony Rabern also inquired about the closing of Tugalo Park. Georgia Power confirmed that the park would be closed for the duration of the project and that consultation is being handled separately as a temporary modification to the Recreation Plan since the timeframe for that was slightly earlier. Mr. Rabern stated that the park is heavily used but understands the necessity to close it to stage the project. Patrick stated that if WRD needed special access in this area Georgia Power would work with them if needed.
- Courtenay O'Mara stated that bulkheads would be used for the spillway gate replacement, and lake levels will not need to be lowered. Anthony Rabern stated that lake level restrictions at Tugalo have greatly enhanced the species population, and the walleye population below Yonah has made a huge recovery because of the minimum flow out of Yonah Dam. He stated that those are two very beneficial outcomes of the 1990s relicensing process.
- WRD stated that the reviewed changes from the modernization were negligible. Georgia Power will follow up via email with WRD and will address any further concerns or comments for the Tugalo Modernization Project if needed.

Georgia Power

North Georgia Project (FERC No. 2354) License Amendment
Tugalo Unit Upgrade

- From upstream to downstream, the Tugalo development is the fifth of six hydroelectric developments in the Federal Energy Regulatory Commission (FERC) licensed North Georgia Project (FERC No. 2354). Water for generation at Tugalo comes from rainfall in the Tallulah River basin (first coming through Tallulah Falls powerhouse) and the Chattooga River basin. These rivers converge in Lake Tugalo upstream of Tugalo powerhouse. Operation is modified run-of-river; Lake Tugalo stores inflow over short periods of time, which is utilized to provide generation from Tugalo powerhouse during peak power demand hours. Tugalo powerhouse discharges directly into the downstream Lake Yonah.

- Georgia Power is proposing to amend the North Georgia Project license to upgrade the four generating units in the Tugalo powerhouse. This upgrade includes replacing the turbine runners, generators and intake trashracks. We also will be replacing spillway gates beginning in 2022. Work will be completed behind bulkheads, so no drawdowns will be necessary for spillway gate replacement. Powerhouse work will begin in 2022, with a generator/turbine unit replaced each year in 2022, 2023, 2024, and 2025.

- Tugalo Park will be closed for staging materials beginning October 1, 2021. This is a temporary deviation to the Recreation Plan, not a license amendment, and is in advance of the modernization schedule. This item is being consulted on separately through the FERC ARO. Pursuant to Article 418, GPC is consulting Chattahoochee-Oconee National Forest, Francis Marion-Sumter National Forest, Georgia DNR (Wildlife Resources Division, Law Enforcement Division, State Parks & Historic Sites Division), and the National Park Service on this temporary modification to the Recreation Plan.

- The table below compares the rated generating and maximum hydraulic capacities of the existing units with the expected performance of the upgraded units.

UNIT	Existing Rated (Best Gate/Most Efficient) Capacity (MW)	Existing Rated (Best Gate /Most Efficient) Hydraulic Capacity (CFS)	Proposed Rated (Best Gate/Most Efficient) Capacity (MW)	Proposed Rated (Best Gate /Most Efficient) Hydraulic Capacity (CFS)	Proposed Full Gate/Max Capacity after Upgrade (MW)	Proposed Max Hydraulic Capacity (CFS) after Upgrade
1	11.25	1240	16	1400	17	1500
2	11.25	1240	16	1400	17	1500
3	11.25	1240	16	1400	17	1500
4	11.25	1240	16	1400	17	1500

*Max Flow from 1 unit tested in field on June 8, 2020. Best gate flow was 1240 cfs per unit

- Following the upgrade, Georgia Power will operate the Tugalo powerhouse with no change to existing lake levels at Lake Tugalo and Lake Yonah.

- The approach velocities expected with new trashracks are estimated to be 1.73 and 1.86 foot per second (ft/s) at best and full gate flows, respectively. This is a decrease of 0.05 and 0.04 ft/s increase from the estimated approach velocities at best and full gate flow with the existing trashracks and existing units.

- By design, the expected range of temperature change in the tailrace due to the upgraded turbine coolers will be -0.01° F to 0.36° F.

- Georgia Power is preparing a non-capacity license amendment application to file with FERC. The application will conform with 18 C.F.R. §4.201 (c). Georgia Power will consult with state and federal agencies prior to filing. Non-capacity amendment applications typically have few, if any, effects on environmental, recreational, and

cultural resources; however, any potential issues would be disclosed in the application to FERC and in the pre-filing consultation.

- Georgia Power is consulting with the following agencies on this license amendment application:
    - Georgia Wildlife Resources Division/South Carolina Department of Natural Resources – lake levels, trashrack velocity changes, and species affects
    - US Fish and Wildlife Service – lake levels, trashrack velocity changes/species affects
    - US Forest Service – adjacent property owner; lake levels/species affects
    - Georgia State Historic Preservation Office and South Carolina State Historic Preservation Office – spillway gate replacements/generator replacements
    - GA Environmental Protection Division –lake levels and affects to existing 401 water quality certificate
- FERC typically issues a notice of the application receipt and may ask Georgia Power for additional information prior to its analysis of the proposed upgrade. Georgia Power may request FERC to conduct an expedited review to facilitate equipment procurement and work at the Tugalo powerhouse.

From: Rabern, Anthony
To: O"Rouke, Patrick Michael; Gavrielides, George
Cc: Munn, Laura S.
Subject: RE: Tugalo Modernization
Date: Tuesday, June 29, 2021 9:31:24 AM

EXTERNAL MAIL: Caution Opening Links or Files

Patrick,
Thank you for briefing us on the planned upgrades at Tugalo Dam. We concur that the project will have negligible impact on the fishery resources of Lake Tugalo and Lake Yonah. Although the closure of the Lake Yonah public use area immediately downstream of Tugalo Dam will displace outdoor recreation opportunities at that facility for a period of about four years, we understand the need to use the area for staging equipment and supplies. I recommend that you inform the public, including Tallulah Gorge State Park, of this closure as best you can.

Anthony Rabern
Region 2 Supervisor, Fisheries

Wildlife Resources Division [gcc02.safelinks.protection.outlook.com]
(770) 535-5498 | M: (404) 695-7816

Facebook [gcc02.safelinks.protection.outlook.com] • Twitter [gcc02.safelinks.protection.outlook.com] • Instagram [gcc02.safelinks.protection.outlook.com]
Check out our Biodiversity Data Portal! [gcc02.safelinks.protection.outlook.com]

A division of the
GEORGIA DEPARTMENT OF NATURAL RESOURCES

From: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Sent: Friday, June 25, 2021 3:33 PM
To: Gavrielides, George <george.gavrielides@dnr.ga.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>
Cc: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Subject: Tugalo Modernization

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George and Anthony:

We appreciate your time on our call yesterday. I've attached the agency briefing that we're providing to everyone as well as a follow-up form with notes from the call yesterday that we'll file with FERC. Please let me know if you have any questions or need any additional clarifications on

this.

Thank you,
Patrick

Patrick O'Rouke
Fisheries Biologist
Georgia Power

pmorouke@southernco.com
241 Ralph McGill Blvd.
Atlanta, GA 30308
(404) 506-5025 (Office)
(470) 426-5322 (Cell)

Written Correspondence with Agencies

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Sent: Friday, August 6, 2021 12:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <Kelly.Schaeffer@KleinschmidtGroup.com>
Subject: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

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Thanks so much.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



From: Munn, Laura S.
To: Rabern, Anthony
Cc: Gavrielides, George; O"Rouke, Patrick Michael; O"Mara, Courtenay R.; Kelly Schaeffer
Subject: RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant
Date: Monday, August 9, 2021 11:32:00 AM
Attachments: image001.gif

Anthony,
Thank you so much for your time and review. We really appreciate it.
Laurie

From: Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>
Sent: Monday, August 9, 2021 11:31 AM
To: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Cc: Gavrielides, George <george.gavrielides@dnr.ga.gov>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Subject: RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

EXTERNAL MAIL: Caution Opening Links or Files

Laura,
Thank you for providing the opportunity to review a draft license amendment application for the Tugalo Hydro Plant. We continue to support the position that no significant impacts to aquatic resources will occur from the upgrades to the Tugalo plant and that the draft application provides adequate information related to the scope of work and its potential impacts. We have no additional edits or recommendations for the draft application. Thanks again for the opportunity to comment.

Anthony Rabern
Region 2 Supervisor, Fisheries

Wildlife Resources Division [gcc02.safelinks.protection.outlook.com]
(770) 535-5498 | M: (404) 695-7816

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A division of the
GEORGIA DEPARTMENT OF NATURAL RESOURCES

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Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064

Georgia Department of Community Affairs
Historic Preservation Division

Written Correspondence with HPD

From: Charles, Joseph D.
To: ER@dca.ga.gov
Cc: Santiago D. Martinez
Subject: Project submittal, North Georgia Hydroelectric Project (FERC #2354)
Date: Tuesday, July 20, 2021 2:18:00 PM
Attachments: HPD package_rd.pdf

Joseph Charles
Hydro Compliance Coordinator
Environmental & Natural Resources
Georgia Power
241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, Georgia 30308
404.506.2337 (office)
404.782.8796 (cell)

Attachment to Georgia Power's 7/20/21 Email to HPD

Georgia Power

241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, GA 30308
404 506 2337 tel
404 506 4132 fax
404 782 8796 cell
jcharles@southernco.com

July 20, 2021

Mr. Santiago Martinez
DCA Historic Preservation Division
60 Executive Park South, NE
Atlanta, GA 30329-4940

RE: System upgrades at the Tugalo powerhouse – North Georgia Project (#2354)

Dear Mr. Martinez:

Thank you again for meeting with Melissa Crabbe (Southern Company Generation), Elizabeth Johnson (South Carolina Department of Archives and History), and I on July 1 to discuss Georgia Power's hydro modernization efforts at the Tugalo Development of the North Georgia Hydroelectric Project (FERC #2354). As we discussed, the purpose of the meeting was to provide an overview of the Project, as well as proposed upgrades at Tugalo dam and powerhouse. The meeting was to be followed by a written filing to both capture the meeting itself and provide a more detailed description of the undertaking for your review and comment.

Attached you will find a copy of the brief PowerPoint presentation that accompanied the meeting, including an agenda, and an attendees list generated in Microsoft Teams for your records. Also attached are a brief narrative describing the undertaking and potential effects to historic properties, as well as proposed mitigation measures for adverse effects to historic properties. If you have questions or require more information, please contact me at 404-782-8796 or jcharles@southernco.com.

Sincerely,

Joseph Charles
Hydro Compliance Coordinator, Natural Resources

Attachment to Georgia Power's 7/20/21 Email to HPD

Meeting Summary
Total Number of Participants 4
Meeting Title Overview of Tugalo modernization project
Meeting Start Time "7/1/2021, 1:58:58 PM"
Meeting End Time "7/1/2021, 2:43:54 PM"

Full Name	Join Time	Leave Time	Duration	Email	Role
"Charles, Joseph D."	"7/1/2021, 1:58:58 PM"	"7/1/2021, 2:40:59 PM"	42m	JCHARLES@SOUTHERNCO.COM	Organizer
"Crabbe, Melissa C."	"7/1/2021, 1:59:05 PM"	"7/1/2021, 2:41:00 PM"	41m 54s	MCCRABBE@SOUTHERNCO.COM	Presenter
Santiago D. Martinez	"7/1/2021, 2:00:44 PM"	"7/1/2021, 2:41:02 PM"	40m 18s	Santiago.Martinez@dca.ga.gov	Presenter
Elizabeth Johnson (Guest)	"7/1/2021, 2:01:02 PM"	"7/1/2021, 2:43:54 PM"	42m 52s		Presenter

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Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <Kelly.Schaeffer@KleinschmidtGroup.com>
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Good afternoon,

We are close to submitting the license amendment application to FERC for the Tugalo Hydro Plant, which is 1 of 6 plants that Georgia Power operates as its North Georgia Project (FERC Project Number 2354). We appreciate all of the feedback and consultation that has been ongoing since June 2021 with you. As you may recall, our proposal is for a non-capacity upgrade of four generating units in the Tugalo powerhouse, and includes replacing the turbine runners, generators, intake trash racks, and spillway gates.

South Carolina Department of Natural Resources has requested a desktop entrainment study. We are currently preparing that, and we will distribute the study to the group as soon as it is completed, hopefully in the next 2-3 weeks. In the meantime, we wanted to provide you some time to take a look at our Draft License Amendment application so that you could provide any comment, if needed. Your comments are sufficient via reply email. We will take your comments and also provide them to the FERC when we make the application. FERC in turn will also provide an additional opportunity for comment after they receive our application, but we thought your early review would help resolve any outstanding issues.

The draft application consists of the following attachments:
Attachment A – Initial Statement and Application for a Non-Capacity License Amendment
Attachment B - Documentation of our Consultation with Agencies
Attachment C – Marked up version of the existing Exhibit A, showing changes that would be required to this part of our existing FERC license by the proposal

If possible, we would like your review by Friday, August 20, 2021.

Thanks so much.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



Brian P. Kemp
Governor

Christopher Nunn
Commissioner

Georgia® Department of Community Affairs

August 12, 2021

Joseph Charles
Hydro Compliance Coordinator
Georgia Power
241 Ralph McGill Boulevard NE
Atlanta, Georgia 30308

RE: FERC 2354: Tugalo Powerhouse Modernization, Tugalo Village Road, Turnerville
Habersham County, Georgia
HP-210720-010

Dear Mr. Charles:

The Historic Preservation Division (HPD) has received the information submitted concerning the above referenced project. Our comments are offered to assist the Federal Energy Regulatory Commission (FERC) and its applicants in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

The subject project consists of modernization upgrades to the circa 1923 Tugalo Dam and Powerhouse located just south of the confluence of the Tallulah and Chattooga Rivers, along the Georgia-South Carolina border, including replacing non-original trash racks upstream of the dam intake, replacing non-original control panels and instrumentation in the control room, replacing the original steel spillway gates in-kind with new steel gates of the same design and appearance, and replacing original generators and turbines with new turbines and generators that will also have cooling units attached to them. It is HPD's understanding that the new turbines and generators will retain the same footprint as the originals and will not require modifications to the powerhouse structure, and that equipment will need to be staged at the nearby, circa 1990s Tugalo Park due to terrain and space constraints. Based on the information provided and desktop research, HPD concurs that Tugalo Dam and Powerhouse is eligible for listing in the National Register of Historic Places (NRHP). Therefore, HPD concurs that the project, as currently proposed, constitutes an **adverse effect** to historic properties that are eligible for listing in the NRHP, as defined in 36 CFR Part 800.5(a)(2). The removal and replacement of original, character-defining features of the property is not consistent with the Secretary of the Interior's *Standards for the Treatment of Historic Properties*. However, HPD concurs that the adverse effect is unavoidable.

HPD would like to note that this determination of an unavoidable adverse effect is not the end of the Section 106 consultation process. When an adverse effect to a historic property is found, the federal agency must notify the Advisory Council on Historic Preservation (ACHP) of the determination and draft a Memorandum of Agreement (MOA) in order to resolve the adverse effect. If the federal agency delegates ACHP notification responsibility to the applicant, the applicant should utilize the ACHP's e-notification system available here: https://www.achp.gov/e106-email-form. If the federal agency delegates the drafting of a MOA to the applicant, the applicant should visit the ACHP's *Guidance on Agreement Documents* webpage, found here: https://www.achp.gov/initiatives/guidance-agreement-documents and utilize the MOA template found therein. Regarding mitigation, HPD concurs with the mitigation proposed and looks forward to receiving a draft MOA, once available.

Please refer to project number **HP-210720-010** in any future correspondence regarding this project. If we may be of further assistance, please contact Aspen Kemmerlin, Compliance Archaeologist, at (404) 486-6425 or Aspen.Kemmerlin@dca.ga.gov or Santiago Martinez, Environmental Review Historian, at (404) 486-6425 or Santiago.Martinez@dca.ga.gov.

V/r,

Dr. David Crass
Division Director
Deputy State Historic Preservation Officer

DCC/sdm

cc: Joe Rothwell, Georgia Mountains Regional Commission

Written Correspondence with HPD

From: Santiago D. Martinez
To: Charles, Joseph D.
Subject: FERC 2354: Tugalo Powerhouse Modernization, Tugalo Village Road, Turnerville HP-210720-010 MOA Response
Date: Thursday, September 16, 2021 1:06:27 PM
Attachments:

EXTERNAL MAIL: Caution Opening Links or Files

Joey,

Good afternoon, I am reaching out to provide HPD's edits to the MOA for the project referenced in the subject line of this email. Please see the attached for specifics.

Please let me know if you have any questions for HPD.

Best regards,

Santiago Martinez

Learn more about our commitment to fair housing [dca.ga.gov].

Santiago D. Martinez
Environmental Review Historian
Georgia Department of Community Affairs
60 Executive Park, NE
Atlanta, Georgia 30329

Direct 4044866425
Santiago.Martinez@dca.ga.gov

MEMORANDUM OF AGREEMENT
AMONG
THE FEDERAL ENERGY REGULATORY COMMISSION,
THE GEORGIA STATE HISTORIC PRESERVATION OFFICER,
THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER,
AND
GEORGIA POWER COMPANY
REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF
THE NORTH GEORGIA HYDROELECTRIC PROJECT
IN RABUN COUNTY, GEORGIA AND
OCONEE COUNTY, SOUTH CAROLINA
FERC NO. 2354-###
HP-210720-010; 21-EJ0211

WHEREAS, as part of the Federal Energy Regulatory Commission ("Commission") relicensing of Georgia Power Company's ("Licensee") North Georgia Hydroelectric Project (FERC Project No. 2354) ("Project"), a historic context study and inventory of the Project dam and supporting structures was conducted in 1990; and

WHEREAS, the Project works were determined eligible for listing in the National Register of Historic Places ("NRHP"); and

WHEREAS, Licensee has developed and implemented a Cultural Resources Management Plan ("CRMP") for the Project pursuant to Article 417 of the Project's license issued by the Commission; and

WHEREAS, Licensee has proposed necessary system upgrades to the Tugalo Development ("Undertaking"), including generators and turbines, which are considered character-defining features of the powerhouse; and

WHEREAS, the Commission has determined that the Undertaking will have an adverse effect on the Tugalo Development, which is contributing to the NRHP-eligible Project works; and

WHEREAS, the Undertaking may affect lands important to the Eastern Band of Cherokee Indians, the Cherokee Nation, United Keetoowah Band of Cherokee Indians, and the Muscogee (Creek) Nation, (hereinafter, "Tribes") and the Tribes have participated in consultation and have been invited to concur in this Memorandum of Agreement (MOA), but have elected not to participate; and

WHEREAS, on [insert date], the Commission issued a notice of application for filing and soliciting comments, comments, motions to intervene, and protests regarding the proposed Undertaking, and no comments were received; and

WHEREAS, the Licensee and Commission have consulted with the Georgia State Historic Preservation Officer ("Georgia SHPO") and South Carolina State Historic Preservation Officer ("South Carolina SHPO") pursuant to regulations implementing Section 106 of the National Historic Preservation Act (54 USC 306108), 36 CFR Part 800, and have notified the Advisory Council on Historic Preservation ("Council") of the adverse effect finding pursuant to 36 CFR §800.6(a)(1) and afforded the Council an opportunity to comment on [insert date]; and

WHEREAS, the Commission has executed a Programmatic Agreement (PA) with the Council, Georgia SHPO, South Carolina SHPO and Licensee, executed on January 30,1996, as a condition of issuing a license for Commission Project No. 2354 on October 3, 1996, and finds the PA consistent with Commission guidelines; and

WHEREAS, the Commission, Licensee, Georgia SHPO and South Carolina SHPO agree that there is no practicable alternative to avoid or minimize the adverse effect to the powerhouse; and

WHEREAS, the Licensee participated in the consultation for the Undertaking described above, and pursuant to a Commission order, the Licensee will be directed to implement the stipulations below and has been invited to sign this MOA as an invited signatory per 36 C.F.R. Part 800.6 (c)(2);

NOW THEREFORE, the Commission, the Licensee, Georgia SHPO and South Carolina SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the Undertaking on historic properties:

STIPULATIONS

The Commission will condition any approval issued in connection with the Undertaking to require the satisfactory completion of the following stipulations and will ensure that the following stipulations are carried out under the authority of the Commission by or under the direct supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Standards & Guidelines: Professional Qualifications Standards* (48 FR44738-44739) in the appropriate discipline:

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

I. MITIGATION MEASURES

A. RECORDATION

Upon execution of the MOA and prior to commencing the above-referenced upgrades, the Licensee will perform or cause to be performed Level II Historic American Engineering Record ("HAER") documentation of the generators and turbines, to include an historic narrative, measured drawings, and medium format black and white photography. The draft HAER documentation will be submitted to all signatories and the National Park Service (NPS) for review and comment. Upon receipt of all comments, the Licensee will revise the HAER documentation and submit to the signatories and the NPS for acceptance. Once accepted by the NPS, the record will be housed at the Library of Congress. Final hardcopies and digital copies should be submitted to all signatories for their records. This record will also be available to the public via Georgia Power's North Georgia website (http://georgiapowerlakes.com/northgeorgialakes/).

B. PUBLIC INTERPRETATION

Upon completion of the system upgrades at the Tugalo Development, the licensee will, in consultation with the signatories of the MOA, prepare and install interpretive signage at Tugalo Park describing the history of hydropower at the development and the prehistory and history of the region.

C. UNANTICIPATED DISCOVERIES

If the Licensee determines after removal has commenced that the Undertaking will affect a previously unidentified property or further impact a known property that may be eligible for inclusion in the NRHP, the Licensee will address the discovery in accordance with the HPMP.

II. ADMINISTRATIVE PROVISIONS

A. MONITORING AND REPORTING

Annually, following the execution of this MOA until it expires or is terminated, the Licensee shall provide all parties to this MOA a summary report detailing work undertaken pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in the Licensee's efforts to carry out the terms of this MOA.

