US Army Corps of Engineers®

ENVIRONMENTAL ASSESSMENT
J. STROM THURMOND PROJECT MASTER PLAN

US ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

McCormick and Abbeville Counties in South Carolina; and
Columbia, McDuffie, Warren, Wilkes, Lincoln, and Elbert Counties in Georgia

June 2022

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ENVIRONMENTAL ASSESSMENT

J. Strom Thurmond Project Master Plan

Savannah River, Georgia and South Carolina

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Savannah District (SAS), has prepared this Environmental Assessment (EA) to evaluate the potential impacts of updating the J. Strom Thurmond Project (Thurmond Project) Master Plan (MP). This EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's (CEQ) Code of Federal Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation (ER) 200-2-2. This EA provides sufficient information on the potential adverse and beneficial environmental effects to allow the SAS District Commander to make an informed decision on the appropriateness of preparing an Environmental Impact Statement (EIS) or signing a Finding of No Significant Impact (FONSI).

1.1 Proposed Action

The proposed action consists of updating the MP which is required for civil works projects and other fee-owned lands for which USACE has administrative responsibility for management of natural and manmade resources. The most recent update to the Thurmond Project MP was completed in 1995. The proposed changes to recreation facilities, land classifications (Appendix A), and natural resources management practices as detailed in the MP are consistent with ER 1130-2-550 dated 30 January 2013.

Proposed changes from the 1995 MP (Appendix B) include the addition of a proposed marina at the north end of the lake, satellite marina operations for Soap Creek and Savannah Lakes Marinas, and more active forest management techniques at Bussey Point, to include longleaf pine restoration, thinning operations, and gradual conversion of areas from pine to hardwood. All proposed changes to recreation facilities, including the addition of marina and satellite marina facilities, will occur in areas previously designated for high-density recreation. Improvements within USACE-operated parks and campgrounds include the addition of more parking, improved/realigned roads for better traffic flow, additional campsites and attendant camp pads, playgrounds, beaches, new fishing piers, tournament weigh stations, disc golf course, shelters, boat ramps, amphitheaters, restroom facilities, utility upgrades, trail improvements, invasive species control, and erosion control/shoreline stabilization.

Potential changes within the lease areas (Appendix B) include the addition of campsites, cabins, and yurts in parks and marinas, new hotel/convention center and

restaurant facilities at Hickory Knob State Park and Wildwood Park, restaurants at Raysville and Clarks Hill Marinas, additional restroom/bathhouse facilities in marinas and parks, disc golf and miniature golf courses, outdoor education center, amphitheaters/group shelters, trails, beaches, boat ramps, fishing piers, additional dry storage and wet slips at marinas, playgrounds, confidence courses, equestrian campground, and swimming pools. Improvements to existing facilities include restaurant expansion, utility upgrades, trail improvements, invasive species control, and erosion control/shoreline stabilization.

All potential improvements, as well as natural resource management actions, will be reviewed for compliance with all environmental laws including the Endangered Species Act (ESA), the Fish and Wildlife Coordination Act (FWCA), the National Historic Preservation Act (NHPA), the Clean Water Act, (CWA) and in accordance with ER 200-2-2, Procedures for Implementing NEPA, and will be addressed by the appropriate categorical exclusion at the time of implementation.

The recreation facilities listed in Table 1 may be considered for development within existing high-density recreation areas without an additional addendum or modification to the MP or any additional NEPA analysis. A lessee must submit detailed plans prior to evaluation of such facilities by the project office. Engineer approved plans may be required and a market and feasibility analysis may be required for larger, revenue producing facilities. All state and local ordinances and laws apply. Prior to construction, an endangered species survey will be conducted in accordance with the Memorandum of Agreement (MOA) between the USACE, SAS, and the U.S. Fish and Wildlife Service (USFWS), dated July 2010. Cultural resources information will be reviewed, and consultation completed, if necessary, to ensure resources are protected. Section 404 of the CWA and Section 10 of the Rivers and Harbors Act (RHA) permits may be required for certain water-based construction. Generally, habitable structures will not be authorized below 346’ above mean sea level (amsl) elevation, the maximum flood surcharge.

In addition to USACE and the leased recreation areas, 277 easements for roads and utilities cross public land at Thurmond Project. Easements are renewed on a regular basis and new easements are issued for utilities to serve recreation areas and adjoining private customers. All easements are reviewed for compliance with NEPA in accordance with ER 200-2-2, the USACE Non-Recreational Outgrant Policy and all pertinent environmental laws and regulations. Issuance of easements is addressed in accordance with a categorical exclusion for real estate grants for rights-of-way.

The MP provides a programmatic approach to the management of all the lands included within the Thurmond Project boundary and serves as the basic document guiding USACE responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop the projects lands, waters, and associated resources.

The MP is a planning document anticipating what could and should happen and is flexible based upon changing conditions. Detailed management and administration

functions are handled in the Operational Management Plan (OMP), which translates the concepts of the MP into operations terms.

Table 1: Potential Recreational Facilities Development

PUBLIC PARKS	
Facilities approved on the lease development plan	Replacement, relocation, and/or modernization of existing facilities not to exceed 10% of the original facility's footprint
Campsites not to exceed 25% of the existing number of campsites	Picnic Sites not to exceed 50% of the existing number of picnic sites
Yurts not to exceed 25% of the existing number of campsites/yurts sites combined	Portable or fixed mini cabins not to exceed 25% of the existing number of campsites/yurts sites combined.
Sanitary facilities necessary to meet existing or expected demand including restrooms, shower houses, septic systems, and RV dump station	Conversion of picnic areas to campgrounds or campgrounds to picnic areas
Picnic shelter not to exceed 200-person capacity	Amphitheater not to exceed 250-person capacity
Designated parking lot(s) not to exceed 100 spaces	Disc golf course not to exceed 25 acres in size
Archery or skeet range not to exceed 25 acres in size	Additional lanes to existing boat ramps. Realignment of roads to improve safety and traffic flow at boat ramps
Playground(s)	Park office or gate house
Restaurant	Hiking, biking, interpretive, fitness, endurance, or equestrian trails or zip lines/high ropes courses
Courtesy dock, fishing pier	Park attendant/camp host sites
Fish cleaning station	Swim beach(s)
Shoreline erosion control	Game court, ball field
Camp store not to exceed 1,000 square feet	Designated pet friendly areas
Interpretive center	Splash pad/mini water park not to exceed one acre

PUBLIC MARINAS

Facilities approved on the lease development plan	Replacement, relocation, and/or modernization of existing facilities not to exceed 10% of the original facility's footprint
Additional wet slip, dry stack, or open boat storage not to exceed 25% of the approved total of boat storage opportunities	Marina office, ships store or gate house
Sanitary facilities necessary to meet existing or expected demand including restrooms, shower houses, septic systems, and marine pump out station	Picnic shelters not to exceed 200-person capacity
Amphitheater not to exceed 250-person capacity	Marine service and sales facility not to exceed 1 acre
Playground(s)	Fish cleaning station
Courtesy dock, fishing pier	Restaurant

1.2 Purpose and Need for the Proposed Action

The last Thurmond Project MP update was finalized in June 1995. Over the past 27 years, changes have occurred that warrant updating the MP. These include changes in policy, changes in regulations, increases in economic and community growth, changes in recreational use patterns, and changes in natural resources management practices. Pursuant to ER 1130-2-550, the objective of the updated MP is to provide a strategic land use management document to guide the comprehensive management and development of all recreational, natural, and cultural resources for the next 10 to 20 years.

The proposed MP update meets the following goals:

- Incorporates updates to policies and regulations pertaining to the management and future development of the Thurmond Project.

- Provides the best possible combination of responses to national objectives, regional needs, resource capabilities and suitability, and expressed public interests and desires consistent with authorized project purposes.

- Addresses changes in land uses, recreational uses, and natural resources management activities.

- Protects and manages project natural and cultural resources through sustainable environmental stewardship programs.

- Recognizes the particular qualities, characteristics, and potential of the project and provides for the orderly and timely development of recreation facilities by lessees and USACE.

- Ensures that program management actions are based on current information and regulations through collaboration.

The MP guidance includes revised categories of Land Classifications (Appendix A) used to define project lands. All lands were acquired for authorized project purposes and allocated for these uses. The classification process is a further distribution of project lands by management categories which, based upon resources available and public needs, will provide for full utilization while protecting project resources. The guidance also includes requirements for an interdisciplinary team approach for updating the MP. Coordination with other agencies, stakeholders and the public is an integral part of the MP process. The Thurmond Project consists of approximately 79,588 acres of land and 70,714 acres of water. The revised MP classifies Project lands based on the following primary uses as summarized in Table 2.

Table 2: Land and Water Classifications

Land Classification	**Acres**
Project Operations	647.4
High-density Recreation	13,890.8
Public Recreation Areas	11,627.8
Quasi-Public Recreation Areas	935.3
Private Clubs	26.3
Special Use Areas	1,301.4
Mitigation Lands	6,882.8
Environmental Sensitive Areas Above 330’ amsl (includes islands)	2,419.8
Cultural Resource Sites, Cemeteries, Buffer*	1,654.5
Plants of Concern*	137.2
Multiple Resources Management Lands	55,746.7
Low-density Recreation	9,538.2
Wildlife Management	46,208.5
Closed/Future Recreation Areas	0
Vegetative Management	0
TOTAL LAND	**79,587.5**
Surface Water Classification	
Restricted	135.0
Designated No-Wake	852.4
Fish and Wildlife Sanctuary	0.0
Sensitive Areas	574.1
Open Recreation	68,969.0
River	183.2
TOTAL WATER	**70,713.7**

Within the vicinity of the Thurmond Project, land use is primarily forest and agriculture, while residential development is primarily low-density and scattered. There are 91 subdivisions around Thurmond Lake. There are also 42 private club sites around the lake. There are 63 subdivisions/clubs in Lincoln County, 34 in McCormick County, 27 in Columbia County, six in Elbert County and three in McDuffie County. These developments impact the economy of the surrounding counties.

The MP serves three primary purposes that are equal in importance. First, it is the primary management document for the project and provides direction for many of the other plans that also guide the management of the Thurmond Project. Second, it is a land use management tool. This MP will be utilized to update many of the resource management plans as needed such as the OMP. Third, the MP provides for the environmental assessment and public review necessary for facilities and activities proposed in the MP.

As a land use tool, this MP provides USACE and the public with the current classification and preferred future uses of project lands. The land classification maps of project lands allows USACE and the public to visually evaluate the distribution of uses of project lands. For example, the identification of project lands that are suitable for the development or expansion of recreation facilities by USACE or a lease holder is beneficial. Maintaining an up-to-date MP allows USACE to respond effectively to development plans made internally or by outside parties.

The MP includes a Geographic Information Systems (GIS) database. Management can continually update the database throughout the life of the plan to allow USACE to take proactive management actions and adapt existing strategies. Acreages were calculated using best available GIS technology and may vary from acreages in prior MP or official land acquisition records.

The policy-based MP, along with this EA, provide USACE with a document that sets goals and objectives but does not establish concrete development plans. This allows USACE flexibility in the management and development of the Thurmond Project, within a clear policy framework.

1.3 Authority

The initial construction of the Thurmond Project was authorized as part of the Rivers and Harbors Act of 1927 (RHA) (Public Law 71-520). This act authorized USACE to investigate existing and prospective development on various streams throughout the nation for the purposes of navigation, power development, flood control, and irrigation. This authorization was embodied in House Document 308, 69th Congress, first session. SAS completed a report on the entire Savannah River Basin in May 1933. This document recommended against any U.S. Government flood control project for the river. Two locations, however, were proposed as likely sites for future power dams in

the upper Savannah River Basin: Clarks Hill (Thurmond) and Hartwell. The Thurmond Project was authorized as a multipurpose dam and reservoir as part of Public Law 78-534, passed on 22 December 1944.

Section 864 of the Water Resources Development Act of 1986 (Public Law 99-662) was modified to include recreation and fish and wildlife management as Thurmond Project purposes. Project lands which are managed or reserved as of the date of the enactment of said law for the conservation, enhancement, or preservation of fish and wildlife and for recreation shall be considered as lands necessary for such purposes.

On December 22, 1987, President Ronald Reagan signed into law legislation (Public Law 100-209) which changed the name of Clarks Hill Dam, Lake and Highway to J. Strom Thurmond Dam, Reservoir, and Highway in honor of the senior Senator from South Carolina.

Pursuant to ER 1130-2-550, an MP is required for civil works projects and other fee-owned lands for which USACE has administrative responsibility for management of natural, recreational, and cultural resources throughout the life of the water resource project.

1.4 Description of Project Area

The Thurmond Project is located on the Savannah River 22 miles upstream from Augusta, Georgia. The project is near the southeastern margin of the Piedmont Plateau Region, and compromises parts of McCormick and Abbeville counties in South Carolina; and parts of Columbia, McDuffie, Warren, Wilkes, Lincoln, and Elbert Counties in Georgia. The 70,714-acre reservoir has a shoreline of approximately 1,166 miles and an additional 79 miles of island shoreline, with the entire project comprising approximately 150,301 acres of public land and water. This data is based on 2017 LIDAR data and differs from shoreline data reported in previous master plans and shoreline management plans.

Thurmond Dam impounds a lake that stretches nearly 37.8 miles up the Savannah River to Russell Dam, 44.5 miles up Little River, Georgia and 19.7 miles up Little River in South Carolina. Other main tributaries include Long Cane Creek (6.9 miles), Benningsfield Creek (3.7 miles), and Hawe Creek (3.5 miles) in South Carolina; and Broad River (6.1 miles), Soap Creek (8.6 miles), Fishing Creek (9.5 miles), Keg Creek (6.4 miles), Pistol Creek (4.0 miles), Germany Creek (4.1 miles), Lloyd Creek (4.7 miles), Grays Creek (4.6 miles), and Murray Creek (3.2 miles) in Georgia. At full pool, there are over 300 islands in the reservoir ranging in size from 0.10 acre to 43 acres. There are also numerous islands less than 0.10 acre in size.

The Thurmond Project has a 380-megawatt capacity hydropower facility and 1,045,000 acre-feet of usable storage capacity and approximately 70,714 surface acres of water at a normal pool elevation of 330 feet amsl. The project was the first of three USACE projects built in the Savannah River Basin and it was constructed from 1946 through

1954. Filling of the Thurmond Project began in July 1951 and was completed in October 1952. The power plant began commercial operation in November 1952.

The authorized purposes of the Thurmond Project are to provide flood control, fish and wildlife habitat, water quality enhancement, water supply, navigation, recreation, and hydroelectric power. The project has 18 feet of conservation storage from an elevation of 312 to 330 feet amsl. The project has seasonal drawdowns of the conservation pool. The power produced at the Thurmond Power Plant is sold through the Department of Energy, Southeastern Power Administration. The Thurmond Power Plant is operated primarily as a peaking plant to meet electric needs during peak demand hours. There are 93 public recreation areas located around Thurmond Lake ranging from boat ramp only areas to a destination resort state park. The States of Georgia and South Carolina lease approximately 34,992 acres of land and water for wildlife management. USACE manages approximately 22,750 acres of land for wildlife.

Detailed maps of recreation facilities can be found on JST's website at: https://www.sas.usace.army.mil/About/Divisions-and-Offices/Operations-Division/J-Strom-Thurmond-Dam-and-Lake/Plan-a-Visit/Brochures-Maps/ .

1.5 Prior Reports

The original MP for the Thurmond Project (formerly known as Clarks Hill Lake) was published in September 1950. Updates were published in 1966, 1980, and 1995. These updates reflected changes made in response to public demands for recreational opportunities and natural resources needs. Copies of the updates are available at the Thurmond Project Manager's office and may be reviewed upon request.

2.0 ALTERNATIVES TO THE PROPOSED ACTION

The one alternative to the proposed action considered was the no-action, or future without project condition. In the future without project condition (i.e., no-action), the Thurmond Project would continue to operate under the 1995 MP. As a result, individual EAs would be required for development or expansion of facilities or conducting activities not addressed in the 1995 MP. In accordance with ER 1130-2-550, an updated MP (5-year review) is required for civil works projects and other fee-owned lands for which USACE has administrative responsibility for management of natural, recreational, and cultural resources throughout the life of the water resource project.

3.0 AFFECTED ENVIRONMENT

3.1 General

3.1.1 Environmental Setting

USACE operates three major multi-purpose projects located along the Savannah River: Hartwell, Richard B. Russell, and J. Strom Thurmond Projects. The Thurmond Project is a man-made lake bordering Georgia and South Carolina on the Savannah, Broad, and Little Rivers. The lake is created by the Thurmond Dam, located on the Savannah River 22 miles above Augusta, Georgia, and 239.5 miles above the mouth of the Savannah River. The lake extends 37.8 miles up the Savannah River, 44.5 miles up the Little River, and 6.1 miles up the Broad River in Georgia, and 19.7 miles up the Little River in South Carolina. At full pool elevation, Thurmond Lake comprises nearly 70,714 acres of water and 1,166 miles of shoreline.

The Thurmond Project was designed for flood control, hydropower, fish and wildlife management, water quality, water supply, downstream navigation, and recreation. The Seneca and Tugaloo Rivers join to form the Savannah River near Hartwell, Georgia, approximately 90 miles north of Thurmond. There are 316,144 acres in the extended watershed; 201,296 acres or 63.7 percent located in Georgia with the remaining 114,848 acres, or 36.3 percent located in South Carolina.

Land use/land cover in the Georgia portion of the Savannah River Basin watershed includes 68.6 percent forested land, 2.1 percent water, 8.8 percent agricultural land, 2.1 percent urban land, 8.8 percent barren land, and 8.9 percent wetlands. Land use/land cover in the South Carolina portion of the watershed includes 64.5 percent forested land, 18.5 percent water, 8.5 percent agricultural land, 7.1 percent urban land, 1.8 percent barren land, and 0.6 percent forested wetland (swamp). Thurmond Project is located in the Piedmont geographical region.

Additional information about the Thurmond Project can be found on their webpage: http://www.sas.usace.army.mil/About/Divisions-and-Offices/Operations-Division/J-Strom-Thurmond-Dam-and-Lake/.

3.1.2 Description of the Watershed

The Savannah River Basin consists of 34 watersheds. Thurmond Project is located in three hydrologic units (HUC) (Figure 1). They are HUC 03060103 (Upper Savannah, 1,830 sq. mi), HUC 03060104 (Broad, 1,500 sq. mi.), and HUC 03060105 (Little River, 766 sq. mi.). http://www.scdhec.gov/HomeAndEnvironment/Docs/60103-07.pdf.

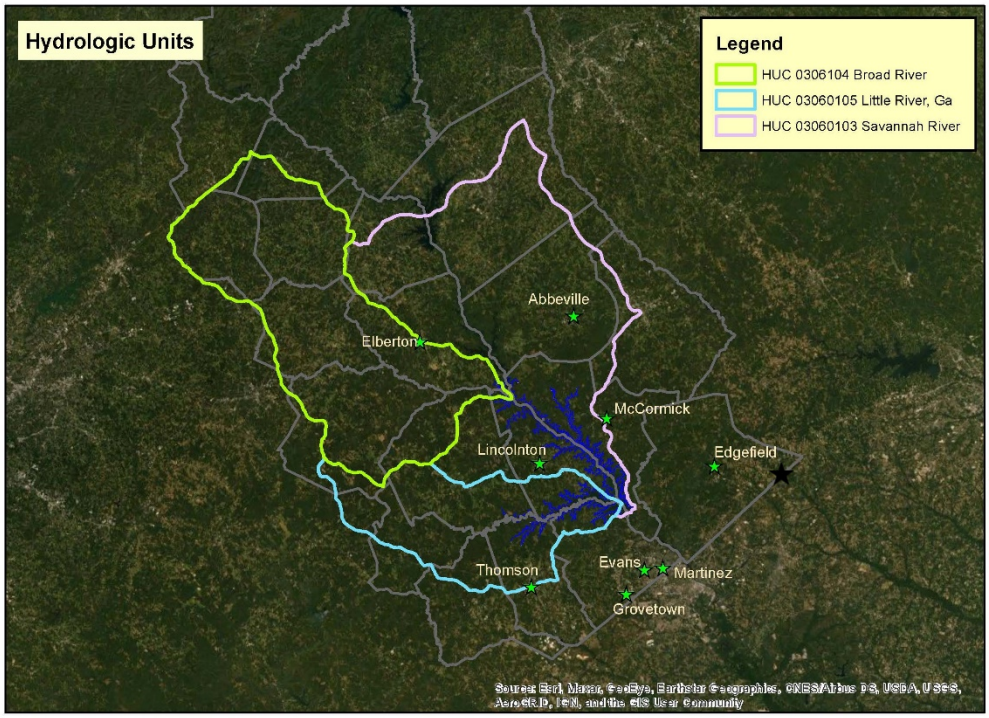


Figure 1: Hydrologic Units Upper Savannah, Broad, and Little River at J. Strom Thurmond

3.1.3 Climate

Hot, humid summers and mild, pleasant winters characterize the heavily wooded area on the shores of Thurmond Lake. A mixed pine and hardwood forest cover the site, providing summer shade and fall color. The average elevation of the region is approximately 345 feet amsl. The following climate data for 1980-2016 were taken from the South Carolina State Climatology office. McCormick County, South Carolina is representative of the Thurmond Lake area and has a warm humid temperate climate with hot summers and no dry season. The area within 50 miles of this station is covered by croplands (17 percent), forests (69 percent), water (11 percent), and built-up areas (3 percent). Over the course of a year, the temperature typically varies from 37°F to 91°F and is rarely below 24°F or above 98°F. The warm season lasts from May 25 to September 15 with an average daily high temperature above 84°F. The hottest day of the year is July 20, with an average high of 91°F and low of 72°F. The cold season lasts from November 27 to February 27 with an average daily high temperature below 55°F. The coldest day of the year is typically around January 17, with an average low of 37°F and high of 55°F.

Over the entire year, the most common forms of precipitation are thunderstorms, light rain, and moderate rain. From May 26 to August 28, there is a greater than 31 percent chance of measurable perception (at least 0.04 inches) on any given day. However, the most rainfall occurs between mid-February and mid-March with an average total accumulation of 4.1 inches.

Over the course of the year, the typical wind speeds vary from 0 miles per hour (mph) to 14 mph (calm to moderate breeze), rarely exceeding 21 mph (fresh breeze). The highest average wind speed of 5.5 mph (light breeze) occurs around March 8, at which time the average daily maximum wind speed is 4.6 mph (light breeze). The lowest average wind speed of 5 mph (light breeze) occurs around August 8, at which time the average daily maximum wind speed is 3.6 mph (light breeze). The wind is most often out of the west (74 percent of the time), north (11 percent of the time), and east (15 percent of the time).

