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June 16, 2009

***VIA Electronic Filing***

Ms. Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street NE  
Washington, DC 20426

RE: Modification of Study Plan 2 - Assessment of Fish Density and Species Composition Associated with Various Shoreline Types for the Martin Hydroelectric Project (FERC No. 349-150)

Dear Secretary Bose,

On April 17, 2009, the Federal Energy Regulatory Commission (FERC) issued to Alabama Power Company (Alabama Power) a Study Plan Determination for the Martin Dam Hydroelectric Project (FERC No. 349-150). In its letter, the FERC approved, with some modifications, the 21 study plans filed by Alabama Power on March 18, 2009. In Appendix A of FERC's Study Determination letter, it requested that Alabama Power modify Study Plan 2 (Assessment of Fish Density and Species Composition Associated with Various Shoreline Types) to include "an evaluation of habitat for other aquatic and semi-aquatic species, such as amphibians and reptiles using the four different shoreline habitat types." The FERC also requested that Alabama Power "extend the length of the survey from April through September 15," and that the study should also be modified "to include identification of on-site aquatic vegetation, slope, morphometry, bottom soil types and substrates, and other physical site characteristics." The FERC also requested that Alabama Power consult with the U.S. Fish and Wildlife Service (USFWS) and the Alabama Department of Conservation and Natural Resources (ADCNR) prior to initiating the study, and that Alabama Power file the modified study with the Director of Energy Projects one week prior to initiating the study.

Alabama Power has reviewed the FERC's requested modifications and has incorporated each into a revised Study Plan 2, now entitled Study Plan 2 - Assessment of the Influence of Shoreline Modifications on Aquatic and Semi-Aquatic Species' Use of Various Shoreline Types. Alabama Power herein submits as Attachment A the modified Study Plan 2 for FERC review and approval.

On June 3, 2009, Alabama Power sent the modified Study Plan 2 to the USFWS and ADCNR-Wildlife Division via email for their review and comment. The USFWS replied on June 3 with minor comments, which Alabama Power addressed in the Study

Plan 2. The ADCNR provided its comments on June 4, 2009. The ADCNR is concerned about the effect of shoreline development on all species, noting “as we have discussed at several meetings, we suspect wading birds and many mammal species are negatively impacted by extensive shoreline development. We encourage any study that is done to take a comprehensive look at shoreline development on all species.” The ADCNR response also states “...if the results are to applied on the entire reservoir why is the study area limited to Blue Creek? It would seem more sites well distributed on the reservoir would provide results that would increase confidence.” The email correspondence with the USFWS and ADCNR is submitted as Attachment B.

Alabama Power respectfully disagrees with the ADCNR’s recommendation to revise Study Plan 2 to include a comprehensive study on all species. Alabama Power has modified Study Plan 2 to include an evaluation of habitat for other aquatic and semi-aquatic species, as directed by the FERC in its Study Plan Determination letter. Moreover, we have added two natural undeveloped areas for survey and included an assessment of wading birds at the four shoreline habitat types. Alabama Power believes the sample sites in the modified study plan adequately represent larger areas around the lake and can be used for decision making on protection, mitigation, and enhancement (PM&E) measures. Furthermore, we feel ADCNR’s additional concerns will be addressed in other Martin study plans related to threatened and endangered species, wildlife management and shoreline management planning.

Alabama Power requests expedited review and final approval of the modified Study Plan 2 in order to provide ample time for June field work and sampling. Any questions regarding this filing and/or other related items should be addressed to Jim Crew at 205-257-4265 or JFCREW@southernco.com.

Very Truly Yours,



Eugene B. Allison  
Hydro General Manager  
Alabama Power Company

Attachment A – Study Plan 2 - Assessment of the Influence of Shoreline Modifications on Aquatic and Semi-Aquatic Species’ Use of Various Shoreline Types  
Attachment B – Email Consultation with ADCNR and USFWS

Cc(w/attachments): Mark Pawlowski, FERC  
Lee Emery, FERC  
Martin Project Stakeholder Distribution List

**Attachment A**  
**Study Plan 2 - Assessment of the Influence of Shoreline Modifications on Aquatic  
and Semi-Aquatic Species' Use of Various Shoreline Types**



# **ALABAMA POWER COMPANY**

*BIRMINGHAM, ALABAMA*

## **MARTIN HYDROELECTRIC PROJECT**

*FERC NO. 349*

### **STUDY PLAN 2 – ASSESSMENT OF THE INFLUENCE OF SHORELINE MODIFICATIONS ON AQUATIC AND SEMI- AQUATIC SPECIES' USE OF VARIOUS SHORELINE TYPES**