B. DISPUTE RESOLUTION

1. Should any party to this MOA object to or be unable to complete the execution of any provisions of this MOA, the Commission shall take the objection into account and consult as needed with the objecting party to resolve the objection.

2. If the Commission determines that the objection cannot be resolved, the Commission shall forward all documentation relevant to the dispute, including the Commission's proposed resolution, to the Council. The Council shall provide the Commission with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the Commission shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the Council, signatories and concurring parties, and provide them with a copy of this written response. The Commission will then proceed according to its final decision.

3. If the Council does not provide its advice regarding the dispute within the thirty (30) daytime period, the Commission may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the Commission shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA and provide them and the Council with a copy of such written response.

4. The responsibility of the parties to this MOA to carry out all actions under this MOA that are not the subject of the dispute will remain unchanged.

C. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the Council.

D. TERMINATION

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation II.C., above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories. Once the MOA is terminated, and prior to work continuing on the undertaking, the Commission must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the Council under 36 CFR § 800.7. The Commission shall notify the signatories as to the course of action it will pursue.

E. DURATION

This MOA will expire if its terms are not carried out within five (5) years from the date of its execution. Prior to such time, the Commission may consult with the other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation II.C. above.

F. EFFECTIVE DATE

This MOA will take effect on the date that it has been fully executed by the Commission, South Carolina SHPO, Georgia SHPO, and Licensee, and incorporated into the license for the Project.

EXECUTION of this MOA by the Commission, South Carolina SHPO, Georgia SHPO, and Licensee, and satisfaction of its terms evidence that the Commission has taken into account the effect of the Undertaking on historic properties and has afforded the Council an opportunity to comment.

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

SIGNATORIES:

FEDERAL ENERGY REGULATORY COMMISSION

By:_____ Date:_____

Carlisa Linton-Peters
Acting Director, Division of Hydropower
Administration and Compliance

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

SIGNATORIES:

GEORGIA STATE HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Dr. David C. Crass
Deputy Georgia State Historic
Preservation Officer

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

SIGNATORIES:

SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Elizabeth Johnson
Deputy South Carolina
State Historic Preservation Officer

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

INVITED SIGNATORIES:

GEORGIA POWER COMPANY

By:_____ Date:_____

Jennifer Winn
General Manager, Natural Resources
Georgia Power Company

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

CONCURRING PARTIES:

EASTERN BAND OF CHEROKEE INDIANS TRIBAL HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Stephen J. Yerka
Tribal Historic
Preservation Officer

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

CHEROKEE NATION TRIBAL HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Elizabeth Toombs
Tribal Historic
Preservation Officer

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

UNITED KEETOOWAH BAND OF CHEROKEE INDIANS TRIBAL HISTORIC PRESERVATION OFFICE

By:_____ Date:_____

Whitney Warrior
Office of Environmental Services
& Historic Preservation, Director

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

MUSCOGEE (CREEK) NATION TRIBAL HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Corain Lowe-Zepeda
Tribal Historic
Preservation Officer

South Carolina Department of Natural Resources

From: Elizabeth Miller <MillerE@dnr.sc.gov>
Sent: Friday, July 30, 2021 3:07 PM
To: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>; Dan Rankin <RankinD@dnr.sc.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Bauer, Eric F <eric_bauer@fws.gov>; Anthony Rabern <anthony.rabern@dnr.ga.gov>
Subject: RE: Follow-up on Tugalo Modernization Project

EXTERNAL MAIL: Caution Opening Links or Files

Hi Laurie,

The South Carolina Department of Natural Resources (SCDNR) has reviewed your proposed project upgrades at the North Georgia Hydroelectric Project's (P-2354) Tugalo powerhouse. Due to the increased cross sectional area spacing of the new trash racks, the SCDNR requests that a desktop entrainment study be performed in order to evaluate potential adverse effects. Please let me know if you have any questions.

Thank you,

Elizabeth

Elizabeth C. Miller
SCDNR
Office: (843) 953-3881
Cell: (843) 729-4636

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Thursday, July 22, 2021 1:03 PM

Written Correspondence with SCDNR

To: Dan Rankin <RankinD@dnr.sc.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Subject: Follow-up on Tugalo Modernization Project

We appreciate your time on our call last week. I've attached the agency briefing card as well as a follow-up form with notes and responses to your questions. Please let me know if you have any questions or need any additional information. If possible, please review and reply back via email with any feedback by Friday, July 30th.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064

Southern Company

EXTERNAL EMAIL: Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Written Correspondence with SCDNR

Georgia Power

North Georgia Hydroelectric Project

FERC Project #2354

Communication Date: July 15, 2021

Communication Type: Teams Web-Meeting

List and attach pertinent written correspondence:

Map of Dams/River

Agency Briefing Card

List persons attending from Southern Company/Georgia Power:

Southern Company: Courtenay O'Mara, P.E. and Laurie Munn, P.E.

Georgia Power Company (Georgia Power): Patrick O'Rouke

List organization name and persons attending from other organization:

South Carolina Department of Natural Resources – Elizabeth Miller, Amy Breedlove

Subject: Consultation on the Modernization of the North Georgia Project Tugalo Powerhouse

Comments/Discussions/Requests:

Consultation occurred via Teams virtual meeting on July 15, 2021 and follow-up via email on July 22, 2021.

July 15, 2021 Consultation

On July 15, 2021 Southern Company/Georgia Power met via Teams with Elizabeth Miller and Amy Breedlove of South Carolina Department of Natural Resources and discussed the upgrades that Georgia Power has planned for the Tugalo Powerhouse and Dam.

- Overview of modernization program at Tugalo Dam
- Specifically, for Tugalo, which is a part of the North Georgia Hydroelectric Project (FERC No. 2354) (5th of 6 dams), the timeframe is 2022 through 2025 and includes turbine runner replacement, generator rewind, cooling system upgrade, trash gate replacement, and spillway gate replacement.
- The location map was reviewed.
- There will be a slight increase in turbine discharge (1240 cfs to 1400 cfs at best gate), no lake elevation changes, and a power increase (45 MW to 64 MW).
- Georgia Power will file a FERC license amendment and will consult with the additional following agencies: U.S. Fish and Wildlife Service , Georgia Department of Natural Resources, Wildlife Resources Division, South Carolina Department of Natural Resources, U.S. Forest Service, Georgia State Historic Preservation Office and South Carolina State Historic Preservation Office.
- Patrick O'Rouke mentioned the park closure below Tugalo Dam. Elizabeth Miller asked for a copy of the document filed with FERC on July 14, 2021. She mentioned that she cannot access since it was filed CEII. Georgia Power will follow up with a copy of this letter.
- Patrick O'Rouke mentioned that approach velocities through the trash rack would decrease. Elizabeth Miller requested information on the bar size and spacing of the bars on the proposed trash rack. Laurie Munn will follow up with a detail of the trash racks.

Response to questions from Georgia Power and South Carolina Department on Natural Resources Consultation Meeting for Tugalo Modernization Project

Can you provide a detail of the trashrack?

The attached document shows the proposed trashrack detail and the bar spacing description. There will be a 0.02 ft/s decrease for the best gate flows and a 0.55 ft/s decrease for the full gate flows.

How are lake levels affected and will this change your operating plan?

Our modeling shows that if we were to run Tugalo with the historical operating schedule, the lake elevations during normal operating times would only drop 0.26 inches at Lake Tugalo. However, in reality, the effects of the increased hydraulic capacities with the Tugalo modernization will have no impacts on lake levels because the North Georgia Project operates on pond control. This means the generation at Tugalo is run to keep the lake at desired lake levels. Since the volume of water moving through Lake Tugalo will not change (we will operate to keep the entire North Georgia lake system in balance), the plant will generate the same volume of water at a quicker pace. The plant will stop generating when the lake reaches the desired elevation. No access points to the lake will be affected.

Can you provide the document submitted to FERC on 7/14/21?

The letter you requested which was filed on the docket on 7/14/21 is dam safety related. It is CEII, so we are unable to distribute it. The briefing card details the scope of the Proposed Tugalo Modernization process.

Approach Velocities

The approach velocities expected with the proposed trashracks are estimated to be 1.73 and 1.86 foot per second (ft/s) at best and full gate flows, respectively. This is a decrease of 0.02 ft/s for best gate flows and a decrease of 0.55 ft/s for full gate flows from the estimated approach velocities with the existing trashracks. The reason for the decrease in the approach velocity is because even though the bars are spaced closer together, the overall open cross sectional area on the proposed trashracks increased over the existing trashracks. Cross sectional area increases because the vertical bars and horizontal support bars are thinner than the older vertical bars and cross members. The trashrack spacing for the existing and proposed trashracks are described below.

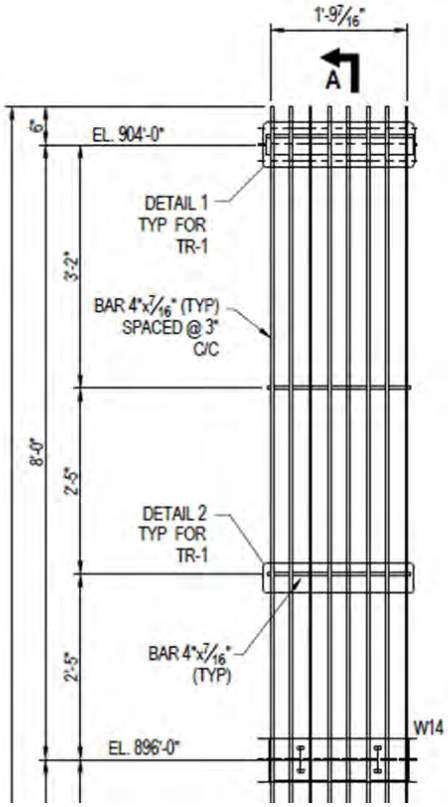
Existing Trashracks

The existing trashracks have an overall dimension of 13 feet -1 inch wide by 7 feet deep. The bars are 1 inch wide and are spaced 7 inches on center. There is a total of 8 trash racks stacked vertically. Each trashrack contains cross-bracing bars which are 2 inches wide.

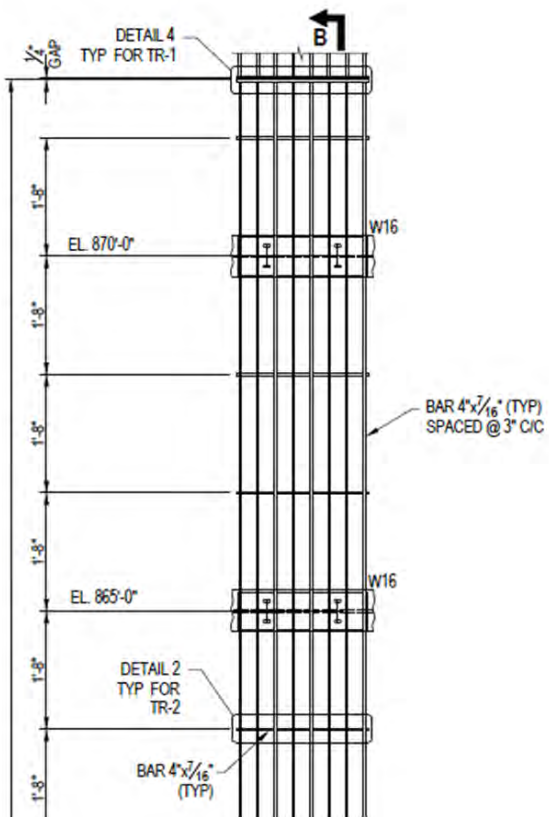
Proposed Trashracks

The proposed trashrack is in two sections, the upper section and the lower section. The trashrack design calls for vertical bars which are 7/16 inches wide and are spaced at 3 inches on center. There is a total of 48 vertical bars across the intake (6 trashracks side by side). Horizontal bracing bars are 7/16 inches wide and are positioned at distances from 1 foot - 8 inches to 3 feet – 2 inches over the depth of the trashrack. The total depth of the upper trashrack is approximately 32 feet, and the total depth of the lower trashrack is approximately 27.5 feet. Below are detailed sections of the upper and lower trashracks.

Upper Trashrack



Lower Trashrack



Written Correspondence with Agencies

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Friday, August 6, 2021 12:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <Kelly.Schaeffer@KleinschmidtGroup.com>
Subject: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

Good afternoon,

We are close to submitting the license amendment application to FERC for the Tugalo Hydro Plant, which is 1 of 6 plants that Georgia Power operates as its North Georgia Project (FERC Project Number 2354). We appreciate all of the feedback and consultation that has been ongoing since June 2021 with you. As you may recall, our proposal is for a non-capacity upgrade of four generating units in the Tugalo powerhouse, and includes replacing the turbine runners, generators, intake trash racks, and spillway gates.

South Carolina Department of Natural Resources has requested a desktop entrainment study. We are currently preparing that, and we will distribute the study to the group as soon as it is completed, hopefully in the next 2-3 weeks. In the meantime, we wanted to provide you some time to take a look at our Draft License Amendment application so that you could provide any comment, if needed. Your comments are sufficient via reply email. We will take your comments and also provide them to the FERC when we make the application. FERC in turn will also provide an additional opportunity for comment after they receive our application, but we thought your early review would help resolve any outstanding issues.

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Attachment C – Marked up version of the existing Exhibit A, showing changes that would be required to this part of our existing FERC license by the proposal

If possible, we would like your review by Friday, August 20, 2021.

Thanks so much.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



From: Munn, Laura S.
To: Elizabeth Miller
Cc: Dan Rankin; Amy Breedlove; O"Mara, Courtenay R.; Kelly Schaeffer
Subject: RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant
Date: Friday, August 20, 2021 3:43:00 PM
Attachments: image001.gif

Elizabeth,
Thank you for your response. We appreciate your time and comments. We will follow up as soon as we have completed the desktop entrainment study. Have a wonderful weekend!
Laurie

From: Elizabeth Miller <MillerE@dnr.sc.gov>
Sent: Friday, August 20, 2021 3:41 PM
To: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Cc: Dan Rankin <RankinD@dnr.sc.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>
Subject: RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

EXTERNAL MAIL: Caution Opening Links or Files

Hi Laura,

The SCDNR concurs with GAWRD's positive comments regarding reservoir fluctuation restrictions and downstream flows from the Yonah Development. We greatly value the impact that these license requirements have made to the fishery resources and strongly recommend the licensee continue to implement these environmental measures.

Thank you for the opportunity for the preliminary review of the license application. We look forward to reviewing the results of the desktop entrainment study.

Elizabeth

Elizabeth C. Miller
SCDNR
Office: (843) 953-3881
Cell: (843) 729-4636

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Friday, August 6, 2021 1:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>

Written Correspondence with SCDNR

Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <kelly.schaeffer@kleinschmidtgroup.com>
Subject: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

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Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



EXTERNAL EMAIL: Do not click any links or open any attachments unless you trust the sender and know the content is safe.

South Carolina Department of Health and Environmental Control

Written Correspondence with SCDHEC

From: Dodd, Anthony Ray <ARDODD@southernco.com>
Sent: Monday, June 21, 2021 2:10 PM
To: HIGHTOCW@dhec.sc.gov
Subject: Georgia Power Company maintenance upgrades for Tugalo Dam Hydro Project (FERC 2354) powerhouse and dam

Mr. Hightower,
On behalf of Georgia Power Company's Project Team currently managing the Modernization/Maintenance of the Tugalo Dam Hydro Project (FERC 2354), Lake Tugalo, we are requesting consultation with South Carolina DHEC towards 401 Water Quality Certification. The current FERC license for Tugalo Dam operations, established in the early 1990's, acknowledges 401 Water Quality Certification by Georgia EPD and Waiver from SCDHEC (although some waters of Lake Tugalo flow along the South Carolina shoreline, all discharge from Tugalo Dam originates in Georgia).

We are currently consulting with GA EPD and other agencies in describing the nature and extent of the planned maintenance of Tugalo Dam in 2022 through 2025. Below are several bulleted descriptions of the modernization project:

- The Tugalo development is the fifth of six hydroelectric developments in the Federal Energy Regulatory Commission (FERC) licensed North Georgia Project (FERC No. 2354). Water for generation at Tugalo comes from rainfall in the Tallulah River basin (first coming through Tallulah Falls powerhouse) and the Chattooga River basin. These rivers converge in Lake Tugalo upstream of Tugalo powerhouse. Operation is modified run-of-river; Lake Tugalo stores inflow over short periods of time, which is utilized to provide generation from Tugalo powerhouse during peak power demand hours. Tugalo powerhouse discharges directly into the downstream Lake Yonah.

- Georgia Power is proposing to amend the North Georgia Project license to upgrade the four generating units in the Tugalo powerhouse. This upgrade includes replacing the turbine runners, generators and intake trashracks. We also will be replacing spillway gates beginning in 2022. Work will be completed behind bulkheads, so no drawdowns will be necessary for spillway gate replacement. Powerhouse work will begin in 2022, with a generator/turbine unit replaced each year in 2022, 2023, 2024, and 2025.

- There will be a slight increase in turbine discharge (1240 cfs to 1400 cfs at best gate), no lake elevation changes, and a power increase (45 MW to 64 MW).

- Georgia Power will file a FERC license amendment and will consult with the additional following agencies: U.S. Fish and Wildlife Service , Georgia Department of Natural Resources, Wildlife Resources Division, U.S. Forest Service, Georgia State Historic Preservation Office and South Carolina State Historic Preservation Office.

- As compared to historic monthly measured tailrace temperatures, calculated temperature changes to the tailrace as a result of the turbine upgrade are expected to range from -0.01°F in July to 0.36 °F in January. This calculation detail plus seasonal water quality data is available in an additional information package.

- Georgia Power's calculations show that state water quality criteria is being met and will continue to be met after the Tugalo Powerhouse modernization activities are complete. In our recent meeting (14 June) with GA EPD, we shared calculations showing there will be no material adverse effect on the water quality and we sought EPD's concurrence. EPD was inclined to agree and will render a decision based on its review of the information package.

As South Carolina is our project waters neighbor, Georgia Power Company is asking you to please consider either providing comments toward 401 Water Quality Certification or Waiver to GA EPD for the Tugalo modernization. We'd be happy to facilitate further information needs at your choice by email, phone calls or virtual meeting.
Please let me know if you have any questions. I look forward to hearing from you.

Thank you,

Tony Dodd
Natural Resources Specialist
Georgia Power Company
241 Ralph McGill Blvd, NE
Atlanta, GA 30308
Cell: 404-434-9412
Desk: 404-506-5026
Email: ardodd@southernco.com

Georgia Power

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Regarding Correspondence with SCDHEC

From: Dodd, Anthony Ray <ARDODD@southernco.com>
Sent: Monday, July 12, 2021 10:07 AM
To: O'Mara, Courtenay R.
Cc: Kelly Schaeffer; Crabbe, Melissa C.

Re: Tugalo hydro modernization

I reached out today, this time by phone, to Mr. Chuck Hightower, 401 Water Quality Certifications, SCDHEC.
I left a detailed message for him.

Will keep you posted

Tony Dodd
Natural Resources Specialist
Georgia Power Company
241 Ralph McGill Blvd, NE
Atlanta, GA 30308
Cell: 404-434-9412
Desk: 404-506-5026
Email: ardodd@southernco.com

Georgia Power

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Written Correspondence with Agencies

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Friday, August 6, 2021 12:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <Kelly.Schaeffer@KleinschmidtGroup.com>
Subject: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

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Thanks so much.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



South Carolina Department of Archives and History

Written Correspondence with SCDAH

From: Charles, Joseph D.
To: Johnson, Elizabeth
Subject: SCDAH package.pdf
Date: Tuesday, July 20, 2021 2:27:00 PM
Attachments: SCDAH package.pdf

Elizabeth,

Attached is a consultation package for the Tugalo Modernization Project for your review. I included a Section 106 review form from your website and filled it out as best as I could. I am also preparing packages for the tribes we discussed and will send them out today. Let me know if you need any additional information.

Joey

Joseph Charles
Hydro Compliance Coordinator
Environmental & Natural Resources
Georgia Power
241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, Georgia 30308
404.506.2337 (office)
404.782.8796 (cell)

Attachment to Georgia Power's 7/20/21 Email to SCDAH

Georgia Power

241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, GA 30308
404 506 2337 tel
404 506 4132 fax
404 782 8796 cell
jcharles@southernco.com

July 20, 2021

Ms. Elizabeth Johnson
South Carolina Dept. of Archives & History
60 Executive Park South, NE
Atlanta, GA 30329-4940

RE: System upgrades at the Tugalo powerhouse – North Georgia Project (#2354)

Dear Ms. Johnson:

Thank you again for meeting with Melissa Crabbe (Southern Company Generation), Santiago Martinez (Georgia Historic Preservation Division), and I on July 1 to discuss Georgia Power's hydro modernization efforts at the Tugalo Development of the North Georgia Hydroelectric Project (FERC #2354). As we discussed, the purpose of the meeting was to provide an overview of the Project, as well as proposed upgrades at Tugalo dam and powerhouse. The meeting was to be followed by a written filing to both capture the meeting itself and provide a more detailed description of the undertaking for your review and comment.

Attached you will find a copy of the brief PowerPoint presentation that accompanied the meeting, including an agenda, and an attendees list generated in Microsoft Teams for your records. Also attached are a brief narrative describing the undertaking and potential effects to historic properties, as well as proposed mitigation measures for adverse effects to historic properties. If you have questions or require more information, please contact me at 404-782-8796 or jcharles@southernco.com.