Snowfall is rare in the region. The South Carolina State Climatology Office (www.dnr.sc.gov/climate/sco/ClimateData/countyData/county_mccormick.php) reported the following climate summaries and severe weather events for McCormick County, SC in Table 3.

Table 3: Potential Weather Summaries and Severe Weather (1950 – 2016)

Weather Summaries and Severe Events (1950 – 2016)	
Temperature Summary (1952-2011)	
Highest Maximum	109 F, July 29, 1987; Clarks Hill
Lowest Minimum	-2 F, January 21, 1985; Clarks Hill
Precipitation Summary (1952-2011)	
Highest Daily Rainfall	9.40 Inches, October 12, 1990; Clarks Hill
Annual Average Rainfall	46.02 Inches
Wettest Year	76.28 Inches, 1964
Driest Year	24.28 Inches, 1954
Highest Daily Snowfall	8.0 Inches, February 24, 1989
Severe Weather Events	
Tornado	15 Tornadoes (1950-2016) Tornado damage: $509,000 4 tornado related injuries 0 tornado related fatalities
Thunderstorm Winds	79 Wind events (winds exceeding 50 knots or 58 miles per hour, 1955-2016) Hail (>1.0 inch) 24 Hail events (1955-2016)
Lightning	1 Lightning events (1993-2016) Lightning damage: $200,000 0 Lightning related fatalities
Flood	5 Flood Events (1993-2016)
Snow and Ice	8 Winter frozen precipitation events (1993-2016)

The typical growing season lasts for eight months from around March 18 to November 16 (243 days).

3.1.4 Physiography and Geology

The following information about physiography, geology and soils is incorporated by reference from the Savannah River Basin Watershed Protection Plan 2001, Georgia Department of Natural Resources (GA DNR) Environmental Protection Division (EPD).

Physiography

The Thurmond Project is located within the Piedmont physiographic province. The Savannah River basin includes parts of the Blue Ridge, Piedmont, and Coastal Plain physiographic provinces, which extend throughout the southeastern United States. Similar to much of the Southeast, the basin's physiography reflects a geologic history of mountain building in the Appalachian Mountains and long periods of repeated land submergence in the Coastal Plain Province. The Fall Line is the boundary between the Piedmont and Coastal Plain provinces. This boundary approximately follows the contact between older crystalline metamorphic rocks of the Piedmont Province and the younger unconsolidated Cretaceous and Tertiary sediments of the Coastal Plain Province. As implied by the name, streams flowing across the Fall Line can undergo abrupt changes in gradient, which are marked by the presence of rapids and shoals. Geomorphic characteristics of streams differ between the Piedmont and Coastal Plain provinces. In the Coastal Plain, streams typically lack the riffles and shoals common to streams in the Piedmont and exhibit greater floodplain development and increased sinuosity.

Geology

The Blue Ridge and Piedmont provinces, which constitute approximately 60 percent of the Savannah River basin, are underlain by crystalline metamorphic and igneous rocks. The metamorphic rocks originally were sedimentary, volcanic, and igneous plutonic rocks that have been altered by several stages of regional metamorphism as well as several episodes of granite intrusion. Many of the exposed rocks of the Savannah River basin consist of several types of gneiss, largely made up of biotite gneiss, granite gneiss, and amphibolite. Granites are locally important in the basin as are metasedimentary rocks such as metagraywackes, quartzites, and schists. Less than 0.1 percent of the Savannah River basin is occupied by ultramafic rock units. Coastal Plain sediments constitute approximately 40 percent of the Savannah River basin. Approximately 80 percent of the sediments are sands and clays. The rest include calcareous sediments and Quaternary alluvium. The Coastal Plain sediments overlap the southern edge of the Piedmont Province at the Fall Line and those sediments nearest to the Fall Line are Cretaceous to Eocene in age. They are predominantly terrestrial to shallow marine in origin and consist of sand, kaolinitic sand, kaolin, and pebbly sand. These sediments host the major kaolin deposits in Georgia with many of these deposits found within the Savannah River basin. Much of the southeastern Piedmont is covered by deeply weathered bedrock called saprolite. Average saprolite thickness in the Piedmont rarely exceeds 20 meters, but the thickness can vary widely within a short distance. A considerable amount of ground water flows through the saprolite and recharges streams in the Piedmont. Saprolite is easily eroded when covering vegetation and soil are removed. Extensive erosion of soil and saprolite caused by agricultural practices during the 1800s and early 1900s contributed a vast quantity of sediment into stream valleys, choking the streams and raising the streams base level. As conservation practices stabilized erosion, streams began to reestablish

grade and cut into the thick accumulations of sediments, remobilizing them into the major rivers and eventually into reservoirs.

3.1.5 Soils

The Savannah River watershed in Georgia crosses 5 Major Land Resource Areas (MLRA's) soils vary widely across the watershed, ranging from nearly level to very steep, from shallow to very deep, from excessively drained to very poorly drained, and from sandy to clayey. There are some general trends with soils across the watershed. Going from north to south, degree of slope decreases, water tables are generally higher, and soil textures go from loamy in the Blue Ridge, to clayey in the Southern Piedmont, to sandy or sandy over loamy in the Sand Hills, Coastal Plain, and Atlantic Coast Flatwoods. About 6 percent of the watershed is in the Blue Ridge MLRA. Most of the soils in this area formed from weathered granite, gneiss, and schist. These are the steepest soils in the watershed, with slopes in most areas ranging from 25 to 60 percent. Soils on the steeper slopes and higher elevations are commonly loamy throughout, are brown to yellowish red, and are shallow or moderately deep to bedrock. Deep to very deep, red clayey soils are common in less sloping areas at lower elevations. About 60 percent of the watershed is in the Southern Piedmont MLRA, which includes Thurmond Project. Most of the soils in this region are very deep, well drained, red clayey soils that formed from felsic, high grade metamorphic or igneous rocks.

There is a large area in the central part of this region that contains soils formed from intermediate and mafic crystalline rocks. These soils have slower permeability and are less acid than typical Piedmont soils. Another large area in the lower portion of the Piedmont has soils formed from Carolina slate. These soils are still clayey but have a higher silt content than typical Piedmont soils. About 8 percent of the watershed is in the Carolina and Georgia Sand Hills MLRA. Soils in this area formed primarily in sandy and loamy marine sediments, which occasionally overlie residual Piedmont materials. There are two major groups of soils in this area. One group consists of deep sands ranging from 40 to more than 80 inches deep. The other group consists primarily of soils that have a sandy surface and a loamy subsoil, often exhibiting dense or brittle properties. Soils in this MLRA are generally less developed than soils in other parts of the watershed. About 17 percent of the watershed is in the Southern Coastal Plain MLRA. Soils in this part of the watershed are more variable than in other parts, particularly with regards to textures and water table depths. Typically, soils have a sandy surface layer that overlies a red to yellow, loamy subsoil. The depth of the sandy surface is quite variable. Soils in this region are on more gently sloping landforms than in previously mentioned MLRA's. There is a continuum of soils ranging from well drained soils on ridges and hillsides to poorly drained soils in depressions and along drainage ways. Approximately 9 percent of the watershed is in the Atlantic Coast Flatwoods MLRA.

Landforms in this part of the watershed are nearly level. Water tables are generally closer to the surface in this area than in other parts of the watershed. Typically, soils

have a sandy surface layer that is 20 to 40 inches deep over a loamy subsoil. This varies considerably, however. Characteristic of part of this MLRA are sandy soils that have an accumulation of an organic matter-aluminum complex.

3.2 Existing Conditions

This section contains a description of the existing conditions of relevant resources that could be impacted by the project. These relevant resources described in this section are those recognized by laws, executive orders, regulations, and other standards of National, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public. The following resources have been considered and were not found to be present within the project area: coastal wetlands, cypress tupelo swamp, coastal marshes, estuarine waters, coastal wooded ridges, barrier islands, hardwood bottoms, essential fish habitat, and desert plains.

The important resources listed below are those that are frequently encountered: wetlands, aquatic resources/fisheries, terrestrial resources, bottomland hardwood forests, wildlife, threatened and endangered species, beaches, water supply, cultural and archaeological resources, and water quality. Appendix C lists common animal and fish species found in and around the Thurmond Project.

3.2.1 Wetlands and Aquatic Vegetation

There are approximately 1,331 acres of various types of wetlands adjacent to Thurmond Lake. Approximately 358 acres are classified as palustrine emergent wetland habitat, 187 acres as palustrine scrub-shrub wetland habitat, and 786 acres as estimated to be palustrine forested wetland.

There are approximately 68,013 acres of lacustrine habitat created by the dam. An aquatic vegetation survey conducted on Thurmond Lake in 2010 found hydrilla distributed across 11,271 acres. Based on an acoustic survey to determine the density and better estimate vegetated acres, hydrilla covered an average of 44 percent of the area resulting in 4,959 acres of hydrilla. The 2010 annual update of the Aquatic Plant Management Plan (APMP) also noted 32 acres of water primrose, 72 acres of alligator weed, 600 acres of slender pondweed, and approximately half of an acre of the state-listed threatened shoals spider-lily. The 2015 survey determined that hydrilla was present on 10,644 acres with a density of 22.2 percent so the estimated hydrilla coverage was 2,363 acres.

The frequency of other submerged aquatic vegetation and wetland plants are in Appendix B of the APMP. Plant growth varied greatly across the reservoir. In most areas, the hydrilla seldom exceeded three feet in height and was not problematic during the peak of the recreation season. Hydrilla has not impacted hydropower production operations. The APMP for USACE, SAS Water Resources Projects, SC and GA, address actions taken to reduce the negative impacts of nuisance aquatic vegetation. The Avian Vacuolar Myelinopathy (AVM) Plan for USACE, SAS, J. Strom Thurmond

Project, addresses actions taken to reduce the effects of AVM on American Bald Eagle, various waterfowl, and other shorebirds. As a result of the AVM plan, grass carp were incrementally stocked between 2017 and 2019 to target a rate of 15 fish per vegetated acre. A cursory vegetation survey in 2019 indicated an absence of hydrilla and a significant decline in aquatic vegetation. A lake-wide comprehensive survey is planned for 2022.

3.2.2 Aquatic Resources/Fisheries

Thurmond Lake supports popular warm-water fisheries. The reservoir is populated by a variety of native species of freshwater fish, crustaceans, and freshwater mussels, many endemic to the Savannah River system. Popular game fish within the reservoir are largemouth bass, striped bass, black crappie, hybrid bass (white bass crossed with striped bass), spotted bass (non-native) bluegill, redear sunfish, channel catfish, blue catfish (non-native) and flathead catfish. Some game fish are also stocked (striped bass, hybrid bass) within the reservoir to support recreational fishing. Both GA DNR and SC DNR produce striped bass and hybrid bass to stock in Thurmond Lake as fingerlings. On average, 1,000,000 total striped and hybrid striped bass are stocked in Thurmond Lake each year (USACE 2012). Other fish naturally enter the system from the reservoir's tributaries. Blueback herring, gizzard shad and threadfin shad are important forage fish in Thurmond Lake.

The fishery resources of Thurmond Lake have been extensively studied by the USACE, with the Georgia Cooperative Fish and Wildlife Research Unit (GA COOP) performing baseline studies of fishery resources in Thurmond Lake as early as 1986. These studies included cove rotenone sampling, gillnet sampling, electrofishing, and telemetry. The Clemson University Cooperative Fish and Wildlife Research Unit (CU COOP) conducted a commercial creel estimate and a population estimate of blueback herring. SC DNR has conducted fisherman creel surveys on Thurmond Lake since 1991 (USACE 2012).

The robust redhorse is among the largest of the redhorses, reaching lengths over 700 mm and 8 kg. It is a mainstem river species that exhibits potamodromous behavior and spawns in high velocity, shallow water over gravel substrates (Grabowski & Isley 2005; Fisk 2010). After being described by Edward Cope in 1870 from a collection in the Pee Dee River basin, the species was misidentified and overlooked by the scientific community for 120 years before again being detected in Georgia, North Carolina, and South Carolina rivers in the 1980s and 1990s (Bryant et al. 1996). The species is currently protected by state endangered status in Georgia and North Carolina, but it has no official listing in South Carolina (GADNR 2015; SCDNR 2015). Stocking programs were initiated in Georgia in the 1990s and in South Carolina in the first decade of the 21st century to supplement existing robust redhorse populations and to establish new populations in suspected historical reaches (Fisk et al. 2014).

Stocked juvenile Robust Redhorse have been collected in the Thurmond Reservoir and in slower Coastal Plain river runs. One wild spawn juvenile was collected in Savannah

River tidal freshwater. Adults in Georgia's Broad River use the downstream reservoir outside of spawning season. These reservoir collections tend to indicate a tolerance of, or a preference for, lentic habitat during a portion of the life cycle (DeMeo 2000). Recent telemetry observations in both the Santee River drainage (Supplemental Volume: Species of Conservation Concern, SCDNR 2014) and Georgia's Broad River support the hypothesis that adults select cooler water temperatures during the summer.

Habitat loss and disruption of spawning migrations resulting from dams and impoundments; predation and competition by introduced non-native species like buffalo, flathead catfish and blue catfish; and deterioration of water quality due to sedimentation and pollution are believed to have contributed to the decline of the Robust Redhorse. Additionally, the limited range of known populations and low rates of recruitment to the adult population represent challenges to the species' future (Robust Redhorse Conservation Committee 2004; SCDNR 2015).

The Savannah River downstream from the Thurmond Lake supports an abundant and diverse fish community including resident freshwater, euryhaline, and diadromous species. Augusta Shoals and other gravel bars downstream from Thurmond Dam are known spawning habitats for many fish species including striped bass, American shad, suckers, and other riverine species (Duncan et al. 2003). Sufficient river flows during spawning runs, larval drift and juvenile outmigration, and overwintering are important for completion of diadromous and resident fish life cycles.

Summer low flow periods, particularly during drought years can reduce wetted perimeters and limit instream habitats. These periods create stressful conditions for fish and mussel species and during extreme circumstances can result in fish and mussel mortalities. Mean monthly flows were used to assess potential effects on critical time periods for fish and mussel communities in the lower Savannah River downstream from Thurmond Dam (USACE 2014).

Wetland habitats support many aquatic species of frogs including the bullfrog, green frog, southern leopard frog, several species of tree frogs, cricket frogs, and chorus frogs. Turtles found in the wetlands include the river cooter, Florida cooter, eastern chicken turtle, snapping turtle, and common musk turtle. Snakes found in the wetlands include the numerous water snake species and eastern mud snake (USACE 2012).

3.2.3 Floodplains

At the time of acquisition, extensive floodplains were associated with the Savannah River drainage. After dam construction, the majority of these floodplains were inundated. Some floodplain still exists above 330' amsl in the upper reaches of drainages around the project.

3.2.4 Forest/Terrestrial Resources

The Thurmond Project is situated near the southeastern margin of the Piedmont Plateau Region. Lands acquired for Thurmond Project were generally owned by small landowners, forest industries, and power companies. In many cases, the land had been used for agricultural purposes prior to the Depression era but has been allowed to revert to forest growth. At the time of acquisition, most forested areas were supporting second growth pine with a mixture of hardwoods. Most river bottom hardwoods were inundated when Thurmond reservoir was constructed.

Five basic forest types may be identified on project lands: pine, pine-hardwood, hardwood-pine, upland hardwood, and bottomland hardwood. For practical silviculture, these five types are consolidated into three types: pine, pine-hardwood, and hardwood. The pine forest type is made up of shortleaf pine, loblolly pine, and scattered small stands of longleaf pine, occurring naturally or planted.

The pine-hardwood forest type includes the pine species listed above along with hardwood species such as sweetgum, yellow-poplar, white oak, post oak, red oaks, white ash, winged elm, and other regional hardwoods. Minor constituents of this type include sourwood, American holly, sycamore, and red maple.

Understory species vary widely and include Viburnum spp., Rhus spp., Sassafras spp., several species of blackberry, greenbriar, dogwood, and redbud. Japanese honeysuckle is abundant throughout the area but is kept in check by whitetail deer. Kudzu and wisteria are problematic in some areas. Other exotics found on project lands include chinaberry, princess tree, privet, climbing fern, tallow tree, bamboo, giant reed, and periwinkle.

Only a small percentage of the total land area is open or unforested. A few of the open areas maintained in open condition for operational use and utility right-of-ways, but most exist under the wildlife management program.

Thurmond Project has always implemented intensive forest management designed to provide increased user benefits by creating and maintaining a healthy, mixed forest. Silvicultural treatments are prescribed for forest management activities each year. Selective tree thinning and regeneration harvests are made to improve wildlife habitat, diversify habitat, and enhance values for low-density recreational use. Special consideration is given to high-density recreation areas and other areas with unique or cultural values.

3.2.5 Wildlife

Wildlife species can be found in various habitats within and immediately adjacent to Thurmond Lake. Commonly occurring plants and wildlife are listed in Appendix C. Habitats include open water, wetlands (emergent, shrub/scrub and forested), and uplands (forested, open/field, and disturbed). Some of these habitats can be affected

by fluctuations in reservoir levels and others are likely to remain unaffected. Upland habitats are less likely to be impacted by water level changes due to their elevation above normal pool. In addition, wetland habitats that do not depend upon reservoir level as a source of hydrology are less likely to be impacted. However, open water and wetland habitats dependent on reservoir level for hydrology and primary productivity, such as fringe wetlands, are affected by reservoir fluctuations (e.g., 10 feet or more). Therefore, wildlife species using those habitats are also affected.

Reservoir Dependent Wetland (RDW) habitats are composed of emergent, shrub/scrub, and forested wetland habitats existing due to the water level in the reservoirs. As with the open-water habitat, RDW are widely used by wildlife during various parts of their life cycle. Reptiles and amphibians use open water habitats of the reservoir. Species such as Eastern painted turtle, common musk turtle, snapping turtle, spiny softshell turtle, yellow-bellied slider, numerous species of water snakes, newt, and frogs are predominantly associated with the shallow water areas of reservoirs. These species use the open water habitats for breeding, foraging, and hibernation. Reptiles and amphibians use RDW habitats near the shorelines of reservoir. For example, a variety of turtles and snakes use RDW for feeding and basking, and numerous amphibians breed, lay eggs, forage, and undergo their aquatic larval stage in these habitats. Some species, such as the Eastern newt, could spend their entire life cycle in RDW habitats.

Like reptiles and amphibians, birds use the shoreline and shallow open water habitats within the reservoir. These open water habitats are used as migration stopovers (resting habitat) for numerous species of ducks and geese as well as wading birds such as egrets, herons, and sandpipers. During the migration stopover, these species also use these areas for feeding prior to continuing their migration. Some of these migratory species use the reservoir as overwintering habitat including Bonaparte’s and ring-billed gulls, American coots, common loons, and hooded mergansers. In addition to the use of these habitats for feeding and overwintering by migratory species, resident avian species use open water for feeding. Examples of birds identified using the reservoir for feeding during the winter include belted kingfishers and great blue herons feeding in the shallow waters of the open water habitat.

Avian species use RDW habitats adjacent to the reservoir as a migration stopover. Examples include numerous species of ducks and geese, as well as Neotropical migrants such as flycatchers, vireos, thrushes, and warblers. During the migration stopover, these species also use vegetated areas for feeding prior to continuing their migration. Some of these migratory species use RDW habitats as their overwintering habitat including swamp sparrows, yellow-rumped warblers, and Wilson's snipe. In addition, RDW habitats also provide food and nesting for resident avian species. Chipping and field sparrows, yellow warblers, eastern kingbirds, mallard, wood duck, and Canada geese are a few examples of species that nest and raise their young in RDW habitats.

Several of the most common bird species noted in the immediate vicinity of the Thurmond Project include red-shouldered hawk, red-tailed hawk, ruby-throated

hummingbird, Eastern kingbird, blue jay, American crow, Carolina chickadee, tufted titmouse, white-breasted nuthatch, American robin, Northern mockingbird, brown thrasher, Northern cardinal, red-winged blackbird, ring-necked duck, lesser scaup, and brown-headed cowbird (USACE 2008 and USACE 1981). Additionally, some avian species commonly seen or heard in the surrounding uplands include wild turkey, American bittern, great blue heron, osprey, mourning dove, whip-poor-will, belted kingfisher, red-headed woodpecker, Eastern bluebird, gray catbird, and Northern parula (USACE 2008 and USACE 1981).

Mammals commonly use open water, wetlands, and RDW habitats. Bats often feed over open water and wetland habitats as they forage for flying insects such as midges and mosquitoes. Furbearers and other mammals that are important components of these wetlands include the American beaver, muskrat, mink, and northern river otter. These mammals use shallow water for feeding and as a means of transportation to other habitats. Palustrine emergent wetlands also provide excellent habitat for furbearing mammals. In addition, the opossum, white-tailed deer and other mammals use RDW habitats for foraging and raising young (USACE 2014). Terrestrial species from surrounding areas often use the fresh marsh edge for shelter, food, and water. These include Northern raccoon, Virginia opossum, cottontails, nine-banded armadillo, coyote, and bobcat (USACE 2012 and USACE 1981).

The Thurmond Project Operational Management Plan (OMP) prescribes active management for maintenance of diverse habitats for game and non-game wildlife species. A total of 53,091.3 acres of project lands are managed as wildlife management areas, including 10,181.5 acres of land leased to SC DNR, 20,160.1 acres of land leased to GA DNR, and the remaining 22,749.7 acres are managed by USACE.

3.2.6 Protected Species

This section cover species that have been listed under the Threatened and Endangered Species Act, as well as those protected by other Federal and state laws. The USFWS Information, Planning, and Conservation System (http://ecos.fws.gov/ipac/) website provided a current inventory of federally listed species within the Thurmond Project area. Table 4 identifies federally-listed species and otherwise protected species that are known to be in the area. The list includes the bald eagle (*Haliaeetus leucocephalus*) which is protected under the Federal Bald and Gold Eagle Protection Act and the Migratory Bird Treaty Act. A database of known locations of state- and federally-listed species at Thurmond project is maintained at the project office.

There are several federally-listed fish species, including those classified as endangered, threatened, species of concern, or candidates for listing that occur in the lower Savannah River below Thurmond Dam. These include the shortnose sturgeon, Atlantic sturgeon, American eel, robust redhorse, and bluebarred pygmy sunfish. Three mussel species recently collected in the lower Savannah River (the Atlantic pigtoe, Savannah lilliput, and yellow lampmussel) are considered federal species of concern. The Altamaha arc-mussel and brother spike are two other federal species of concern.

