Nuisance Aquatic Vegetation and Vector Control Management Program

R.L. Harris Hydroelectric Project

HARRIS DAM RELICENSING

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1.0 INTRODUCTION

The Alabama Power Company (Alabama Power), as part of its R.L. Harris Hydroelectric Project ("the Harris Project" or "the Project") relicensing process, has developed this Nuisance Aquatic Vegetation and Vector Control Management Program (Program). The Program describes current efforts to identify and control nuisance aquatic vegetation and vectors and serves as a baseline of information for stakeholders.

Alabama Power's Nuisance Aquatic Vegetation and Vector Control Management Programs[1] are guided by the Public Health Laws of Alabama, the regulations of the Federal Energy Regulatory Commission (FERC), and Alabama Power's commitment to the public health and welfare of Alabama.

Stakeholders should alert Alabama Power of any areas they feel may require additional levels of control. Any questions regarding Alabama Power's Nuisance Aquatic Vegetation and Vector Control Management Programs or other requests for assistance may be directed to the Environmental Affairs Department (EA), Aquatic Plant and Vector Management through Alabama Power's Aquatic Plant Management website or via phone at 1-800-LAKES-11.

[1] Alabama Power implements similar FERC-approved Nuisance Aquatic Vegetation and Vector Control Management Programs at its Coosa River Hydroelectric Project (148 FERC ¶ 62,140), Martin Dam Hydroelectric Project (156 FERC ¶ 62,187), and Warrior River Hydroelectric Project (130 FERC ¶ 62,271).

1.1 PROJECT DESCRIPTION

Alabama Power owns and operates the Harris Project, FERC Project No. 2628, licensed by FERC. Alabama Power is relicensing the 135-megawatt (MW) Harris Project, and the existing license expires in 2023. The Harris Project consists of a dam, spillway, powerhouse, and those lands and waters necessary for the operation of the hydroelectric project and enhancement and protection of environmental resources. These structures, lands, and water are enclosed within the FERC Project Boundary. Under the existing Harris Project license, the FERC Project Boundary encloses two distinct geographic areas, described below.

Harris Reservoir is the 9,870-acre reservoir (Harris Reservoir) created by the R.L. Harris Dam. The lands adjoining the reservoir are included in the FERC Project Boundary (Figure 1-1). This includes land to 795 feet mean sea level (msl)[2], as well as natural undeveloped areas, hunting lands, prohibited access areas, recreational areas, and all islands.

The Harris Project also contains project lands within the James D. Martin-Skyline Wildlife Management Area located in Jackson County, Alabama. These lands are located approximately 110 miles north of Harris Reservoir and were acquired and incorporated into the FERC Project Boundary as part of the July 29, 1988 Harris Project Wildlife Mitigative Plan and the June 29, 1990 Wildlife Management Plan.

The only waterbody managed by Alabama Power as part of its FERC license for the Harris Project is the Harris Reservoir. Therefore, because the project lands at Skyline are not on a waterbody, these lands are not a part of this Program. The term "Project Boundary" within this document refers to only those Project lands located at Lake Harris.

[2] Also includes a scenic easement (to 800 feet msl or 50 horizontal feet from 793 feet msl, whichever is less, but never less than 795 feet msl).