Sincerely,

Joseph Charles
Hydro Compliance Coordinator, Natural Resources

Attachment to Georgia Power's 7/20/21 Email to SCDAH

Meeting Summary
Total Number of Participants 4
Meeting Title Overview of Tugalo modernization project
Meeting Start Time "7/1/2021, 1:58:58 PM"
Meeting End Time "7/1/2021, 2:43:54 PM"

Full Name	Join Time	Leave Time	Duration	Email	Role
"Charles, Joseph D."	"7/1/2021, 1:58:58 PM"	"7/1/2021, 2:40:59 PM"	42m	JCHARLES@SOUTHERNCO.COM	Organizer
"Crabbe, Melissa C."	"7/1/2021, 1:59:05 PM"	"7/1/2021, 2:41:00 PM"	41m 54s	MCCRABBE@SOUTHERNCO.COM	Presenter
Santiago D. Martinez	"7/1/2021, 2:00:44 PM"	"7/1/2021, 2:41:02 PM"	40m 18s	Santiago.Martinez@dca.ga.gov	Presenter
Elizabeth Johnson (Guest)	"7/1/2021, 2:01:02 PM"	"7/1/2021, 2:43:54 PM"	42m 52s		Presenter

Letter from SCDAH

SOUTH CAROLINA DEPARTMENT OF ARCHIVES & HISTORY

July 30, 2021

Joseph Charles
Georgia Power
Atlanta, GA 30308
JCHARLES@southernco.com

Re: Tugalo Modernization Project
Oconee County, South Carolina
SHPO Project No. 21-EJ0211 FERC# 2354

Dear Joseph Charles:

Thank you for the letter and consultation package which we received via email on July 20, 2021, regarding the Tugalo Modernization Project. We also received a copy of the July 1, 2021 PowerPoint presentation and cultural resources assessment as supporting documentation for this undertaking. The State Historic Preservation Office (SHPO) is providing comments to Georgia Power for the Federal Energy Regulatory Commission (FERC) pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800. Consultation with the SHPO is not a substitution for consultation with Tribal Historic Preservation Offices, other Native American tribes including those with state recognition, local governments, or the public.

The proposed undertaking is defined as the replacement of several systems to modernize the Tugalo dam and powerhouse including the generators (original), turbines (original), control panels and instrumentation (not original), the 14 spillway gates (proposed replacements will be steel gates of the same design and appearance) and the intake trash rakes (not original).

The Tugalo dam and powerhouse were previously determined eligible for listing in the National Register of Historic Places under Criteria A and C. The historic properties are managed under a Programmatic Agreement (PA) between FERC, Georgia SHPO, SC SHPO, and the Georgia Power Company for the North Georgia Hydroelectric Project signed in 1996, and a Cultural Resources Management Plan (CRMP).

As the generators and turbines are original equipment and considered character-defining features, Georgia Power has determined that their replacement will be an adverse effect. Our office concurs with the assessment that the historic property will be adversely affected by this undertaking. Georgia Power has proposed developing a Memorandum of Agreement (MOA) to

resolve the adverse effect. Proposed mitigation would consist of photographic and archival documentation (Level II) for the Historic American Engineering Record (HAER) and the installation of an interpretive panel on the historic of the Tugalo project and its place within the North Georgia Hydroelectric Project, and the history of the electrification of Georgia.

We look forward to continuing consultation with the development of the MOA. Please refer to SHPO Project Number 21-EJ0211 in any future correspondence regarding this project. If you have any questions, please contact me at (803) 896-6168 or ejohnson@scdah.sc.gov.

Sincerely,

Elizabeth M. Johnson

Elizabeth M. Johnson
Director, Historical Services
State Historic Preservation Office

Cc: Santiago Martinez, GA SHPO
Santiago.Martinez@dca.ga.gov

Written Correspondence with Agencies

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Friday, August 6, 2021 12:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <Kelly.Schaeffer@KleinschmidtGroup.com>
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Sr. Engineer
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Tel 404.506.7275
Mobile 404.360.1064



Written Correspondence with SCDAH

From: Johnson, Elizabeth
To: Munn, Laura S.
Subject: RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant
Date: Thursday, August 12, 2021 4:54:44 PM
Attachments: image002.png
image003.gif

EXTERNAL MAIL: Caution Opening Links or Files

Thank you for providing this information for review.

Our office provided comments in a letter of July 30, 2021. We would like to suggest that for the interpretive panel suggested as a component of mitigation for the adverse effect to the historic property, that consideration also be given to including a section on the Native American history of the area.

Thanks,

Elizabeth Johnson

Elizabeth M. Johnson
Director, Historical Services, D-SHPO
State Historic Preservation Office
SC Department of Archives & History
8301 Parklane Road
Columbia, SC 29223
Ph: 803.896.6168 Fax: 803.896.6167 https://scdah.sc.gov/historic-preservation [scdah.sc.gov]

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Friday, August 06, 2021 1:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; Johnson, Elizabeth <EJohnson@scdah.sc.gov>; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <kelly.schaeffer@kleinschmidtgroup.com>
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Thanks so much.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



Written Correspondence with SCDAH

From: Johnson, Elizabeth
To: Charles, Joseph D.
Subject: RE: draft Tugalo MOA
Date: Wednesday, September 1, 2021 9:36:51 AM
Attachments:

EXTERNAL MAIL: Caution Opening Links or Files

Joey,

Attached is a copy of the draft MOA with comments in track changes. Please let me know if you have any questions.

Thanks,

Elizabeth

Elizabeth M. Johnson
Director, Historical Services, D-SHPO
State Historic Preservation Office
SC Department of Archives & History
8301 Parklane Road
Columbia, SC 29223
Ph: 803.896.6168 Fax: 803.896.6167 https://scdah.sc.gov/historic-preservation [scdah.sc.gov]

From: Charles, Joseph D. <JCHARLES@southernco.com>
Sent: Monday, August 23, 2021 10:38 AM
To: Johnson, Elizabeth <EJohnson@scdah.sc.gov>
Subject: draft Tugalo MOA

Elizabeth,

Please find attached a draft MOA for the Tugalo modernization project (21-EJ0211) for your review and comment. Let me know if I need to file differently.

Thanks,

Joey

Joseph Charles

Hydro Compliance Coordinator
Environmental & Natural Resources
Georgia Power
241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, Georgia 30308
404.506.2337 (office)
404.782.8796 (cell)

MEMORANDUM OF AGREEMENT
AMONG
THE FEDERAL ENERGY REGULATORY COMMISSION,
THE GEORGIA STATE HISTORIC PRESERVATION OFFICER,
THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER,
AND
GEORGIA POWER COMPANY
REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF
THE NORTH GEORGIA HYDROELECTRIC PROJECT
IN RABUN COUNTY, GEORGIA AND
OCONEE COUNTY, SOUTH CAROLINA
FERC NO. 2354-###
HP-210720-010; 21-EJ0211

WHEREAS, as part of the Federal Energy Regulatory Commission ("Commission") relicensing of Georgia Power Company's ("Licensee") North Georgia Hydroelectric Project (FERC Project No. 2354) ("Project"), a historic context study and inventory of the Project dam and supporting structures was conducted in 1990; and

WHEREAS, the Project works were determined eligible for listing in the National Register of Historic Places ("NRHP"); and

WHEREAS, Licensee has developed and implemented a Cultural Resources Management Plan ("CRMP") for the Project pursuant to Article 417 of the Project's license issued by the Commission; and

WHEREAS, Licensee has proposed necessary system upgrades to the Tugalo Development ("Undertaking"), including generators and turbines, which are considered character-defining features of the powerhouse; and

WHEREAS, the Commission has determined that the Undertaking will have an adverse effect on the Tugalo Development, which is contributing to the NRHP-eligible Project works; and

WHEREAS, the Undertaking may affect lands important to the Eastern Band of Cherokee Indians, the Cherokee Nation, United Keetoowah Band of Cherokee Indians, and the Muscogee (Creek) Nation, (hereinafter, "Tribes") and the Tribes have participated in consultation and have been invited to concur in this Memorandum of Agreement (MOA), but have elected not to participate; and

WHEREAS, on [insert date], the Commission issued a notice of application for filing and soliciting comments, comments, motions to intervene, and protests regarding the proposed Undertaking, and no comments were received; and

WHEREAS, the Licensee and Commission have consulted with the Georgia State Historic Preservation Officer ("Georgia SHPO") and South Carolina State Historic Preservation Officer ("South Carolina SHPO") pursuant to regulations implementing Section 106 of the National Historic Preservation Act (54 USC 306108), 36 CFR Part 800, and have notified the Advisory Council on Historic Preservation ("Council") of the adverse effect finding pursuant to 36 CFR §800.6(a)(1) and afforded the Council an opportunity to comment on [insert date]; and

WHEREAS, the Commission has executed a Programmatic Agreement (PA) with the Council, Georgia SHPO, South Carolina SHPO and Licensee, executed on January 30,1996, as a condition of issuing a license for Commission Project No. 2354 on October 3, 1996, and finds the PA consistent with Commission guidelines; and

WHEREAS, the Commission, Licensee, Georgia SHPO and South Carolina SHPO agree that there is no practicable alternative to avoid or minimize the adverse effect to the powerhouse; and

WHEREAS, the Licensee participated in the consultation for the Undertaking described above, and pursuant to a Commission order, the Licensee will be directed to implement the stipulations below and has been invited to sign this MOA as an invited signatory per 36 C.F.R. Part 800.6 (c)(2);

NOW THEREFORE, the Commission, the Licensee, Georgia SHPO and South Carolina SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the Undertaking on historic properties:

STIPULATIONS

The Commission will condition any approval issued in connection with the Undertaking to require the satisfactory completion of the following stipulations and will ensure that the following stipulations are carried out under the authority of the Commission by or under the direct supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Standards & Guidelines: Professional Qualifications Standards* (48 FR44738-44739) in the appropriate discipline:

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

I. MITIGATION MEASURES

A. RECORDATION

Upon execution of the MOA and prior to commencing the above-referenced upgrades, the Licensee will perform or cause to be performed Level II Historic American Engineering Record ("HAER") documentation of the generators and turbines, to include an historic narrative, measured drawings, and medium format black and white photography. The draft HAER documentation will be submitted to all signatories and the National Park Service (NPS) for review and comment. Upon receipt of all comments, the Licensee will revise the HAER documentation and submit to the signatories and the NPS for acceptance. Once accepted by the NPS, the record will be housed at the Library of Congress. Final hardcopies and digital copies should be submitted to all signatories for their records. This record will also be available to the public via Georgia Power's North Georgia website (http://georgiapowerlakes.com/northgeorgialakes/).

B. PUBLIC INTERPRETATION

Upon completion of the system upgrades at the Tugalo Development, the licensee will, in consultation with the signatories of the MOA, prepare and install interpretive signage at Tugalo Park describing the history of hydropower at the development and the prehistory and history of the region.

C. UNANTICIPATED DISCOVERIES

If the Licensee determines after removal has commenced that the Undertaking will affect a previously unidentified property or further impact a known property that may be eligible for inclusion in the NRHP, the Licensee will address the discovery in accordance with the HPMP.

II. ADMINISTRATIVE PROVISIONS

A. MONITORING AND REPORTING

Annually, following the execution of this MOA until it expires or is terminated, the Licensee shall provide all parties to this MOA a summary report detailing work undertaken pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in the Licensee's efforts to carry out the terms of this MOA.

B. DISPUTE RESOLUTION

1. Should any party to this MOA object to or be unable to complete the execution of any provisions of this MOA, the Commission shall take the objection into account and consult as needed with the objecting party to resolve the objection.

2. If the Commission determines that the objection cannot be resolved, the Commission shall forward all documentation relevant to the dispute, including the Commission's proposed resolution, to the Council. The Council shall provide the Commission with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the Commission shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the Council, signatories and concurring parties, and provide them with a copy of this written response. The Commission will then proceed according to its final decision.

3. If the Council does not provide its advice regarding the dispute within the thirty (30) daytime period, the Commission may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the Commission shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA and provide them and the Council with a copy of such written response.

4. The responsibility of the parties to this MOA to carry out all actions under this MOA that are not the subject of the dispute will remain unchanged.

C. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the Council.

D. TERMINATION

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation II.C., above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories. Once the MOA is terminated, and prior to work continuing on the undertaking, the Commission must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the Council under 36 CFR § 800.7. The Commission shall notify the signatories as to the course of action it will pursue.

E. DURATION

This MOA will expire if its terms are not carried out within five (5) years from the date of its execution. Prior to such time, the Commission may consult with the other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation II.C. above.

F. EFFECTIVE DATE

This MOA will take effect on the date that it has been fully executed by the Commission, South Carolina SHPO, Georgia SHPO, and Licensee, and incorporated into the license for the Project.

EXECUTION of this MOA by the Commission, South Carolina SHPO, Georgia SHPO, and Licensee, and satisfaction of its terms evidence that the Commission has taken into account the effect of the Undertaking on historic properties and has afforded the Council an opportunity to comment.

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

SIGNATORIES:

FEDERAL ENERGY REGULATORY COMMISSION

By:_____ Date:_____

Carlisa Linton-Peters
Acting Director, Division of Hydropower
Administration and Compliance

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

SIGNATORIES:

GEORGIA STATE HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Dr. David C. Crass
Deputy Georgia State Historic
Preservation Officer

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

SIGNATORIES:

SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Elizabeth Johnson
Deputy South Carolina
State Historic Preservation Officer

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

INVITED SIGNATORIES:

GEORGIA POWER COMPANY

By:_____ Date:_____

Jennifer Winn
General Manager, Natural Resources
Georgia Power Company

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

CONCURRING PARTIES:

EASTERN BAND OF CHEROKEE INDIANS TRIBAL HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Stephen J. Yerka
Tribal Historic
Preservation Officer

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

CHEROKEE NATION TRIBAL HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Elizabeth Toombs
Tribal Historic
Preservation Officer

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

UNITED KEETOOWAH BAND OF CHEROKEE INDIANS TRIBAL HISTORIC PRESERVATION OFFICE

By:_____ Date:_____

Whitney Warrior
Office of Environmental Services
& Historic Preservation, Director

Revised MOA - Version incorporates comments received from HPD (9/16/2021) and SCDAH (9/1/2021)

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

MUSCOGEE (CREEK) NATION TRIBAL HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Corain Lowe-Zepeda
Tribal Historic
Preservation Officer

Eastern Band of Cherokee Indians

Written Correspondence With EBCI

From: Charles, Joseph D.
To: syerka@nc-cherokee.com
Subject: Section 106 submittal
Date: Tuesday, July 20, 2021 3:51:00 PM
Attachments: EBCI package.pdf

Mr. Yerka,

Please find attached a 106 consultation package for your review and comment. I was told that your office accepts electronic submittals, but if that is not correct, please accept my apologies and let me know the best way to get a copy to you.

Thank you,

Joey

Joseph Charles
Hydro Compliance Coordinator
Environmental & Natural Resources
Georgia Power
241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, Georgia 30308
404.506.2337 (office)
404.782.8796 (cell)

Attachment to Georgia Power's 7/20/21 Email to EBCI

Georgia Power

241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, GA 30308
404 506 2337 tel
404 506 4132 fax
404 782 8796 cell
jcharles@southernco.com

July 20, 2021

Stephen J. Yerka
Historic Preservation Specialist, THPO
P.O. Box 455
Cherokee, NC 28719

RE: System upgrades at the Tugalo powerhouse – North Georgia Project (#2354)

Dear Mr. Yerka:

Georgia Power is planning a series of system upgrades for the Tugalo Development of the North Georgia Hydroelectric Project (Project) in Rabun, Habersham, and Stephens Counties, Georgia and Oconee County, South Carolina. As the project works of the Project have been determined eligible for inclusion on the National Register of Historic Places (NRHP), Georgia Power is conducting consultation under Section 106 of the National Historic Preservation Act (NHPA) as the Federal Energy Regulatory Commission's (FERC) non-federal designee.

Please find attached a brief narrative describing the undertaking and potential effects to historic properties, as well as proposed mitigation measures for adverse effects to historic properties. If you have questions or require more information, please contact me at 404-782-8796 or jcharles@southernco.com.

Sincerely,

Joseph Charles
Hydro Compliance Coordinator
Georgia Power, Environmental & Natural Resources

Muscogee (Creek) Nation

Written Correspondence with MCN

From: Charles, Joseph D.
To: section106@mcn-nsn.gov
Cc: Turner Hunt
Subject: 106 consultation package
Date: Tuesday, July 20, 2021 4:02:00 PM
Attachments: MCN package.pdf

Please find attached a Section 106 consultation package for Georgia Power's North Georgia Hydroelectric Project (FERC #2354).

Joseph Charles
Hydro Compliance Coordinator
Environmental & Natural Resources
Georgia Power
241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, Georgia 30308
404.506.2337 (office)
404.782.8796 (cell)

Georgia Power

241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, GA 30308
404 506 2337 tel
404 506 4132 fax
404 782 8796 cell
jcharles@southernco.com

July 20, 2021

Corain Lowe-Zepeda
Tribal Historic Preservation Officer
Muscogee (Creek) Nation
Historic and Cultural Preservation Office
Human Development Building
Hwy 75 & Loop 56
PO Box 580
Okmulgee, OK 74447

RE: System upgrades at the Tugalo powerhouse – North Georgia Project (#2354)

Dear Ms. Lowe-Zepeda:

Georgia Power is planning a series of system upgrades for the Tugalo Development of the North Georgia Hydroelectric Project (Project) in Rabun, Habersham, and Stephens Counties, Georgia and Oconee County, South Carolina. As the project works of the Project have been determined eligible for inclusion on the National Register of Historic Places (NRHP), Georgia Power is conducting consultation under Section 106 of the National Historic Preservation Act (NHPA) as the Federal Energy Regulatory Commission's (FERC) non-federal designee.

Please find attached a brief narrative describing the undertaking and potential effects to historic properties, as well as proposed mitigation measures for adverse effects to historic properties. If you have questions or require more information, please contact me at 404-782-8796 or jcharles@southernco.com.

Sincerely,

Joseph Charles
Hydro Compliance Coordinator
Georgia Power, Environmental & Natural Resources

United Keetoowah Band of Cherokee Indians

Written Correspondence with UKB

From: Charles, Joseph D.
To: wwarrior@ukb-nsn.gov; egorsuch@ukb-nsn.gov
Subject: 106 submittal
Date: Tuesday, July 20, 2021 4:08:00 PM
Attachments: UKB package.pdf

Ms. Warrior,

Please find attached a Section 106 consultation package for Georgia Power's North Georgia Hydroelectric Project (FERC #2354).

Thank you,

Joey

Joseph Charles
Hydro Compliance Coordinator
Environmental & Natural Resources
Georgia Power
241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, Georgia 30308
404.506.2337 (office)
404.782.8796 (cell)

Georgia Power

241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, GA 30308
404 506 2337 tel
404 506 4132 fax
404 782 8796 cell
jcharles@southernco.com

July 20, 2021

Whitney Warrior
Office of Environmental Services
& Historic Preservation – Director
United Keetoowah Band of Cherokee Indians
PO Box 746
Tahlequah, OK 74464

RE: System upgrades at the Tugalo powerhouse – North Georgia Project (#2354)

Dear Ms. Warrior:

Georgia Power is planning a series of system upgrades for the Tugalo Development of the North Georgia Hydroelectric Project (Project) in Rabun, Habersham, and Stephens Counties, Georgia and Oconee County, South Carolina. As the project works of the Project have been determined eligible for inclusion on the National Register of Historic Places (NRHP), Georgia Power is conducting consultation under Section 106 of the National Historic Preservation Act (NHPA) as the Federal Energy Regulatory Commission's (FERC) non-federal designee.

Please find attached a brief narrative describing the undertaking and potential effects to historic properties, as well as proposed mitigation measures for adverse effects to historic properties. If you have questions or require more information, please contact me at 404-782-8796 or jcharles@southernco.com.

Sincerely,

Joseph Charles
Hydro Compliance Coordinator
Georgia Power, Environmental & Natural Resources

Catawba Indian Nation

Written Correspondence with CIN

From: Charles, Joseph D.
To: Wenonah.haire@catawba.com
Cc: Caitlin.Rogers@catawba.com
Subject: 106 consultation package
Date: Tuesday, July 20, 2021 4:18:00 PM
Attachments: CIN package.pdf

Dr. Haire,

Please find attached a Section 106 consultation package for Georgia Power's North Georgia Hydroelectric Project (FERC #2354) for your review and comment. If your office does not accept electronic submissions, please accept my apologies and let me know that best way to get a copy to you.

Thank you,

Joey

Joseph Charles
Hydro Compliance Coordinator
Environmental & Natural Resources
Georgia Power
241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, Georgia 30308
404.506.2337 (office)
404.782.8796 (cell)

Attachment to Georgia Power's 7/20/2021 Email to CIN

Georgia Power

241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, GA 30308
404 506 2337 tel
404 506 4132 fax
404 782 8796 cell
jcharles@southernco.com

July 20, 2021

Dr. Wenonah G. Haire
THPO
Catawba Indian Nation
996 Avenue of the Nations
Rock Hill, SC 29730

RE: System upgrades at the Tugalo powerhouse – North Georgia Project (#2354)

Dear Dr. Haire:

Georgia Power is planning a series of system upgrades for the Tugalo Development of the North Georgia Hydroelectric Project (Project) in Rabun, Habersham, and Stephens Counties, Georgia and Oconee County, South Carolina. As the project works of the Project have been determined eligible for inclusion on the National Register of Historic Places (NRHP), Georgia Power is conducting consultation under Section 106 of the National Historic Preservation Act (NHPA) as the Federal Energy Regulatory Commission's (FERC) non-federal designee.

Please find attached a brief narrative describing the undertaking and potential effects to historic properties, as well as proposed mitigation measures for adverse effects to historic properties. If you have questions or require more information, please contact me at 404-782-8796 or jcharles@southernco.com.

Sincerely,

Joseph Charles
Hydro Compliance Coordinator
Georgia Power, Environmental & Natural Resources

Written Correspondence with CIN

Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, South Carolina 29730

Office 803-328-2427
Fax 803-328-5791

August 27, 2021

Attention: Joseph Charles
Georgia Power
241 Ralph McGill Blvd., NE
Atlanta, GA 30308

Re. THPO #	TCNS #	Project Description
2021-1205-1		System Upgrades at the Tugalo Powerhouse – North Georgia Project (# 2354)

Dear Mr. Charles,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.**

If you have questions please contact Caitlin Rogers at 803-328-2427 ext. 226, or e-mail Caitlin.Rogers@catawba.com.