The shoals spider-lily, a Federal species of concern and state threatened species, is present in the Savannah River along the rapids between the Stevens Creek Dam and Augusta, GA, and on Project lands in the Anthony Shoals portion of Broad River. Michaux sumac, a federally-listed species, occurs on Project lands in the Broad River Wildlife Management Area. The wood stork, a federally-listed species, is an infrequent visitor on Thurmond Lake.

Table 4: Federally Protected Species Potentially Found On Thurmond Project Lands

Common Name	Scientific Name	Federal Status
Birds		
Bald eagle *	*Haliaeetus leucocephalus*	BGEPA
Wood stork +	*Mycteria americana*	T
Red-cockaded woodpecker	*Picoides borealis*	E
Mammals		
Northern Long-eared bat	*Myotis septentrionalis*	T (PE)
Reptiles		
Gopher Tortoise	*Gopherus polyphemus*	C
Mollusks		
Carolina Heelsplitter	*Lasmigona decorate*	E
Plants		
Harperella	*Ptilimnium nodosum*	E
Pool Sprite	*Amphianthus pusillus*	T
Miccosukee Gooseberry	*Ribes echinellum*	T
Michaux's Sumac*	*Rhus michauxii*	E
Relict Trillium	*Trillium reliquum*	E
Smooth Coneflower	*Echinacea laevigata*	E

Source: FWS ECOS IPaC 2020 Notes: E = Endangered, T = Threatened, T (PE) = Listed Threatened, Proposed Endangered, C = Candidate,
BGEPA = Bald & Golden Eagle Protection Act
* Present on Thurmond Project
+ Occasional seen on Thurmond Project

Past declines of bald eagles at the Thurmond Project resulted in the development and implementation of the AVM Plan to reduce bald eagle mortality. Between 1998 and 2017, ninety-eight eagle mortalities were documented at Thurmond Project. Many of the bald eagles using Thurmond Project are transients. In spite of the localized AVM mortality at Thurmond Lake, a 2017 survey by GADNR documented a record 218 bald eagle nests in the state breaking historical records. After implementation of the plan in 2017-2018, there have been no documented mortalities. Although these earlier mortalities were suspected to be caused by AVM, most were not confirmed due to various stages of decomposition. Eagle nesting and mid-winter survey data from the 2020/2021 nesting season showed a varied age class of eagles including sub-adults and adults coming to the Thurmond Project at the start of the nesting season. A total of

eight active nests were observed in January 2021 and in March 2021. Six chicks were observed in the nests.

Primary habitat for the bald eagle is undisturbed riparian zones including coastal, river, and lakeshore areas. Bald eagle nest sites within the southeast are usually located in living pine or cypress trees. Nest sites are often located in the largest living trees within the area commanding an open view of the surrounding terrain. Nest sites are generally located within one-half mile of open water with a clear flight path leading to the water.

3.2.7 Cultural Resources

The Savannah River Basin has a long history of human occupation with earliest evidence of settlement dating as far back as the Paleoindian Period, ca. 9,500 B.P. The basin has long been an area of archaeological interest for researchers. Prior to the impoundment and subsequent inundation of Thurmond Lake cultural resources investigations of varying degrees of comprehensiveness were conducted. Recent archaeological investigations at Thurmond Project have focused primarily on the upland areas (i.e., above 330 ft. amsl), although smaller shoreline surveys have been conducted at Thurmond Project. A review of the potential for tribal trust resources at the Thurmond project was completed and there are no known resources that meet those criteria.

Archaeological fieldwork conducted in the late 1940s and early 1950s through the Smithsonian Institution's River Basin Survey identified more than 200 sites at the Thurmond Project, with limited excavation conducted at a minimum of 21 of the sites by former Smithsonian Institution and University of Georgia personnel (Elliott 1995). The survey focused on previously recorded sites and visits to likely village sites as determined through archival research and previous experience of working in similar environmental settings. Some of the recorded sites were discovered during excavation of the reservoir. Nearly 100 of the sites were determined to be flooded by the inundation of Thurmond Lake (i.e., at or below 330 amsl) and almost the same number was situated outside of the flood pool.

Since 1990, shoreline surveys of the Thurmond Project have been conducted that resulted in the recordation of numerous previously unrecorded archaeological sites. In 1983 - 84 the U.S. Forest Service identified 54 sites, 38 of which had been previously unrecorded. Sites ranged from the Early Archaic period (8,000 B.C. – 6,000 B.C) to the early 20 th century (Elliott 1995). Anderson et al. (1994) conducted a terrestrial and underwater survey of a two-mile section of lake shore and a 440-acre upland tract that identified 14 upland sites, 32 sites along the shoreline as well as one underwater site. Only the underwater site had been previously located by the River Basin Survey in the 1940s - 1950s.

Archaeological surveys conducted in the mid-late 1990s at the Thurmond Project by cultural resources firms contracted by SAS have focused exclusively on upland areas. These large-scale surveys were conducted to comply with Section 110 of the National

Historic Preservation Act, as amended (NHPA), in areas that were managed for timber. As a result of the surveys, over 1600 archaeological sites, isolated finds and rock piles have been recorded. A wide array of site types is represented at Thurmond Project, ranging from prehistoric camp sites to 19th – 20th century mills and cemeteries.

Between December 2021 and January 2022, an additional five sites were identified through a Phase I archaeological survey to assist with development of a geographic information system (GIS) spatial model that can be used to predict archaeological site locations. The sites included three prehistoric artifact scatters, a prehistoric rock pile, and a lithic scatter. The effort to generate a predictive model was in line with Thurmond Project's Historic Properties Management Plan (HPMP, 2001) and the related Programmatic Agreement (2003). Updates to the HPMP will be implemented to reflect any new sites that are identified through the predictive model's implementation and any future projects.

3.2.8 Recreational Resources

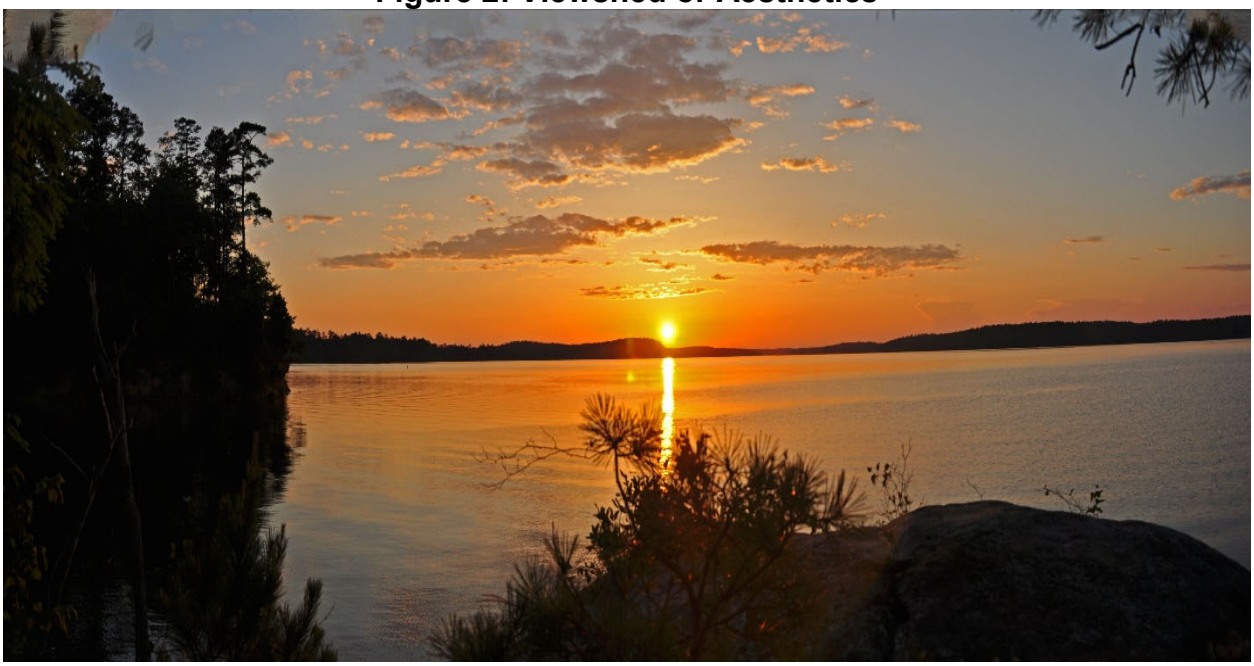
Recreational opportunities at the Thurmond Project include camping, biking, picnicking, hunting, hiking, wildlife viewing, outdoor sports activities, water sport/leisure activities (boating, swimming, fishing, skiing, wake boarding, etc.), and horseback riding. Currently, the Thurmond Project provides 24 recreation areas, including six state parks, twelve county parks, seven USACE-operated campgrounds, and five major USACE-operated day use areas. The Thurmond Project also provides 32 boat ramps, six marinas, one commercial campground, and 16 quasi-public recreation areas that are currently leased to churches, civic groups, and scout organizations. Three additional areas are leased to the Army, Veterans Administration, and the South Carolina National Guard for recreation and training purposes. The Thurmond Project has 14 campgrounds and recreation areas with designated swimming areas. Thurmond Lake receives approximately 3.5 million visitors per year.

3.2.9 Aesthetics

The Thurmond Project is one of the few civil works projects possessing a large land base consisting primarily of woodlands. Boaters can view miles of undisturbed shoreline free of docks, marinas, cabins, and other signs of human habitation. These extensive woodlands provide a pleasant visual experience and serve to minimize conflicting activities (Figure 2).

The natural beauty of the Thurmond Project is a recreational asset which offers almost unlimited opportunities for outdoor oriented activities such as sightseeing and hiking as well as provides a pleasant environment for campers, mountain bikers, horseback riders, hunters, and fishermen.

Figure 2: Viewshed or Aesthetics



3.2.10 Socio-Economic Resources

The total population for the zone of interest is approximately 654,812, as shown in Table 5. More than 80 percent of the population is in the greater Augusta area which consists of Richmond, Columbia, and Aiken counties. Each of the remaining counties make up less than 5 percent each of the total population. The population in the zone of interest makes up approximately 3.9 percent of the total population of Georgia and 4.5 percent of South Carolina. The zone of interest includes those adjacent counties that would be directly impacted by the management of Thurmond Project.

In Georgia, Columbia County experienced the highest annual growth in 2020 and the highest projected growth from 2010 through 2021. In South Carolina, Aiken County experienced the highest growth in population annually and projected from 2010 through 2021.

Table 5: 2019 Population Estimates and 2021 Projections

	2019 Population Estimate[1]	2019 Percent of Zone of Interest[1]	2020 Annual Growth Rate[2]	Estimated Growth 2010-2021[2]
States:				
Georgia	10,711,908			
South Carolina	5,118,714			
Counties:				
Abbeville, SC	24,527	3.75%	-0.24%	-3.64%
Aiken, SC	170,872	26.09%	0.84%	8.20%
Edgefield, SC	27,260	4.16%	0.47%	2.05%
McCormick	9,463	1.45%	0.58%	-6.23%
Columbia, GA	156,714	23.93%	1.68%	29.64%
Elbert, GA	19,194	2.93%	0.52%	-3.52%
Lincoln, GA	7,921	1.21%	-0.05%	-0.72%
McDuffie, GA	21,312	3.25%	-1.02%	-4.27%
Richmond, GA	202,518	30.93%	0.42%	1.54%
Warren, GA	5,254	0.80%	0.13%	-8.89%
Wilkes, GA	9,777	1.49%	-0.88%	-7.56%
Zone of Interest Total	654,812			

[1]U.S. Bureau of the Census, 2019 Estimate
[2]Annual Growth and Estimated Growth, World Population Review Projections from the 2019 Census Estimate

The distribution of the population in the zone of interest among gender is approximately 49.2 percent male and 50.8 percent female as shown in Table 6. Table 6 also shows the population composition by age group. Of note, many of the rural counties have a higher population of those over age 65.

Table 6: 2019 Age and Gender Distribution

Geographical Area	Under 18	18 to 64	65 and Over	Female	Male
States:					
Georgia	23.6%	62.1%	14.3%	51.3%	48.7%
South Carolina	21.6%	60.2%	18.2%	51.7%	48.3%
Counties:					
Abbeville, SC	20.8%	58.1%	21.1%	48.3%	51.7%
Aiken, SC	20.9%	60.4%	18.7%	51.7%	48.3%
Edgefield, SC	18.6%	63.0%	18.4%	46.7%	53.3%
McCormick, SC	12.2%	54.4%	33.4%	44.6%	55.4%
Columbia, GA	25.5%	61.3%	13.2%	51.1%	48.9%
Elbert, GA	21.9%	57.8%	20.3%	52.0%	48.0%
Lincoln, GA	19.2%	57.6%	23.2%	53.2%	46.8%
McDuffie, GA	25.3%	57.4%	17.3%	54.2%	45.8%
Richmond, GA	23.1%	63.3%	13.6%	51.6%	48.4%
Warren, GA	20.8%	57.6%	21.6%	53.4%	46.6%
Wilkes, GA	21.4%	55.7%	22.9%	51.5%	48.5%
Zone of Interest Total	20.9%	58.8%	20.3%	50.8%	49.2%

Source: U.S. Bureau of the Census, 2019 American Community Survey

Population by Race and Hispanic Origin is displayed in Table 7. For the zone of interest, 58.5 percent of the population is White, 37.3 percent is Black or African American, 3.8 percent are Hispanic or Latina, 0.9 percent are Asian, and 1.9 percent are two or more races. The remainder of the races makes up less than 1 percent each.

By comparison, for the state of South Carolina, 66.7 percent of the population is White, 26.5 percent is Black or African American, and the remaining races constitute a slightly greater percentage of the total population than in the zone of interest. For Georgia, 57.8 percent of the population is White, 31.9 percent is Black or African American, and the remaining races constitute a slightly greater percentage of the total population than in the zone of interest.

Table 7: 2019 Population Estimate by Race/Hispanic Origin

Geographical Area	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian or Other Pacific Islander Alone	Two or more races	Hispanic or Latino
States:							
Georgia	57.8%	31.9%	0.4%	4.1%	0.1%	2.7%	9.8%
South Carolina	66.7%	26.5%	0.4%	1.7%	0.1%	2.4%	5.8%
Counties:							
Abbeville, SC	69.9%	27.6%	0.1%	0.3%	0.0%	1.9%	1.5%
Aiken, SC	70.7%	25.0%	0.3%	0.9%	0.0%	2.4%	5.7%
Edgefield, SC	60.0%	35.3%	0.4%	0.3%	0.0%	1.8%	6.0%
McCormick	51.5%	44.8%	0.2%	0.2%	0.0%	2.7%	0.8%
Columbia, GA	73.9%	16.7%	0.3%	3.9%	0.0%	4.2%	6.7%
Elbert, GA	68.1%	29.9%	0.0%	0.6%	0.0%	0.9%	5.7%
Lincoln, GA	67.4%	31.0%	0.1%	0.0%	0.0%	1.0%	1.8%
McDuffie, GA	54.0%	39.9%	0.0%	0.4%	1.2%	1.9%	3.1%
Richmond, GA	37.1%	56.5%	0.3%	1.9%	0.2%	2.6%	4.9%
Warren, GA	37.5%	61.1%	0.0%	0.6%	0.0%	0.7%	0.5%
Wilkes, GA	52.6%	42.6%	0.0%	0.4%	0.0%	0.9%	5.1%
Zone of Interest Total	58.5%	37.3%	0.2%	0.9%	0.1%	1.9%	3.8%

Source: U.S. Bureau of the Census, 2019 American Community Survey

Table 8 shows the population over 25 years of age by highest level of educational attainment for each of the geographical areas. In the zone of interest, for 5.4 percent of the population 25 years old and older, the highest level of education attained is below the ninth-grade level. Another 11.6 percent attended high school but did not graduate. For 36.2 percent of the population, the largest in the zone of interest, a high school degree is the highest level of educational attainment. Another 19.4 percent attended some college but did not graduate. Bachelor's degrees were the highest educational attainment of 11.9 percent, while associate degrees were 8.8 percent. The smallest group, those that have graduate or professional degrees, is 6.7 percent.

By comparison, in Georgia 4.5 percent have less than ninth grade education, 7.6 percent attended some high school, 27.4 percent graduated high school, 20.0 percent attended some college, 9.9 percent obtained an associate degree, 19.9 percent obtained a bachelor's degree, and 12.6 percent have a graduate or professional degree. For South Carolina, 3.7 percent have less than ninth grade education, 7.9 percent attended some high school, 28.5 percent graduated high school, 20.4 percent attended some college, 9.9 percent obtained an associate degree, 18.4 percent obtained a bachelor's degree, and 11.2 percent have a graduate or professional degree.

Table 8: Population Highest Level of Education Attainment (Age 25 or greater)

Geographic Area	Less than 9th grade	9th to 12th grade, no diploma	High school graduate (includes equivalency)	Some college, no degree	Associate degree	Bachelor degree	Graduate or professional degree
States:							
Georgia	4.5%	7.6%	27.4%	20.0%	9.9%	19.9%	12.6%
South Carolina	3.7%	7.9%	28.5%	20.4%	9.9%	18.4%	11.2%
Counties:							
Abbeville, SC	6.0%	12.4%	34.0%	18.9%	13.1%	11.0%	4.5%
Aiken, SC	4.3%	7.7%	32.8%	20.3%	8.5%	17.1%	9.3%
Edgefield, SC	6.7%	10.4%	36.7%	20.8%	8.8%	10.2%	6.5%
McCormick	4.1%	12.5%	33.9%	18.4%	10.6%	13.9%	6.6%
Columbia, GA	2.4%	4.9%	23.8%	22.0%	10.6%	22.5%	13.9%
Elbert, GA	6.2%	15.4%	40.9%	18.9%	7.0%	6.9%	4.7%
Lincoln, GA	5.4%	12.5%	39.7%	18.8%	7.8%	11.0%	4.9%
McDuffie, GA	4.2%	12.5%	41.6%	19.6%	8.1%	8.7%	5.3%
Richmond, GA	4.1%	11.8%	31.4%	22.7%	8.6%	13.1%	8.3%
Warren, GA	9.8%	17.0%	39.8%	14.2%	6.9%	8.1%	4.2%
Wilkes, GA	6.0%	10.3%	44.0%	18.6%	7.3%	8.0%	5.8%
Zone of Interest Total	5.4%	11.6%	36.2%	19.4%	8.8%	11.9%	6.7%

Source: U.S. Bureau of the Census, 2019 American Community Survey

Employment by sector is presented in Table 9 (See next page). Each figure represents the percentage of the employed civilian population in each area. In the zone of interest, the largest sectors are educational services, health care, and social assistance, employing 22.6 percent of the population. The second largest sector is manufacturing, employing 17.1 percent. This is followed by retail trade with 11.5 percent.

Similarly, the largest employment sectors for Georgia and South Carolina are also educational services, health care, and social assistance, with 20.8 percent and 21.9 percent, respectively, of the total employment. While manufacturing has importance in both the zone of interest and state, it is evident that the economies are driven by service sector employment.

Table 9: Employment by Sector (percentage of employed civilian population)

Sector	GA	SC	Abbe-ville, SC	Aiken SC	Edge field, SC	McCor mick, SC	Colum -bia, GA	Elbert GA	Lincoln GA	McDuffie GA	Richmond GA	Warren GA	Wilkes GA	Zone of Interest Total
Public Administration	4.4%	4.3%	3.2%	4.6%	4.3%	8.2%	7.9%	5.7%	6.3%	4.4%	5.6%	5.9%	7.3%	5.7%
Other Service except Public Administration	4.7%	5.0%	4.6%	5.5%	6.7%	4.8%	4.0%	5.5%	3.7%	3.1%	4.4%	3.6%	5.4%	4.8%
Arts, entertainment, recreation, food	9.4%	10.8%	7.0%	8.5%	5.1%	7.1%	7.4%	4.4%	5.6%	10.0%	11.8%	2.4%	4.5%	7.2%
Educational services, health care, social	20.8%	21.9%	24.3%	21.1 %	19.6 %	28.5%	26.4%	20.1%	30.5%	16.8%	24.9%	17.8%	27.2%	22.6%
Professional, scientific, admin	13.1%	10.2%	7.9%	10.7 %	8.9%	4.9%	11.5%	5.2%	7.1%	8.9%	11.9%	7.0%	6.7%	8.9%
Finance, insurance, real estate, rentals	6.3%	5.6%	3.3%	4.4%	3.7%	3.3%	4.2%	3.3%	5.3%	2.9%	3.5%	1.8%	5.2%	3.4%
Information	2.3%	1.3%	1.1%	1.4%	1.6%	3.0%	1.8%	0.6%	1.5%	2.4%	1.6%	0.4%	1.1%	1.2%
Transportation, warehouse, utilities	7.2%	5.3%	4.6%	6.1%	5.2%	3.4%	5.2%	4.4%	5.8%	4.7%	5.4%	8.1%	6.5%	5.2%
Retail trade	10.7%	11.5%	9.2%	12.6 %	11.5 %	7.5%	13.0%	11.4%	10.8%	16.8%	13.4%	14.3%	8.2%	11.5%
Wholesale trade	2.9%	2.3%	1.7%	1.5%	2.2%	0.8%	1.9%	4.4%	1.7%	3.1%	1.9%	2.1%	2.2%	2.1%
Manufacturing	10.6%	13.7%	24.0%	14.1 %	17.7 %	21.7%	9.8%	27.3%	14.0%	15.3%	9.7%	25.2%	16.3%	17.1%
Construction	6.7%	7.2%	6.3%	8.0%	7.4%	6.0%	6.7%	3.4%	15.1%	8.9%	5.2%	4.4%	3.8%	7.4%
Agriculture, forestry, fishing and hunting	1.0%	0.9%	1.5%	1.5%	6.2%	0.9%	0.3%	4.4%	2.5%	2.6%	0.6%	6.6%	5.4%	2.9%

Source: U.S. Bureau of Census, 2019

As shown in Table 10, the 2019 unemployment rate for the zone of interest at 6.8 percent is higher than that of Georgia and South Carolina average unemployment rate of 4.7 and 4.6 percent, respectively. Columbia, Lincoln and Wilkes Counties are the only counties with unemployment rates below the state averages.