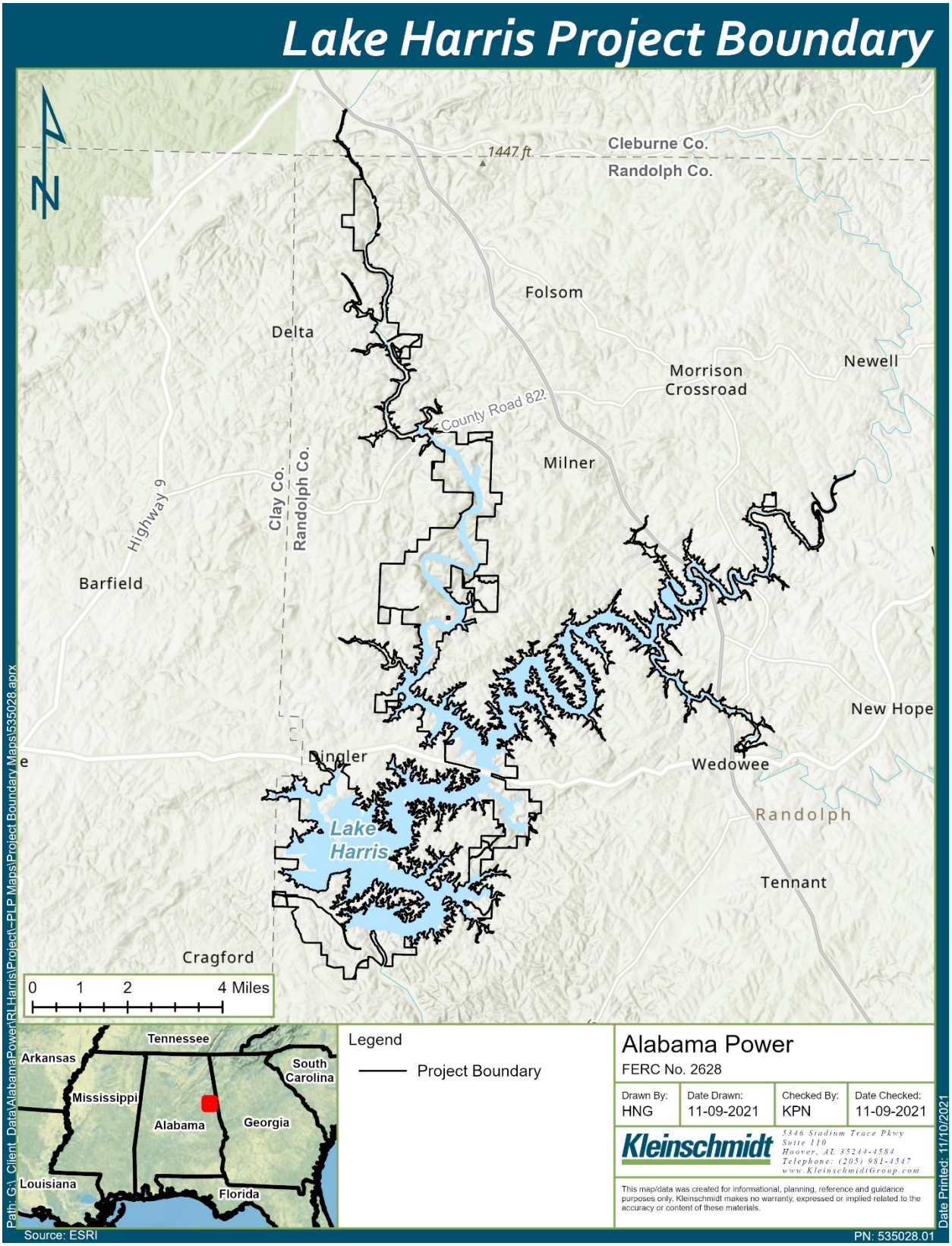

FIGURE 1-1 LAKE HARRIS PROJECT BOUNDARY

2.0 NUISANCE AQUATIC VEGETATION AND VECTORS

Alabama Power complies with all state and federal laws prohibiting the introduction and proliferation of nuisance species, which are defined as species that are unwanted or deemed harmful to local interests (see applicable laws in Appendix A). Currently, Alabama Power's Nuisance Aquatic Vegetation Control Management Program strives to protect Lake Harris from the invasion of nuisance aquatic plant species. Alabama Power stays informed on all state and national issues related to nuisance species. Nuisance species found within the Project Boundary are evaluated for management actions on a case-by-case basis.