Sincerely,

Caitlin Rogers for

Wenonah G. Haire
Tribal Historic Preservation Officer

Cherokee Nation

Written Correspondence with CN

From: Charles, Joseph D.
To: elizabeth-toombs@cherokee.org
Subject: CN package.pdf
Date: Tuesday, July 20, 2021 3:09:00 PM
Attachments: CN package.pdf

Ms. Toombs,

I am not sure if your office accepts electronic submissions for Section 106 review, but I have attached a submission for your review and comment. If you require a hard copy or if there is another means of submitting electronically, please let me know.

Thank you,

Joey

Joseph Charles
Hydro Compliance Coordinator
Environmental & Natural Resources
Georgia Power
241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, Georgia 30308
404.506.2337 (office)
404.782.8796 (cell)

Attachment to Georgia Power's 7/20/21 Email to CN

Georgia Power

241 Ralph McGill Blvd., NE
BIN 10151
Atlanta, GA 30308
404 506 2337 tel
404 506 4132 fax
404 782 8796 cell
jcharles@southernco.com

July 20, 2021

Elizabeth Toombs
Tribal Historic Preservation Officer
Cherokee Nation
PO Box 948
Tahlequah, OK 74465-0948

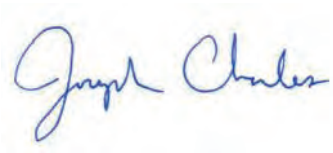
RE: System upgrades at the Tugalo powerhouse – North Georgia Project (#2354)

Dear Ms. Toombs:

Georgia Power is planning a series of system upgrades for the Tugalo Development of the North Georgia Hydroelectric Project (Project) in Rabun, Habersham, and Stephens Counties, Georgia and Oconee County, South Carolina. As the project works of the Project have been determined eligible for inclusion on the National Register of Historic Places (NRHP), Georgia Power is conducting consultation under Section 106 of the National Historic Preservation Act (NHPA) as the Federal Energy Regulatory Commission's (FERC) non-federal designee.

Please find attached a brief narrative describing the undertaking and potential effects to historic properties, as well as proposed mitigation measures for adverse effects to historic properties. If you have questions or require more information, please contact me at 404-782-8796 or jcharles@southernco.com.

Sincerely,



Joseph Charles
Hydro Compliance Coordinator
Georgia Power, Environmental & Natural Resources

Attachment C

Desktop Fish Entrainment Memo and Agency Consultation

TECHNICAL MEMORANDUM

To:	Courtenay O'Mara, Laurie Munn, Tony Dodd, Patrick O'Rouke – Georgia Power Company
From:	Jason Moak – Kleinschmidt Associates
Cc:	Kelly Schaeffer – Kleinschmidt Associates
Date:	9/14/2021 **Document No.** *0534.050.02*
Re:	Tugalo Upgrade and Fish Entrainment

INTRODUCTION

Georgia Power Company (Georgia Power) is preparing an amendment application to the Federal Energy Regulatory Commission (FERC) for turbine upgrades at its North Georgia Project (Project) (FERC No. 2354). Specifically, the application to FERC is for a non-capacity amendment to upgrade and rehabilitate the four project turbines in the Tugalo powerhouse, rewinding and refurbishing the generators, replacing the control room panels, and intake trashracks and spillway gates. The existing nameplate rated capacity is 11.25 megawatts (MW) each for units 1 through 4. Following the upgrade, the units will be approximately 16 MW each. Existing hydraulic capacity at nameplate rated capacity is approximately 1,240 cubic feet per second (cfs) for each unit and refurbished units will be approximately 1,400 cfs each. Along with the turbine upgrade, Georgia Power is planning to replace the existing trashracks at the intake.

South Carolina Department of Natural Resources (SCDNR) requested that Georgia Power perform an assessment of the potential effects of the turbine upgrade and trashrack replacement on fish entrainment at Tugalo. Kleinschmidt prepared this technical memorandum to address SCDNR's request.

FISH ENTRAINMENT AT HYDROPOWER PROJECTS

As hydropower dams operate, some of the fish present in the reservoir are entrained or passed through the turbine. In most cases, these fish are passed into the river below unharmed; however, some may be injured or killed due to strikes from turbine blades or rapid pressure changes.

Across the United States, numerous licensees have performed fish entrainment and turbine mortality studies at hydropower projects. Data from these studies have been used to perform "desktop" assessments of fish entrainment and turbine mortality at other hydropower projects where field studies may be impractical. The desktop assessments are

typically performed by using entrainment and turbine mortality data from studies with similar project characteristics, including:

- Reservoir Size
- Head
- Hydraulic Capacity
- Runner (turbine) diameter, number of blades, and speed

Entrainment results from field studies at similar projects are normalized by calculating the number of fish per volume of water passed through the project. These entrainment rates are then used to estimate the magnitude of fish entrainment in a desktop assessment at a project of interest.

The sizes of fish that could potentially be entrained at a hydropower project are determined by the width of the trashracks at the intake. Fish that are too large (i.e., wide) to fit through the trashracks are not susceptible to entrainment, but may be susceptible to impingement. Impingement occurs when fish that are too large to fit through a trashrack are unable to swim faster than the intake velocity and become pinned against the trashracks.

TUGALO UPGRADE AND EFFECTS ON FISH ENTRAINMENT

The existing turbines at Tugalo would be replaced with new turbines having the same dimensions, number of blades, and speed. Advances in design and fabrication techniques result in the new units having slightly higher hydraulic and associated generating capacity. However, the same volume of water will pass through the new turbines on a daily, seasonal, and annual basis. Therefore, the magnitude of fish entrainment would be unaffected by the Tugalo turbine upgrade.

Georgia Power's proposal to replace the existing trashracks at Tugalo may have positive effects on fish entrainment for some species. The existing trashracks have a spacing of 7 inches (in) and the new trashracks would have a spacing of 3 in. This smaller spacing would potentially exclude larger fish from being entrained. Previous studies indicate sportfish are the dominant species in the Tugalo reservoir, including Bluegill, crappie, Walleye, Largemouth Bass, and Yellow Perch.

Based on published relationships of fish length to body width, we estimated the smallest sizes of some common fish species that would be excluded from the intake based on the existing and proposed trashrack spacing (Table 1). Neither the proposed or existing trashracks would exclude Bluegill, as they rarely exceed 12 in total length (2 in body width). Due to the smaller spacing, the proposed trashracks would exclude a larger size range of

fish, compared to the existing trashracks, especially when considering wider-bodied fish such as catfish.

Although the new trashracks would have a smaller spacing, calculations indicate the approach velocity would decrease by 0.02 feet per second (fps) at best gate flows (from 1.75 to 1.73 fps) and decrease by 0.55 fps at full gate flows (from 2.41 to 1.86 fps) compared to the existing trashracks. The reason for the decrease in the approach velocity is due to an increase in overall open cross-sectional area on the new trashracks over the existing trashracks. With the new trashracks, the cross-sectional area increases because bars are thinner than the older ones. Lower approach velocities could result in a decrease in entrainment as additional fish may be able to swim fast enough to avoid becoming entrained. Additionally, any fish susceptible to impingement against the new racks due to the smaller spacing would be likely to escape given that most fish greater than 12 inches in length are capable of swimming fast enough to escape the expected velocities.

TABLE 1 FISH EXCLUSION FROM TUGALO INTAKE BASED ON EXISTING AND PROPOSED TRASHRACK SPACING

Species	Smallest Total Length Excluded by Proposed Trashracks	Smallest Total Length Excluded by Existing Trashracks
Bluegill	18 in	41 in
Walleye	20 in	47 in
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SUMMARY

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From:	Munn, Laura S.
To:	Zeng, Wei; Booth, Elizabeth; Wiedl, Stephen; Bauer, Eric F; Amy Breedlove; Vinson, David -FS; Rabern, Anthony; Gavrielides, George; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller; Dan Rankin
Cc:	O"Mara, Courtenay R.; O"Rouke, Patrick Michael; Dodd, Anthony Ray; Peeples, Alan L.; Kelly Schaeffer
Subject:	RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant
Date:	Tuesday, September 14, 2021 6:21:00 PM
Attachments:	2021-09-14 Tugalo Entrainment Memo FINAL.pdf image001.gif

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Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



From: Munn, Laura S.
Sent: Friday, August 6, 2021 1:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
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Subject: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

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Attachment B - Documentation of our Consultation with Agencies
Attachment C – Marked up version of the existing Exhibit A, showing changes that would be required to this part of our existing FERC license by the proposal

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Thanks so much.

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Tel 404.506.7275
Mobile 404.360.1064



TECHNICAL MEMORANDUM

To: Courtenay O'Mara, Laurie Munn, Tony Dodd, Patrick O'Rouke – Georgia Power Company

From: Jason Moak – Kleinschmidt Associates

Cc: Kelly Schaeffer – Kleinschmidt Associates

Date: 9/14/2021 **Document No.** *0534.050.02*

Re: Tugalo Upgrade and Fish Entrainment

INTRODUCTION

Georgia Power Company (Georgia Power) is preparing an amendment application to the Federal Energy Regulatory Commission (FERC) for turbine upgrades at its North Georgia Project (Project) (FERC No. 2354). Specifically, the application to FERC is for a non-capacity amendment to upgrade and rehabilitate the four project turbines in the Tugalo powerhouse, rewinding and refurbishing the generators, replacing the control room panels, and intake trashracks and spillway gates. The existing nameplate rated capacity is 11.25 megawatts (MW) each for units 1 through 4. Following the upgrade, the units will be approximately 16 MW each. Existing hydraulic capacity at nameplate rated capacity is approximately 1,240 cubic feet per second (cfs) for each unit and refurbished units will be approximately 1,400 cfs each. Along with the turbine upgrade, Georgia Power is planning to replace the existing trashracks at the intake.

South Carolina Department of Natural Resources (SCDNR) requested that Georgia Power perform an assessment of the potential effects of the turbine upgrade and trashrack replacement on fish entrainment at Tugalo. Kleinschmidt prepared this technical memorandum to address SCDNR's request.

FISH ENTRAINMENT AT HYDROPOWER PROJECTS

As hydropower dams operate, some of the fish present in the reservoir are entrained or passed through the turbine. In most cases, these fish are passed into the river below unharmed; however, some may be injured or killed due to strikes from turbine blades or rapid pressure changes.

Across the United States, numerous licensees have performed fish entrainment and turbine mortality studies at hydropower projects. Data from these studies have been used to perform "desktop" assessments of fish entrainment and turbine mortality at other hydropower projects where field studies may be impractical. The desktop assessments are

typically performed by using entrainment and turbine mortality data from studies with similar project characteristics, including:

- Reservoir Size
- Head
- Hydraulic Capacity
- Runner (turbine) diameter, number of blades, and speed

Entrainment results from field studies at similar projects are normalized by calculating the number of fish per volume of water passed through the project. These entrainment rates are then used to estimate the magnitude of fish entrainment in a desktop assessment at a project of interest.

The sizes of fish that could potentially be entrained at a hydropower project are determined by the width of the trashracks at the intake. Fish that are too large (i.e., wide) to fit through the trashracks are not susceptible to entrainment, but may be susceptible to impingement. Impingement occurs when fish that are too large to fit through a trashrack are unable to swim faster than the intake velocity and become pinned against the trashracks.

TUGALO UPGRADE AND EFFECTS ON FISH ENTRAINMENT

The existing turbines at Tugalo would be replaced with new turbines having the same dimensions, number of blades, and speed. Advances in design and fabrication techniques result in the new units having slightly higher hydraulic and associated generating capacity. However, the same volume of water will pass through the new turbines on a daily, seasonal, and annual basis. Therefore, the magnitude of fish entrainment would be unaffected by the Tugalo turbine upgrade.

Georgia Power's proposal to replace the existing trashracks at Tugalo may have positive effects on fish entrainment for some species. The existing trashracks have a spacing of 7 inches (in) and the new trashracks would have a spacing of 3 in. This smaller spacing would potentially exclude larger fish from being entrained. Previous studies indicate sportfish are the dominant species in the Tugalo reservoir, including Bluegill, crappie, Walleye, Largemouth Bass, and Yellow Perch.

Based on published relationships of fish length to body width, we estimated the smallest sizes of some common fish species that would be excluded from the intake based on the existing and proposed trashrack spacing (Table 1). Neither the proposed or existing trashracks would exclude Bluegill, as they rarely exceed 12 in total length (2 in body width). Due to the smaller spacing, the proposed trashracks would exclude a larger size range of

fish, compared to the existing trashracks, especially when considering wider-bodied fish such as catfish.

Although the new trashracks would have a smaller spacing, calculations indicate the approach velocity would decrease by 0.02 feet per second (fps) at best gate flows (from 1.75 to 1.73 fps) and decrease by 0.55 fps at full gate flows (from 2.41 to 1.86 fps) compared to the existing trashracks. The reason for the decrease in the approach velocity is due to an increase in overall open cross-sectional area on the new trashracks over the existing trashracks. With the new trashracks, the cross-sectional area increases because bars are thinner than the older ones. Lower approach velocities could result in a decrease in entrainment as additional fish may be able to swim fast enough to avoid becoming entrained. Additionally, any fish susceptible to impingement against the new racks due to the smaller spacing would be likely to escape given that most fish greater than 12 inches in length are capable of swimming fast enough to escape the expected velocities.

TABLE 1 FISH EXCLUSION FROM TUGALO INTAKE BASED ON EXISTING AND PROPOSED TRASHRACK SPACING

Species	Smallest Total Length Excluded by Proposed Trashracks	Smallest Total Length Excluded by Existing Trashracks
Bluegill	18 in	41 in
Walleye	20 in	47 in
Largemouth Bass	18 in	43 in
White Catfish	13 in	30 in

SUMMARY

Because the proposed new turbines have essentially the same specifications as the existing turbines and the same amount of water would pass through the turbines on a daily/seasonal/annual basis, we do not expect a significant difference in fish entrainment or turbine mortality related to the upgrade. The replacement of the existing trashracks with new trashracks with narrower spacing would likely result in reducing the amount of larger fish that are entrained at Tugalo. Decreased approach velocities at full gate flow may allow additional fish to avoid becoming entrained or impinged.

U.S. Fish and Wildlife Service

From:	Bauer, Eric F
To:	Booth, Elizabeth; Munn, Laura S.; Zeng, Wei; Wiedl, Stephen; Amy Breedlove; Vinson, David -FS; Rabern, Anthony; Gavrielides, George; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller; Dan Rankin
Cc:	O"Mara, Courtenay R.; O"Rouke, Patrick Michael; Dodd, Anthony Ray; Peeples, Alan L.; Kelly Schaeffer
Subject:	Re: [EXTERNAL] RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant
Date:	Friday, September 17, 2021 11:17:49 AM
Attachments:	image001.gif

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Fish and Wildlife Service has no comment on the entrainment study other than that the narrower spacing of the trash racks and slower approach velocities appear to be improvements from a fish entrainment perspective. Thanks for the opportunity to review this desktop entrainment study.

-Eric

Eric F. Bauer, PhD
(he/him/his)
Fish and Wildlife Biologist
Georgia Ecological Services
US Fish and Wildlife Service
RG Stephens, Jr. Federal Building
355 East Hancock Avenue, Room 320, Box 7
Athens, GA 30601
Office #: 706-613-9493

From: Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>
Sent: Thursday, September 16, 2021 12:36 PM
To: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>; Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov <ER@dca.ga.gov>; Santiago.Martinez@dca.ga.gov <Santiago.Martinez@dca.ga.gov>; EJohnson@scdah.sc.gov <EJohnson@scdah.sc.gov>; HIGHTOCW@dhec.sc.gov <HIGHTOCW@dhec.sc.gov>; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
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links, opening attachments, or responding.

WRD fisheries and FWS need to comment on this. Thanks Liz

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To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
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Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064

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Sent: Friday, August 6, 2021 1:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael

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Thanks so much.

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Georgia Department of Natural Resources
Environmental Protection Division

From: Wiedl, Stephen
To: Munn, Laura S.
Cc: O"Mara, Courtenay R.; Dodd, Anthony Ray; Zeng, Wei; Booth, Elizabeth
Subject: RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant
Date: Wednesday, September 15, 2021 6:24:26 PM
Attachments: RE Follow-up to Tugalo Modernization Water Quality Meeting - EPD Concurrence per No 401 WQC Required.txt
2021-09-14 Tugalo Entrainment Memo FINAL.pdf

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Ms. Munn,

Observing that the subject Tugalo Modernization technical memo presents documentation that fisheries conditions would be similar or perhaps improved in some instances for the proposed project, Georgia EPD Wetlands Unit reaffirms our previous 7-13-21 feedback that no new 401 Water Quality Certification would be necessary for this project and we have no further comments at this time.

Stephen C. Wiedl, PWS
Manager – Wetlands Unit
Georgia Environmental Protection Division
7 Martin Luther King, Jr. Drive, Suite 450
Atlanta, GA 30334

404-452-5060
Stephen.Wiedl@dnr.ga.gov

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Sent: Tuesday, September 14, 2021 6:22 PM
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Sr. Engineer
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Tel 404.506.7275
Mobile 404.360.1064



Georgia Department of Natural Resources
Wildlife Resources Division

From: Rabern, Anthony
To: Munn, Laura S.
Cc: Marcinek, Paula
Subject: RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant (SD: 9/17/21)
Date: Thursday, September 16, 2021 12:42:04 PM

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Laura,
Thank you for being responsive to SCDNR's question about fish entrainment. I appreciate the desktop review and believe its findings are accurate. Best regards on moving forward with the project.

Anthony Rabern
Region 2 Supervisor, Fisheries

Wildlife Resources Division [gcc02.safelinks.protection.outlook.com]
(770) 535-5498 | M: (404) 695-7816

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Check out our Biodiversity Data Portal! [gcc02.safelinks.protection.outlook.com]

A division of the
GEORGIA DEPARTMENT OF NATURAL RESOURCES

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Check out our Biodiversity Data Portal! [gcc02.safelinks.protection.outlook.com]

A division of the
GEORGIA DEPARTMENT OF NATURAL RESOURCES

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From: Munn, Laura S.
Sent: Friday, August 6, 2021 1:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <kelly.schaeffer@kleinschmidtgroup.com>
Subject: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

Good afternoon,

We are close to submitting the license amendment application to FERC for the Tugalo Hydro Plant, which is 1 of 6 plants that Georgia Power operates as its North Georgia Project (FERC Project Number 2354). We appreciate all of the feedback and consultation that has been ongoing since June 2021 with you. As you may recall, our proposal is for a non-capacity upgrade of four generating units in the Tugalo powerhouse, and includes replacing the turbine runners, generators, intake trash racks, and spillway gates.

South Carolina Department of Natural Resources has requested a desktop entrainment study. We are currently preparing that, and we will distribute the study to the group as soon as it is completed, hopefully in the next 2-3 weeks. In the meantime, we wanted to provide you some time to take a look at our Draft License Amendment application so that you could provide any comment, if needed. Your comments are sufficient via reply email. We will take your comments and also provide them to the FERC when we make the application. FERC in turn will also provide an additional opportunity for comment after they receive our application, but we thought your early review would help resolve any outstanding issues.

The draft application consists of the following attachments:
Attachment A – Initial Statement and Application for a Non-Capacity License Amendment

process.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064

Southern Company

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Sent: Friday, August 6, 2021 1:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
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Attachment B - Documentation of our Consultation with Agencies
Attachment C – Marked up version of the existing Exhibit A, showing changes that would be required to this part of our existing FERC license by the proposal

If possible, we would like your review by Friday, August 20, 2021.

Thanks so much.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064



South Carolina Department of Natural Resources

From: Elizabeth Miller <MillerE@dnr.sc.gov>
Sent: Tuesday, September 21, 2021 3:36 PM
To: Munn, Laura S.
Cc: Amy Breedlove; Dan Rankin
Subject: RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

EXTERNAL MAIL: Caution Opening Links or Files

Hi Laurie,

The South Carolina Department of Natural Resources has no comments to offer on North Georgia's Fish Entrainment Study.

Thank you,

Elizabeth

Elizabeth C. Miller
SCDNR
Office: (843) 953-3881
Cell: (843) 729-4636

From: Munn, Laura S. <LSMUNN@SOUTHERNCO.COM>
Sent: Tuesday, September 21, 2021 8:43 AM
To: Elizabeth Miller <MillerE@dnr.sc.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>
Subject: FW: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

Hi Elizabeth and Amy,
We are planning to file our license amendment application with FERC today. I just want to make sure you don't have any comments on the Fish Entrainment Study. Sorry for the short time frame.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064

Written Correspondence with SCDNR

Southern Company

From: Munn, Laura S.
Sent: Tuesday, September 14, 2021 6:22 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
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Subject: RE: Georgia Power FERC License Amendment Application for Tugalo Hydro Plant

Please find attached the Technical Memo on the Tugalo Upgrade and Fish Entrainment as requested by South Carolina Department of Natural Resources. Please review and respond by Friday, September 17, 2021, with any comments or questions. Thank you all again for your time in this process.

Laurie Munn, P.E.
Sr. Engineer
Southern Company Generation Hydro Services
Tel 404.506.7275
Mobile 404.360.1064

Southern Company

From: Munn, Laura S.
Sent: Friday, August 6, 2021 1:46 PM
To: Zeng, Wei <Wei.Zeng@dnr.ga.gov>; Booth, Elizabeth <Elizabeth.Booth@dnr.ga.gov>; Wiedl, Stephen <Stephen.Wiedl@dnr.ga.gov>; Bauer, Eric F <eric_bauer@fws.gov>; Amy Breedlove <BreedloveA@dnr.sc.gov>; Vinson, David -FS <david.vinson@usda.gov>; Rabern, Anthony <Anthony.Rabern@dnr.ga.gov>; Gavrielides, George <george.gavrielides@dnr.ga.gov>; ER@dca.ga.gov; Santiago.Martinez@dca.ga.gov; EJohnson@scdah.sc.gov; HIGHTOCW@dhec.sc.gov; Elizabeth Miller <MillerE@dnr.sc.gov>; Dan Rankin <RankinD@dnr.sc.gov>
Cc: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>; Dodd, Anthony Ray <ARDODD@southernco.com>; Peeples, Alan L. <ALPEEPLE@southernco.com>; Kelly Schaeffer <kelly.schaeffer@kleinschmidtgroup.com>
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If possible, we would like your review by Friday, August 20, 2021.