Table 10: Labor Force, Employment and Unemployment Rates for Civilian Labor Force Over Age 16

Geographical Area	Labor Force	Employed	Unemployed	Unemployment Rate	Armed Forces
States:					
Georgia	5,308,730	5,002,153	251,981	4.7%	54,596
South Carolina	2,513,088	2,359,714	116,037	4.6%	37,337
Counties:					
Abbeville, SC	10,719	10,104	586	5.5%	29
Aiken, SC	77,441	71,279	5,813	7.5%	349
Edgefield, SC	11,389	10,602	753	6.6%	34
McCormick	3,066	2,803	263	8.6%	0
Columbia, GA	75,480	68,738	3,271	4.3%	3,471
Elbert, GA	8,401	7,769	623	7.4%	9
Lincoln, GA	3,418	3,289	116	3.4%	13
McDuffie, GA	9,229	8,481	641	6.9%	107
Richmond, GA	96,101	82,032	8,095	8.4%	5,974
Warren, GA	2,224	2,115	107	4.8%	2
Wilkes, GA	4,234	4,092	128	3.0%	14
Zone of Interest Total	301,702	271,304	20,396	6.8%	10,002

Source: U.S. Bureau of the Census, 2019 American Community Survey

There are approximately 233,416 households in the zone of interest with an average household size of 2.51 persons. For Georgia, there are 3.85 million households and in South Carolina, 1.98 million, with an average size of households at 2.69 for Georgia and 2.54 for South Carolina, as shown in Table 11. Also as shown in Table 11, the zone of interest is poorer than Georgia and South Carolina overall. In the counties in the zone of interest, the median household income is $45,896 compared to the state median household incomes of $56,227 in South Carolina and $61,890 in Georgia. Similarly, the zone of interest has a lower per capita income ($23,423) compared to Georgia ($32,657) and South Carolina ($31,295). Within the zone of interest, Columbia County has the highest per capita income ($34,579).

Table 11: Households, Household Size, Median Income, and Per Capita Income

Geographical Area	Households	Persons/ household	Median household income 2019 Dollars	Per capita income 2019 Dollars
States:				
Georgia	3,852,714	2.69	$61,890	$32,657
South Carolina	1,975,915	2.54	$56,227	$31,295
Counties:				
Abbeville, SC	9,660	2.46	$38,714	$22,646
Aiken, SC	67,598	2.45	$51,399	$28,396
Edgefield, SC	9,176	2.64	$49,127	$26,228
McCormick, SC	3,957	2.11	$43,633	$25,617
Columbia, GA	47,215	3.18	$82,330	$34,579
Elbert, GA	7,559	2.50	$38,678	$22,355
Lincoln, GA	3,475	2.23	$39,742	$26,918
McDuffie, GA	8,153	2.59	$43,468	$21,625
Richmond, GA	71,400	2.69	$42,728	$22,787
Warren, GA	2,244	2.32	$37,203	$23,448
Wilkes, GA	3,979	2.45	$37,838	$24,674
Zone of Interest Total	233,416	2.51	$45,896	$23,423

Source: U.S. Bureau of the Census, 2019 American Community Survey

3.2.11 Environmental Justice and Protection of Children

Executive Order (EO) 12898 and Department of Defense's Strategy on Environmental Justice, dated March 24, 1995, directs Federal agencies to identify and address the disproportionately high adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law (Table 7 and Table 11). The order also directs each agency to develop a strategy for implementing environmental justice. Minority populations are those persons who identify themselves as Black or African American, Hispanic, Asian American, American Indian/Alaskan Native, and Pacific Islander. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. No environmental justice communities exist within the project area based on the 2019 census data.

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, requires each federal agency, to the extent possible, to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children; and ensure its policies, programs, activities, and standards address disproportionate risks to children resulting from environmental health or safety risks (White House Press Release 1997).

3.2.12 Air Quality

The Thurmond Project extends into several counties; McCormick and Abbeville counties in South Carolina; and parts of Columbia, McDuffie, Warren, Wilkes, Lincoln and Elbert Counties in Georgia. All of these counties are considered in attainment for all federal air quality standards (http://www3.epa.gov/airquality/greenbk/astate.html). Despite being in compliance for these standards, portions of the area that contain the reservoir are at times subjected to temporary impacts to air quality resulting from activities such as large-scale construction projects and prescribed burning.

Air quality within the project boundary is influenced by exhaust from motor vehicles and boats, the use of grills and fire pits, and other regional activities (such as large-scale construction projects, prescribed burning as well as timber industry logging operations). The large open area created by the reservoir allows strong air currents to reduce and/or eliminate localized air quality concerns caused by these pollutants. Air quality is strongly influenced by external factors such as urban areas and factories located as far away as Augusta and Atlanta, GA.

Air quality is regulated by the Clean Air Act Section 176(c) and implemented by the Environmental Protection Agency (EPA), South Carolina Department of Health and Environmental Control (SC DHEC), and Georgia Department of Natural Resources, Environmental Protection Division (GA DNR-EPD). Air quality standards are defined in the National Ambient Air Quality Standards. Actions which result in increased emissions may require a permit issued by SC DHEC or GA DNR-EPD.

3.2.13 Hydrology, Water Quality and Water Supply

Surface water quality in Thurmond Lake is measured by Georgia and South Carolina natural resource agencies. Georgia monitors water quality in the dam forebay, the Savannah River at Dordon Creek, and the Savannah River at U.S. Highway 378. South Carolina monitors water quality in the dam forebay. Aquatic life and recreational uses are fully supported at all sites. Currently, both states have identified fish consumption advisories for largemouth bass caught in Thurmond Lake due to potential mercury levels resulting from outside sources. Additionally, the state of South Carolina has designated Thurmond Lake as a No Discharge Lake.

The headwaters of Thurmond Lake back up to the Richard B. Russell (RBR) Dam. As a result, water released from RBR Dam affects water quality in Thurmond Lake. USACE conducts an annual water quality sampling program in both reservoirs to evaluate the impacts of USACE project operations on water quality in the reservoirs and immediate tailrace areas.

The Thurmond Project conducts monthly sampling of dissolved oxygen (DO) and temperature at established locations in the reservoir. The routine monthly sampling is conducted only at the forebay station from December through March when reservoir conditions are isothermal and DO concentrations are near saturation. From April through November, stratification drives reservoir processes that lead to reduced DO conditions, and the reservoir is sampled at 12 established locations throughout the mainstream and major tributaries. The USACE sampling locations are shown in Figure 3. Additional sampling may occasionally be required for special studies (i.e. operation of oxygen system, blueback herring entrainment, etc.).

Thermal stratification in the downstream region of the reservoir usually begins late-April with the establishment of a thermocline (20 - 26 feet) in mid-May. Temperatures range from 57.2 to 86°F and the thermocline remains near a depth of 26 to 33 feet throughout the stratification period. The thermocline begins to weaken in late-September when seasonal cooling begins, until the reservoir conditions are almost completely isothermal by mid-October. Temporal regimes in the Savannah River portion (mainstem) of Thurmond Lake can be influenced by flow releases from RBR Lake.

Similarly, temporal and spatial gradients of DO. were observed in the mainstem of the reservoir during stratification (1984 – 1988 monitoring period). DO concentrations remained near 8 to 10 milligrams per Liter (mg/L), gradually decreasing towards the downstream area of the reservoir. Anoxic conditions were established in the downstream hypolimnion area from mid-to-late August continuing until late October.

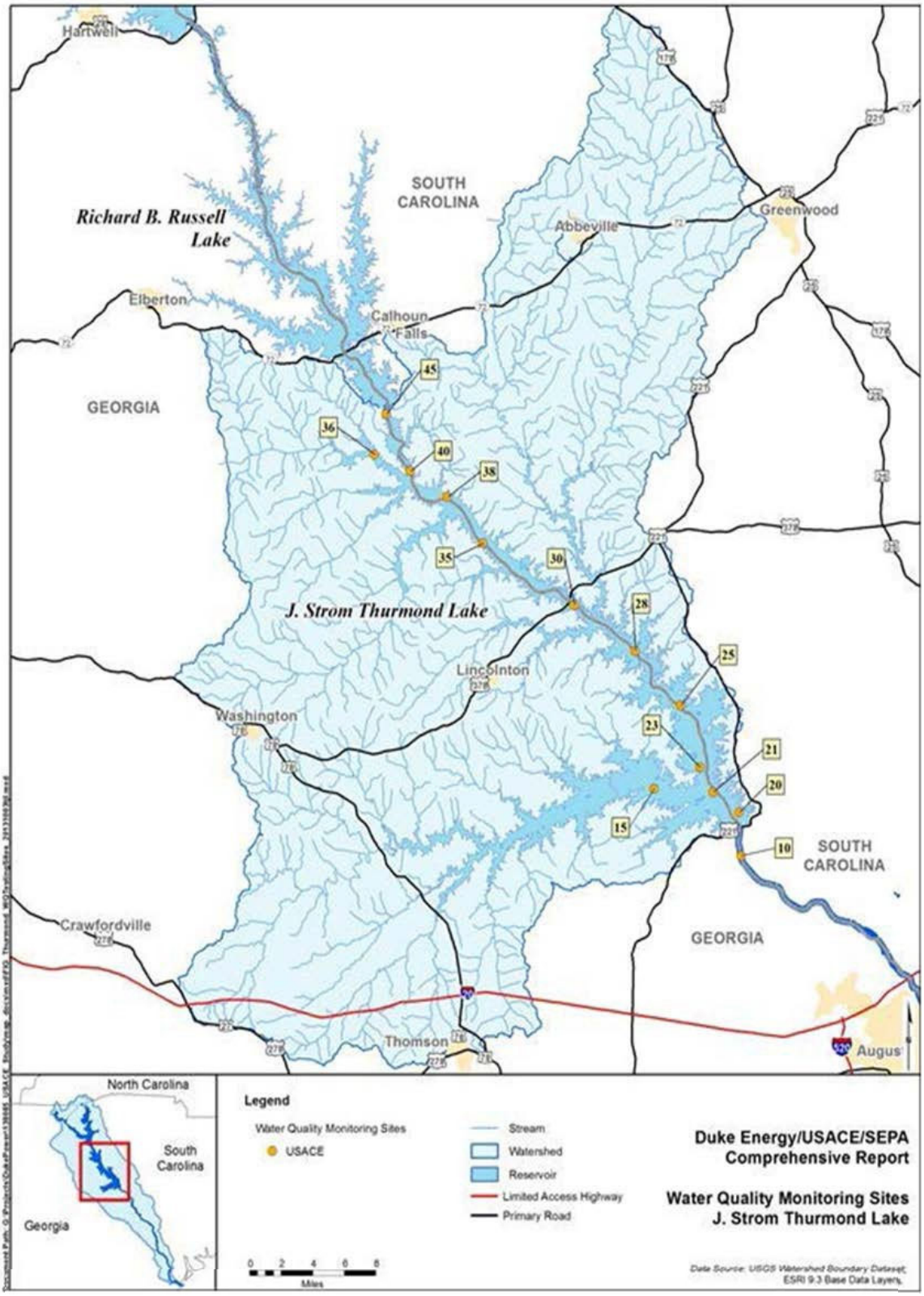
Anoxic conditions remained within 33 feet of the surface. Concentrations of DO did not fall below 4 mg/L in the mid-region of the reservoir. The oxygenated waters during stratification can be attributed to the well-oxygenated flow releases from RBR Dam. Anoxic conditions may also be the result of the proximity of major and secondary tributaries entering Thurmond Lake. Temperature and D.O. concentrations in the water

releases showed similar trends to those of the forebay. During fall mixing, D.O. levels were near 10 mg/L in the tailrace (Ashby et al. 1994).

The turbines at Thurmond Dam were replaced during a major rehabilitation effort that was completed in 2007. The new turbines include a self-aspirating design that is an advanced form of turbine venting. This venting adds 2 to 3 mg/L of DO to the water as it passes through the dam. In addition to turbine venting, USACE installed an oxygen injection system in the lake that began operating in 2011. This system is located adjacent to the Modoc Boat Ramp near Modoc, SC, approximately 5.5-miles upstream of the dam. The primary objective of this system is to improve cool water fishery habitat in the lower 1/3 of the reservoir, but the system also improves the DO of water immediately upstream of Thurmond Dam. Thus, the operation of this DO system in combination with the turbine venting at the dam results in the DO concentration below Thurmond Dam remaining near or above 5 mg/l throughout the year.

Average daily water withdrawals from Thurmond Lake (2017 - 2019) are 6.7 million gallons per day (mgd) including withdrawals from eleven raw water intakes. There are six users with a total of eight permanent water storage contracts withdrawing from the lake: McCormick, South Carolina (two contracts); Lincolnton, Georgia (two contracts); Thomson, Georgia; Columbia County, Georgia; Savannah Lakes Village, South Carolina; and Washington, Georgia. Additionally, Hickory Knob State Park Golf Course withdraws water in accordance with riparian rights. The contracted amount of storage accounts for 3,741-acre feet of conservation storage out of 1,045,000-acre feet of total conservation storage.

Figure 3: JST Water Quality Monitoring Sites



3.2.14 Hazardous, Toxic and Radioactive Waste (HTRW)

Under ER 1165-2-132, USACE assumes responsibility for the reasonable identification and evaluation of all Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within the vicinity of proposed actions.

In accordance with ER 1165-2-132, Section 13b, USACE conducts Environmental Review Guide for Operations (ERGO) inspections every five years, using an external team. In addition, SAS performs an internal ERGO review annually. Those inspections include developed recreation areas around the lake that are operated by USACE, as well as outgrant areas for commercial concession (marinas) and state parks. USACE tracks the results and findings of these inspections and will take all necessary remedial actions.

USACE prepares an Environmental Condition of Property (ECP) report (in place of a Phase 1 Site Assessment in accordance with ASTM standards) on lands that the USACE leases to other agencies, non-profit organizations, and private entities.

From the 1950s until 1970s, the Thurmond Project conducted mosquito control programs that included the use of pesticides, such as dichloro-diphenyl-trichloroethane (DDT). A chemical mixing area located at the lower airstrip near Lake Springs Road required remediation. Approximately 389 tons of contaminated material were removed in 2010. The USACE has included a copy of the Revised Compliance Status Report from 2014 and 2015 as Appendix D. GA DNR-EPD has required that this MP include the following controls to remove the site from the State of Georgia Hazardous Site Index.

a. The Site shall not be used for recreational purposes, agricultural or grazing purposes, residential purposes, childcare centers, schools, parks, athletic fields, sporting activities of any kind, kennels, private animal pens or riding clubs without the written approval of the GA DNR-EPD.

b. Groundwater beneath the Site shall not be used as a source of potable or irrigation water without the written approval of the GA DNR-EPD.

c. The USACE shall take no action to modify the Site provisions of the J. Strom Thurmond Lake Master Plan listed in subsections a & b above, without the written approval of the GA DNR-EPD.

Thurmond Marina (Clarks Hill Marina) was originally established in 1953 as Little River Sportsmen's Camp. Two 2,000-gallon underground fuel storage tanks (UST) and one 1,000-gallon UST were installed. These tanks were abandoned in place and replaced with two 4,000-gallon tanks and one 2,000-gallon tank in 1988.

Upon expiration of the previous lease in 2010, all USTs were replaced with above-ground storage tanks. During removal of the USTs in 2014, soil and groundwater

contamination was discovered. A corrective action plan was developed in accordance with State of Georgia regulations for removal of 1,482 cubic yards of benzene, toluene, and ethylbenzene (BTEX) contaminated soil and installation of injection and monitoring wells to treat and monitor groundwater contamination. Oxygen Release Compound (ORC-A) in pellet form was placed in the excavated area prior to backfilling and ORC-A in liquid form was subsequently injected via the wells for a second treatment. Periodic groundwater monitoring will be conducted in accordance with state requirements and the corrective action plan.

3.2.15 Noise Levels

Ambient noise levels around the Thurmond Project are quiet to moderate and are typical of recreational environments. The major noise producers include recreational boating, adjacent residential areas, and vehicular traffic. The Thurmond Project is not densely populated or industrialized.

3.2.16 Climate Change

There is strong agreement from the literature review that temperatures in the Southeast will increase over the next century (USACE 2015). Projections for precipitation events and hydrology are less certain than temperature projections for the Southeast Region.

4.0 ENVIRONMENTAL CONSEQUENCES

The changes being considered from the 1995 MP to this MP to recreation facilities and natural resources management practices as detailed in the MP are consistent with current regulations and policies. Detailed evaluation of potential consequences will depend on the proposed improvement being assessed. However, all individually proposed improvements, as well as natural resource management actions, will be reviewed for compliance with the Endangered Species Act, the Fish and Wildlife Coordination Act, the National Historic Preservation Act, the Clean Water Act, etc., in accordance with ER 200-2-2, Procedures for Implementing NEPA, and will be addressed by the appropriate NEPA compliance, generally a categorical exclusion when in accordance with this MP.

In addition, Erosion control measures will be implemented during proposed recreation area development. Construction activities are required to follow state regulations for stormwater and erosion control measures, as well as National Pollution Discharge Elimination System (NPDES) permitting and Section 404 permitting as required. Natural resources management activities that may impact waterbodies will be conducted in accordance with the appropriate Georgia or South Carolina BMPs for stormwater and sediment control, as well as each state’s respective forestry BMP manuals.

4.1 Wetlands/Aquatic Vegetation

4.1.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse impacts. The MP would not be updated. Natural resources management activities in the 1995 MP that may impact wetlands will be conducted in accordance with the appropriate state Best Management Practices (BMP). Activities beyond the scope of the BMPs may require permits in accordance with Section 404 of the CWA and Section 10 of the RHA.

4.1.2 Future Conditions with the Proposed Action

With implementation of the proposed action, the MP has been updated and includes maps of recreation areas with proposed improvements (Appendix D of the MP). Proposed recreation area improvements avoid impacts to wetlands.

Natural resources management activities that may impact wetlands will be conducted in accordance with the appropriate state Best Management Practices (BMP). Activities beyond the scope of the BMP may require permits in accordance with Section 404 of the CWA and Section 10 of the RHA.

4.2 Aquatic Resources/Fisheries

4.2.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse impacts to the aquatic resources/fisheries. Activities in accordance with the 1995 MP would continue.

4.2.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there may be beneficial impacts to the aquatic resources/fisheries. Proposed improvements to aquatic plant habitat would have minor beneficial impacts by potentially increasing the abundance of game and non-game fish and access to the fishery. Erosion control measures will be implemented during proposed recreation area development. Construction activities are required to follow state regulations for stormwater and erosion control measures, as well as NPDES permitting and Section 404 permitting as required. Natural resources management activities that may impact waterbodies will be conducted in accordance with the appropriate Georgia or South Carolina BMPs for stormwater and sediment control, as well as each state's respective forestry BMP manuals.

4.3 Floodplains

In accordance with Executive Order 11988, federal agencies must avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and

modification of floodplains and avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

4.3.1 Future Conditions with No Action

The No Action alternative would result in no adverse nor positive impacts to the floodplain or management of the floodplain.

4.3.2 Future Conditions with the Proposed Action

The proposed action would result in no adverse impacts to the floodplain or management of the floodplain. Any new construction or recreation area expansion within the 5-foot flood pool area 330'-335' amsl will be avoided where possible to prevent impacts.

4.4 Forest/Terrestrial Resources

4.4.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse impacts to the terrestrial resources.

4.4.2 Future Conditions with the Proposed Action

With implementation of the proposed action, recreation facilities will be constructed in areas designated for recreational use.

Natural resources management activities described in the proposed action, mainly timber harvesting, will have no long-term adverse impacts on terrestrial resources. The short-term impacts of timber harvest will be offset by site restoration (replanting) in areas that are clear cut. The short-term impact to timber stands that are thinned are offset by providing short-term early successional habitat and long-term improvements to the residual stand. These short-term negative impacts to the terrestrial vegetation caused by timber harvesting have the long-term benefits of diversifying wildlife habitat. With implementation of the proposed action, there would be no adverse impacts to bottomland hardwoods. Any potential adverse impacts to forest resources will be minimized using BMP for forest roads and accepted trail construction standards.

4.5 Wildlife

4.5.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse impacts to the wildlife.

4.5.2 Future Conditions with the Proposed Action

With implementation of the proposed action, beneficial impacts to wildlife could occur with additional improvements to wildlife habitat, timber stand diversity, and incorporation of former quasi-public lease areas into wildlife management areas. There may be temporary, insignificant adverse effects during construction of recreation facilities due to displacement of wildlife into surrounding areas.

4.6 Protected Species

4.6.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse impacts to protected species, or their designated critical habitats.

4.6.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there would be no impacts to protected species. SAS would continue to follow the May 28, 2010 MOA with USFWS (Appendix E) for the protection of federally listed Threatened and Endangered species. Additionally, the Corps will continue to coordinate closely with the States to ensure protection of state-listed species. Any new construction, timber harvest, or soil disturbance requires a protected species survey for both federally- and state-listed species to be completed prior to construction. The most recent list of protected species will be obtained from the USFWS and each state prior to survey.

4.7 Cultural Resources

4.7.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no change in the administration or management of cultural or archaeological resources. Management of cultural resources would continue in accordance with the J. Strom Thurmond Project Historic Properties Management Plan, updated April 2001 and the Programmatic Agreement Among the U.S. Army Engineer District, Savannah, the Georgia State Historic Preservation Officer, the South Carolina Historic Preservation Office, and the Advisory Council on Historic Preservation for the Operation and Maintenance of the J. Strom Thurmond Lake Project, Georgia and South Carolina, dated 2003. This plan and agreement define policies and procedures implemented at the Thurmond Project to assure compliance with federal cultural resources laws and regulations.

4.7.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there would be no adverse impacts to any cultural resources. Management of cultural resources would continue in accordance with the Historic Properties Management Plan and Programmatic Agreement.

4.8 Recreational Resources

4.8.1 Future Conditions with No Action

With implementation of the no action alternative, there would be minor adverse impacts to recreation resources. Existing facilities would deteriorate more rapidly due to overuse if additional facilities are not provided to keep pace with current and future demand.

4.8.2 Future Conditions with the Proposed Action

There could be minor beneficial impacts to recreation due to the updated MP. With implementation of the proposed action, more recreation resources may be provided. The additional facilities are proposed within existing recreational areas.

4.9 Aesthetics

4.9.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse impacts to aesthetics or any view of the watershed.

4.9.2 Future Conditions with the Proposed Action

With implementation of the proposed action, additional recreational facilities would have minimal adverse impact to the aesthetics or view of the watershed since these areas are already classified for recreation use and have been previously impacted by recreational development.

4.10 Socio-Economic Resources

4.10.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse impacts on the socio-economic resources.

4.10.2 Future Conditions with the Proposed Action

Implementation of the proposed action provides for economically and socially productive uses of the project. Beneficial impacts on the socio-economic resources are expected to result. Enhancing the recreational capacity of the project will increase public use and draw more visitors to the area, benefitting the local economy. Proper management of the natural resources will have a beneficial impact on the timber industry and businesses that support outdoor enthusiasts. Beneficial effects on residential property values in the surrounding area can also be expected, which can lead to proportionally higher property tax revenues for local governments. Conversely, higher property values could result in an adverse effect of higher taxes for individual property owners.