Historically there have not been many aquatic vegetation management challenges on Harris Reservoir. Annually, Alabama Power has received very few aquatic vegetation management requests from homeowners and/or lake users. For example, over the past five years, Alabama Power's aquatic plant management team has received an average of only two calls each year for assistance with, or concerns regarding, aquatic plants on Harris. These requests have consisted of Duckweed (Lemna minor) and Soft Rush (Juncus effusus). The reason these species and others have not spread is likely due to the winter drawdown and exposure to cold temperatures for extended periods each year.

Vectors are organisms that carry disease causing pathogens from one host to another. Alabama Power's Vector Control Program primarily targets mosquitoes. Control of mosquitoes at the Harris Project is accomplished on a case-by-case basis around Lake Harris.

Alabama Power receives less than three calls annually from Harris shoreline homeowners and/or lake users regarding mosquitoes. This small number can be attributed to the lack of marginal aquatic vegetation species that commonly harbor mosquitoes and/or offer mosquito breeding habitat. For over five years, Alabama Power has maintained six adult mosquito resting stations strategically placed around Harris Reservoir. These stations allow staff biologists to monitor species presence and abundance. As a preventive measure, staff biologists treat one location annually on Harris with a pre-emergent mosquito larvicide. This application is performed by hand in early spring and involves placing larvicidal briquettes in this low-lying area, which is conducive for mosquito production.

3.0 NUISANCE AQUATIC VEGETATION MANAGEMENT PROGRAM

Nuisance aquatic vegetation in Alabama Power's reservoirs is managed in compliance with local, state, and federal laws and regulations to optimize all the uses of these reservoirs.

3.1 NONINDIGENOUS AQUATIC PLANTS

Alabama Power's Nuisance Aquatic Vegetation Management Program is directed toward, but not limited to, species listed in the "Alabama Nonindigenous Aquatic Plant Control Act[3]". Aquatic species that are prohibited from being introduced or placed or caused to be introduced or placed into public waters of the state of Alabama are provided in Table 3-1.

TABLE 3-1 NON-INDIGENOUS AQUATIC PLANTS PROHIBITED FROM THE WATERS OF THE STATE OF ALABAMA

Common Name	Scientific Name
African Elodea	*Lagarosiphon spp*
Alligator Weed	*Alternanthera philoxeriodes*
Brazilian Elodea	*Egeria densa*
Curlyleaf Pondweed	*Potamogeton crispus*
Eurasian Watermilfoil	*Myriophyllum spicatum*
Floating Water Hyacinth	*Eichhornia crassipes*
Giant Salvinia	*Salvinia molesta*
Hydrilla	*Hydrilla verticillata*
Hygrophila	*Hygrophila polysperma*
Limnophila	*Limnophila sessiliflora*
Parrot-feather	*Myriophyllum aquatica*
Purple Loosestrife	*Lythrum salicaria*
Rooted Water Hyacinth	*Eichhornia azurea*
Spinyleaf Naiad	*Najas minor*
Water-aloe	*Stratiotes aloides*
Water-lettuce	*Pistia stratiotes*
Water Chestnut	*Trapa natans*
Water spinach	*Ipomea aquatica*

[3] Alabama Admin. Code 220-2-.124

3.2 NUISANCE AQUATIC VEGETATION CONTROL

Alabama Power's aquatic plant control program is based on a maintenance control philosophy. Staff annually perform lake-wide surveys to identify areas of aquatic plant infestation. Control measures are initiated before noxious weeds reach a problematic stage because once weeds reach the problematic stage, it is difficult to return to the original maintenance level. This philosophy helps to minimize chemical control measures and promotes plant diversity. All aquatic plant control measures are directed by staff biologists certified as commercial aquatic applicators by the State of Alabama, Department of Agriculture and Industries. Only Environmental Protection Agency (EPA) approved aquatic herbicides and algaecides are used in the management of invasive aquatic plants.