Thanks so much.

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Sr. Engineer
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EXTERNAL EMAIL: Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Attachment D

Tracked Change Version of Revised Exhibit A

GEORGIA POWER COMPANY

NORTH GEORGIA PROJECT

FERC PROJECT NO. 2354

EXHIBIT A – PROJECT DESCRIPTION

AMENDED JUNE 2021

4.51.b Exhibit A is a description of the project. If the project includes more than one dam with associated facilities, each dam and the associated component parts must be described together as a discrete development. The statement contains subsections that follow this introduction. Each of these subsections is keyed to the appropriate corresponding requirements of 18 CFR 4.51.

The North Georgia Project consists of six separate developments: Burton, Nacoochee, Mathis-Terrora, and Tallulah Falls on the Tallulah River; and Tugalo and Yonah on the Tugaloo River. Each development is described separately below. The Tugalo description was updated to reflect the project description in the June 2021 Non-Capacity Related License Amendment.

BURTON DEVELOPMENT

4.51.b.1 Physical Description

The Burton Development is located farthest upstream of the six developments in the North Georgia Project, at Mile 368 on the Tallulah River. This development impounds most of the storage volume for the project, and its discharge is used by each of the other developments in turn to generate power. The development consists of a dam with non-overflow, low-level sluiceway, intake, and gated spillway sections, a tailrace, a powerhouse with two generating units, and a transformer and switchgear in a small substation adjacent to the powerhouse.

The dam is a concrete gravity type, built using cyclopean concrete construction. From left to right, the dam consists of: a left non-overflow section 296.5 feet long (including a 56.3-foot long core wall), a gated spillway section 197 feet long, a sluiceway section 69.5 feet long, an intake section 64 feet long, and a right non-overflow section 360.5 feet long. The total length of the dam is 987.5 feet and the maximum height is about 128 feet. The crest elevation of the non-overflow section is 1873.0 feet above mean sea level; there is a bridge over the spillway with this same crest elevation. The spillway crest elevation is 1860.0 feet. The spillway has eight motor-operated, bottom-hinged gates 22 feet wide and 7.5 feet high.
The steel penstocks, seven feet in diameter and 120 feet long, are built into the intake section of the dam. The penstocks and two low-level sluices in the sluiceway section are joined to a common header in the dam which connects to the two turbines and to an 84-inch free discharge gate valve.

The powerhouse sits at the toe of the dam. It is a steel, reinforced concrete, and masonry structure 88 feet long, 47 feet 8 inches wide, and about 81.5 feet tall at the downstream face. The powerhouse contains two generating units, a control room, and a machine shop.

The tailrace is about 50 feet wide and merges with the main river channel about 150 feet downstream of the powerhouse. Concrete walls contain the tailrace downstream of the powerhouse for about 120 feet on the right side and about 65 feet on the left side.

The generating units supply power at 6600 volts to a small substation adjacent to the powerhouse. A transformer in the substation steps up the power to 46 KV. Two 46-KV transmission lines leave the substation: one connects with the Habersham Electric Municipal Cooperative (EMC), and the other connects with the Nacoochee Development downstream. These transmission lines are primarily used to distribute power to Habersham EMC and are not part of the Burton Development.

4.51.b.2 Areas, Elevations, Storage Capacity

The full-pool level of the Burton Development Impoundment (Lake Burton) is 1866.6 feet above mean sea level. At that elevation, the surface area of the lake is 2775 acres. The gross storage capacity at full-pool is 108,000 acre-feet and the usable storage capacity is 90,000 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

Burton has two generating units. Each unit has a vertical Francis-type turbine rated at 7300 horsepower at 110 feet of head, and a vertical, direct-coupled alternating current generator rated 4500 KVA, 4050 KW at 225 rpm.

4.51.b.4 Transmission Line Description

Only the short stub lines from the powerhouse to the substation are included in the project. The 46-KV transmission lines leaving the substation are primarily used to distribute power to Habersham EMC and are not part of the Burton Development.

4.51.b.5 Additional Equipment Description

<u>Mechanical</u>

Turbines:

2 – Vertical shaft, Francis type, S. Morgan Smith, 7300 hp at 110 feet of head, 225 rpm

Turbines are complete with steel penstocks, 84” motor operated penstock valves, steel pressure cases, Woodward governors, conical steel draft tubes, and other minor auxiliary equipment.

Gates:

8 – Crest gates: tilting type, steel with steel frame, 7.5 feet X 22 feet, with individual motor operated hoists.

2 – Head gates: steel, vertical lift, screw type, with motor operated hoists for 7 feet X 7 feet penstock opening.

1 – Sluice gate valve: 84-inch diameter, steel, vertical lift, screw type, motor operated (sluice gates are not operated).

Miscellaneous:

1 – Powerhouse crane: Shaw, 25 ton, bridge type, with 42'9" span and 31' lift.

Other miscellaneous mechanical equipment includes trash racks, oil pumps, an air compressor, storage tanks, piping, and fire protection equipment.

Electrical

Generators:

2 – Vertical shaft, General Electric, 4500 KVA, 0.9 p.f., 4050 KW, 225 rpm, 3 phase, 60 cycle, 6600 volts.

Generators are open frame with direct connected 37-KW main exciters.

Circuit Breakers:

3 – Industrial Electric Manufacturing vacuum circuit breakers, 13.8 KV.

Switchboard:

1 – Complete nine panel switchboard for: remote control of units; local control of generators, exciters, voltage regulators, station service, motor generator, and outgoing transmission lines; and all necessary instruments, controls, indicating devices and protective relays.

Miscellaneous electrical equipment includes current and potential transformers, 65 KW motor generator, switchgear, station batteries, and lighting and telephone systems.

Transmission

Transformer:

1 – Wagner, 7500 KVA, 46,000 GRD Y/23, 100-6600 volts, three phase, 60 cycle, oil insulated, forced air cooled, outdoor type.

Circuit Breaker:

1 – Allis Chalmers power circuit breaker, 46 IV, 600 ampere.

Transmission Lines:

Only the short stub lines from the powerhouse to the substation are included in the project. The 46-KV transmission lines leaving the substation are primarily used to distribute power to Habersham EMC and are not part of the Burton Development.

The transmission substation is located at the west end of the powerhouse and consists of steel frames, buses, disconnecting switches and cable necessary to control the station from the switchboard.

4.51.b.6 Description of Lands of the United States

No lands of the United States are enclosed within the project boundary.

NACOOCHEE DEVELOPMENT

4.51.b.1 Physical Description

The Nacoochee Development is located approximately 4.8 miles downstream from Burton Dam. The development consists of a concrete gravity dam with nonoverflow, intake, low-level sluiceway, and free-crested spillway sections, a powerhouse with two generating units, a tailrace, and a transformer and switchgear in a small substation adjacent to the powerhouse.

The dam was built using cyclopean concrete construction. From left to right, the dam consists of : a 190-foot left nonoverflow section, a 54-foot long intake section, a 38-foot long sluiceway section, a 140-foot long free-crested spillway section, and a 78-foot long right nonoverflow section. The total length of the dam is 500 feet and the maximum height is about 73 feet. The crest elevation of the non-overflow sections is 1765.0 feet above mean sea level. The spillway crest elevation is 1752.5 feet.

Two steel penstocks nine feet in diameter and about 80 feet long are built into the intake section of the dam. The dam has a 7-foot by 7-foot sluiceway with a steel slide gate. The sluice gate is not operated.

The powerhouse sits at the toe of the dam. It is a steel, reinforced concrete, and masonry structure 85’4” long, 40’4” wide, and about 76.5 feet high at the downstream face. The powerhouse contains two generating units, a control room, and a machine shop.

The tailrace is about 50 feet wide and merges with the main river channel about 200 feet downstream of the powerhouse. Concrete walls contain the tailrace downstream of the powerhouse for about 50 feet on the right side and for about 200 feet on the left side.

A small substation adjacent to the powerhouse steps up the power generated from 6600 volts to 46,000 volts. The substation also serves as the connecting point for the 46-KV distribution line from the Burton Development, and two six-mile long 46-KV transmission lines to the Mathis-Terrora Development. These transmission lines are used primarily as distribution lines and are not part of the Nacoochee Development.

4.51.b.2 Areas, Elevations, Storage Capacity

The full-pool level for the Nacoochee Development impoundment (Seed Lake) is 1752.5 feet above mean sea level. At that level, the surface area of the lake is 260 acres. The gross storage capacity is 8250 acre-feet and the usable storage capacity is 5350 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

Nacoochee has two generating units. Each unit has a vertical shaft, propeller-type turbine rated 4000 horsepower at 58 feet of head, and a directly connecting alternating current generator rated 3000 KVA, 2400 KW at 400 rpm.

4.51.b.4 Transmission Line Description

Only the short stub lines from the Nacoochee powerhouse to the substation transformer are included in the Nacoochee Development. The 46-KV line to Burton and the two 46-KV lines to the Terrora substation are not part of the Nacoochee Development.

4.51.b.5 Additional Equipment Description

Mechanical

Turbines:
2 – Vertical shaft, propeller type (Bell), S. Morgan Smith, 4000 hp at 58 feet of head, 400 rpm.

Turbines are complete with steel penstocks, steel pressure cases, Woodward governors, concrete elbow type draft tubes, and other minor auxiliary equipment.

Gates:
2 – Headgates; steel, vertical lift, screw type, with motor operated hoist for 10 ft. X 15 ft. opening.
1 – Sluice gate; steel, vertical lift, screw type, with motor operated hoist for 7 ft. X 7 ft. sluiceway.

Miscellaneous:
1 – Powerhouse crane; Shaw, 20 ton, bridge type, with 34’5” span and 30 foot lift.

Other miscellaneous mechanical equipment includes trash racks, oil pumps, an air compressor, storage tanks, piping, sump pumps, and fire protection equipment.

Electrical

Generators:
2 – Vertical shaft, General Electric, 3000 KVA, 0.8 p.f., 2400 KW, 400 rpm, 3-phase, 60 cycle, 6600 volts.

Generators are open frame with direct connected 48-KW main exciters.

Circuit Breakers:
3 – Industrial Electric Manufacturing vacuum breaker, 13.8 KV.

Switchboard:
1 – Complete nine panel switchboard for: remote control of units; control of generators, exciters, voltage regulators, station service, motor generator, and outgoing transmission lines; and all necessary instruments, controls, indicating devices and protective relays.

Miscellaneous electrical equipment includes current and potential transformers, 65 KW motor generator, switchgear, station batteries, and lighting and telephone equipment.

Transmission

Transformer:
1 – General Electric, 5000 KVA, 43,800 GRV/25290-6600 volts, three phase, 60 cycle, oil insulated, forced air cooled, outdoor type.

Circuit Breaker:
1 – McGraw Edison power circuit breaker, 46 KV, 1200 ampere.

Transmission Lines:
Only the short stub lines from the powerhouse to the substation transformer are included in the Nacoochee Development.

The transmission substation is located just below the powerhouse and consists of steel frames, buses, disconnecting switches and cable necessary to control station from switchboard.

4.51.b.6 Description of Lands of the United States

No lands of the United States are enclosed within the project boundary.

MATHIS-TERRORA DEVELOPMENT

4.51.b.1 Physical Description

The Mathis-Terrora Development consists of a main dam, called Mathis Dam, a saddle dike, an intake and power tunnel, a surge tank, two penstocks, a powerhouse with two generating units, and transformers and switchgear in a substation. Mathis Dam is located at mile 354 on the Tallulah River, about nine miles downstream of the Nacoochee Development. The Terrora powerhouse is located 5.6 miles downstream of Mathis Dam at the head of the impoundment of the Tallulah Falls Development. The mile-long power tunnel cuts through a mountain to connect the impoundment (Lake Rabun) and the Terrora penstocks.

Mathis Dam is a concrete slab and buttress dam with the main concrete dam structure at 617 feet long and a maximum height of 115 feet. Several walls have been added on both sides of the dam since original construction. With the added walls, the dam consists of the following sections, from left to right: 1) a 20-foot concrete wall, a 19.75-foot concrete wall, a 48.5-foot concrete panel wall, a 47.33-foot timber wall, a 275-foot left non-overflow section with a timber wall on top, a 290-foot long spillway section, a 50-foot right non-overflow section with a timber wall on top, and a 21.5-foot timber wall. These structures together create a crest elevation of 1703 feet for the impounding structure. The timber walls, on both the non-overflow sections and the abutments, and the concrete walls on the left abutment were added to raise the elevation of the structures to at least 1,702 feet, which corresponds to the probable maximum flood (PMF) elevation. A one-foot high steel splash plate was added to the timber walls, the concrete panel wall, and the 19.8-foot long concrete wall to increase the top elevation to at least 1703, or about one foot above PMF. The 20-foot long concrete wall was constructed to at least elevation 1,703 as well. The original crest elevation of the main concrete, non-overflow sections is 1695.0 feet above mean sea level, and the spillway crest elevation is 1683.1 feet. A spillway bridge at elevation 1704.0 feet extends over the length of the spillway.

The spillway is equipped with 16 Obermeyer gates with bay openings varying from about 15.5 to 16 feet wide. The skin plates for the Obermeyer gates are about 7.8 feet tall with a curved face. The new spillway gates were installed in 2014-2015 to replace the original bottom-hinged gates. The gates are operated from a control room under the dam in the old powerhouse location. Backup power to the gate control system is provided by a natural gas generator that was installed during spillway gate replacement. As a safety mechanism, the spillway gates have a mechanical device that will deflate the bladders and lower the gates automatically if about one foot of water is passing over the gates.

A saddle dike closes a low saddle in the reservoir rim about 2300 feet north of Mathis Dam. It is a homogeneous earth embankment 370 feet long and

about 65 feet high at its centerline. The dike has a 20-foot wide crest, slopes of 2.5 horizontal to 1 vertical, a downstream rock toe with a 2.75:1 slope, and a combination open cut and grouted cutoff extending into the hard mico schist foundation rock. This saddle dike was constructed in 1956 to replace the original concrete slab and buttress saddle dike, which is located just upstream of the new dike and has been breached.

The intake to the power tunnel is a separate reinforced concrete structure located on the right abutment about 500 feet upstream of the dam. The power tunnel is excavated through rock. The power tunnel is lined where it enters and exits the mountain. Between the entrance and exit, the tunnel is unlined. The power tunnel has a lower rectangular cross section that is topped by a semi-circular cross section. The width of the lower rectangular section varies from 11 to 13 feet while the semi-circular top portion varies in radius from 5'6" to 6'6. The entire power tunnel has a length of 5334 feet. The power tunnel discharges into a reinforced concrete surge tank. Two steel riveted penstocks, nine feet in diameter and about 850 feet long, connect the surge tank and the Terrora powerhouse.

The Terrora powerhouse is a steel, reinforced concrete, and masonry structure 127'4" long, 57'4" wide and about 100 feet tall at the downstream face. It houses two generating units, a control room, and a machine shop. The generating units discharge water out of the powerhouse directly into the impoundment for the Tallulah Falls Development; there is no tailrace.

The generating units supply power at 6600 volts. This is stepped up to 115,000 volts by transformers in the substation east of the powerhouse. The substation is a connecting point for the two 46-KV transmission lines from Nacoochee, and for two 110-KV lines from the Tallulah Lodge substation. The Terrora Development includes only step-up and switching facilities in the substation up to the point of junction with the 110-KV Terrora-Tallulah Lodge distribution line. Neither the transmission lines between Terrora and Nacoochee nor the lines between Terrora and the Tallulah Lodge substation are part of the development.

4.51.b.2 Areas, Elevation, Storage Capacity

The full pool elevation of Lake Rabun, the impoundment of Mathis Dam, 1689.6 feet above mean sea level. At that elevation, Lake Rabun has a surface area of 780 acres, a gross storage of 31,100 acre-feet, and a usable volume of 21,900 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

There are two generating units in the Terrora powerhouse. Each unit has a vertical Francis-type turbine rated 15,499 horsepower at 176 feet of head,

directly connected to a vertical alternating current generator rated 14,375 KVA, 11,500 KW at 200 rpm.

4.51.b.4 Transmission Line Description

This development includes only the stub lines from the Terrora powerhouse to the Terrora substation up to the point of junction with the Terrora-Tallulah Lodge transmission line.

4.51.b.5 Additional Equipment Description

Mechanical

Turbines:
2 – Vertical shaft, Francis type, American Hydro Corporation, 15,499 hp at 176 feet of head, 200 rpm. Turbine units are rated approximately 10.4 MW each at best gate.

Turbines are complete with steel penstocks, 84” hydraulically operated penstock valves, steel pressure cases, Woodward governors, conical steel draft tubes, and other minor auxiliary equipment.

Gates:
16 – Crest gates; Obermeyer, with a 7.75-foot curved steel skin plate.
2 – Head gates; steel, vertical lift, screw type, with motor operated hoist for 30 ft. X 20 ft. tunnel opening.
2 – Penstock emergency gates; tilting type, steel, with motor operated hoist for 9 ft. diameter penstock opening.

Miscellaneous:
1 – Powerhouse crane, Whiting, 50 ton, bridge type, with 50 ft. span.
3 – Gate valves; 48”, for sluiceways.
2 – Relief valves; 22”, water pressure operated.
1 – Surge tank; reinforced concrete.

Other miscellaneous equipment includes trash racks, oil pumps, an air compressor, storage tanks, piping, and fire protection equipment.

Electrical

Generators:
2 – Vertical shaft, Westinghouse (Rewound by NEC), 14,375 KVA, 0.8 P.F., 11,500 KW, 200 rpm, 3 phase, 60 cycle, 6600 volts.

Generators are direct connected with 160-KW exciters.

Circuit Breakers:
2 - 2000 amp Powell frame breakers, 6600 V, with a short circuit rating of 50kA.

Computerized Control System:
1 - digital distributed control system for remote control of units; control of generators, exciters, voltage regulators, station service, motor generator, and outgoing transmission lines; and all necessary instruments, controls, indicating devices and protective relays.

Miscellaneous equipment includes current and potential transformers, 160 KW motor generator, 480V metal clad switchgear, station batteries, and telephone and lighting equipment.

Transmission

Transformers:
3 - Westinghouse, 6667 KVA, 110 KV/63.52 KV/6.6 KV, single phase, 60 cycle, oil insulated, water cooled, outdoor type.
1 - Westinghouse, 12,000 KVA, 115KV/46KV, three phase, 60 cycle, oil insulated, forced air cooled, outdoor type.

Circuit Breakers:
1 - General Electric, oil-blast circuit breaker, 115 KV, 800 ampere.
1 - Westinghouse, 46 KV, 1200 ampere.
1 - Westinghouse, 46 KV, 600 ampere.
1 - McGraw-Edison, 121 KV, 1200 ampere.

Transmission Lines:
The development includes only the short stub lines from the powerhouse to the point of junction with the Terrora-Tallulah Lodge 115 KV transmission line in the Terrora substation.

The transmission substation is located at the east end of the powerhouse and consists of steel frames, buses, disconnecting switches and cable necessary to control the station from the switchboard.

4.51.b.6 Description of Lands of the United States

No lands of the United States are enclosed within the project boundary.

TALLULAH FALLS DEVELOPMENT

4.51.B.1 Physical Description

The Tallulah Falls Development consists of a dam, an intake and power tunnel, a surge tank, six penstocks, an incline railway, a powerhouse with six generating units, other plant buildings, a tailrace, transformers and switchgear, and one transmission line. The Tallulah Falls Dam is located at mile 347 on the Tallulah River, and the powerhouse is located 1.8 miles downstream at the head of the impoundment of the Tugalo Development.

The Tallulah Falls Dam is a concrete gravity dam constructed with a curved alignment. From left to right, the dam consists of: a left abutment, a gated spillway section, and a right abutment. The total length of the dam is 426 feet, and the maximum height is about 130 feet. The crest elevation of the abutments is 1514.0 feet above mean sea level, and the spillway crest elevation is 1493.0 feet. A bridge with 3-foot high parapet walls spans the dam. The spillway has 10 spillway bays, each 28 feet wide. The four left bays have wooden flashboards with aluminum pipe supports that are 7 feet high. The six right bays are bottom-hinged steel gate structures with wood facing with motor-operated hoists. The gates are 8 feet high. There are also two five-foot square sluiceways through the spillway at elevation 1425.0 feet. The sluiceways close with steel slide gates on the upstream face of the dam. The sluice gates are not operated.

The intake to the power tunnel is a separate reinforced-concrete structure on the right bank about 75 feet up stream of the dam. The power tunnel is cut through rock and is concrete lined. It is horseshoe-shaped in cross section, about 11 feet wide and 14.5 feet high, and 6665 feet long.

The tunnel discharges into a box-type surge tank partially excavated into rock. The tank is constructed of reinforced concrete. It is 93’ high, 71’ long, and 30’ wide. Six steel penstocks connect the surge tank to the powerhouse, which is located down in the Tallulah Gorge. The penstocks are five feet in diameter and average 1250 feet in length. Upper penstock sections are riveted together on all six penstocks, while the lower sections are welded together for Penstocks 1-5 (from left to right). Penstock 6, which was American-made, is riveted for its full length. The penstocks rest on concrete piers spaced 32 feet apart.

An incline railway provides access to the powerhouse in the gorge. The railway is about 1200 feet long and rises in that distance about 650 feet. The maximum grade of the railway is 98 percent. A brick and steel house covers the hoist arrangement at the head on the incline.