The implementation of the 2022 Thurmond Project MP is not expected to have any adverse impacts on the area's socioeconomic well-being. Community benefits from recreation, power generation, and water supply for industrial and residential use will not be adversely impacted.

4.11 Environmental Justice and Protection of Children

4.11.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse impacts on environmental justice or health or safety risks to children.

4.11.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there would be no adverse impacts on environmental justice or health or safety risks to children. There are no specific impacts on general health or quality of life that would adversely or disproportionately impact the surrounding population.

4.12 Air Quality

4.12.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse impacts on air quality.

4.12.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there would be no adverse impacts on air quality. All of the counties within the Zone of Interest are considered to be in "Attainment" for all federal air quality standards (EPA 2014) and any of the small-scale construction that occurs in compliance with the MP would not change this designation.

4.13 Hydrology, Water Quality, and Water Supply

4.13.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse impacts on water quality.

4.13.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there would be no adverse impacts on water quality. Construction activities are required to follow state regulations for stormwater and erosion control measures, as well as National Pollution Discharge Elimination System (NPDES) permitting and Section 404 permitting as required.

Natural resources management activities that may impact water quality will be conducted in accordance with the appropriate Georgia or South Carolina BMPs for stormwater and sediment control, as well as each state's respective forestry BMP manuals. Off-site activities such as major construction, road maintenance, timber logging operations, and agricultural uses have the largest potential impact on water quality.

4.14 Hazardous, Toxic, and Radioactive Waste (HTRW)

4.14.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse impacts on HTRW.

4.14.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there would be no adverse impacts on HTRW. Any change in the storage or use of hazardous materials must comply with federal and state regulations. The Thurmond Project is responsible for ensuring compliance with EPA, SC DHEC and GA DNR-EPD regulations on public lands at the Thurmond Project. The EPA EnviroMapper website (https://enviro.epa.gov/enviro/em4ef.home) was researched and identified no known hazardous waste sites at Thurmond Project.

4.15 Noise Levels

4.15.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse effects on noise levels.

4.15.2 Future Conditions with the Proposed Action

With implementation of the above alternatives, minor short-term negative impacts would be expected from noise if and when recreation areas were under construction. Equipment used during construction would temporarily raise the noise level in the areas where construction would occur. Therefore, these short-term impacts would be negligible.

4.16 Climate Change

4.16.1 Future Conditions with No Action

With implementation of the no action alternative, there would be no adverse effects on climate change.

4.16.2 Future Conditions with the Proposed Action

Based on the results of the USACE Vulnerability Assessment Tool (USACE 2016, 2018), relative to the other watersheds in the continental United States (CONUS), the Ogeechee-Savannah watershed isn't highly vulnerable (top 20% of CONUS watersheds) to the impacts of climate change on any of the four business lines evaluated (Recreation, Water Supply, Flood Risk Reduction, or Hydropower). The results of the vulnerability assessment do not imply that the Ogeechee-Savannah watershed will not be impacted by climate change, but rather that climate change will have comparatively less of an impact in the Ogeechee-Savannah watershed relative to its impact on other HUC04 watersheds in CONUS. How climate change will impact the reservoirs is complex. The proposed action would not have a significantly greater impact positively or negatively on climate change when compared to the no action alternative.

5.0 CUMULATIVE IMPACTS

The CEQ regulations implementing the procedural provisions of the NEPA of 1969, as amended (42 U.S.C. 4321 et seq.) define cumulative effects as:

> "The impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7)".

Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. Past, present, and reasonably foreseeable future actions have and continue to contribute to the cumulative impacts of activities in and around Thurmond Project. Past actions include the construction and operation of the reservoir, the recreation sites surrounding the reservoir, as well as residential, commercial, and industrial facilities throughout the region. All of these developments have had varying levels of impacts on the physical and natural resources in the region. Implementing management plans like the MP help to ensure a balance between public uses and stewardship of the natural environment. The proposed updates to the MP involve the additional recreational facilities and changes to natural resources management practices. Additional recreational facilities will be developed in areas that are already designated for recreational use. Natural resource management activities will be conducted in accordance with BMP standards.

6.0 COORDINATION

6.1 Agencies and Non-Governmental Organizations (NGO)

This EA was circulated for a 30-day review and comment period to the following agencies, groups, and individuals. Preparation of this EA and FONSI was coordinated

with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. The following is a list of the federal and state agencies and NGOs that were contacted during the evaluation and will receive a copy of the EA for review.

Federal Agencies

- Advisory Council on Historic Preservation
- Federal Highway Administration
- National Center for Environmental Health
- National Marine Fisheries Service - Southeast Regional Office
- U.S. Department of Agriculture
- U.S.D.A., Natural Resources Conservation Service
- U.S. Department of Energy
- U.S. Department of the Interior - Office of Environmental Policy & Compliance
- U.S. Department of Housing & Urban Development
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Forest Service - Southern Region

Native American Tribes

- Absentee-Shawnee Tribe
- Alabama-Quassarte Tribal Town
- Cherokee Nation
- Chickasaw Nation
- Coushatta Tribe of Louisiana
- Delaware Tribe of Indians
- Eastern Band of Cherokee Indians
- Eastern Shawnee Tribe of Oklahoma
- Kialegee Tribal Town
- Muscogee (Creek) Nation
- Poarch Band of Creek Indians
- Seminole Nation of Oklahoma
- Shawnee Tribe
- Thlopthlocco Tribal Town
- United Keetoowah Band of Cherokee Indians in Oklahoma

State Agencies

South Carolina

- SC State Historic Preservation Office
- SC Department of Health and Environmental Control
- SC Department of Parks, Recreation and Tourism
- SC Department of Natural Resources

Georgia

- GA State Historic Preservation Office
- GA Department of Natural Resources, Environmental Protection Division

- GA Department of Natural Resources - State Parks and Historic Sites
- GA Department of Natural Resources - Wildlife Resources Division

Local Agencies

South Carolina Counties: Abbeville, Aiken, Edgefield, Greenwood, and McCormick,
Georgia Counties: Columbia, Elbert, Lincoln, McDuffie, Richmond, Taliaferro, Warren, and Wilkes

Elected Officials

- All South Carolina & Georgia U.S. Senators and Local Representatives
- All Local State Senators and Representatives

Conservation Groups

- National Wildlife Federation
- The National Audubon Society
- The Nature Conservancy
- The Wilderness Society
- Trust for Public Land
- Savannah River Keeper
- The Sierra Club

6.2 Public Review

SAS provided documents for comment on the website and requested comments without in-person meetings. Information provided during the 30-day comment period was used to develop the Thurmond MP.

See Appendix F for comments that were received and responses.

7.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Environmental compliance for the proposed action would be achieved upon:

- Coordination of this EA and FONSI with appropriate agencies, organizations, and individuals for their review and comments; and USFWS and NMFS concurrence that the proposed action would not be likely to adversely affect any endangered or threatened species;

- Receipt of the Georgia and South Carolina Historic Preservation Officer concurrence in the District's determination of No Effect on cultural resources;

- Receipt of Tribal Historic Preservation Officer concurrence in the District's determination of No Effect on cultural resources; and

- Receipt and acceptance or resolution of all USFWS Fish and Wildlife Coordination Act recommendations.

The FONSI will not be signed until the proposed action achieves environmental compliance with applicable laws and regulations, as described above.

Table 12: Relationship of the Proposed Action to Applicable Federal Laws and Policies

Public Laws		
Title of Public Law	**U.S. Code**	**Compliance Status***
Anadromous Fish Conservation Act of 1965, as amended	16 U.S.C. §757a *et. seq.*	Full Compliance
Archaeological and Historic Preservation Act, as amended	P.L. 93-29	Full Compliance
Archeological Resources Protection Act	P.L. 96-95	Full Compliance
Bald and Golden Eagle Act of 1972	16 U.S.C. §§668-668d	Full Compliance
Clean Air Act of 1972, as amended	42 U.S.C. Chapter 85	Full Compliance
Clean Water Act of 1971, as amended	33 U.S.C. §1251 *et. seq.*	Full Compliance
Endangered Species Act of 1973	16 U.S.C. §1531 *et. seq.*	Full Compliance
Fish and Wildlife Coordination Act of 1958, as amended	16 U.S.C. §§661-665; 665a; 666; 666a-666c	Full Compliance
Flood Control Act of 1944, as amended, Section 4	P.L. 78–534	Full Compliance
Migratory Bird Conservation Act of 1928, as Amended	16 U.S.C. §715	Full Compliance
Migratory Bird Treaty Act of 1918, as amended	16 U.S.C. §§703-712	Full Compliance
National Environmental Policy Act of 1969, as amended	42 U.S.C. §4321 *et. seq.*	Full Compliance
National Historic Preservation Act of 1966, as amended	54 U.S.C. §300101 *et. seq.*	Full Compliance
Noise Control Act of 1972, as amended	42 U.S.C. §4901 *et. seq.*	Full Compliance
Safe Drinking Water Act	42 U.S.C. §§300f-300j	Full Compliance

Executive Orders		
Title of Executive Order	**Executive Order Number**	**Compliance Status***
Protection and Enhancement of Environmental Quality	11514/11991	Full Compliance
Protection and Enhancement of the Cultural Environment	11593	Full Compliance
Floodplain Management	11988	Full Compliance
Protection of Wetlands	11990	Full Compliance
Federal Compliance with Pollution Control Standards	12088	Full Compliance
Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances	12843	Full Compliance
Federal Compliance with Right-To-Know Laws and Pollution Prevention	12856	Full Compliance
Federal Actions to Address Environmental Justice and Minority and Low-Income Populations	12898	Full Compliance
Federal Acquisition and Community Right-To-Know	12969	Full Compliance
Indian Sacred Sites	13007	Full Compliance
Protection of Children from Environmental Health Risks and Safety Risks	13045	Full Compliance
Invasive Species	13112	Full Compliance
Consultation and Coordination with Indian Tribal Governments	13175	Full Compliance
Responsibilities of Federal Agencies to Protect Migratory Birds	13186	Full Compliance
Executive Order Facilitation of Cooperative Conservation	13352	Full Compliance

*Compliance Status:
Full Compliance: Having met all requirements of the statute, EO, or other environmental requirements.
Partial Compliance: Not having met some of the requirements at current stage of planning. Compliance with these requirements is ongoing.
Non-Compliance: Violation of a requirement of the statute, EO, or other environmental requirement.
Not Applicable: No requirements for the statute, EO, or other environmental requirement for the current stage of planning.

8.0 CONCLUSION

The proposed action consists of updating the Thurmond Project MP. USACE has assessed the environmental impacts of the proposed action and has determined that the proposed actions would have no adverse or beneficial impact upon cultural resources and no adverse cumulative impacts on other resources associated with the proposed action. The creation of additional recreation facilities within existing recreation areas would provide for additional recreational benefits to lake visitors. Changes to natural resources management practices will have beneficial long-term effects on wildlife, fishery, and forest resources.

The Proposed Plan is not expected to significantly adversely affect the quality of the environment; therefore, an Environmental Impact Statement would not be required. For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 13.

Table 13: Summary of Potential Effects of the Preferred Alternative

	Insignificant effects	Insignificant effects due to mitigation	Resource unaffected by action
Wetlands/Aquatic Vegetation	☒	☐	☐
Aquatic Resources/Fisheries	☒	☐	☐
Floodplains	☒	☐	☐
Forest /Terrestrial Resources	☒	☐	☐
Wildlife	☒	☐	☐
Protected Species	☐	☒	☐
Cultural Resources	☐	☒	☐
Recreational Resources	☒	☐	☐
Aesthetics	☒	☐	☐
Socio-economic Resources	☒	☐	☐
Environmental Justice	☒	☐	☐
Air Quality	☒	☐	☐
Water Quality	☒	☐	☐
Hazardous, Toxic, and Radioactive Waste	☒	☐	☐
Noise Levels	☒	☐	☐
Climate change	☒	☐	☐

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. BMPs as detailed throughout the draft EA will be implemented, if appropriate, to minimize impacts.

9.0 PREPARERS

This EA and the associated FONSI were prepared by Allen Dean, Natural Resources Specialist and Susan Boyd, Natural Resources Program Manager, Thurmond Project with relevant sections prepared by: Julie Morgan, Cultural Resources; Andrea Farmer, Cultural Resources; Chris Spiller, Natural Resources Program Manager, Thurmond Project; Jeff Brooks, Wildlife Management; Jamie Sykes, Fisheries Management; Kenneth Boyd, Forestry, Fish and Wildlife Management, Section Chief, Thurmond Project; Aaron Murphy, Project Forester and Evan Brashier, Conservation Biologist, Thurmond Project.

The address of the preparers is: U.S. Army Corps of Engineers, Savannah District - Planning Division, 100 West Oglethorpe Avenue, Savannah, GA 31401.

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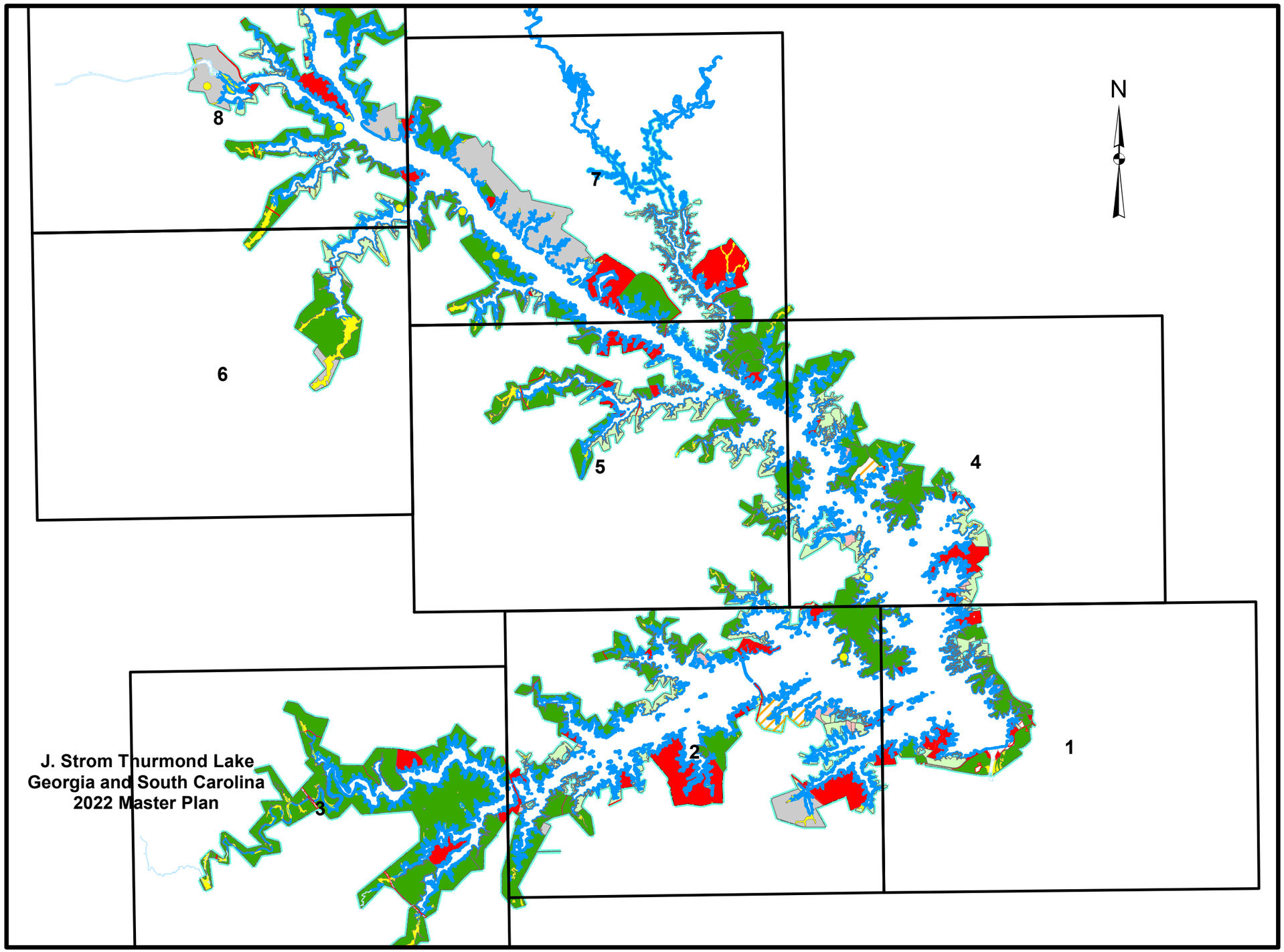
Appendix A

Land Classification Maps

JST Land Classification Key Map



J. Strom Thurmond Lake
Georgia and South Carolina
2022 Master Plan

US Army Corps of Engineers®
Savannah District

Location Map

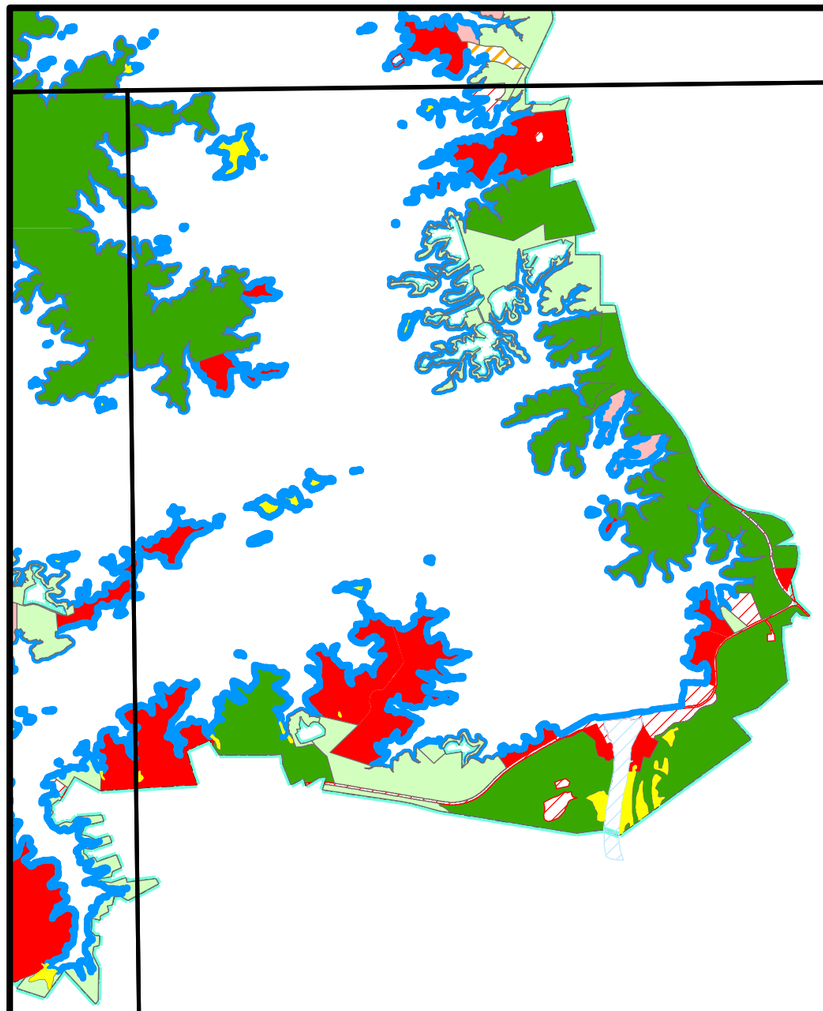
Legend

Land Classification

- Environmentally Sensitive Areas
- High Density Recreation
- Lake
- Low Density Recreation
- Mitigation
- Project Operations
- Recreation - Quasi_Private
- River
- Special Use
- Wildlife Mgt
- Property Line
- Zoning Index

0 7,000 14,000 28,000 42,000 56,000 Feet

JST Land Classification Maps- Plate 1 of 8



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Georgia and South Carolina
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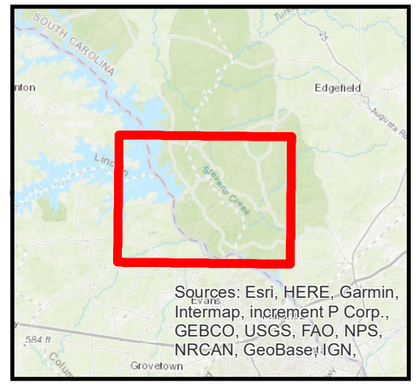

Location Map

Legend

Land Classification

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- Lake
- Low Density Recreation
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- Zoning Index

0 2,375 4,750 9,500 14,250 19,000
Feet

JST Land Classification Maps- Plate 2 of 8

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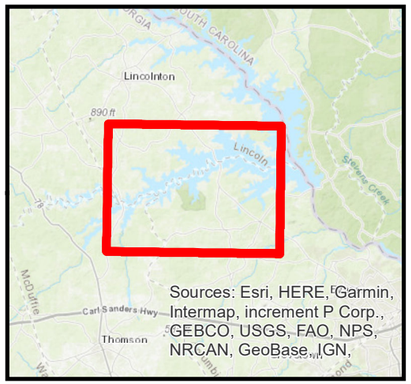

Location Map

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JST Land Classification Maps- Plate 3 of 8

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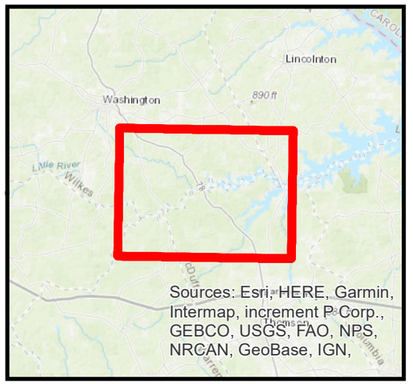
Savannah District



Location Map

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Georgia and South Carolina
2022 Master Plan

Legend

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- Property Line
- Zoning Index