*JUNE 2009*

*Prepared by:*



**A SOUTHERN COMPANY**

**ALABAMA POWER COMPANY  
BIRMINGHAM, ALABAMA**

**MARTIN HYDROELECTRIC PROJECT  
FERC NO. 349**

**STUDY PLAN 2 – ASSESSMENT OF THE INFLUENCE OF SHORELINE  
MODIFICATIONS ON AQUATIC AND SEMI-AQUATIC SPECIES’ USE OF VARIOUS  
SHORELINE TYPES**

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**STUDY PLAN 2 – ASSESSMENT OF THE INFLUENCE OF SHORELINE  
MODIFICATIONS ON AQUATIC AND SEMI-AQUATIC SPECIES' USE OF VARIOUS  
SHORELINE TYPES*****1.0 GOALS AND OBJECTIVES OF STUDY***

The Alabama Department of Conservation and Natural Resources (ADCNR) has historically recommended that, for protection of aquatic resources, shoreline habitat not be altered as a property is developed. When a property owner has requested to alter the natural habitat by building a seawall or bulkhead, the ADCNR has promoted the use of rip rap by itself or in addition to the seawall to provide a “better” habitat for aquatic species. The ADCNR wishes to investigate the value of this historic recommendation to determine its effectiveness in meeting their goals for aquatic habitat. The ADCNR is especially interested in learning what type structure/material currently used on the lake is the most effective in providing shoreline refuge, habitat, etc., for aquatic and semi-aquatic species.

***2.0 RELEVANT RESOURCE MANAGEMENT GOALS***

ADCNR manages the recreational fishery of Lake Martin and encourages habitat conservation for semi-aquatic species. Part of that management includes an effort to preserve and protect aquatic and riparian habitats of the lake. ADCNR recommendations to homeowners and developers of shoreline habitats on the lake should be accurate, cost-effective, and help the agency meet their overall goals.

***3.0 BACKGROUND AND EXISTING INFORMATION***

During fishery collections in the southeast, many biologists have observed a marked increase in the number of fish (abundance and diversity) associated with rip rap areas of lakes when compared with seawall areas. This has typically been accounted for by the diversity of habitats (interstitial spaces, irregular surface, gradual drop-off, etc.) associated with rip rap areas vs. the straight, flat wall of a seawall. Although a number of studies have examined the influence of human shoreline development on fishes, there is no consensus on the impact of development and even less is known about comparing sites within a single lake. It is probable that these modified shorelines reduce the quality of habitat for semi-aquatic species also. Therefore, information gained in regards to this resource would also be beneficial.

#### **4.0 PROJECT NEXUS**

Alabama Power Company (Alabama Power) implements shoreline management plans and permitting regulations that allow modification of the natural shoreline and include and/or promote the use of rip rap in front of traditional seawalls. Alabama Power and the ADCNR want to make sure that they are recommending a shoreline structure that protects the shoreline and also protects or enhances aquatic habitat.

The specific objectives of the study are to quantify aquatic species abundance and composition at four different shoreline types and in addition quantify other parameters important to the aquatic community within each of these four habitats/shoreline types, such as substrate composition, macroinvertebrates, and zooplankton density. Another objective is to evaluate how modification of the shoreline may impact aquatic and shoreline habitat for use by semi-aquatic species.

#### **5.0 STUDY AREA AND STUDY SITES**

The study will be conducted in the Blue Creek arm of Lake Martin. This area was initially selected in consultation with the Freshwater Fisheries Section of the ADCNR. The area was picked because it contains relatively uniform slope, has representative sites of each of the various shoreline treatment types, and is relatively productive with regard to aquatic species density and distribution. We assume that these characteristics are also helpful in evaluating aquatic and semi-aquatic species use of these areas. It is reasonable to assume that the information collected in the Blue Creek area would be applicable to other areas of the lake for determination of potential effects (both positive and adverse).

Four to five replicate sites with similar characteristics (presence/absence of piers, slope, depth, etc.) will be selected for each of four treatments (undeveloped shoreline, shoreline with seawall, shoreline with both seawall and rip rap, and shoreline reinforced with large stone or rock).

#### **6.0 PROPOSED METHODOLOGY**

The proposed method for implementing this study would include a review of literature available on various shoreline structures (*i.e.*, seawall, seawall/rip rap, large stone or rock reinforced shoreline – including construction costs) followed by a field study at selected sites that represent the four treatment types (undeveloped shoreline, shoreline with seawall, shoreline with both seawall and rip rap, and shoreline reinforced with large stone or rock) on Lake Martin.

##### **6.1 Data Collection Techniques for Aquatic Species**

Initially, multiple study areas on Lake Martin will be selected by Alabama Power and ADCNR that include the four treatment types for this study – natural undeveloped, traditional seawall, seawall/rip rap, and large stone or rock reinforced shorelines. Sites

will be selected while the lake is at the winter pool level. At least four sites for each treatment type of habitat will be geo-referenced and photographed upon selection.