The power plant buildings located in the gorge are steel, reinforced concrete and masonry structures. The generator building houses the six generating units. It is 191’ 9 ½” long, 47’6” wide and approximately 115’ tall at the

downstream face. The switching house contains transformers and switchgear. It is 248' 5 ½" long, 49' 6 ¾" wide, and about 120' at its downstream face high. These two buildings are connected by a small building, 28'10" long and 28' wide, which houses the plant control room.

The tailrace was constructed almost at a right angle to the powerhouse, in the original river channel. It is tapered, being only 10 feet wide at the first unit upstream and widening to 50 feet at its lower end. The tailrace is about 250 feet long. It is bounded on its right side by the powerhouse and a concrete wall that extends downstream from the powerhouse about 50 feet. On its left side, it is bounded by a concrete wall extending downstream 250 feet.

Power is delivered from the generators at 6600 volts. This is stepped up to 110,000 volts by transformers in the switching house and delivered by one 0.3-mile long, 110 KV transmission line to the Tallulah Lodge substation at the crest of the gorge. The Tallulah Lodge substation is not a part of the Tallulah Falls Development.

4.51.b.2 Areas, Elevations, Storage Capacity

The full pool elevation of the Tallulah Falls Development impoundment (Tallulah Falls Lake) is 1500 feet above mean sea level. At that elevation the surface area of the impoundment is 63 acres. The gross storage capacity at full pool is 2450 acre-feet and the usable storage capacity is 1490 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

The Tallulah Falls Development has six generating units. Each unit has a vertical Francis-type turbine rated 19,300 horsepower at 580 feet of head. The generators are direct-connected, vertical, alternating current generators rated 12,000 KVA, 12,000 KW at 514 rpm.

4.51.b.5 Additional Equipment Description

Mechanical

Turbines:

6 – Vertical shaft, Francis type, S. Morgan Smith, 19,300 hp at 580 feet of head, 514 rpm.

Turbines are complete with steel penstocks, 60” motor operated penstock valves and 45” water pressure operated valves, cast-iron pressure cases except one with cast steel pressure case, Woodward governors, elbow type steel draft tubes, and other minor auxiliary equipment.

1 - Horizontal shaft, Pelton wheel, 67 hp at 608.5 feet of head, 750 rpm, for auxiliary exciter.

Gates:

4 - Stationary flashboards, 7 ft. X 28 ft., wood with aluminum pipe supports.

6 Spillway gates- 8 ft. X 28 ft., wood-faced with steel frame, electric motor operated.

2 - Sluice gates; vertical lift, screw type, with manual operated hoist for 5’ diameter opening. The sluice gates are not operated.

5 - Intake gates; steel, vertical lift, with manual hoist for 8 ft. X 10 ft. opening.

6 - Emergency gates; steel, flap type, manually operated for steel penstocks.

Miscellaneous:

1 – Powerhouse crane, Shaw, 60 ton, bridge type.

1 – 15 ton crane for switching building.

1 – Surge tank; reinforced concrete.

1 - Passenger incline car; Intamin, Inc.

1 – Freight incline car.

Other miscellaneous equipment includes trash racks, oil pumps, air compressors, storage tanks, piping, automatic release valves, by-pass valves, meters and fire protection equipment.

Electrical

Generators:

6 – Vertical shaft, General Electric, 12,000 KVA, 1.0 p.f., 12,000 KW, 514 rpm, 3 phase, 60 cycle, 6600 volts.

Generators are direct connected with 100 KW exciters.

1 - Horizontal shaft, 50 KW, 250 volt, 750 rpm auxiliary exciter.

Circuit Breakers:

6 - Industrial Electric Manufacturing, MCVB-1523-20 vacuum breakers, 13.8 KV, 2000 amps.

Switchboard:

1 - Complete fourteen panel switchboard for: remote control of units; control of generators, exciters, voltage regulators, station service, and outgoing transmission lines; and all necessary instruments, controls, indicating devices and protective relays.

Miscellaneous electrical equipment includes current and potential transformers, switchgear, station batteries, and lighting and telephone equipment.

Transmission

Transformers:

4 - General Electric, 3333 KVA, 63,500/110,000/6600 volt, single phase, 60 cycle, oil insulated, water cooled.
1 - Westinghouse, 12/16/20 MVA, 115,000/6900 volt, 3 phase, 60 cycle, oil insulated, water cooled.
8 - General Electric, 4167 KVA, 66,400/115,000/6900 volt, single phase, 60 cycle, oil insulated, water cooled.
1 - Kuhlman, 12/16 MVA, 115 KV/6.6 KV, oil insulated.
1 – General Electric, 8000 KVA, 63,500/100,000/6600 volt, water cooled, oil insulated.

Circuit Breakers:

1 - Westinghouse oil circuit breaker, 115 KV, 1200 ampere.
1 - General Electric oil circuit breaker, 15 KV, 300 ampere.

Transmission Line:

1 – 0.3 mile, 110-KV line from the plant to the Tallulah Lodge substation at the crest of the gorge.

The transmission substation is located in the switching house which is adjacent to the powerhouse and consists of buses, disconnecting switches and cable necessary to control the station from the switchboard.

4.51.b.6 Description of Lands of the United States

No lands of the United States are enclosed within the project boundary.

TUGALO DEVELOPMENT

The Tugalo Development is located just downstream of the confluence of the Tallulah and Chattooga Rivers into the Tugaloo River, at river mile 343. The development consists of: a concrete gravity dam with non-overflow, intake, and gated spillway sections, a powerhouse with four generating units, a tailrace, and a substation with transformers and switchgear.

The dam was built with cyclopean concrete construction. From left to right, the dam consists of: a left non-overflow section 73 feet long, a gated spillway section 357 feet long, a center non-overflow section 20 feet long, an intake section 165 feet long, and a right non-overflow section 225 feet long. The total dam length if 840 feet and the maximum dam height is about 160 feet. The crest elevation of the non-overflow sections is 905.0 feet above mean sea level; there is a bridge over the spillway at this same elevation. The spillway crest elevation is 885.0 feet. The spillway has 14 motor-operated, bottom-hinged steel gates 22 feet long and 7.5 feet high. Two seven-foot square sluiceways with centerline at elevation 820.0 feet are located in the spillway section. The sluice gates are not operated.
Four steel penstocks, each about 308 feet long and 13 feet in diameter, carry water from the intake section through the dam, then under a substation located between the dam and powerhouse, and finally into the generating units. The penstocks are encased in concrete.

The powerhouse sits about 130 feet downstream of the toe of the dam; a substation is situated in the space between. The powerhouse is a steel, reinforced concrete, and masonry building 204’4” long and 64’4” wide, with a 40’ by 37’10” control room extending out from the upstream side. The powerhouse is 109.5 feet high at its downstream face. It contains four generating units, a control room, and a machine shop.

The tailrace is about 150 feet wide and joins the main river channel about 200 feet downstream of the powerhouse. The tailrace is separated from the main channel on its left by a concrete wall about 70 feet long. On the right side a concrete wall extends about 200 feet downstream.

The plant substation is located between the powerhouse and the toe of the dam. Transformers step up power from 6600 volts to 115,000 volts for transmission. Interconnection to the 115-KV Tallulah Lodge – Tugalo – Commerce transmission line of the distribution system is done in the substation. Only the short stub lines from the powerhouse to the substation transformers are part of the Tugalo Development. The 115-KV Tallulah Lodge – Tugalo – Commerce transmission line is primarily for distribution and so is not part of the Tugalo Development.

4.51.b.2 Areas, Elevations, Storage Capacity

The full-pool level for the Tugalo impoundment (Tugalo Lake) is 891.5 feet above mean sea level. At full pool the reservoir surface area is 597 acres, the gross storage capacity is 43,000 acre-feet and the usable storage is 14,000 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

Tugalo has four generating units. Each unit has a vertical Francis-type turbine rated 22,850 horsepower at 143 feet of head. Turbine units are rated approximately 16 MW each at best gate. Each generator is a vertical shaft, General Electric, 18,293 KVA, 0.9 p.f., 17,041 KW, 171.4 rpm, 3 phase, 60 cycle, 6600 volts.

Deleted: 1,200

Deleted: and a vertical, alternating current generator rated 12,500 KVA, 11,250 KW 16,000 KW at 171.4 rpm.

4.51.b.4 Transmission Line Description

Only the stub lines connecting the Tugalo powerhouse and the substation transformers are part of the Tugalo Development. The 115 KV Tallulah Lodge – Tugalo – Commerce distribution line is not part of the Tugalo Development.

4.51.b.5 Additional Equipment Description

Mechanical

Turbines:

4 – Vertical shaft, Francis type, Mavel Americas, 22,850 hp at 143 feet of head, 171.4 rpm.

Deleted: S. Morgan Smith

Deleted: 1

Deleted: 200

Deleted: 2

Turbines are complete with steel penstocks, steel pressure cases, American Governor HPUs, elbow type draft tubes, and other minor auxiliary equipment.

Deleted: Woodward governors

Deleted: 1 - Vertical shaft, Francis type, S. Morgan Smith, 135 hp at 150 feet of ¶ head, 1000 rpm, for auxiliary exciter.¶
¶
Turbine is complete with steel penstock, 15” gate valve, steel pressure case, governor, conical steel draft tube, and auxiliary equipment.¶

Gates:

14 - Crest gates; tilting type, steel, 7'6" X 22', with individual motor operated hoists. 2 - Sluice gates; steel, vertical lift, motor operated for 7 ft. X 7 ft. sluiceway. The sluice gates are not operated.

8 - Intake gates; cast iron, vertical lift, screw type, with motor operated hoist for 13 foot diameter penstock.

1 - Intake gate; cast iron, vertical lift, screw type, with motor operated hoist for 3 ft. diameter penstock.

Miscellaneous:

1 –Powerhouse crane, Northern, 50- ton, bridge type.

4 – Turbine Bearing Lube Oil Circulation Skids equipped with 2 – AC pumps with VFDs, 480v/ 3ph and 1 - DC pump 125v supplying ISO VG 68 oil to the generator bearings for the four (4) units. Each skid has a shell & tube heat exchanger to remove the heat that will be generated from the bearings and a sump tank for the heaters.

4 – Hydraulic Power Units (HPU) equipped. 2 – redundant AC pumps, sump tank and air over oil accumulator tanks and piping provides oil to and from the servo motors for the four (4) units.

2 – Air compressors, Atlas Copco #LS15-175 120H, 230v/3 ph, 15 hp and 240-gallon air receiver tank and Atlas Copco #FD50 desiccant dryer.

2 – 100% redundant service/cooling water pumps

4 – Oil Water Separators (OWS)

4 – Braking & Hydraulic Jacking Units and brake cylinders. Each of the 4 - units are equipped with eight (8) brake cylinders each.

Electrical

Generators:

4 – Vertical shaft, General Electric, 18,293 KVA, 0.9 p.f., 17,041 KW, 171.4 rpm, 3 phase, 60 cycle, 6600 volts.

Exciters:

4 - DECS-400 static exciter with constant pressure brush rigging and high side Potential Power Transformer (PPT) fed from generator bus

Generator Breakers:
4 - 6600V, 2000 amperes.

Station Service Transformers:
1 - 6.6/0.48kV, 500kVA
1 - 12/0.48kV, 500kVA

DCS:
Emerson Ovation DCS control system for: remote control of units, control of generators and auxiliary systems, turbines and auxiliary systems, exciters, voltage regulators, and station service

Switchboard:
Vertical Panels for housing of Generator, Generator Step-up Transformer (GSU), and Station Service protective relaying and metering

Other electrical equipment, includes current and potential transformers, switchgear, station batteries, lighting and telephone systems, transfer switch, and 480V switchgear and MCC.

Transmission

Generator Step-up Transformers (GSU):
2 - 40,000 KVA, 115,000 GRDY/6400 volts, 3 phase, 60 cycle, oil insulated, forced air cooled.

Circuit Breakers:
1 - General Electric, 115 KV, 1200 ampere.
1 - General Electric, 115 KV, 600 ampere.

Transmission Lines:
Only the short stub lines connecting the powerhouse with the substation transformers are part of the Tugalo Development.

The transmission substation is located between the powerhouse and the dam and consists of buses, disconnecting switches, and cable necessary to control the station from the switchboard.

4.51.b.6 Description of Lands of the United States

Deleted: Miscellaneous:¶
1 – Powerhouse crane, Northern, 50 ton, bridge type.¶
¶
Other miscellaneous equipment includes trash racks, oil pumps, air compressors, storage tanks, piping, and fire protection equipment.¶
¶
Electrical¶
¶
Generators:¶
4 – Vertical shaft, General Electric, 12,500 KVA, 0.9 p.f., 11,250 KW, ¶
171.4 rpm, 3 phase, 60 cycle, 6600 volts.¶
¶
Generators are equipped with direct connected with 100 KW exciters.¶
¶
1 - Vertical shaft, General Electric, 100 KW, 250 volt, auxiliary exciter.¶
¶
Circuit Breakers:¶
4 - ITE, air circuit breakers, 7200 V, 1200 ampere.¶

Deleted: Switchboard:Computerized Control System:¶
1 - digital distributed control system for remote ¶
¶
1 - Complete sixteen panel switchboard and benchboard for: remote ¶
control of units; control of generators, exciters, voltage regulators, station service, auxiliary exciter, and outgoing transmission lines; and all necessary instruments, controls, indicating devices and protective relays.¶
¶
Other electrical equipment, includes current and potential transformers, switchgear, station batteries, and lighting and telephone systems.¶

Deleted: ¶

Deleted: Westinghouse, 26720 KVA

No lands of the United States are enclosed within the project boundary.

YONAH DEVELOPMENT

4.51.b.1 Physical Description

The Yonah Development is the farthest downstream development in the North Georgia Project. Yonah is located at mile 340 on the Tugaloo River, 3.1 miles downstream of Tugalo Dam. The development consists of: a concrete gravity dam with non-overflow, intake, low-level sluiceways, spillway sections, a powerhouse with three generating units, a tailrace, and a substation with transformers and switchgear.

The dam is a concrete gravity dam of cyclopean concrete construction. From left to right, the dam consists of: a left non-overflow section 112 feet long, a 450-foot long spillway section with 2-foot high flashboards, a sluiceway section 49'4" long, an intake section 131'6" long, and a 204'2" long right non-overflow section. The total length of the dam is 947 feet and the maximum height is about 95 feet. The crest of the non-overflow sections is 757.0 feet above mean sea level and the spillway crest elevation is 742.25 feet. Two-foot high flashboards make the spillway crest elevation 744.25 feet during normal operation.

Three penstocks approximately 15 feet in diameter are built into the dam. Two 7-foot square sluiceways were constructed at an invert elevation of 676.50 feet.

The powerhouse is located at the toe of the intake. It is a steel, reinforced concrete, and masonry structure 184'8" long, 58'8" wide, and about 120 feet tall at its downstream face. The powerhouse contains three generating units, a control room, and a machine shop.

The tailrace is about 120 feet wide and merges with the main river channel about 300 feet downstream of the powerhouse. The tailrace is separated from the main river channel on the left by a concrete wall about 240 feet long. Another concrete wall extends out from the powerhouse about 200 feet on the right side of the tailrace.

Generation from the Yonah units is at 6600 volts. Power is transmitted from the powerhouse to the adjacent substation with short stub lines. In the substation, the power is stepped up to 115 KV and connected to the 115-KV Tallulah Lodge – Yonah – Commerce transmission line. The Tallulah Lodge – Yonah – Commerce transmission line is part of the power distribution system and is not included in the Yonah Development.

4.51.b.2 Areas, Elevations, Storage Capacity

The full-pool elevation of the Yonah impoundment (Yonah Lake) is 744.25 feet above mean sea level. At that elevation, the surface area of the lake is about 293 acres, the gross storage capacity is 10,200 acre-feet, and the usable storage is estimated to be 6000 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

Yonah has three generating units. Each unit has a vertical Francis-type turbine rated at 13,700 horsepower at 68 feet of head, and a directly connected alternating current generator rated 8333 KVA, 7500 KW, at 128.6 rpm. Power from the units is at 6600 volts and is stepped up to 115 KV in the substation adjacent to the powerhouse.

4.51.b.4 Transmission Line Description

Only the short stub lines connecting the Yonah powerhouse and the substation transformers are part of the Yonah Development. The 115 KV Tallulah Lodge – Yonah – Commerce transmission line is primarily for distribution purposes and is not part of the Yonah Development.

4.51.b.5 Additional Equipment Description

<u>Mechanical</u>

Turbines:
3 – Vertical shaft, Francis type, S. Morgan Smith, 13,700 hp at 68 feet of head, 128.6 rpm.

Turbines are complete with steel penstocks, cast-iron pressure cases, Woodward governors, elbow type draft tubes, and other minor auxiliary equipment.

Gates:
30 - Crest gates; timber flashboards, 15 ft. X 2.25 ft. supported by steel pipe. These are operated in three sections, with each section having a different trip elevation.
2 - Sluice gates; steel, vertical lift, screw type, with motor operated hoist for 7 ft X 7 ft. sluiceway. The sluice gates are not operated.
6 - Head gates; steel, vertical lift, screw type, with motor hoist for 15 ft. diameter penstock.

Miscellaneous:
1 – Powerhouse crane, Northern, 60 ton, bridge type.

Other mechanical equipment includes trash racks, oil pumps, air compressors, storage tanks, piping, and fire protection equipment.

Electrical

Generators:

3 – Vertical shaft, General Electric, 8333 KVA, .9 p.f., 7500 KW, 128.6 rpm, 3 phase, 60 cycle, 6600 volts.

Generators are complete with direct connected with 175 KW exciters.

Circuit Breakers:

1 - General Electric oil circuit breaker, 7500 volt, 500 ampere.
3 - Industrial Electric Manufacture's vacuum breakers, 13.8 KV.

Switchboard:

1 - Complete 23- panel switchboard for: remote control of units; control of governors, exciters, voltage regulators, station service, motor generator, and outgoing transmission lines; and all necessary instruments, controls, indicating devices and protective relays.

Miscellaneous electrical equipment including current and potential transformers, 125-KW motor generator, switchgear, station batteries, and lighting and telephone systems.

Transmission

Transformers:

4 - General Electric, 8333 KVA, 63.7/110/6.6 KV, single phase, 60 cycle, oil insulated, water cooled.
1 - Kuhlman, 7500 KVA, oil insulated, air cooled.

Circuit Breakers:

1 - General Electric, pneumatic air circuit breaker, 115000 v, 1200 ampere.
1 - Allis Chalmers, 14.4 KV, 1200 ampere, solenoid operated.

Transmission Lines:
Only the stub lines between the powerhouse and the substation transformers are part of the Yonah Development.

The transmission substation is located at the southwest corner of the powerhouse and consists of steel frames, buses, disconnecting switches, and cable necessary to control the station from the switchboard.

4.51.b.6 Description of Lands of the United States

No lands of the United States are enclosed within the project boundary.

Attachment E

Clean Version of Revised Exhibit A

GEORGIA POWER COMPANY

NORTH GEORGIA PROJECT

FERC PROJECT NO. 2354

EXHIBIT A – PROJECT DESCRIPTION

AMENDED JUNE 2021

4.51.b Exhibit A is a description of the project. If the project includes more than one dam with associated facilities, each dam and the associated component parts must be described together as a discrete development. The statement contains subsections that follow this introduction. Each of these subsections is keyed to the appropriate corresponding requirements of 18 CFR 4.51.

The North Georgia Project consists of six separate developments: Burton, Nacoochee, Mathis-Terrora, and Tallulah Falls on the Tallulah River; and Tugalo and Yonah on the Tugaloo River. Each development is described separately below. The Tugalo description was updated to reflect the project description in the June 2021 Non-Capacity Related License Amendment.

BURTON DEVELOPMENT

4.51.b.1 Physical Description

The Burton Development is located farthest upstream of the six developments in the North Georgia Project, at Mile 368 on the Tallulah River. This development impounds most of the storage volume for the project, and its discharge is used by each of the other developments in turn to generate power. The development consists of a dam with non-overflow, low-level sluiceway, intake, and gated spillway sections, a tailrace, a powerhouse with two generating units, and a transformer and switchgear in a small substation adjacent to the powerhouse.

The dam is a concrete gravity type, built using cyclopean concrete construction. From left to right, the dam consists of: a left non-overflow section 296.5 feet long (including a 56.3-foot long core wall), a gated spillway section 197 feet long, a sluiceway section 69.5 feet long, an intake section 64 feet long, and a right non-overflow section 360.5 feet long. The total length of the dam is 987.5 feet and the maximum height is about 128 feet. The crest elevation of the non-overflow section is 1873.0 feet above mean sea level; there is a bridge over the spillway with this same crest elevation. The spillway crest elevation is 1860.0 feet. The spillway has eight motor-operated, bottom-hinged gates 22 feet wide and 7.5 feet high.
The steel penstocks, seven feet in diameter and 120 feet long, are built into the intake section of the dam. The penstocks and two low-level sluices in the sluiceway section are joined to a common header in the dam which connects to the two turbines and to an 84-inch free discharge gate valve.

The powerhouse sits at the toe of the dam. It is a steel, reinforced concrete, and masonry structure 88 feet long, 47 feet 8 inches wide, and about 81.5 feet tall at the downstream face. The powerhouse contains two generating units, a control room, and a machine shop.

The tailrace is about 50 feet wide and merges with the main river channel about 150 feet downstream of the powerhouse. Concrete walls contain the tailrace downstream of the powerhouse for about 120 feet on the right side and about 65 feet on the left side.

The generating units supply power at 6600 volts to a small substation adjacent to the powerhouse. A transformer in the substation steps up the power to 46 KV. Two 46-KV transmission lines leave the substation: one connects with the Habersham Electric Municipal Cooperative (EMC), and the other connects with the Nacoochee Development downstream. These transmission lines are primarily used to distribute power to Habersham EMC and are not part of the Burton Development.