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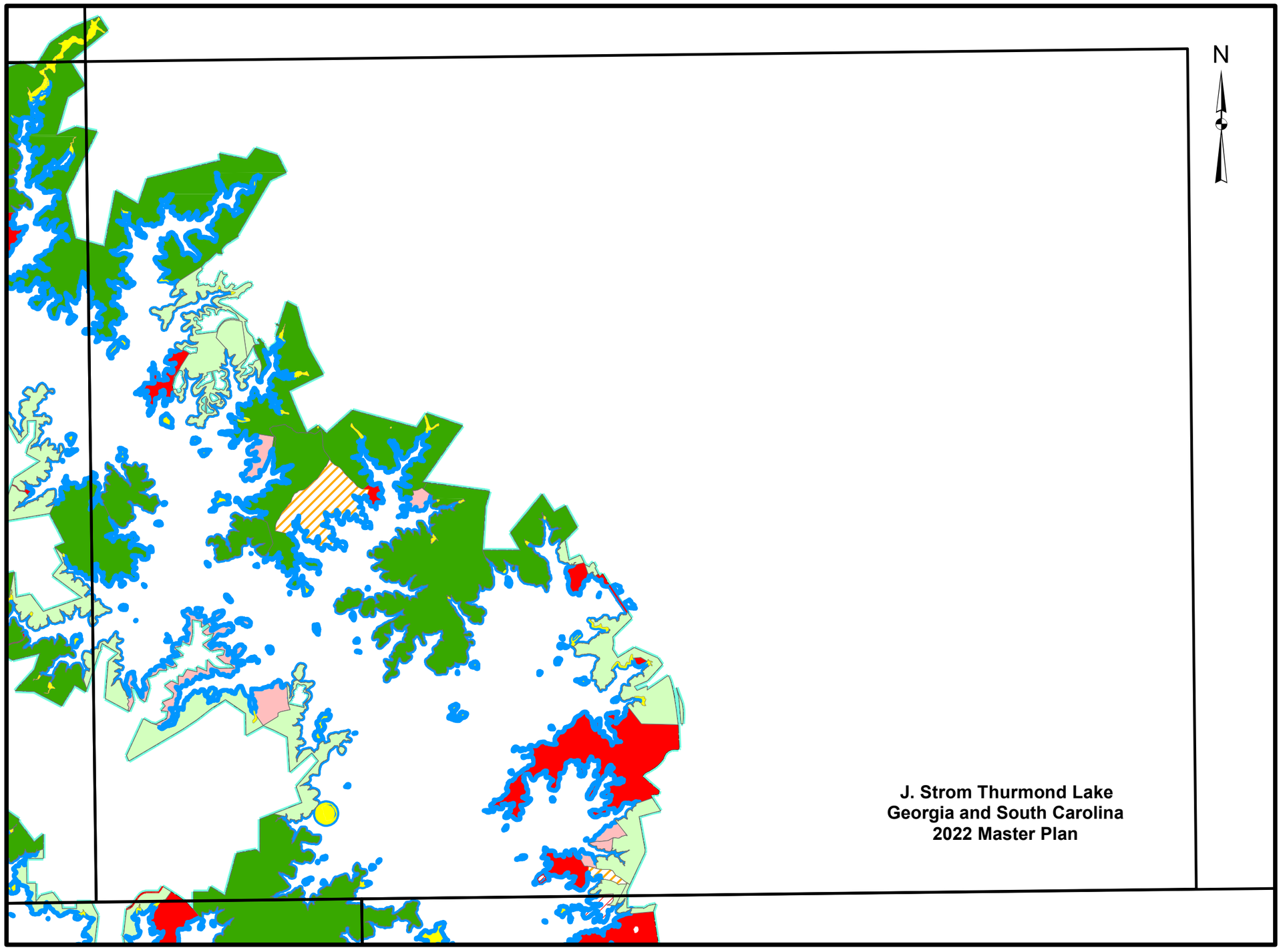
Feet

JST Land Classification Maps- Plate 4 of 8



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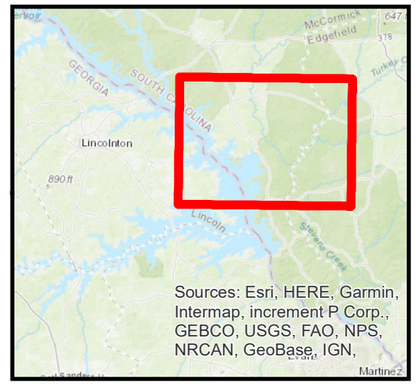

Location Map

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Land Classification

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- Zoning Index

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JST Land Classification Maps- Plate 5 of 8

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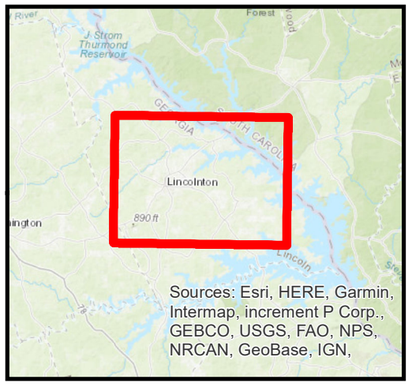

Location Map

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J. Strom Thurmond Lake
Georgia and South Carolina
2022 Master Plan

Legend

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- Property Line
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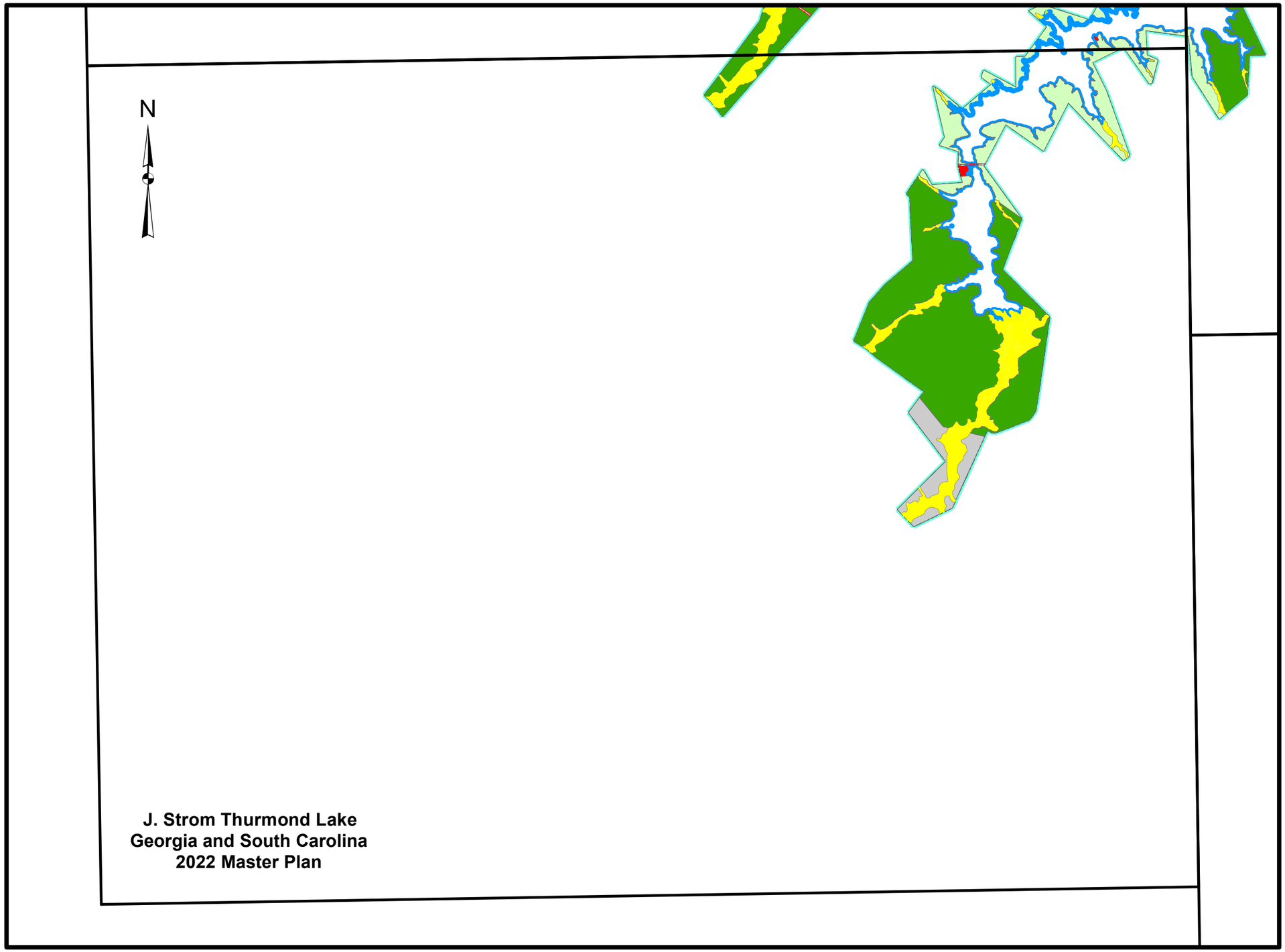
JST Land Classification Maps- Plate 6 of 8



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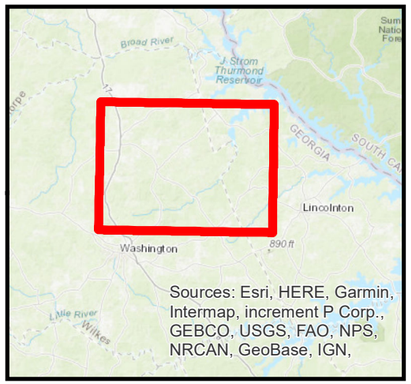

Location Map

Legend

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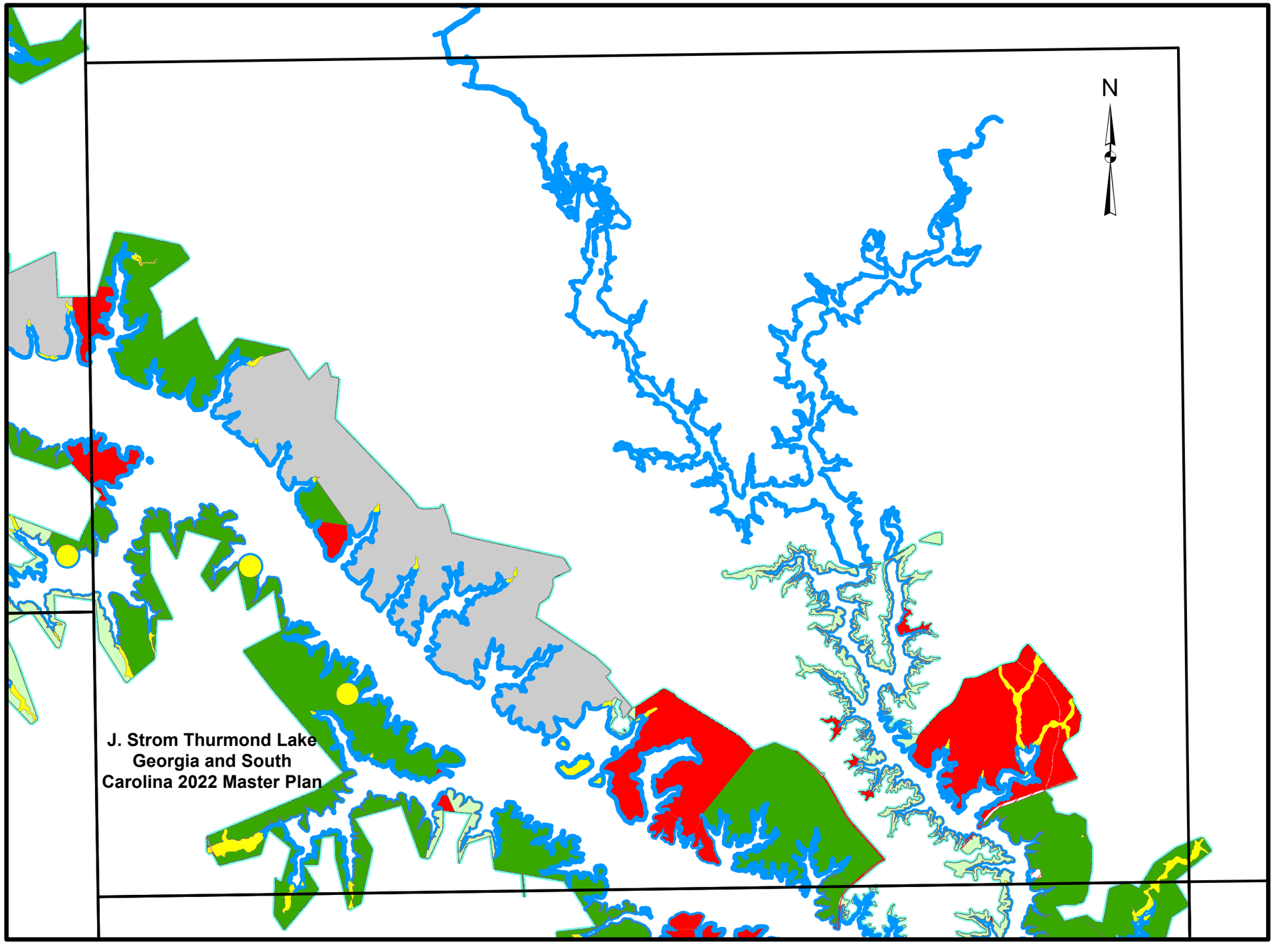
Feet

JST Land Classification Maps- Plate 7 of 8



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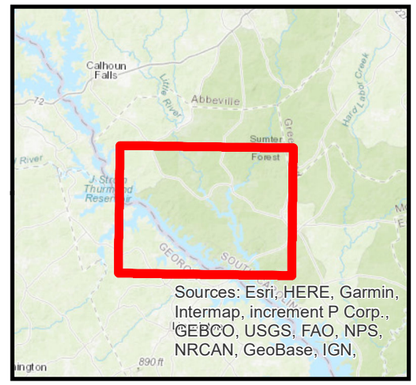

Location Map

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- Zoning Index

0 2,400 4,800 9,600 14,400 19,200 Feet

JST Land Classification Maps- Plate 8 of 8

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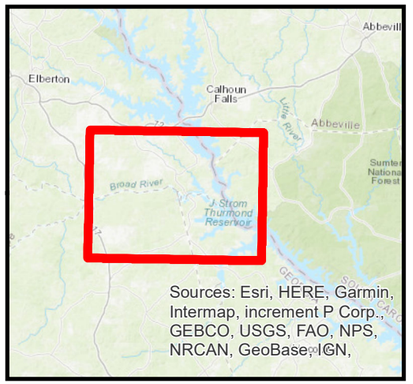
Savannah District



Location Map

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J. Strom Thurmond Lake
Georgia and South Carolina
2022 Master Plan

Legend

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0 2,400 4,800 9,600 14,400 19,200
Feet

Appendix B

Site-Specific Proposed Changes

LOCATION	OPERATOR	PROPOSED IMPROVEMENTS
Project Manager's Office/Visitor Center, Power Plant, Maintenance/Storage Compounds	USACE	- Necessary maintenance/renovation of existing buildings - Replace aging storage buildings - Add two bays to existing pole barn, USACE storage compound
Below Dam, SC Day Use Area	USACE	- Necessary maintenance/renovation of existing facilities - Improved parking and traffic flow at ramp
Clarks Hill Park	USACE	- Necessary maintenance/upgrade of existing facilities - Relocate fish cleaning station/improve traffic flow - Increase boat parking - Install playground and two park host sites
Scotts Ferry Boat Ramp	USACE	- Necessary maintenance/upgrade of existing facilities
Modoc Campground	USACE	- Necessary maintenance/upgrade of existing facilities - Electrical upgrades, sites 1-10, 12-15 - Shoreline stabilization - Re-establish beach area - Invasive species treatment
JST Volunteer Village	USACE	- Necessary maintenance/upgrade of existing facilities - Addition of 12 campsites, full hook-ups
Modoc Boat Ramp	USACE	- Necessary maintenance/upgrade of existing facilities - Additional 40-space parking - Additional launch ramps - Tournament weigh station, shelter station and restroom - Invasive species treatment
Parksville Recreation Area	USACE	- Necessary maintenance/upgrade of existing facilities - Disc golf course - Playground and utilities, Shelter 2 - Road realignment, expanded trailer parking - Additional vault toilet

Dordon Creek Boat Ramp	USACE	- Necessary maintenance/upgrade of existing facilities - Additional parking
Hawe Creek Campground	USACE	- Necessary maintenance/upgrade of existing facilities - Electrical upgrades, sites 25-34 - Improved traffic flow at ramp - Shoreline stabilization
Leroys Ferry Campground	USACE	- Necessary maintenance/upgrade of existing facilities - Campsite renovation - Shoreline stabilization - Invasive species treatment
Mt. Carmel Recreation Area	USACE	Possible lease for following operations: - Development of overnight youth camp - Cabins/yurts - Minor marina - Add courtesy dock at day use ramp
Mt. Pleasant Boat Ramp	USACE	- Necessary maintenance/upgrade of existing facilities
Calhoun Fall Ramp	USACE	- Necessary maintenance/upgrade of existing facilities
Morrahs Boat Ramp	USACE	- Necessary maintenance/upgrade of existing facilities - 20 additional trailer parking spaces - Potable water and new restroom - Shoreline stabilization
Gill Point Recreation Area	USACE	- Necessary maintenance/upgrade of existing facilities - Add vault toilet at ramp
Bussey Point Campground	USACE	- Necessary maintenance/upgrade of existing facilities - Add 10 campsites - Extend electricity and county water to area - Add park host site - Add Adirondack shelter, Area 3
Amity Recreation Area	USACE	- Necessary maintenance/upgrade of existing facilities - Upgrade restroom at boat ramp - Add second attendant pad - Replace volleyball court
Winfield Campground	USACE	- Necessary maintenance/upgrade of existing facilities - Add waterborne shower facility

		- Construct group camp with 1-20 campsites - Add 15-20 individual campsites with hookups - Add boat ramp outside campground, 70 trailer parking spaces and courtesy dock
Ridge Road Campground	USACE	- Necessary maintenance/upgrade of existing facilities - Relocate gate house and attendant campsites - Add 20-30 campsites with hookups - Construct additional waterborne shower facility - Add boat ramp with 70 trailer parking spaces outside campground - Invasive species treatment
Keg Creek Boat Ramp	USACE	- Necessary maintenance/upgrade of existing facilities - Add trailer parking species - Improve restroom facility - Add street lights to bank fishing/trail parking and sidewalk - Shoreline stabilization
Petersburg Campground	USACE	- Necessary maintenance/upgrade of existing facilities - Add 20-30 campsites with hookups - Add waterborne shower facility - Add park host/volunteer campsite - Construct amphitheater (75-person capacity) - Construct additional parking (74-80 loop) - Additional support facilities and parking at Bartram Trail parking area - Shoreline stabilization
Lake Springs Recreation Area	USACE	- Necessary maintenance/upgrade of existing facilities - Add park attendant/volunteer campsite - Enlarge boat ramp parking area - Expand amenities at existing group shelters - Upgrade portions of Bartram Trail connector trail - Add pet beach area
West Dam Recreation Area	USACE	- Necessary maintenance/upgrade of existing facilities - Add park attendant/volunteer campsite - Expand amenities at existing group shelter
Below Dam, GA Boat Ramp	USACE	- Necessary maintenance/upgrade of existing facilities - Improve traffic flow and parking at ramp - Maintain open vistas from upper parking area

Hamilton Branch State Park	SCPRT	- Necessary maintenance/upgrade of existing facilities
Baker Creek State Park	SCPRT	- Necessary maintenance/upgrade of existing facilities - Add courtesy dock and paved sidewalk, Hwy 378 boat ramp - Add ADA accessible fishing pier, picnic area
Hickory Knob State Park	SCPRT	- Necessary maintenance/upgrade of existing facilities - Construct new 100-room indoor access hotel, restaurant and convention center - Add 10 camper cabins adjoining campground
Bobby Brown Park	GADNR/Elbert County	- Necessary maintenance/upgrade of existing facilities - Additional yurts - Fuel dock - Additional boat ramp and parking - Beach area - Amphitheaters - 18-hole disc golf course - Miniature golf course - Outdoor education center and trails
Elijah Clark State Park	GADNR	- Necessary maintenance/upgrade of existing facilities
Mistletoe State Park	GADNR	- Necessary maintenance/upgrade of existing facilities
Clarks Hill Ball Field	McCormick County	- Necessary maintenance/upgrade of existing facilities
Parksville Wayside	McCormick County	- Necessary maintenance/upgrade of existing facilities
William Bryant Dorn Sports Fishing and Boating Facility	McCormick County	- Necessary maintenance/upgrade of existing facilities
Broad River Campground	Lincoln County	- Necessary maintenance/upgrade of existing facilities - Add multi-lane boat ramp with 40-car/trailer parking area and restroom, across Hwy 79
Hesters Ferry Campground	Lincoln County	- Necessary maintenance/upgrade of existing facilities - Add mini-marina with fuel, limited wet slips - Add day use facilities - Amphitheater - Beach

		- Cabins/yurts - Expand boat ramp parking
Parkway Boat Ramp	Lincoln County	- Necessary maintenance/upgrade of existing facilities - Improve traffic flow and parking - Add group shelter/amphitheater - Possible site for satellite marina
Eddie Fletcher Park	Lincoln County	- Necessary maintenance/upgrade of existing facilities
Cherokee Recreation Area	Lincoln County	- Necessary maintenance/upgrade of existing facilities - Amphitheater, pavilion/shelter - Additional parking - Fishing pier - Mountain bike/hiking trails - Campsites - Cabins/yurts
Clay Hill Campground	Lincoln County	- Necessary maintenance/upgrade of existing facilities - Add electric/water to primitive campsites - Add campsites - Add gatehouse, camp store - Upgrade existing boat ramp
Raysville Campground	McDuffie County	- Necessary maintenance/upgrade of existing facilities
Big Hart Campground	McDuffie County	- Necessary maintenance/upgrade of existing facilities - Add 15-20 campsites with hookups - Relocate gate house - Install dump station at group camp - Invasive species control (feral hogs)
Holiday Park	Wilkes County	- Necessary maintenance/upgrade of existing facilities
Wildwood Park	Columbia County	- Necessary maintenance/upgrade of existing facilities - Visitor Center with 25 parking spaces - Amphitheater with 1,000 seating capacity - Equestrian campground - ADA-accessible super playground (2-acre) - Lodge, 100-room capacity - Cabins (24) - Confidence course, team building area - Archery area - Additional hiking/biking/equestrian/multi-use trails - Relocate beach area

Plum Branch Yacht Club	Private Concessionaire	- Necessary maintenance/upgrade of existing facilities - Additional wet slip moorage - Additional dry storage units - Additional campsites - New bath house/laundry facility - Restaurant expansion - Seawall expansion/shoreline stabilization
Savannah Lakes Marina	Private Concessionaire	- Necessary maintenance/upgrade of existing facilities - Possible satellite marina development
Soap Creek Marina	Private Concessionaire	- Necessary maintenance/upgrade of existing facilities - Renovate/replace existing cabins and associated courtesy docks - Construct 8-12 new cabins - Replace existing aged caretaker cabin - Add additional beach - Install playground - Add additional campsites with hookups - Add second bath house facility - Add dry stack storage facility - Replace existing docks, as needed - Install additional wet slips/docks at proposed satellite marina location (below SR 220 bridge) - Miniature golf course/putting green - Swimming pool/splash pad and snack bar.
Raysville Marina	Private Concessionaire	- Necessary maintenance/upgrade of existing facilities - Add restaurant - Add waterborne shower facility
Clarks Hill (Thurmond) Marina	Private Concessionaire	- Necessary maintenance/upgrade of existing facilities - Add restaurant - Additional wet slips and dry storage facilities - Add acreage from original marina lease for additional campground development
Trade Winds Marina	Private Concessionaire	- Necessary maintenance/upgrade of existing facilities - Additional dry storage facilities - Boat rentals - Additional rental cabins - RV Campground development
Pointes West Army Resort (formerly Ft.	U.S. Army, Ft. Gordon	- Necessary maintenance/upgrade of existing facilities - Add 11 new cottages/lodging units