Decisions for treatment applications to be implemented are made by Alabama Power biologists on a case-by-case basis and are performed when conditions such as weather, water flows, and plant growth stage are most conducive. Additional factors considered may include previous experience with a particular species, location, and time of year. Aquatic herbicide and algaecide applications are made via boat and truck mounted equipment, and in some instances by hand equipment. Post treatment monitoring is conducted in accordance with the State of Alabama's National Pollutant Discharge Elimination System (NPDES) Pesticide General Permitting protocols. Subsequent applications are made when necessary.

Initial and subsequent aquatic plant control applications will be considered if vegetation:

- Creates a potential public health hazard by providing mosquito breeding habitat
- Poses a threat to power generation facilities or water withdrawal structures
- Restricts recreational use of the reservoir, and/or
- Poses a threat to the ecological balance of the reservoir

The extent of corrective action initiated will be determined by actual need and whether the concern falls within the above categories. Aquatic vegetation will be left in its natural state in areas which do not meet the above criteria (as deemed appropriate by Alabama Power biologists and staff) to enhance fishery habitat and reservoir aesthetics.

3.3 MONITORING

Biologists with Alabama Power's Vector and Aquatic Plant Management Team perform annual visual aquatic plant surveys on Harris Reservoir. Surveys are performed in the fall, when vegetation biomass is usually at its peak. These surveys take place in shoreline/littoral regions of the lake and areas where water depth allows sunlight penetration in sufficient amounts to the benthic area to promote submersed and/or emergent plant growth. Handheld drag lines are used to survey for submersed species in deeper waters. Species presence and abundance is noted, and special consideration is given to aquatic plant species that are high on the priority list (Table 3-1). In addition, vegetation monitoring is conducted throughout the growing season while staff biologists are performing aquatic plant control measures.

4.0 VECTOR CONTROL PROGRAM

Alabama Power's Vector Control Program is based on best practice methods developed by the United States Public Health Service and the Tennessee Valley Authority and adopted by the World Health Organization, Center for Disease Control, American Mosquito Control Association and other agencies charged with developing mosquito control programs and training mosquito control personnel. These methods have been developed through extensive field studies that address monitoring techniques, source reduction, larviciding, and adulticiding of mosquitoes to prevent nuisance levels that could affect the health and well-being of lake residents and visitors.

4.1 MONITORING

Mosquito monitoring is carried out on all Alabama Power reservoirs to determine which mosquito species are present, if control measures are necessary, and if applied control measures are effective.

The monitoring program at Lake Harris consists of one or more of the following:

- Larval sampling –Mosquito larvae are collected from select permanent pools and floodwaters and identified to species.
- Adult resting stations – Resting stations are strategically placed near potential breeding sites, monitored during the mosquito breeding season, and then used as an index of permanent pool mosquito production.
- Light traps – A commercial adult mosquito capturing apparatus consisting of light, fan and collection jar is used to trap mosquitoes. They are typically used to identify nuisance species when there are extensive complaints in a specific area.
- Biting collections – An aspirator is used to capture mosquitoes that land on a collector for blood meal. Individuals are identified to species.

4.2 SOURCE REDUCTION

Source reduction involves preventing the development of mosquito larvae and is an integral part of Alabama Power's Vector Control Program. Since mosquitoes need water for development, the chief strategy in source reduction is eliminating sources of standing water that may provide an environment for mosquito egg-laying. Source reduction, where

feasible, offers a permanent solution to mosquito problems by eliminating productive mosquito breeding habitat.