4.51.b.2 Areas, Elevations, Storage Capacity

The full-pool level of the Burton Development Impoundment (Lake Burton) is 1866.6 feet above mean sea level. At that elevation, the surface area of the lake is 2775 acres. The gross storage capacity at full-pool is 108,000 acre-feet and the usable storage capacity is 90,000 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

Burton has two generating units. Each unit has a vertical Francis-type turbine rated at 7300 horsepower at 110 feet of head, and a vertical, direct-coupled alternating current generator rated 4500 KVA, 4050 KW at 225 rpm.

4.51.b.4 Transmission Line Description

Only the short stub lines from the powerhouse to the substation are included in the project. The 46-KV transmission lines leaving the substation are primarily used to distribute power to Habersham EMC and are not part of the Burton Development.

4.51.b.5 Additional Equipment Description

<u>Mechanical</u>

Turbines:

2 – Vertical shaft, Francis type, S. Morgan Smith, 7300 hp at 110 feet of head, 225 rpm

Turbines are complete with steel penstocks, 84” motor operated penstock valves, steel pressure cases, Woodward governors, conical steel draft tubes, and other minor auxiliary equipment.

Gates:

8 – Crest gates: tilting type, steel with steel frame, 7.5 feet X 22 feet, with individual motor operated hoists.

2 – Head gates: steel, vertical lift, screw type, with motor operated hoists for 7 feet X 7 feet penstock opening.

1 – Sluice gate valve: 84-inch diameter, steel, vertical lift, screw type, motor operated (sluice gates are not operated).

Miscellaneous:

1 – Powerhouse crane: Shaw, 25 ton, bridge type, with 42'9" span and 31' lift.

Other miscellaneous mechanical equipment includes trash racks, oil pumps, an air compressor, storage tanks, piping, and fire protection equipment.

Electrical

Generators:

2 – Vertical shaft, General Electric, 4500 KVA, 0.9 p.f., 4050 KW, 225 rpm, 3 phase, 60 cycle, 6600 volts.

Generators are open frame with direct connected 37-KW main exciters.

Circuit Breakers:

3 – Industrial Electric Manufacturing vacuum circuit breakers, 13.8 KV.

Switchboard:

1 – Complete nine panel switchboard for: remote control of units; local control of generators, exciters, voltage regulators, station service, motor generator, and outgoing transmission lines; and all necessary instruments, controls, indicating devices and protective relays.

Miscellaneous electrical equipment includes current and potential transformers, 65 KW motor generator, switchgear, station batteries, and lighting and telephone systems.

Transmission

Transformer:

1 – Wagner, 7500 KVA, 46,000 GRD Y/23, 100-6600 volts, three phase, 60 cycle, oil insulated, forced air cooled, outdoor type.

Circuit Breaker:

1 – Allis Chalmers power circuit breaker, 46 IV, 600 ampere.

Transmission Lines:

Only the short stub lines from the powerhouse to the substation are included in the project. The 46-KV transmission lines leaving the substation are primarily used to distribute power to Habersham EMC and are not part of the Burton Development.

The transmission substation is located at the west end of the powerhouse and consists of steel frames, buses, disconnecting switches and cable necessary to control the station from the switchboard.

4.51.b.6 Description of Lands of the United States

No lands of the United States are enclosed within the project boundary.

NACOOCHEE DEVELOPMENT

4.51.b.1 Physical Description

The Nacoochee Development is located approximately 4.8 miles downstream from Burton Dam. The development consists of a concrete gravity dam with nonoverflow, intake, low-level sluiceway, and free-crested spillway sections, a powerhouse with two generating units, a tailrace, and a transformer and switchgear in a small substation adjacent to the powerhouse.

The dam was built using cyclopean concrete construction. From left to right, the dam consists of : a 190-foot left nonoverflow section, a 54-foot long intake section, a 38-foot long sluiceway section, a 140-foot long free-crested spillway section, and a 78-foot long right nonoverflow section. The total length of the dam is 500 feet and the maximum height is about 73 feet. The crest elevation of the non-overflow sections is 1765.0 feet above mean sea level. The spillway crest elevation is 1752.5 feet.

Two steel penstocks nine feet in diameter and about 80 feet long are built into the intake section of the dam. The dam has a 7-foot by 7-foot sluiceway with a steel slide gate. The sluice gate is not operated.

The powerhouse sits at the toe of the dam. It is a steel, reinforced concrete, and masonry structure 85’4” long, 40’4” wide, and about 76.5 feet high at the downstream face. The powerhouse contains two generating units, a control room, and a machine shop.

The tailrace is about 50 feet wide and merges with the main river channel about 200 feet downstream of the powerhouse. Concrete walls contain the tailrace downstream of the powerhouse for about 50 feet on the right side and for about 200 feet on the left side.

A small substation adjacent to the powerhouse steps up the power generated from 6600 volts to 46,000 volts. The substation also serves as the connecting point for the 46-KV distribution line from the Burton Development, and two six-mile long 46-KV transmission lines to the Mathis-Terrora Development. These transmission lines are used primarily as distribution lines and are not part of the Nacoochee Development.

4.51.b.2 Areas, Elevations, Storage Capacity

The full-pool level for the Nacoochee Development impoundment (Seed Lake) is 1752.5 feet above mean sea level. At that level, the surface area of the lake is 260 acres. The gross storage capacity is 8250 acre-feet and the usable storage capacity is 5350 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

Nacoochee has two generating units. Each unit has a vertical shaft, propeller-type turbine rated 4000 horsepower at 58 feet of head, and a directly connecting alternating current generator rated 3000 KVA, 2400 KW at 400 rpm.

4.51.b.4 Transmission Line Description

Only the short stub lines from the Nacoochee powerhouse to the substation transformer are included in the Nacoochee Development. The 46-KV line to Burton and the two 46-KV lines to the Terrora substation are not part of the Nacoochee Development.

4.51.b.5 Additional Equipment Description

Mechanical

Turbines:

2 – Vertical shaft, propeller type (Bell), S. Morgan Smith, 4000 hp at 58 feet of head, 400 rpm.

Turbines are complete with steel penstocks, steel pressure cases, Woodward governors, concrete elbow type draft tubes, and other minor auxiliary equipment.

Gates:

2 – Headgates; steel, vertical lift, screw type, with motor operated hoist for 10 ft. X 15 ft. opening.

1 – Sluice gate; steel, vertical lift, screw type, with motor operated hoist for 7 ft. X 7 ft. sluiceway.

Miscellaneous:

1 – Powerhouse crane; Shaw, 20 ton, bridge type, with 34’5” span and 30 foot lift.

Other miscellaneous mechanical equipment includes trash racks, oil pumps, an air compressor, storage tanks, piping, sump pumps, and fire protection equipment.

Electrical

Generators:

2 – Vertical shaft, General Electric, 3000 KVA, 0.8 p.f., 2400 KW, 400 rpm, 3-phase, 60 cycle, 6600 volts.

Generators are open frame with direct connected 48-KW main exciters.

Circuit Breakers:

3 – Industrial Electric Manufacturing vacuum breaker, 13.8 KV.

Switchboard:

1 – Complete nine panel switchboard for: remote control of units; control of generators, exciters, voltage regulators, station service, motor generator, and outgoing transmission lines; and all necessary instruments, controls, indicating devices and protective relays.

Miscellaneous electrical equipment includes current and potential transformers, 65 KW motor generator, switchgear, station batteries, and lighting and telephone equipment.

Transmission

Transformer:

1 – General Electric, 5000 KVA, 43,800 GRV/25290-6600 volts, three phase, 60 cycle, oil insulated, forced air cooled, outdoor type.

Circuit Breaker:

1 – McGraw Edison power circuit breaker, 46 KV, 1200 ampere.

Transmission Lines:

Only the short stub lines from the powerhouse to the substation transformer are included in the Nacoochee Development.

The transmission substation is located just below the powerhouse and consists of steel frames, buses, disconnecting switches and cable necessary to control station from switchboard.

4.51.b.6 Description of Lands of the United States

No lands of the United States are enclosed within the project boundary.

MATHIS-TERRORA DEVELOPMENT

4.51.b.1 Physical Description

The Mathis-Terrora Development consists of a main dam, called Mathis Dam, a saddle dike, an intake and power tunnel, a surge tank, two penstocks, a powerhouse with two generating units, and transformers and switchgear in a substation. Mathis Dam is located at mile 354 on the Tallulah River, about nine miles downstream of the Nacoochee Development. The Terrora powerhouse is located 5.6 miles downstream of Mathis Dam at the head of the impoundment of the Tallulah Falls Development. The mile-long power tunnel cuts through a mountain to connect the impoundment (Lake Rabun) and the Terrora penstocks.

Mathis Dam is a concrete slab and buttress dam with the main concrete dam structure at 617 feet long and a maximum height of 115 feet. Several walls have been added on both sides of the dam since original construction. With the added walls, the dam consists of the following sections, from left to right: 1) a 20-foot concrete wall, a 19.75-foot concrete wall, a 48.5-foot concrete panel wall, a 47.33-foot timber wall, a 275-foot left non-overflow section with a timber wall on top, a 290-foot long spillway section, a 50-foot right non-overflow section with a timber wall on top, and a 21.5-foot timber wall. These structures together create a crest elevation of 1703 feet for the impounding structure. The timber walls, on both the non-overflow sections and the abutments, and the concrete walls on the left abutment were added to raise the elevation of the structures to at least 1,702 feet, which corresponds to the probable maximum flood (PMF) elevation. A one-foot high steel splash plate was added to the timber walls, the concrete panel wall, and the 19.8-foot long concrete wall to increase the top elevation to at least 1703, or about one foot above PMF. The 20-foot long concrete wall was constructed to at least elevation 1,703 as well. The original crest elevation of the main concrete, non-overflow sections is 1695.0 feet above mean sea level, and the spillway crest elevation is 1683.1 feet. A spillway bridge at elevation 1704.0 feet extends over the length of the spillway.

The spillway is equipped with 16 Obermeyer gates with bay openings varying from about 15.5 to 16 feet wide. The skin plates for the Obermeyer gates are about 7.8 feet tall with a curved face. The new spillway gates were installed in 2014-2015 to replace the original bottom-hinged gates. The gates are operated from a control room under the dam in the old powerhouse location. Backup power to the gate control system is provided by a natural gas generator that was installed during spillway gate replacement. As a safety mechanism, the spillway gates have a mechanical device that will deflate the bladders and lower the gates automatically if about one foot of water is passing over the gates.

A saddle dike closes a low saddle in the reservoir rim about 2300 feet north of Mathis Dam. It is a homogeneous earth embankment 370 feet long and

about 65 feet high at its centerline. The dike has a 20-foot wide crest, slopes of 2.5 horizontal to 1 vertical, a downstream rock toe with a 2.75:1 slope, and a combination open cut and grouted cutoff extending into the hard mico schist foundation rock. This saddle dike was constructed in 1956 to replace the original concrete slab and buttress saddle dike, which is located just upstream of the new dike and has been breached.

The intake to the power tunnel is a separate reinforced concrete structure located on the right abutment about 500 feet upstream of the dam. The power tunnel is excavated through rock. The power tunnel is lined where it enters and exits the mountain. Between the entrance and exit, the tunnel is unlined. The power tunnel has a lower rectangular cross section that is topped by a semi-circular cross section. The width of the lower rectangular section varies from 11 to 13 feet while the semi-circular top portion varies in radius from 5’6” to 6’6. The entire power tunnel has a length of 5334 feet. The power tunnel discharges into a reinforced concrete surge tank. Two steel riveted penstocks, nine feet in diameter and about 850 feet long, connect the surge tank and the Terrora powerhouse.

The Terrora powerhouse is a steel, reinforced concrete, and masonry structure 127’4” long, 57’4” wide and about 100 feet tall at the downstream face. It houses two generating units, a control room, and a machine shop. The generating units discharge water out of the powerhouse directly into the impoundment for the Tallulah Falls Development; there is no tailrace.

The generating units supply power at 6600 volts. This is stepped up to 115,000 volts by transformers in the substation east of the powerhouse. The substation is a connecting point for the two 46-KV transmission lines from Nacoochee, and for two 110-KV lines from the Tallulah Lodge substation. The Terrora Development includes only step-up and switching facilities in the substation up to the point of junction with the 110-KV Terrora-Tallulah Lodge distribution line. Neither the transmission lines between Terrora and Nacoochee nor the lines between Terrora and the Tallulah Lodge substation are part of the development.

4.51.b.2 Areas, Elevation, Storage Capacity

The full pool elevation of Lake Rabun, the impoundment of Mathis Dam, 1689.6 feet above mean sea level. At that elevation, Lake Rabun has a surface area of 780 acres, a gross storage of 31,100 acre-feet, and a usable volume of 21,900 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

There are two generating units in the Terrora powerhouse. Each unit has a vertical Francis-type turbine rated 15,499 horsepower at 176 feet of head,

directly connected to a vertical alternating current generator rated 14,375 KVA, 11,500 KW at 200 rpm.

4.51.b.4 Transmission Line Description

This development includes only the stub lines from the Terrora powerhouse to the Terrora substation up to the point of junction with the Terrora-Tallulah Lodge transmission line.

4.51.b.5 Additional Equipment Description

Mechanical

Turbines:

2 – Vertical shaft, Francis type, American Hydro Corporation, 15,499 hp at 176 feet of head, 200 rpm. Turbine units are rated approximately 10.4 MW each at best gate.

Turbines are complete with steel penstocks, 84” hydraulically operated penstock valves, steel pressure cases, Woodward governors, conical steel draft tubes, and other minor auxiliary equipment.

Gates:

16 – Crest gates; Obermeyer, with a 7.75-foot curved steel skin plate.
2 – Head gates; steel, vertical lift, screw type, with motor operated hoist for 30 ft. X 20 ft. tunnel opening.
2 – Penstock emergency gates; tilting type, steel, with motor operated hoist for 9 ft. diameter penstock opening.

Miscellaneous:

1 – Powerhouse crane, Whiting, 50 ton, bridge type, with 50 ft. span.
3 – Gate valves; 48”, for sluiceways.
2 – Relief valves; 22”, water pressure operated.
1 – Surge tank; reinforced concrete.

Other miscellaneous equipment includes trash racks, oil pumps, an air compressor, storage tanks, piping, and fire protection equipment.

Electrical

Generators:
2 – Vertical shaft, Westinghouse (Rewound by NEC), 14,375 KVA, 0.8 P.F., 11,500 KW, 200 rpm, 3 phase, 60 cycle, 6600 volts.

Generators are direct connected with 160-KW exciters.

Circuit Breakers:
2 - 2000 amp Powell frame breakers, 6600 V, with a short circuit rating of 50kA.

Computerized Control System:
1 - digital distributed control system for remote control of units; control of generators, exciters, voltage regulators, station service, motor generator, and outgoing transmission lines; and all necessary instruments, controls, indicating devices and protective relays.

Miscellaneous equipment includes current and potential transformers, 160 KW motor generator, 480V metal clad switchgear, station batteries, and telephone and lighting equipment.

Transmission

Transformers:
3 - Westinghouse, 6667 KVA, 110 KV/63.52 KV/6.6 KV, single phase, 60 cycle, oil insulated, water cooled, outdoor type.
1 - Westinghouse, 12,000 KVA, 115KV/46KV, three phase, 60 cycle, oil insulated, forced air cooled, outdoor type.

Circuit Breakers:
1 - General Electric, oil-blast circuit breaker, 115 KV, 800 ampere.
1 - Westinghouse, 46 KV, 1200 ampere.
1 - Westinghouse, 46 KV, 600 ampere.
1 - McGraw-Edison, 121 KV, 1200 ampere.

Transmission Lines:
The development includes only the short stub lines from the powerhouse to the point of junction with the Terrora-Tallulah Lodge 115 KV transmission line in the Terrora substation.

The transmission substation is located at the east end of the powerhouse and consists of steel frames, buses, disconnecting switches and cable necessary to control the station from the switchboard.

4.51.b.6 Description of Lands of the United States

No lands of the United States are enclosed within the project boundary.

TALLULAH FALLS DEVELOPMENT

4.51.B.1 Physical Description

The Tallulah Falls Development consists of a dam, an intake and power tunnel, a surge tank, six penstocks, an incline railway, a powerhouse with six generating units, other plant buildings, a tailrace, transformers and switchgear, and one transmission line. The Tallulah Falls Dam is located at mile 347 on the Tallulah River, and the powerhouse is located 1.8 miles downstream at the head of the impoundment of the Tugalo Development.

The Tallulah Falls Dam is a concrete gravity dam constructed with a curved alignment. From left to right, the dam consists of: a left abutment, a gated spillway section, and a right abutment. The total length of the dam is 426 feet, and the maximum height is about 130 feet. The crest elevation of the abutments is 1514.0 feet above mean sea level, and the spillway crest elevation is 1493.0 feet. A bridge with 3-foot high parapet walls spans the dam. The spillway has 10 spillway bays, each 28 feet wide. The four left bays have wooden flashboards with aluminum pipe supports that are 7 feet high. The six right bays are bottom-hinged steel gate structures with wood facing with motor-operated hoists. The gates are 8 feet high. There are also two five-foot square sluiceways through the spillway at elevation 1425.0 feet. The sluiceways close with steel slide gates on the upstream face of the dam. The sluice gates are not operated.

The intake to the power tunnel is a separate reinforced-concrete structure on the right bank about 75 feet up stream of the dam. The power tunnel is cut through rock and is concrete lined. It is horseshoe-shaped in cross section, about 11 feet wide and 14.5 feet high, and 6665 feet long.

The tunnel discharges into a box-type surge tank partially excavated into rock. The tank is constructed of reinforced concrete. It is 93’ high, 71’ long, and 30’ wide. Six steel penstocks connect the surge tank to the powerhouse, which is located down in the Tallulah Gorge. The penstocks are five feet in diameter and average 1250 feet in length. Upper penstock sections are riveted together on all six penstocks, while the lower sections are welded together for Penstocks 1-5 (from left to right). Penstock 6, which was American-made, is riveted for its full length. The penstocks rest on concrete piers spaced 32 feet apart.

An incline railway provides access to the powerhouse in the gorge. The railway is about 1200 feet long and rises in that distance about 650 feet. The maximum grade of the railway is 98 percent. A brick and steel house covers the hoist arrangement at the head on the incline.

The power plant buildings located in the gorge are steel, reinforced concrete and masonry structures. The generator building houses the six generating units. It is 191’ 9 ½” long, 47’6” wide and approximately 115’ tall at the

downstream face. The switching house contains transformers and switchgear. It is 248' 5 ½" long, 49' 6 ¾" wide, and about 120' at its downstream face high. These two buildings are connected by a small building, 28'10" long and 28' wide, which houses the plant control room.

The tailrace was constructed almost at a right angle to the powerhouse, in the original river channel. It is tapered, being only 10 feet wide at the first unit upstream and widening to 50 feet at its lower end. The tailrace is about 250 feet long. It is bounded on its right side by the powerhouse and a concrete wall that extends downstream from the powerhouse about 50 feet. On its left side, it is bounded by a concrete wall extending downstream 250 feet.

Power is delivered from the generators at 6600 volts. This is stepped up to 110,000 volts by transformers in the switching house and delivered by one 0.3-mile long, 110 KV transmission line to the Tallulah Lodge substation at the crest of the gorge. The Tallulah Lodge substation is not a part of the Tallulah Falls Development.

4.51.b.2 Areas, Elevations, Storage Capacity

The full pool elevation of the Tallulah Falls Development impoundment (Tallulah Falls Lake) is 1500 feet above mean sea level. At that elevation the surface area of the impoundment is 63 acres. The gross storage capacity at full pool is 2450 acre-feet and the usable storage capacity is 1490 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

The Tallulah Falls Development has six generating units. Each unit has a vertical Francis-type turbine rated 19,300 horsepower at 580 feet of head. The generators are direct-connected, vertical, alternating current generators rated 12,000 KVA, 12,000 KW at 514 rpm.

4.51.b.5 Additional Equipment Description

Mechanical

Turbines:

6 – Vertical shaft, Francis type, S. Morgan Smith, 19,300 hp at 580 feet of head, 514 rpm.

Turbines are complete with steel penstocks, 60” motor operated penstock valves and 45” water pressure operated valves, cast-iron pressure cases except one with cast steel pressure case, Woodward governors, elbow type steel draft tubes, and other minor auxiliary equipment.

1 - Horizontal shaft, Pelton wheel, 67 hp at 608.5 feet of head, 750 rpm, for auxiliary exciter.

Gates:

4 - Stationary flashboards, 7 ft. X 28 ft., wood with aluminum pipe supports.

6 Spillway gates- 8 ft. X 28 ft., wood-faced with steel frame, electric motor operated.

2 - Sluice gates; vertical lift, screw type, with manual operated hoist for 5’ diameter opening. The sluice gates are not operated.

5 - Intake gates; steel, vertical lift, with manual hoist for 8 ft. X 10 ft. opening.

6 - Emergency gates; steel, flap type, manually operated for steel penstocks.

Miscellaneous:

1 – Powerhouse crane, Shaw, 60 ton, bridge type.

1 – 15 ton crane for switching building.

1 – Surge tank; reinforced concrete.

1 - Passenger incline car; Intamin, Inc.

1 – Freight incline car.

Other miscellaneous equipment includes trash racks, oil pumps, air compressors, storage tanks, piping, automatic release valves, by-pass valves, meters and fire protection equipment.

Electrical

Generators:

6 – Vertical shaft, General Electric, 12,000 KVA, 1.0 p.f., 12,000 KW, 514 rpm, 3 phase, 60 cycle, 6600 volts.

Generators are direct connected with 100 KW exciters.

1 - Horizontal shaft, 50 KW, 250 volt, 750 rpm auxiliary exciter.

Circuit Breakers:

6 - Industrial Electric Manufacturing, MCVB-1523-20 vacuum breakers, 13.8 KV, 2000 amps.

Switchboard:

1 - Complete fourteen panel switchboard for: remote control of units; control of generators, exciters, voltage regulators, station service, and outgoing transmission lines; and all necessary instruments, controls, indicating devices and protective relays.