Gordon Recreation Area)		- Add 4 additional dry storage sheds - Replace existing bath house
Clarks Hill Training Site	S.C. Army National Guard	- Necessary maintenance/upgrade of existing facilities - Additional training facilities approved in 2016 National Guard Real Property Development Plan (RPDP), including barracks (250-person capacity), expanded facility maintenance compound, readiness and training area for the multi-role bridge company, training support facilities for classroom and simulation training, new HQ facility, new 100-person capacity conference center, additional campsites, new shower facility, four additional cabins, and associate road and parking improvements. No additional development beyond the 2016 RPDP will be approved.
The Family "Y"	Non-profit organization	- Necessary maintenance/upgrade of existing facilities - Under partnership with The Children's Hospital of Georgia, the approved 2014 development plan includes the following: - Multi-purpose gym facility - 10 double cabin with bathroom/shower facilities - 10 singe cabins with bathroom/shower facilities - Medical facility - Welcome center - Swimming pool complex - Adaptive playground - Staff/Director/Caretaker cabins - New administrative building - Fishing house - Media center - Covered pavilion - Chapel - Amphitheater - Associated roads and utilities

Appendix C

Common Terrestrial and Aquatic Plants,

Mammals, Reptiles, Amphibians, Birds, Fish, and Freshwater Mussels of

J. Strom Thurmond Project

Commonly Occurring Plant Species

Overstory

Common Name	Scientific Name
Southern Sugar Maple	*Acer barbatum*
Red Maple	*Acer rubrum*
Silver Maple	*Acer saccharum*
River Birch	*Betula nigra*
Bitternut Hickory	*Carya cordiformis*
Pignut Hickory	*Carya glabra*
Shagbark Hickory	*Carya ovata*
Mockernut Hickory	*Carya tomentosa*
White Ash	*Fraxinus americana*
Sweetgum	*Liquidambar styraciflua*
Yellow Poplar	*Liriodendron tulipifera*
Southern Magnolia	*Magnolia grandiflora*
Blackgum	*Nyssa sylvatica*
Shortleaf Pine	*Pinus echinata*
Slash Pine	*Pinus elliottii*
Longleaf Pine	*Pinus palustris*
Loblolly Pine	*Pinus taeda*
Sycamore	*Platanus occidentallis*
Eastern Cottonwood	*Populus deltoides*
White Oak	*Quercus alba*
Scarlet Oak	*Quercus coccinea*
Southern Red Oak	*Quercus falcata*
Turkey Oak	*Quercus laevis*
Laural Oak	*Quercus laurifolia*
Blackjack Oak	*Quercus marilandica*
Water Oak	*Quercus nigra*
Pin Oak	*Quercus palustris*
Willow Oak	*Quercus phellos*
Swamp Chestnut Oak	*Quercus prinus*
Northern Red Oak	*Quercus rubra*
Post Oak	*Quercus stellata*
Black Oak	*Quercus velutina*
Winged elm	*Ulmus alata*
American elm	*Ulmus americana*

Midstory

Common Name	Scientific Name
Boxelder	*Acer negundo*
Beauty-berry	*Callicarpa americana*
American Hornbeam, Musclewood	*Carpinus caroliniana*
Hackberry	*Celtis occidentalis*
Redbud	*Cercis canadensis*
Fringetree	*Chionanthus virginicus*
Dogwood	*Cornus florida*
Hawthorn	*Craetagus sp.*
Persimmon	*Diospyros virginiana*
Honey locust	*Gleditsia triacanthos*
American Holly	*Ilex opaca*
Black Walnut	*Juglans nigra*
Eastern Red Cedar	*Juniperus virginiana*
Red Mulberry	*Morus rubra*
Wax myrtle	*Myrica cerifera*
Eastern Hop Hornbeam, Ironwood	*Ostrya virginiana*
Sourwood	*Oxydendron arboreum*
Black Cherry	*Prunus serotina*
Wild Plum	*Prunus sp.*
Winged Sumac	*Rhus copallina*
Black locust	*Robinia pseudoacacia*
Palmetto	*Sabal minor*
Black Willow	*Salix nigra*
Sassafras	*Sassafras albidum*
Southern Catapala	*Catalpa bignonioides*
Sparkleberry	*Vaccinium sp.*
Blueberry	*Vacinium corymbosum*

Ground Covers

Common Name	Scientific Name
Trumpet Creeper	*Campsis radicans*
Yellow jessamine	*Gelseminum sempervirens*
Virginia Creeper	*Parthenocissus quinquefolia*
Ferns	*Polystichum sp.*
Poison Oak	*Rhus quercifolia*
Poison Ivy	*Rhus radicans*
Poison Sumac	*Rhus vernix*
Black Berry	*Rubus sp.*
Greenbrier, Smilax	*Smilax sp.*
Wood grass	*Uniola sessiliflora*
Periwinkle	*Vinca minor*
Muscadine	*Vitis rotundifolia*

Aquatic Plants

Common Name	Scientific Name
Brazilian elodea, egeria	*Egeria densa*
Waterhyacinth	*Eichhornia crassipes*
Hydrilla	*Hydrilla verticillata*
Water primrose	*Ludwigia hexapetala*
Parrotfeather	*Myriophyllum aquaticum*
Eurasian watermilfoil	*Myriophyllum spicatum*
American lotus, lotus lily	*Nelumbo lutea*
Alligatorweed	*Alternanthera philoxeriodes*
Fanwort	*Cabomba caroliniana*
Coontail, hornwort	*Ceratophyllum demersum*
Chara, musk grass	*Chara sp.*
Elodea	*Elodea canadensis*
Marsh Hibiscus	*Hibiscus moscheutos*
Southern watergrass	*Hydrochloa caroliniensis*
Water pennywort	*Hyrocotyle umbellata*
Waterwillow	*Justicia americana*
Southern naiad	*Najas guadalupensis*
Slender naiad, spiny-leaf naiad	*Najas minor*
Fragrant waterlily	*Nymphaea odorata*
Water paspalum	*Paspalum fluitans*
Pickerelweed	*Pontederia cordata*
Pondweed	*Potemogeton sp.*
Arrowheads	*Sagittaria sp.*
Cattail	*Typha sp.*
Bladderwort	*Utricullaria sp.*

Exotics

Common Name	Scientific Name
Japanese honeysuckle	*Lonicera japonica*
China-berry	*Melia azedarach*
Kudzu	*Pueraria lobata*
Wisteria	*Wisteria frutescens*
Chinese Tallow Tree	*Sapium sebiferum*
Giant Reed	*Arundo donax*
Chinese Privet	*Ligustrum sinense*
Old World Climbing Fern	*Lygodium microphyllum*
Johnson Grass	*Sorghum halepense*
Autumn Olive or Eleagnus	Elaeagnus umbellata
Bamboo	*Phyllostachys sp*
Hydrilla	*Hydrilla verticillata*
Alligator Weed	*Alternanthera philoxeroides*
Parrot Feather	*Myriophyllum aquaticum*

Commonly Occurring Bird Species

Common Name	Scientific Name	
Wood Duck	*Aix sponsa*	Summer
Mallard	*Anas platyrhynchos*	Summer
Canada Goose	*Branta canadensis*	Summer
Hooded Merganser	*Lophodytes cucullatus*	Summer
Blue-winged Teal	*Anas discors*	Winter
Green-winged Teal	*Podilymbus podiceps*	Winter
Northern Shovelers	*Anas clypeata*	Winter
Canvasback	*Aythya valisinera*	Winter
Redhead	*Aythya americana*	Winter
Ring-necked Duck	*Aythya collaris*	Winter
Greater Scaup	*Aythya marila*	Winter
Lesser Scaup	*Aythya affinis*	Winter
Long-tailed Duck	*Clangula hyemalis*	Winter
Bufflehead	*Bucephala albeola*	Winter
Common Golden eye	*Bucephala clangula*	Winter
Common Merganser	*Mergus merganser*	Winter
Red Breasted Merganser	*Mergus serrator*	Winter
Ruddy Duck	Oxyura jamaicensis	Summer
Pacific Loon	*Gavia Pacifica*	Winter
Common Loon	*Gavia immer*	Winter
Red Throated Loon	*Gavia stellata*	Winter
Pied Billed Grebe	*Podilymbus podiceps*	Summer/Winter
Horned Grebe	*Podiceps auritus*	Winter
Eared Grebe	*Podiceps nigricollis*	Winter
American Coot	*Fulica americana*	Winter
Double-crested Cormorant	*Phalacrocorax auritus*	Summer/Winter
Anhinga	*Anhinga anhinga*	Summer
Belted Kingfisher	*Megaceryle alcyon*	Summer
Great Egret	*Ardea alba*	Summer
Great Blue Heron	*Ardea herodias*	Summer
Green Heron	*Butorides virescens*	Summer
White Ibis	*Eudocimus albus*	Summer
Least Bittern	*Ixobryhus exilis*	Summer
Wood Stork	*Mycteria americana*	Late summer
Brown Pelican	*Pelecanus occidentalis*	Winter
White Pelican	*Pelecanus erythrorhynchos*	Winter
Chimney Swift	*Chaetura pelagica*	Summer
Ruby-throated Hummingbird	*Archilochus colubris*	Summer
Chuck-will's-widow	*Caprimulgus carolinensis*	Summer
Whip-poor-will	*Caprimulgus vociferus*	Summer
Common Nighthawk	*Chordeiles minor*	Summer

Birds Continued		
Killdeer	*Charadrius vociferus*	Summer
Cooper's Hawk	*Accipiter cooperii*	Summer
Sharp-shinned Hawk	*Accipiter striatus*	Summer
Red-tailed Hawk	*Buteo jamaicensis*	Summer
Broad-winged Hawk	*Buteo playtypterus*	Summer
Red-shouldered Hawk	*Buteo lineatus*	Summer
Bald Eagle	*Haliaeetus leucocephalus*	Summer/Winter
Osprey	*Pandion haliaetus*	Summer/Winter
Turkey Vulture	*Cathartes aura*	Summer/Winter
Black Vulture	*Coragyps atratus*	Summer/Winter
Peregrine Falcon	*Falco peregrinus*	Winter
American Kestrel	*Falco sparverius*	Winter
Mourning Dove	*Zenaida macroura*	Summer/Winter
Yellow-billed Cuckoo	*Coccyzus americanus*	Summer
Northern Bobwhite	*Colinus virginianus*	Summer/Winter
Wild Turkey	*Meleagris gallopavo*	Summer/Winter
Cedar Waxwing	*Bombycilla cedrorum*	Winter
Northern Cardinal	*Cardinalis cardinalis*	Summer/Winter
American Crow	*Corvus brachyrhynchos*	Summer/Winter
Fish Crow	*Corvus ossifragus*	Summer/Winter
Blue Jay	*Cyanocitta cristata*	Summer/Winter
Eastern Towhee	*Pipilo erythrophthalmus*	Summer/Winter
American Goldfinch	*Carduelis tristis*	Summer/Winter
House Finch	*Carpodacus mexicanus*	Summer/Winter
Red-winged Blackbird	*Agelaius phoeniceus*	Summer
Orchard Oriole	*Icterus spurius*	Summer
Brown-headed Cowbird	*Molothrus ater*	Summer
Common Grackle	*Quiscalus quiscula*	Summer
Eastern Meadowlark	*Sturnella magna*	Summer
Loggerhead Shrike	*Lanius ludovicianus*	Summer
Northern Mockingbird	*Mimus polyglottos*	Summer/Winter
Brown Thrasher	*Toxostoma rufum*	Summer/Winter
Tufted Titmouse	*Baeolophus bicolor*	Summer/Winter
Carolina Chickadee	*Poecile carolinensis*	Summer/Winter
Pine Warbler	*Dendroica pinus*	Summer/Winter
Yellow-breasted Chat	*Icteria virens*	Summer
Prothonotary Warbler	*Protonotaria citrea*	Summer
American Redstart	*Setophaga ruticilla*	Summer
Hooded Warbler	*Wilsonia citrina*	Summer
Ovenbird	*Seiurus aurocapilla*	Summer
Louisiana Waterthrush	*Seiurus motacilla*	Summer
Black-and-White Warbler	*Mniotila varia*	Summer
Kentucky Warbler	*Oporornis formosus*	Summer
Common Yellowthroat	*Geothlypis trihas*	Summer

Birds Continued		
Hooded Warbler	*Wilsonia citrina*	Summer
Northern Parula	*Parula Americana*	Summer
Pine Warbler	*Dendroica pinus*	Summer
Yellow-throated Warbler	*Dendroica dominica*	Summer
Prairie Warbler	*Dendroica discolor*	Summer
Yellow-Breasted Chat	*Icteria virens*	Summer
Bachman's Sparrow	*Aimophila aestivalis*	Summer/Winter
Chipping Sparrow	*Spizella passerine*	Summer/Winter
Field Sparrow	*Spizella pusilla*	Summer/Winter
Grasshopper Sparrow	*Ammodramus savannarum*	Summer/Winter
Song Sparrow	*Melospiza melodia*	Summer/Winter
White-throated Sparrow	*Zonotrichia albicollis*	Winter
Summer Tanager	*Piranga rubra*	Summer
Northern Cardinal	*Cardinalis cardinalis*	Summer/Winter
Blue Grosbeak	*Passerina caerulea*	Summer/Winter
Indigo Bunting	*Passerina cyanea*	Summer
Red-winged Blackbird	*Agelaius phoeniceus*	Summer/Winter
Eastern Meadowlark	*Sturnella magna*	Summer
House Finch	*Carpodacus mexicnus*	Summer/Winter
American Goldfinch	*Carduelis tristis*	Summer/Winter
Ruby-crowned Kinglet	*Regulus calendula*	Winter
Brown-headed Nuthatch	*Sitta pusilla*	Summer/Winter
European Starling	*Sturnus vulgaris*	Summer/Winter
Blue-gray Gnatcatcher	*Polioptila caerulea*	Summer
Summer Tanager	*Piranga rubra*	Summer
Carolina Wren	*Thryothorus ludovicianus*	Summer/Winter
Wood Thrush	*Hylocichla mustelina*	Summer
Eastern Bluebird	*Sialia sialis*	Summer/Winter
American Robin	*Turdus migratorius*	Summer/Winter
Great Crested Flycatcher	*Myiarchus crinitus*	Summer
Eastern Phoebe	*Sayornis phoebe*	Summer
Eastern Kingbird	*Tyrannus tyrannus*	Summer
Red-eyed Vireo	*Vireo olivaceus*	Summer
White-eyed Vireo	*Vireo grieus*	Summer
Pileated Woodpecker	*Dryocopus pileatus*	Summer/Winter
Red-bellied Woodpecker	*Melanerpes carolinus*	Summer/Winter
Red-headed Woodpecker	*Melanerpes erythrocephalus*	Summer/Winter
Downy Woodpecker	*Picoides pubescens*	Summer/Winter
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Winter
Great Horned Owl	*Bubo virginianus*	Summer/Winter
Eastern Screech-Owl	*Megascops asio*	Summer/Winter
Barred Owl	*Strix varia*	Summer/Winter

**compiled from "Georgia Breeding Bird Atlas", Georgia Ornithological Society Records, UGA Museum of Natural History Records, and field observations.

Commonly Occurring Mammal Species

Common Name	Scientific Name
Hispid Cotton Rat	*Sigmodon hispidus*
Golden Mouse	*Ochrotomys nuttalli*
Eastern Harvest Mouse	*Reithrodontomys humulis*
White-footed Mouse	*Peromyscus leucopus*
Cotton Mouse	*Peromyscus gossypinus*
Common Muskrat	*Ondatra zibethicus*
Oldfield Mouse	*Peromyscus polionotus*
Southern Flying Squirrel	*Glaucomys volans*
Eastern Gray Squirrel	*Sciurus carolinensis*
Eastern Fox Squirrel	*Sciurus niger*
Eastern Chipmunk	*Tamias striatus*
Southern Short-tailed Shrew	*Blarina carolinensis*
Least Shrew	*Cryptotis parva*
Eastern Mole	*Scalopus aquaticus*
Eastern Cottontail	*Sylvilagus aquaticus*
Swamp Rabbit	*Sylvilagus floridanus*
Eastern Pipistrille	*Pipistrellus subflavus*
Rafineques Big Eared bat	*Corynorhinus rafinesquii*
Southeastern Myotis	*Myotis austroriparius*
Big Brown Bat	*Eptesicus fuscus*
Little Brown Bat	*Myotis lucifugus*
Silver-haired Bat	*Lasionycteris noctivagans*
Eastern Red Bat	*Lasiurus borealis*
Hoary Bat	*Lasiurus cinereus*
Seminole Bat	*Lasiurus seminolus*
Evening Bat	*Pipistrellus subflavus*
Coyote	*Canis latrans*
Gray Fox	*Urocyon cinereoargenteus*
Red Fox	*Vulpes vulpes*
Bobcat	*Lynx rufus*
Striped Skunk	*Mephitis mephitis*
Spotted Skunk	*Spilogale putorius*
Long-tailed Weasel	*Mustela frenata*
Mink	*Mustela vison*
Northern Raccoon	*Procyon lotor*
Northern River Otter	*Lontra canadensis*
Virginia Opossum	*Didelphis virginiana*
American Beaver	*Castor canadensis*
Nine-banded Armadillo	*Dasypus novemcinctus*
White-tailed Deer	*Odocoileus virginianus*

Commonly Occurring Reptile Species

Common Name	**Scientific Name**
Snakes	
Eastern Black Racer	*Coluber constrictor*
Corn Snake	*Elaphe guttata*
Rat Snake	*Elaphe obsoleta*
Eastern Hognose Snake	*Heterodon platirhinos*
Southern Hognose	*Heterodon simus*
Mole Snake	*Lampropeltis calligaster*
Eastern King Snake	*Lampropeltis getula*
Scarlet King	*Lampropeltis triangulum elapsoides*
Coachwhip	*Masticophis flagellum*
Plain-bellied Watersnake	*Nerodia erythrogaster*
Northern Watersnake	*Nerodia sipedon*
Brown Watersnake	*Nerodia taxispilota*
Rough Green Snake	*Opeodrys aestivus*
Queen Snake	*Regina septemvittata*
Brown Snake	*Storeria dekayi*
Red-bellied Snake	*Storeria occipitomaculata*
Southeastern Crowned Snake	*Tantila coronata*
Eastern Ribbon Snake	*Thamnophis suaritus*
Common Garter Snake	*Thamnophis sirtalis*
Rough Earth Snake	*Virginia striatula*
Smooth Earth Snake	*Virginia valeriae*
Copperhead	*Agkistrodon contortrix*
Cottonmouth	*Agkistrodon piscivorus*
Timber Rattlesnake	*Crotalus horridus*
Pygmy Rattlesnake	*Sistrurus miliarius*
Lizards	
Common Name	**Scientific Name**
Eastern Fence Lizard	*Sceloporus undulatus*
Green Anole	*Anolis carolinensis*
Five-lined Skink	*Eumeces fasciatus*
Southeastern Five-lined Skink	*Eumeces inexpectatus*
Six-lined Racerunner	*Cnemidophorus sexlineatus*
Slender Glass Lizard	*Ophisaurus attenuatus*
Eastern Glass Lizard	*Ophisaurus ventralis*
Broadhead Skink	*Eumeces* laticeps
Ground Skink	*Scincella lateralis*

Crocodilian	
Common Name	**Scientific Name**
American Alligator	*Alligator mississippiensis*
Turtles	
Common Name	**Scientific Name**
Common Snapping Turtle	*Chelydra serpentina*
Eastern Box Turtle	*Terrapene carolina*
Pond Slider	*Trachemys scripta*
Painted Turtle	Chrysemys picta
River Cooter	Pseudemys coninna
Eastern Musk Turtle	Kinosternon subrubrum
Common Musk Turtle	Sternotherus odoratus
Spiny Softshell	*Apalone spinifera*

Commonly Occurring Amphibian Species

Common Name	**Scientific Name**
Frogs and Toads	
American Toad	*Bufo americanus*
Fowler's Toad American Toad	*Bufo fowleriBufo americanus*
Northern Cricket Frog Fowler's Toad	*Acris crepitansBufo fowleri*
Bird-voiced Treefrog Northern Cricket Frog	*Hyla avivocaAcris crepitans*
Cope's Gray Treefrog Bird-voiced Treefrog	*Hyla chrysoscelisHyla avivoca*
Green Treefrog Cope's Gray Treefrog	*Hyla cinereaHyla chrysoscelis*
Barking Treefrog Green Treefrog	*Hyla gratiosaHyla cinerea*
Squirrel Treefrog Barking Treefrog	*Hyla squirellaHyla gratiosa*
Spring Peeper Squirrel Treefrog	*Pseudacris cruciferHyla squirella*
Upland Chorus Frog Spring Peeper	*Pseudacris feriarumPseudacris crucifer*
Southern Chorus Frog Upland Chorus Frog	*Pseudacris nigritaPseudacris feriarum*
Eastern Narrowmouth Toad Southern Chorus Frog	*Gastrophryne carolinensisPseudacris nigrita*
Eastern Spadefoot Toad Eastern Narrowmouth Toad	*Scaphiopus holbrookiiGastrophryne carolinensis*
Bullfrog Eastern Spadefoot Toad	*Rana catesbeianaScaphiopus holbrookii*
Green Frog / Bronze Frog Bullfrog	*Rana clamitansRana catesbeiana*
Pickerel Frog Green Frog / Bronze Frog	*Rana palustrisRana clamitans*
Southern Leopard Frog Pickerel Frog	*Rana sphenocephalaRana palustris*
Southern Leopard Frog	*Rana sphenocephala*
Salamanders	
Spotted Salamander	*Ambystoma maculatum*
Marbled Salamander Spotted Salamander	*Ambystoma opacum Ambystoma maculatum*