Sampling will be conducted while the lake is at or near full pool, generally between April through May, of both 2009 and 2010. Two types of electrofishing will be used, likely conducted once every 2 weeks at night (to ensure adequate catch rates), including traditional boat/boom electrofishing, and prod pole electrofishing (which allows effective sampling of shallow nearshore areas). All fish that are shocked will be identified, counted, and measured (total length in mm). Fish that cannot be identified in the field will be returned to the laboratory for identification. Larger sport fishes (e.g., largemouth bass, spotted bass, crappie) will have their diets removed via tubing in the field (Van Den Avyle and Roussel 1980). Stomach contents will be returned to the lab for analysis. Once each year, a sample of fishes will be retained from the primary sport fish species (likely largemouth bass, spotted bass, crappie). These fish will be returned to the lab where their otoliths will be removed and the fish aged and growth backcalculated using standard techniques (DeVries and Frie 1996). Zooplankton and benthic macroinvertebrates will also be collected at each site to quantify potential food resources for fish populations. Zooplankton will be collected using vertical net hauls and benthic macroinvertebrates with artificial substrates and grab samples. Finally, other water quality parameters (e.g., water temperature, dissolved oxygen) will be collected at each site during each sampling period.

Analysis includes comparison of species composition and species richness across shoreline treatments through time for both years. In addition, the biomass of food that key species (likely largemouth bass, spotted bass, crappie) consume will be measured and compared across shoreline treatments, as well as growth of these key species across shoreline treatments. The combined data will allow testing (using a replicated design) to determine if there are differences in the fishes associated with the four treatment types of shorelines.

## 6.2 Data Collection Techniques for Semi-Aquatic Species

### Habitat Evaluation

Each of the four treatment habitat types (undeveloped shoreline, shoreline with seawall, shoreline with both seawall and rip rap, and shoreline reinforced with large stone or rock) will be evaluated by Mark Bailey – a wildlife expert and lead author on the *Habitat Management Guidelines for Amphibians and Reptiles of the Southeast*. In addition to the four treatment types described above, two additional Natural Undeveloped shoreline areas in the Blue Creek vicinity will also be included for observations to be used to describe “baseline condition”.

Mr. Bailey will determine which treatment types would likely have the least impact on semi-aquatic amphibians and reptiles common to the area. Mr. Bailey will observe each sample area and take photos and notes for each site. Using current information and publications, he will assess the shoreline treatment types to determine

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**MIG 1 – FISH AND WILDLIFE**  
**FINAL STUDY PLAN**

those that are most beneficial to least beneficial to aquatic and semi-aquatic species common to these areas.

Field Surveys

Periodic observations/surveys will be performed in June and September 2009 by Mr. Mark Bailey to document use of the sites by various semi-aquatic amphibians and reptiles (salamanders, frogs, lizards, turtles, and snakes). In addition, Mr. Bailey will also record information on the presence of birds and semi-aquatic mammals utilizing the shoreline areas. The specific dates for sampling will be determined by Mr. Bailey.

- Daytime Surveys will include timed visual surveys along the shoreline and in the immediate bank area to look for basking snakes and turtles and to assess the ability of turtles to exit the lake to access nesting sites at each shoreline type. Use of each area by shoreline bird and semi-aquatic mammal species will also be collected.
- Evening Surveys will focus on listening for calling males frogs after dark during the spring/summer breeding season).
- All species noted during each type of survey will be identified to the lowest taxonomic level (as possible) and recorded.

6.3 Data Analysis

Collected data will be analyzed to evaluate abundance and species diversity at each habitat type. Based on the findings, recommendations will be made regarding future development of shoreline sites on Lake Martin. Alabama Power will use this study in the development of Best Management Practices regarding the most aquatic/semi-aquatic “friendly” shoreline type.

**7.0 *CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE***

This study employs generally accepted practices for evaluating aquatic and semi-aquatic species abundance and diversity along shoreline areas of reservoirs. The study methodology is consistent with generally accepted sampling principles and practices.

**8.0 *PRODUCTS***

Annual reports will be submitted on July 1<sup>st</sup> 2009 and 2010. Once this study is completed, a draft report of the findings including maps (electronic and hard copy) of the study area will be available to the MIG 1. Upon review and discussion, a Final report will be filed with the Martin License Application.

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**9.0 SCHEDULE**

This schedule corresponds to Alabama Power's Process Plan and Schedule filed with FERC on February 16, 2009. Actual consultation meeting dates will be determined with MIG 1 members upon FERC approval of the study plan.