Miscellaneous electrical equipment includes current and potential transformers, switchgear, station batteries, and lighting and telephone equipment.

Transmission

Transformers:

4 - General Electric, 3333 KVA, 63,500/110,000/6600 volt, single phase, 60 cycle, oil insulated, water cooled.
1 - Westinghouse, 12/16/20 MVA, 115,000/6900 volt, 3 phase, 60 cycle, oil insulated, water cooled.
8 - General Electric, 4167 KVA, 66,400/115,000/6900 volt, single phase, 60 cycle, oil insulated, water cooled.
1 - Kuhlman, 12/16 MVA, 115 KV/6.6 KV, oil insulated.
1 – General Electric, 8000 KVA, 63,500/100,000/6600 volt, water cooled, oil insulated.

Circuit Breakers:

1 - Westinghouse oil circuit breaker, 115 KV, 1200 ampere.
1 - General Electric oil circuit breaker, 15 KV, 300 ampere.

Transmission Line:

1 – 0.3 mile, 110-KV line from the plant to the Tallulah Lodge substation at the crest of the gorge.

The transmission substation is located in the switching house which is adjacent to the powerhouse and consists of buses, disconnecting switches and cable necessary to control the station from the switchboard.

4.51.b.6 Description of Lands of the United States

No lands of the United States are enclosed within the project boundary.

TUGALO DEVELOPMENT

The Tugalo Development is located just downstream of the confluence of the Tallulah and Chattooga Rivers into the Tugaloo River, at river mile 343. The development consists of: a concrete gravity dam with non-overflow, intake, and gated spillway sections, a powerhouse with four generating units, a tailrace, and a substation with transformers and switchgear.

The dam was built with cyclopean concrete construction. From left to right, the dam consists of: a left non-overflow section 73 feet long, a gated spillway section 357 feet long, a center non-overflow section 20 feet long, an intake section 165 feet long, and a right non-overflow section 225 feet long. The total dam length if 840 feet and the maximum dam height is about 160 feet. The crest elevation of the non-overflow sections is 905.0 feet above mean sea level; there is a bridge over the spillway at this same elevation. The spillway crest elevation is 885.0 feet. The spillway has 14 motor-operated, bottom-hinged steel gates 22 feet long and 7.5 feet high. Two seven-foot square sluiceways with centerline at elevation 820.0 feet are located in the spillway section. The sluice gates are not operated.
Four steel penstocks, each about 308 feet long and 13 feet in diameter, carry water from the intake section through the dam, then under a substation located between the dam and powerhouse, and finally into the generating units. The penstocks are encased in concrete.

The powerhouse sits about 130 feet downstream of the toe of the dam; a substation is situated in the space between. The powerhouse is a steel, reinforced concrete, and masonry building 204’4” long and 64’4” wide, with a 40’ by 37’10” control room extending out from the upstream side. The powerhouse is 109.5 feet high at its downstream face. It contains four generating units, a control room, and a machine shop.

The tailrace is about 150 feet wide and joins the main river channel about 200 feet downstream of the powerhouse. The tailrace is separated from the main channel on its left by a concrete wall about 70 feet long. On the right side a concrete wall extends about 200 feet downstream.

The plant substation is located between the powerhouse and the toe of the dam. Transformers step up power from 6600 volts to 115,000 volts for transmission. Interconnection to the 115-KV Tallulah Lodge – Tugalo – Commerce transmission line of the distribution system is done in the substation. Only the short stub lines from the powerhouse to the substation transformers are part of the Tugalo Development. The 115-KV Tallulah Lodge – Tugalo – Commerce transmission line is primarily for distribution and so is not part of the Tugalo Development.

4.51.b.2 Areas, Elevations, Storage Capacity

The full-pool level for the Tugalo impoundment (Tugalo Lake) is 891.5 feet above mean sea level. At full pool the reservoir surface area is 597 acres, the gross storage capacity is 43,000 acre-feet and the usable storage is 14,000 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

Tugalo has four generating units. Each unit has a vertical Francis-type turbine rated 22,850 horsepower at 143 feet of head. Turbine units are rated approximately 16 MW each at best gate. Each generator is a vertical shaft, General Electric, 18,293 KVA, 0.9 p.f., 17,041 KW, 171.4 rpm, 3 phase, 60 cycle, 6600 volts.

4.51.b.4 Transmission Line Description

Only the stub lines connecting the Tugalo powerhouse and the substation transformers are part of the Tugalo Development. The 115 KV Tallulah Lodge – Tugalo – Commerce distribution line is not part of the Tugalo Development.

4.51.b.5 Additional Equipment Description

<u>Mechanical</u>

Turbines:

4 – Vertical shaft, Francis type, Mavel Americas , 22,850 hp at 143 feet of head, 171.4 rpm.

Turbines are complete with steel penstocks, steel pressure cases, American Governor HPUs, elbow type draft tubes, and other minor auxiliary equipment.

Gates:

14 - Crest gates; tilting type, steel, 7'6" X 22', with individual motor operated hoists. 2 - Sluice gates; steel, vertical lift, motor operated for 7 ft. X 7 ft. sluiceway. The sluice gates are not operated.

8 - Intake gates; cast iron, vertical lift, screw type, with motor operated hoist for 13 foot diameter penstock.

1 - Intake gate; cast iron, vertical lift, screw type, with motor operated hoist for 3 ft. diameter penstock.

Miscellaneous:

1 – Powerhouse crane, Northern, 50- ton, bridge type.

4 – Turbine Bearing Lube Oil Circulation Skids equipped with 2 – AC pumps with VFDs, 480v/ 3ph and 1 - DC pump 125v supplying ISO VG 68 oil to the generator bearings for the four (4) units. Each skid has a shell & tube heat exchanger to remove the heat that will be generated from the bearings and a sump tank for the heaters.

4 – Hydraulic Power Units (HPU) equipped. 2 – redundant AC pumps, sump tank and air over oil accumulator tanks and piping provides oil to and from the servo motors for the four (4) units.

2 – Air compressors, Atlas Copco #LS15-175 120H, 230v/3 ph, 15 hp and 240-gallon air receiver tank and Atlas Copco #FD50 desiccant dryer.

2 – 100% redundant service/cooling water pumps

4 – Oil Water Separators (OWS)

4 – Braking & Hydraulic Jacking Units and brake cylinders. Each of the 4 - units are equipped with eight (8) brake cylinders each.

<u>Electrical</u>

Generators:

4 – Vertical shaft, General Electric, 18,293 KVA, 0.9 p.f., 17,041 KW, 171.4 rpm, 3 phase, 60 cycle, 6600 volts.

Exciters:

4 - DECS-400 static exciter with constant pressure brush rigging and high side Potential Power Transformer (PPT) fed from generator bus

Generator Breakers:
4 - 6600V, 2000 amperes.

Station Service Transformers:
1 - 6.6/0.48kV, 500kVA
1 - 12/0.48kV, 500kVA

DCS:
Emerson Ovation DCS control system for: remote control of units, control of generators and auxiliary systems, turbines and auxiliary systems, exciters, voltage requlators, and station service

Switchboard:
Vertical Panels for housing of Generator, Generator Step-up Transformer (GSU), and Station Service protective relaying and metering

Other electrical equipment, includes current and potential transformers, switchgear, station batteries, lighting and telephone systems, transfer switch, and 480V switchgear and MCC.

Transmission

Generator Step-up Transformers (GSU):
2 - 40,000 KVA, 115,000 GRDY/6400 volts, 3 phase, 60 cycle, oil insulated, forced air cooled.

Circuit Breakers:
1 - General Electric, 115 KV, 1200 ampere.
1 - General Electric, 115 KV, 600 ampere.

Transmission Lines:
Only the short stub lines connecting the powerhouse with the substation transformers are part of the Tugalo Development.

The transmission substation is located between the powerhouse and the dam and consists of buses, disconnecting switches, and cable necessary to control the station from the switchboard.

4.51.b.6 Description of Lands of the United States

No lands of the United States are enclosed within the project boundary.

YONAH DEVELOPMENT

4.51.b.1 Physical Description

The Yonah Development is the farthest downstream development in the North Georgia Project. Yonah is located at mile 340 on the Tugaloo River, 3.1 miles downstream of Tugalo Dam. The development consists of: a concrete gravity dam with non-overflow, intake, low-level sluiceways, spillway sections, a powerhouse with three generating units, a tailrace, and a substation with transformers and switchgear.

The dam is a concrete gravity dam of cyclopean concrete construction. From left to right, the dam consists of: a left non-overflow section 112 feet long, a 450-foot long spillway section with 2-foot high flashboards, a sluiceway section 49'4" long, an intake section 131'6" long, and a 204'2" long right non-overflow section. The total length of the dam is 947 feet and the maximum height is about 95 feet. The crest of the non-overflow sections is 757.0 feet above mean sea level and the spillway crest elevation is 742.25 feet. Two-foot high flashboards make the spillway crest elevation 744.25 feet during normal operation.

Three penstocks approximately 15 feet in diameter are built into the dam. Two 7-foot square sluiceways were constructed at an invert elevation of 676.50 feet.

The powerhouse is located at the toe of the intake. It is a steel, reinforced concrete, and masonry structure 184'8" long, 58'8" wide, and about 120 feet tall at its downstream face. The powerhouse contains three generating units, a control room, and a machine shop.

The tailrace is about 120 feet wide and merges with the main river channel about 300 feet downstream of the powerhouse. The tailrace is separated from the main river channel on the left by a concrete wall about 240 feet long. Another concrete wall extends out from the powerhouse about 200 feet on the right side of the tailrace.

Generation from the Yonah units is at 6600 volts. Power is transmitted from the powerhouse to the adjacent substation with short stub lines. In the substation, the power is stepped up to 115 KV and connected to the 115-KV Tallulah Lodge – Yonah – Commerce transmission line. The Tallulah Lodge – Yonah – Commerce transmission line is part of the power distribution system and is not included in the Yonah Development.

4.51.b.2 Areas, Elevations, Storage Capacity

The full-pool elevation of the Yonah impoundment (Yonah Lake) is 744.25 feet above mean sea level. At that elevation, the surface area of the lake is about 293 acres, the gross storage capacity is 10,200 acre-feet, and the usable storage is estimated to be 6000 acre-feet.

4.51.b.3 Turbine and Generator Descriptions

Yonah has three generating units. Each unit has a vertical Francis-type turbine rated at 13,700 horsepower at 68 feet of head, and a directly connected alternating current generator rated 8333 KVA, 7500 KW, at 128.6 rpm. Power from the units is at 6600 volts and is stepped up to 115 KV in the substation adjacent to the powerhouse.

4.51.b.4 Transmission Line Description

Only the short stub lines connecting the Yonah powerhouse and the substation transformers are part of the Yonah Development. The 115 KV Tallulah Lodge – Yonah – Commerce transmission line is primarily for distribution purposes and is not part of the Yonah Development.

4.51.b.5 Additional Equipment Description

<u>Mechanical</u>

Turbines:

3 – Vertical shaft, Francis type, S. Morgan Smith, 13,700 hp at 68 feet of head, 128.6 rpm.

Turbines are complete with steel penstocks, cast-iron pressure cases, Woodward governors, elbow type draft tubes, and other minor auxiliary equipment.

Gates:

30 - Crest gates; timber flashboards, 15 ft. X 2.25 ft. supported by steel pipe. These are operated in three sections, with each section having a different trip elevation.

2 - Sluice gates; steel, vertical lift, screw type, with motor operated hoist for 7 ft X 7 ft. sluiceway. The sluice gates are not operated.

6 - Head gates; steel, vertical lift, screw type, with motor hoist for 15 ft. diameter penstock.

Miscellaneous:

1 – Powerhouse crane, Northern, 60 ton, bridge type.

Other mechanical equipment includes trash racks, oil pumps, air compressors, storage tanks, piping, and fire protection equipment.

Electrical

Generators:

3 – Vertical shaft, General Electric, 8333 KVA, .9 p.f., 7500 KW, 128.6 rpm, 3 phase, 60 cycle, 6600 volts.

Generators are complete with direct connected with 175 KW exciters.

Circuit Breakers:

1 - General Electric oil circuit breaker, 7500 volt, 500 ampere.
3 - Industrial Electric Manufacture's vacuum breakers, 13.8 KV.

Switchboard:

1 - Complete 23- panel switchboard for: remote control of units; control of governors, exciters, voltage regulators, station service, motor generator, and outgoing transmission lines; and all necessary instruments, controls, indicating devices and protective relays.

Miscellaneous electrical equipment including current and potential transformers, 125-KW motor generator, switchgear, station batteries, and lighting and telephone systems.

Transmission

Transformers:

4 - General Electric, 8333 KVA, 63.7/110/6.6 KV, single phase, 60 cycle, oil insulated, water cooled.
1 - Kuhlman, 7500 KVA, oil insulated, air cooled.

Circuit Breakers:

1 - General Electric, pneumatic air circuit breaker, 115000 v, 1200 ampere.
1 - Allis Chalmers, 14.4 KV, 1200 ampere, solenoid operated.

Transmission Lines:
Only the stub lines between the powerhouse and the substation transformers are part of the Yonah Development.

The transmission substation is located at the southwest corner of the powerhouse and consists of steel frames, buses, disconnecting switches, and cable necessary to control the station from the switchboard.

4.51.b.6 Description of Lands of the United States

No lands of the United States are enclosed within the project boundary.

Attachment F

Draft Memorandum of Agreement

MEMORANDUM OF AGREEMENT
AMONG
THE FEDERAL ENERGY REGULATORY COMMISSION,
THE GEORGIA STATE HISTORIC PRESERVATION OFFICER,
THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER,
AND
GEORGIA POWER COMPANY
REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF
THE NORTH GEORGIA HYDROELECTRIC PROJECT
IN RABUN COUNTY, GEORGIA AND
OCONEE COUNTY, SOUTH CAROLINA
FERC NO. 2354-###
HP-210720-010; 21-EJ0211

WHEREAS, as part of the Federal Energy Regulatory Commission ("Commission") relicensing of Georgia Power Company's ("Licensee") North Georgia Hydroelectric Project (FERC Project No. 2354) ("Project"), a historic context study and inventory of the Project dam and supporting structures was conducted in 1990; and

WHEREAS, the Project works were determined eligible for listing in the National Register of Historic Places ("NRHP"); and

WHEREAS, Licensee has developed and implemented a Cultural Resources Management Plan ("CRMP") for the Project pursuant to Article 417 of the Project's license issued by the Commission; and

WHEREAS, Licensee has proposed necessary system upgrades to the Tugalo Development ("Undertaking"), including generators and turbines, which are considered character-defining features of the powerhouse; and

WHEREAS, the Commission has determined that the Undertaking will have an adverse effect on the Tugalo Development, which is contributing to the NRHP-eligible Project works; and

WHEREAS, the Undertaking may affect lands important to the Eastern Band of Cherokee Indians, the Cherokee Nation, United Keetoowah Band of Cherokee Indians, and the Muscogee (Creek) Nation, (hereinafter, "Tribes") and the Tribes have participated in consultation and have been invited to concur in this Memorandum of Agreement (MOA), but have elected not to participate; and

WHEREAS, on [insert date], the Commission issued a notice of application for filing and soliciting comments, comments, motions to intervene, and protests regarding the proposed Undertaking, and no comments were received; and

WHEREAS, the Licensee and Commission have consulted with the Georgia State Historic Preservation Officer ("Georgia SHPO") and South Carolina State Historic Preservation Officer ("South Carolina SHPO") pursuant to regulations implementing Section 106 of the National Historic Preservation Act (54 USC 306108), 36 CFR Part 800, and have notified the Advisory Council on Historic Preservation ("Council") of the adverse effect finding pursuant to 36 CFR §800.6(a)(1) and afforded the Council an opportunity to comment on [insert date]; and

WHEREAS, the Commission has executed a Programmatic Agreement (PA) with the Council, Georgia SHPO, South Carolina SHPO and Licensee, executed on January 30,1996, as a condition of issuing a license for Commission Project No. 2354 on October 3, 1996, and finds the PA consistent with Commission guidelines; and

WHEREAS, the Commission, Licensee, Georgia SHPO and South Carolina SHPO agree that there is no practicable alternative to avoid or minimize the adverse effect to the powerhouse; and

WHEREAS, the Licensee participated in the consultation for the Undertaking described above, and pursuant to a Commission order, the Licensee will be directed to implement the stipulations below and has been invited to sign this MOA as an invited signatory per 36 C.F.R. Part 800.6 (c)(2);

NOW THEREFORE, the Commission, the Licensee, Georgia SHPO and South Carolina SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the Undertaking on historic properties:

STIPULATIONS

The Commission will condition any approval issued in connection with the Undertaking to require the satisfactory completion of the following stipulations and will ensure that the following stipulations are carried out under the authority of the Commission by or under the direct supervision of a person or persons meeting at a minimum the *Secretary of the Interior's Standards & Guidelines: Professional Qualifications Standards* (48 FR44738-44739) in the appropriate discipline:

I. MITIGATION MEASURES

A. RECORDATION

Upon execution of the MOA and prior to commencing the above-referenced upgrades, the Licensee will perform or cause to be performed Level II Historic American Engineering Record ("HAER") documentation of the generators and turbines, to include an historic narrative, measured drawings, and medium format black and white photography. The draft HAER documentation will be submitted to all signatories and the National Park Service (NPS) for review and comment. Upon receipt of all comments, the Licensee will revise the HAER documentation and submit to the signatories and the NPS for acceptance. Once accepted by the NPS, the record will be housed at the Library of Congress. Final hardcopies and digital copies should be submitted to all signatories for their records. This record will also be available to the public via Georgia Power's North Georgia website (http://georgiapowerlakes.com/northgeorgialakes/).

B. PUBLIC INTERPRETATION

Upon completion of the system upgrades at the Tugalo Development, the licensee will, in consultation with the signatories of the MOA, prepare and install interpretive signage at Tugalo Park describing the history of hydropower at the development and the prehistory and history of the region.

C. UNANTICIPATED DISCOVERIES

If the Licensee determines after removal has commenced that the Undertaking will affect a previously unidentified property or further impact a known property that may be eligible for inclusion in the NRHP, the Licensee will address the discovery in accordance with the HPMP.

II. ADMINISTRATIVE PROVISIONS

A. MONITORING AND REPORTING

Annually, following the execution of this MOA until it expires or is terminated, the Licensee shall provide all parties to this MOA a summary report detailing work undertaken pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in the Licensee's efforts to carry out the terms of this MOA.

B. DISPUTE RESOLUTION

1. Should any party to this MOA object to or be unable to complete the execution of any provisions of this MOA, the Commission shall take the objection into account and consult as needed with the objecting party to resolve the objection.

2. If the Commission determines that the objection cannot be resolved, the Commission shall forward all documentation relevant to the dispute, including the Commission's proposed resolution, to the Council. The Council shall provide the Commission with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the Commission shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the Council, signatories and concurring parties, and provide them with a copy of this written response. The Commission will then proceed according to its final decision.

3. If the Council does not provide its advice regarding the dispute within the thirty (30) daytime period, the Commission may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the Commission shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA and provide them and the Council with a copy of such written response.

4. The responsibility of the parties to this MOA to carry out all actions under this MOA that are not the subject of the dispute will remain unchanged.

C. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the Council.

D. TERMINATION

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation II.C., above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories. Once the MOA is terminated, and prior to work continuing on the undertaking, the Commission must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the Council under 36 CFR § 800.7. The Commission shall notify the signatories as to the course of action it will pursue.

E. DURATION

This MOA will expire if its terms are not carried out within five (5) years from the date of its execution. Prior to such time, the Commission may consult with the other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation II.C. above.

F. EFFECTIVE DATE

This MOA will take effect on the date that it has been fully executed by the Commission, South Carolina SHPO, Georgia SHPO, and Licensee, and incorporated into the license for the Project.

EXECUTION of this MOA by the Commission, South Carolina SHPO, Georgia SHPO, and Licensee, and satisfaction of its terms evidence that the Commission has taken into account the effect of the Undertaking on historic properties and has afforded the Council an opportunity to comment.

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

SIGNATORIES:

FEDERAL ENERGY REGULATORY COMMISSION

By:_____ Date:_____

Carlisa Linton-Peters
Acting Director, Division of Hydropower
Administration and Compliance

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

SIGNATORIES:

GEORGIA STATE HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Dr. David C. Crass
Deputy Georgia State Historic
Preservation Officer

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

SIGNATORIES:

SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Elizabeth Johnson
Deputy South Carolina
State Historic Preservation Officer

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

INVITED SIGNATORIES:

GEORGIA POWER COMPANY

By:_____ Date:_____

Jennifer Winn
General Manager, Natural Resources
Georgia Power Company

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

CONCURRING PARTIES:

EASTERN BAND OF CHEROKEE INDIANS TRIBAL HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Stephen J. Yerka
Tribal Historic
Preservation Officer

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

CHEROKEE NATION TRIBAL HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Elizabeth Toombs
Tribal Historic
Preservation Officer

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

UNITED KEETOOWAH BAND OF CHEROKEE INDIANS TRIBAL HISTORIC PRESERVATION OFFICE

By:_____ Date:_____

Whitney Warrior
Office of Environmental Services
& Historic Preservation, Director

MEMORANDUM OF AGREEMENT AMONG THE FEDERAL ENERGY REGULATORY COMMISSION, THE GEORGIA STATE HISTORIC PRESERVATION OFFICER, THE SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICER, AND GEORGIA POWER COMPANY REGARDING ALTERATIONS TO TUGALO DEVELOPMENT OF THE NORTH GEORGIA HYDROELECTRIC PROJECT IN RABUN COUNTY, GEORGIA AND OCONEE COUNTY, SOUTH CAROLINA FERC NO. 2354-### HP-210720-010; 21-EJ0211

MUSCOGEE (CREEK) NATION TRIBAL HISTORIC PRESERVATION OFFICER

By:_____ Date:_____

Corain Lowe-Zepeda
Tribal Historic
Preservation Officer