4.3 HOMEOWNER TIPS

Homeowners can help reduce mosquito populations through source reduction by eliminating breeding sites. The most common nuisance species on Lake Harris is *Aedes albopictus*, a container breeding mosquito that breeds in artificial sites with standing water such as tires, bird baths, folds of tarps, gutters, boats, and other receptacles. Alabama Power staff biologists are available to advise lake residents on how to identify and eliminate this and other important sources of mosquitoes on their property. Among the actions a homeowner can take are the following:

- Discard containers and tires that hold water
- Promptly empty boats and canoes that fill with rainwater
- Eliminate pockets of rainwater within tarps
- Eliminate standing rainwater in drainage ditches
- Maintain good drainage in gutters and downspouts to prevent standing water
- Fill potholes in roads and other depressions that hold water
- Eliminate standing water in flowerpot dishes
- Change water in birdbaths weekly

4.4 LARVICIDING

Where the elimination of breeding sites is not feasible, larviciding of productive mosquito breeding sites is considered. Pre-emergent larvicides, applied to known mosquito habitat, prevent the emergence of adult mosquitoes. This method of control is site-specific, eliminating indiscriminate treatment of non-target species. Larvicides are applied by hand by staff biologists certified as commercial applicators by the State of Alabama, Department of Agriculture and Industries. Larvicides used in project reservoirs are non-persistent in the environment and will not affect fish, waterfowl, mammals, or beneficial predatory insects. Alabama Power does not perform broadcast spraying but treats complaints on a case-by-case basis. As a preventive measure, staff biologists will continue to treat one location annually on Lake Harris with a pre-emergent mosquito larvicide. This

application will be performed by hand in early spring and involves placing larvicidal briquettes in this low-lying area, which is conducive for mosquito production.

Larvicides currently used in the mosquito control program include the following:

- Aquabac – a highly selective bacterial insecticide consisting of a granular formulation of *Bacillus thuringiensis var. israelensis*
- Bactimos – a bacterial insecticide consisting of granular and briquette formulation of *Bacillus thuringiensis var. israelensis*
- Altosid – granular and briquette formulation of methoprene, an insect growth regulator
- Fourstar – briquette formulation of *Bacillus sphaericus* (Bsph) and *Bacillus thuringiensis israelensis* (Bti)

Appendix A

Applicable Alabama State Laws Regarding Nuisance Aquatic Vegetation

Laws applicable to the control and management of nonindigenous aquatic plants are contained in the Code of Alabama Title 9, Chapter 20 as well as The Alabama Administrative Code, General Provisions Chapter 220-2. Relevant information for each law is provided below.

CODE OF ALABAMA
TITLE 9: CONSERVATION AND NATURAL RESOURCES
CHAPTER 20: NONINDIGENOUS AQUATIC PLANT CONTROL ACT

Current as of August 2021

§ 9-20-3. Introduction of nonindigenous aquatic plants in public waters prohibited.

Any person who introduces, places, or causes to be introduced or placed, any nonindigenous aquatic plant into any public waters of the state shall be in violation of this chapter. For purposes of this section, the unintentional adherence to a boat or boat trailer of a nonindigenous aquatic plant, and its subsequent unintentional transportation or dispersal in the course of common and ordinary boating activities and practices, does not constitute a violation of this chapter.

§ 9-20-4. Exemption for possession of nonindigenous aquatic plants.

Any person who possesses, through natural dispersion, an aquatic plant which is prohibited from being introduced or placed in a public water of the state pursuant to Section 9-20-3, and the possession poses neither danger or intent to further disperse the aquatic plant by means of transportation or other action, shall not be guilty of a violation of this chapter.

§ 9-20-5. Rules, regulations, or standards.

The department shall establish, adopt, promulgate, modify, repeal, or suspend any rules, regulations, or standards as necessary for the proper administration, implementation and enforcement of this chapter. The rules, regulations, or standards shall include, without limitation, a list of all nonindigenous aquatic plants which are prohibited from being placed or introduced into public waters of the state pursuant to Section 9-20-3.

§ 9-20-6. Penalties.

Any person who violates this chapter, or any rule, regulation, or standard adopted pursuant to this chapter, shall be guilty of a Class C misdemeanor and shall be punished in accordance with Sections 13A-5-7 and 13A-5-12.