Site Selection .....	March 2008
Alabama Power files Final Study Plan .....	March 2009
FERC Approval .....	April 2009
Field Study (Spring).....	May 2009
.....	May 2010 if needed
MIG 1 Consultation .....	May 2009 – February 2011
Initial Study Report.....	November 2009
Initial Study Report Meeting .....	December 2009
Draft Report .....	November 2010
Final Report .....	February 2011
FERC Updated Study Report.....	September 2010
Updated Study Report Meeting .....	September 2010

**10.0 LEVEL OF EFFORT AND COST**

Alabama Power estimates the cost of consulting on study plan development, conducting the study, and developing a study report is approximately \$175,000.

**11.0 REFERENCES**

- DeVries, D. R. and R. V. Frie. 1996. Determination of age and growth. Pages 483-512 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Van Den Avyle, M.J. and J.E. Roussel. 1980. Evaluation of a simple method for removing food items from live black bass. Progressive Fish-Culturist 42: 222-223.

**Attachment B**  
**Study Plan 2 – Email Correspondence with USFWS and ADCNR-Wildlife Division**

**Crew, James F.**

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**From:** Lochamy, James S.  
**Sent:** Wednesday, June 03, 2009 9:32 AM  
**To:** 'Jeff\_Powell@fws.gov'; 'Shelton-Nix, Ericha'; 'Claybrook, Rick'  
**Cc:** Crew, James F.; 'Henry Mealing'

**Attachments:** 2 Assessment of the Influence of Shoreline Modifications on Aquatic and Semi- Aquatic Species June 2009 (Revised 06-02-09).pdf

Dear Jeff, Ericha and Rick,

Attached is a copy of the Revised Study Plan 2 as requested by the FERC for the Martin Relicensing Study Plan. The Revised Study Plan 2 includes an examination of semi-aquatic species' use of modified shoreline habitats (seawalls, rip-rap, etc.) on Martin Lake. The study includes each of the areas that the FERC requested and should provide the information needed to provide an overall look at the impact of modified shorelines on various aspects of the environment.

Please look this over and give me a call. We believe that the revisions will provide the information needed to assess this impact area.

Jim Lochamy



2 Assessment of  
the Influence...

**Crew, James F.**

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**From:** Jeff\_Powell@fws.gov  
**Sent:** Wednesday, June 03, 2009 4:00 PM  
**To:** Lochamy, James S.  
**Cc:** Shelton-Nix, Ericha; Henry Mealing; Crew, James F.; Claybrook, Rick  
**Subject:** Re:

Jim,

Thanks for forwarding the Revised Shoreline Study Plan for Lake Martin. Other than a few minor comments, which are included below, I believe it looks good. Thanks for the opportunity to review it.

- Section 6.0: the study is going to encompass the four different shoreline treatments (natural undev., seawall, seawall w/ riprap, and riprap only), all of which are located in the Blue Creek area. Since the results of this study will be presumably applied to other areas of the lake, you might want to briefly mention why Blue Creek was selected.
- Section 6.1: in this section you discuss the four habitat types ..... this is slightly different from the four treatment types listed in Section 5.0.
- Are the study sites for the fish (Section 6.1) the same as for the herps (Section 6.2)? If so, maybe make it clearer in the "habitat evaluation" section. If not, explain the difference. You could also include a map of the study sites in the plan for clarification.

Hope this helps – jeff

Jeff Powell  
U.S. Fish and Wildlife Service  
Alabama Ecological Services Field Office  
251.441.5858  
<http://daphne.fws.gov>

**Crew, James F.**

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**From:** Lochamy, James S.  
**Sent:** Thursday, June 04, 2009 9:17 AM  
**To:** Grogan, John D.; Crew, James F.; Segars-Anderegg, Angela; 'Henry Mealing'  
**Subject:** FW: Herp study

-----Original Message-----

From: Moody, Gary [mailto:Gary.Moody@dcnr.alabama.gov]  
Sent: Thursday, June 04, 2009 8:37 AM  
To: Lochamy, James S.  
Cc: Claybrook, Rick; Shelton-Nix, Ericha; Jeff\_Powell@fws.gov; Cook, Stan  
Subject: RE: Herp study

Jim,

We have looked at this proposed study. This incorporates some of the concerns we have shared (herps) but not all. We continue to be concerned about the effect of shoreline development on all species. As we have discussed at several meetings, we suspect wading birds and many mammal species are negatively impacted by extensive shoreline development. We encourage any study that is done to take a comprehensive look at shoreline development on all species. Otherwise the study could end up endorsing practices that could have little or no negative impact on fish but may in fact have significant negative impacts on other species.

Specifically about the proposal, if the results are to be applied on the entire reservoir why is the study area limited to Blue Creek? It would seem more sites well distributed on the reservoir would provide results that would increase confidence. Section 7.0, Consistency with Generally Accepted Scientific Practice, does not include any information about the herp portion of the study. That should be included.

Also I am not aware of the distribution to our Department staff on this study, but Stan Cook and the fisheries biologists need to review the study design.

Gary

Document Content(s)

MartinSP2.PDF.....1-14