Mole Salamander Marbled Salamander	*Ambystoma talpoideum Ambystoma opacum*
Two-toed Amphiuma Mole Salamander	*Amphiuma means Ambystoma talpoideum*
Spotted Dusky Salamander Two-toed Amphiuma	*Desmognathus conanti Amphiuma means*
Two-lined Salamander Spotted Dusky Salamander	*Eueycea bislineata complexDesmognathus conanti*
Three-lined Salamander Two-lined Salamander	*Eueycea guttolineatta Eueycea bislineata complex*
Atlantic Coast Slimy Salamander Three-lined Salamander	*Plethodon chlorobryonis Eueycea guttolineatta*
Savannah Slimy Salamander Atlantic Coast Slimy Salamander	*Plethodon savannah Plethodon chlorobryonis*
Mud Salamander Savannah Slimy Salamander	*Pseudotriton montanus Plethodon savannah*
Red Salamander Mud Salamander	*Pseudotriton ruber Pseudotriton montanus*
Red Salamander	*Pseudotriton ruber*

**Compiled utilizing "Amphibians and Reptiles of Georgia" and the UGA Museum of Natural History Records website

Commonly Occurring Fish Species

Common Name	Scientific Name
Game Fish	
Bass	***Serranidae***
Striped bass*	*Morone saxatilis*
White bass	*Morone chrysops*
Hybrid bass*	*Morone saxaltils x Morone chrysops*
White perch	*Morone americana*
Sunfish	***Centrarchidae***
Largemouth bass	*Micropterus salmoides*
Spotted bass	*Micropterus punctulatus*
Black crappie	*Pomoxis migromaculatus*
White crappie	*Pomoxis annularis*
Bluegill	*Lepomis macrochirus*
Redbreast	*Lepomis auritus*
Green sunfish	*Lepomis cyanellus*
Pumpkinseed	*Lepomis gibbosus*
Flier	*Centrarchus macropterus*
Warmouth	*Lepomis gulosus*
Redear	*Lepomis microlophus*
Perch	***Percidae***
Yellow perch	*Perca flavescens*

Non-Game Fish	
Catfish	***Lepisosteidae***
Channel catfish	*Ictalurus punctatus*
White catfish	*Ictalurus catus*
Flat bullhead	*Ictalurus platycephalus*
Brown bullhead	*Ictalurus nebulosus*
Flathead catfish	*Pylodictis olivaris*
Other	
Longnose gar	*Lepospsteus osseus*
Chain pickerel (jack)	*Esox niger*
Redhorse sucker	*Maxostoma spp.*
Northern hogsucker	*Hypentelium nigricans*
Spotted sucker	*Minytrema melanops*
Forage Species	
Shad and herring	***Clupeidae***
Gizzard shad	*Dorosoma cepedianum*
Threadfin shad	*Dorosoma petenense*
Blueback herring	*Alosa aestivalis*
Minnows	***Cyprinidae***
Spottail shiner	*Notropics hudsonius*
Golden shiner	*Notemigonus chrysoleucas*
Common Carp*	*Cyprinus carpio*
Grass Carp	*Ctenopharyngodon idella*
Livebearers	***Poeciliidae***
Mosquito fish	*Gambusia affinis*

*Stocked species

Freshwater Mussels

Common Name	Scientific Name
Asian Clam	*Corbicula fluminea*
Altamaha Arc Mussel	*Alasmidonta arcula*
Yellow Lampmussel	*Lampsilis cariosa*
Rayed Pink Fatmucket	*Lampsilis splendita*
Eastern Floater	*Pyganodon cataracta*
Creeper	*Strophitus undulatus*
Paper Pondshell	*Utterbackia imbecillas*

Appendix D

Georgia Environmental Protection Division Order Concerning DDT Contamination

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
J. STROM THURMOND LAKE
510 CLARKS HILL HIGHWAY
CLARKS HILL, SC 29821-9703
April 1, 2015

Subject: J. Strom Thurmond Lake Airstrip #1, HSI Site Number 10384, Compliance Status Report, Columbia County, Georgia, Thurmond Lake

Mr. John Maddox
Georgia Department of Natural Resources
Environmental Protection Division
Hazardous Sites Response Program
2 Martin Luther King Jr. Drive, Suite 1462 East
Atlanta, Georgia 30334-8600

Dear Mr. Maddox:

Enclosed is the Monitoring Evaluation Form for 2014 and 2015. J. Strom Thurmond Lake Airstrip #1, HSI Site Number 10384. There have been no changes to the site nor its land use designation in the Thurmond Master Plan.

If you have any questions regarding the compliance status report, please contact Environmental Compliance Coordinator Eric Haskell at 864-333-1171.

Sincerely,

Scott M. Hyatt
Operations Project Manager

Enclosure

SITE USE AND TYPE 4 SOIL RRS MONITORING EVALUATION FORM

J Strom Thurmond Lake Airstrip#1, HSI Site No. 10384

TYPE	No.	CRITERIA RESPONSE	YES	NO
Land Use	1	Does this HSRA site meet the definition of non-residential property as defined in HSRA Rule 391-3-19.02(2)? "Non-residential property means any property or portion of a property not currently being used for human habitation or for other purposes with a similar potential for human exposure, at which activities have been or are being conducted that can be categorized in one of the 1987 Standard Industrial Classification major group…"	x	
	1a	If no to 1, provide a written explanation (attached) to the EPD within 30 days.		
Exposure	2	Are site workers expected to be directly exposed to soils with chemical concentrations in excess of Type 4 RRS at this HSRA site in excess of 250 days per year?		x
	2a	If yes to 2, are these same site workers expected to be exposed to soils at this HSRA site in excess of 25 years throughout their career?		
Erosion	3	Is there evidence of soil erosion in the remedial areas of the site?		x
	3a	If yes to 3, is there evidence of erosion of these soils to off-site areas?		
	3b	If yes to 3a, are corrective measures being taken?		
	3c	If yes to 2, 3, 3a, and/or 3b, provide written explanation (attached) to the EPD within 30 days.		
Property Instruments	4	Do all leases or other property instruments for the site have the applicable deed notice language inserted into them.		N/A
	4a	If no to 4, provide a written explanation (attached) to the EPD within 30 days.		
Inspection	5	Date of inspection: 5 Mar 2014		
	5a	Name of inspector: Eric Haskell		
	5b	Photographs showing current land use (attached)	x	

Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Scott M. Hyatt — NAME (Please type or print)

Operations Project Manager — TITLE

SIGNATURE

1 April 2015 — DATE

SITE USE AND TYPE 4 SOIL RRS MONITORING EVALUATION FORM

J Strom Thurmond Lake Airstrip#1, HSI Site No. 10384

TYPE	No.	CRITERIA RESPONSE	YES	NO
Land Use	1	Does this HSRA site meet the definition of non-residential property as defined in HSRA Rule 391-3-19.02(2)? "Non-residential property means any property or portion of a property not currently being used for human habitation or for other purposes with a similar potential for human exposure, at which activities have been or are being conducted that can be categorized in one of the 1987 Standard Industrial Classification major group…"	x	
	1a	If no to 1, provide a written explanation (attached) to the EPD within 30 days.		
Exposure	2	Are site workers expected to be directly exposed to soils with chemical concentrations in excess of Type 4 RRS at this HSRA site in excess of 250 days per year?		x
	2a	If yes to 2, are these same site workers expected to be exposed to soils at this HSRA site in excess of 25 years throughout their career?		
Erosion	3	Is there evidence of soil erosion in the remedial areas of the site?		x
	3a	If yes to 3, is there evidence of erosion of these soils to off-site areas?		
	3b	If yes to 3a, are corrective measures being taken?		
	3c	If yes to 2, 3, 3a, and/or 3b, provide written explanation (attached) to the EPD within 30 days.		
Property Instruments	4	Do all leases or other property instruments for the site have the applicable deed notice language inserted into them.		N/A
	4a	If no to 4, provide a written explanation (attached) to the EPD within 30 days.		
Inspection	5	Date of inspection: 1 Apr 2015		
	5a	Name of inspector: Eric Haskell		
	5b	Photographs showing current land use (attached)	x	

Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Scott M. Hyatt — Operations Project Manager

NAME (Please type or print) — TITLE

SIGNATURE

1 April 2015

DATE

Appendix E

Memorandum of Agreement Between the U.S. Army Corps of Engineers, Savannah District and the U.S. Fish and Wildlife Service for Protected Species Surveys

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640

RECEIVED
MAY 28 2010
ATHENS, GA
USFWS

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINNERS, SAVANNAH DISTRICT
AND
THE U.S. FISH AND WILDLIFE SERVICE

SUBJECT: Protected Species Surveys at J. Strom Thurmond, Richard B. Russell, and Hartwell Lakes

1. References. Memorandum of Agreement Between the U.S. Army Corps of Engineers, Savannah District (USACE) and the U.S. Fish and Wildlife Service Concerning Protected Species Surveys at J. Strom Thurmond, Richard B. Russell, and Hartwell Lakes, 1995; Section 7, Endangered Species Act of 1973 (ESA); Bald and Golden Eagle Protection Act of 1940.

2. Purpose. A revision of the 1995 Agreement referenced above is needed for clarification and to accommodate project needs regarding resurveys. The revision includes making protected species surveys valid for two years.

3. Problem. The USACE has constructed and operates Hartwell, J. Strom Thurmond, and Richard B. Russell Lakes as multipurpose water reservoirs for the production of hydroelectric power, flood control, navigation, fish and wildlife management, and recreational uses. The routine operations and maintenance of these lakes involves activities that may potentially affect federally-protected plant and animal species that might be present. Based on the 1995 Agreement, protected species surveys are valid for only one year; however, many activities require longer than one year to complete.

4. Scope. The USACE and the U.S. Fish and Wildlife Service (USFWS) agree that the operations and maintenance programs at these lakes will be administered in accordance with the following guidelines regarding the necessity for protected species surveys under Section 7 of the ESA and the Bald and Golden Eagle Protection Act of 1940. Execution and implementation of this Agreement evidences that the USACE has satisfied its Section 7 ESA and Bald and Golden Eagle Protection Act responsibilities for all individual undertakings of this program.

5. Responsibilities.

a. Protected Species. Using the federal listings for Georgia and South Carolina as provided by the USFWS, the USACE agrees to protection of all species listed as federal "Endangered or Threatened"; and that further, all candidate species, though not required to be protected by law, will be given consideration and reported when found.

b. Personnel Qualified for Surveying. Qualified personnel will include Savannah District Biologists or Park Rangers and contract biologists who are trained in protected species identification and qualified to conduct protected species surveys.

c. Major and Minor Surveys. Minor surveys are those involving five acres or less and can be conducted by trained Park Rangers as described below. Major surveys are those involving more than five acres or any areas thought to contain the preferred habitat of a protected species and will be conducted by biologists with experience in protected species surveys. Sites with southern pine beetle activity in excess of five acres may be surveyed by trained Park Rangers.

d. Park Ranger Training. By the terms of this agreement, Park Rangers conducting minor surveys will be trained to identify protected species occurring in the upper Savannah River basin. This training will minimally involve, but not be limited to, classroom instruction on the use of the USACE Protected Species Manual, field exercises, and guidance in completing survey work sheets. Training procedures will be periodically reviewed and altered as needed. Training will be conducted by the District Wildlife Biologist or a biologist with protected species survey experience. Refresher training will be provided as needed.

e. USACE Manual. The USACE Protected Species Manual for the Upper Savannah River Basin will be used as a reference for species identification at the three lake projects. The manual will be updated by the USACE District Wildlife Biologist as species lists are changed by the USFWS. Copies of the manual are available online and hard copies have been distributed to each lake office.

f. Protected Species Sites. All sites, as of the date of this agreement, known to support protected species will continue to be administered so as to protect these species in accordance with the ESA and the Bald and Golden Eagle Protection Act, including all additions and amendments thereto. Such sites are understood to include those which formerly supported documented species which currently may or may not be present, e.g. inactive bald eagle nests suitable for occupation. Any proposed modifications to a documented protected species site will require coordination with USFWS.

g. Resurveys – Seasonal. When suitable habitat is identified for a species and seasonal considerations prevent identification, resurveys will be conducted. Such resurveys will be done in accordance with instructions given in the USACE protected species manual and in consultation with the District Wildlife Biologist before a given activity commences.

h. Resurveys – New Activities. If activities are scheduled for a site more than two years after the initial survey, that site will be resurveyed for protected species.

i. Identified Species. If a species federally-listed as endangered, threatened or a candidate is identified on a site, USFWS will be notified and the locations provided through the District Wildlife Biologist. If the identified species may be affected by the proposed action, the USACE will enter consultation with USFWS.

j. Termination. Any party to this Agreement may terminate it by providing thirty (30) days notice to the other parties, provided that the parties will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the USACE will continue to comply with Section 7 of the ESA and the Bald and Golden Eagle Protection Act with regard to individual undertakings covered by this agreement.

k. Specific Project Activities. The USACE will ensure that protected species surveys are conducted in advance of any undertaking by the USACE or outgrantee that may impact protected species. The following table identifies commonly occurring activities which require or do not require protected species surveys.

ACTIVITY	SURVEY REQUIRED	SURVEY NOT REQUIRED
Forest Management:		
Thinning or regeneration timber harvest	X	
Reforestation/Site preparation		X
New access roads, skidder trails, or herbicide use outside the harvest area	X	
Firebreaks – Prescribed burns	X	
Firebreaks – Wildfires		X
Timber harvest for construction or for insect damage suppression	X	
Cut and leave for insect damage suppression		X
Hazardous tree/stump removal		X
Salvage of storm damaged timber		X
Facility Construction/Expansion including infrastructure or other land disturbing activities:		
In unmaintained or undisturbed areas	X	
In areas routinely mowed or maintained		X
Boundary Line Marking:		X
Shoreline Management:		
Rip-rap placement		X

SUBJECT: Protected Species Surveys at J. Strom Thurmond, Richard B. Russell, and Hartwell Lakes

ACTIVITY	SURVEY REQUIRED	SURVEY NOT REQUIRED
French drains, underbrushing/walkway		X
Boat dock placement including anchor system		X
Snag/hazardous tree removal		X
Underground utility/light poles		X
Changing Shoreline Management allocation to Limited Development	X	
Real Estate:		
Issuance of a new lease, license or easement	X	
Renewal of a lease, license or easement without changes to activities or footprint		X
Renewal of a lease, license, or easement with changes to activities or footprint	X	
Disposal of Government Real Property	X	

6. Effective date. This agreement will become effective as of the last date indicated below and will remain in effect until terminated.

FOR SANDRA TUCKER
Field Supervisor
U.S. Fish and Wildlife Service
Athens, Georgia

Date

JAY HERRINGTON
Field Supervisor
U.S. Fish and Wildlife Service
Charleston, South Carolina

June 8, 2010
Date

JEFFREY M. HALL
Colonel, EN
Commanding

12 JUL 2010
Date

APPENDIX F

COMMENTS RECEIVED AND RESPONSES

Date Received	Commenter	Comment	Response
12/6/2021	Erin Leach	There is no justification whatsoever for spending even one more dime of federal tax dollars on projects named after virulent white supremacists. It is a dishonor to the millions of American citizens who deserved dignity and equal representation in government, and instead they got segregation and the likes of Strom Thurmond. Why is a federal agency continuing to participate in this disgrace?	Federal projects like these two lakes are named by Congress, which means it takes an act of Congress to change the official name. To change the name, the community has to first get the support of a Senator or Congressman willing to sponsor federal legislation to make the change. I encourage you to contact them with your concerns.
12/8/2021	Greg-Bobby Brown Park	The plan looks great and I know a lot of work went into the plan by many different people. The plan for Bobby Brown Park looks accurate and we can't think of any other additions to the plan for our park at this time.	Thank you for your support.
12/12/2021	2. Mr. Selfridge	1. Do I need to be concerned about the 10% limitations like those shown below about the limitations on the potential growth of PBYC? Where can I find the "original footprint" of PBYC. Draft appears not to have a PBYC map. Table 16: Potential Recreational Facilities Development Public Marinas: Facilities approved on the lease development plan. Replacement, relocation, and/or modernization of existing facilities not to exceed 10 percent of the original facility's footprint. 2. On Page 43, the Table list Hester's Bottom as being operated by Lincoln County, SC v. the Stewarts and Jones. 3.On Page 44, the Table lists that there are four (4) sites set aside for New Marinas. Where are these sites located?	See response to the previous comment regarding exceeding 10% expansion. Page 43 does not reference Hesters Bottoms as Lincoln Co. but by a private concessionaire. The Master Plan (MP) accurately reflects that Hesters Bottoms in South Carolina was leased to a private concessionaire in 2021 and that Hesters Ferry is a campground managed by Lincoln County Georgia. Appendix C of the MP has been revised to provide additional information regarding Future Marina Sites.
12/26/2021	1. Mr. Selfridge	I require clarification about this Rule verses Projects that are approved by the District. I am working on plans for approximately twenty (20) new campground sites and a bathhouse on Harbour Point. At present, PBYC has 56 campground sites. According to the Master Plan, PBYC is allowed to have ONLY six (6) more campground sites. The development of Harbour Point cannot be justified based upon only six (6) new sites. I will be working with SCDNR, SCDHEC and a Licensed Engineer to develop an overall plan for Harbour Point.	Table 16 of the Master Plan (MP) and Table 1 of the Environmental Assessment (EA) addresses a 10% expansion; it was determined that this level of expansion could be approved under this EA upon review and approval by the project office. This MP provides our stakeholders with the benefit of possible expansion and other uses without the time and cost of completing a new EA. Requests exceeding the defined expansion limits in the MP

			and EA will be considered but could require additional documentation including a separate analysis under the National Environmental Policy Act.
12/27/2021	3. Mr. Selfridge	How "picky" do you want me to be?? On Pages 21 -22, the MP is using 2019 data when the 2020 Census data is available! Contrary to the data shown in these Tables, McCormick has actually GROWN these past two (2) years. In 2021, 107 new houses were built in SLV alone!! This is why all the County Council Districts are being redrawn.	U.S. Census data from April 1, 2010 indicates a population of 10,233 for McCormick County. The most recent April 1, 2020 census data indicates that the population decreased to 9,526. However, a year-to-year comparison that you reference regarding increased population is not available in the census data. We utilized the best available data when we completed the MP which was 2010-2019.
12/14/2021	Donna Faulkner	Regarding the Lake Thurmond Master Plan, I want to tell you how happy we are to see that there is a proposal to add a marina for those of us at the north end of the lake. My family has had a property on Newford Creek since 1983, and the addition of a marina would be so welcome. We saw the map of the proposed spots and they seem convenient for many. Thank you for the good work you do.	Thank you for your support.

1/10/2022	Lindsey Jones	I have reviewed the Master Plan and there are a few things that I have considered for expansion opportunities that have not come up in the past. Now that I am open, I have some new ideas that I would love for the board to consider for Hester's Bottoms. I am not sure if this is the appropriate forum to mention them, so please let me know if I need to develop a formal proposal and request. As mentioned in my original plan, I would like to add more RV sites (approximately 15), some of which would be full hook-ups with sewage. I would also like to add cabins or tiny houses to the park, as well as 4 covered group pavilions for activities and events. I have considered dry storage as well as extra vehicle parking for day passes. Another thing that would be more of a long-term addition is a marina style dock with wet and transient slips. Finally, I would love to expand the amenities of the park to include another playground (and/or expand the current one), golf cart trails (which were in the original plan, and I hope to do very soon) and a splash pad. Thank you for including me in the process and let me know if I need to do anything else for these to be included for long term consideration.	Most of your requests can be accommodated under this EA as part of your existing development plan. The marina facility, playground, and golf cart trails are covered under this Master Plan (Appendix C). However, the approval of the dry storage will depend on the location. Please submit a separate proposal for dry storage.
12/7/2021	Tom McCoy USFWS (SC Field office)	The U.S. Fish and Wildlife Service has reviewed the J. Strom Thurmond Lake Master Plan and have no comments to provide. Thank you for the opportunity to review.	Thank you for your response.

1/20/2022	Pete Maholland USFWS (GA Field office)	The U.S. Fish and Wildlife Service (Service) has reviewed the proposed update to the J Strom Thurmond Lake Master Plan and the accompanying draft environmental analysis. The Master Plan provides a programmatic approach to the management of all the lands included within the J Strom Thurmond Project boundary. We submit the following comments under provisions of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et. seq.), Migratory Bird Treaty Act (16 U.S.C. 703, et seq.), The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), and the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). Based on the information provided, the Corps has determined that the update to the master plan will have no adverse impacts on federally listed Threatened or Endangered species or critical habitat because recreation area development will not occur in critical habitats or if a TES is present. The Corps proposes to conduct surveys for protected species prior to the construction of any new facilities to ensure no adverse effects to any Federally listed threatened for endangered species in accordance with the Memorandum of Agreement between the U.S. Army Corps of Engineers, Savannah District and the U.S. Fish and Wildlife Service, May 28, 2010. If protected species are discovered during these surveys the Corps will then consult with the Service. The Service agrees with this approach and does not anticipate impacts to protected species or critical habitat as a result of the update to the J Strom Thurmond Lake Master Plan. The Service would like to bring it to the attention of the Corps that the Monarch Butterfly (Danaus plexippus) also may occur within the boundaries of the J Strom Thurmond Project. In December 2020, after an extensive status assessment of the monarch butterfly, USFWS determined that listing the monarch under the Endangered Species Act is warranted but precluded at this time by higher priority listing actions. With this finding, the	We appreciate your comments and have created an area near the dam focused on pollinators with milkweed planted for Monarch butterflies. We added monarch butterfly to Table 3 of the MP as a Candidate species. Flow regimes and water releases are not within the purview of the Master Plan; however, the Corps will coordinate closely, and consult as necessary, with the Service(s) on any updates to manuals or plans affecting water management.

		monarch butterfly becomes a candidate for listing; we will review its status each year until we are able to begin developing a proposal to list the monarch. There are generally no section 7 requirements for candidate species (see our Section 7 Questions and Answers on the monarch here https://www.fws.gov/savethemonarch/FAQ-Section7.html), but we encourage all agencies to take advantage of any opportunity they may have to help conserve the species. Letter lists habitat requirements for the monarch and interest in working with the Corps on any future updates to any Corps project operations that impact water management (e.g. timing, duration, and volume of flows) in the Savannah River to conserve and enhance populations of rare and protected species in the lower Savannah River.	
1/28/2022	David Bernhart, NMFS	We have no comments on the proposed changes to these aspects of the master plan. However, we maintain our long-standing concern over the ecological impacts of the current peaking-flow releases from J. Strom Thurmond Dam on NOAA trust resources downstream of the dam. We believe ecological impacts could be diminished if, in lieu of pulsed releases, the same daily flow volumes were released more consistently throughout the course of the day. We recognize managing these flows is complex and requires balancing the competing needs of multiple stakeholders and interests, while still meeting the power generation needs of the region. With those complexities in mind, we wish to start a dialog with the Savannah District, and other downstream users and stakeholders, to identify challenges and opportunities for addressing peaking flow operations. We would like to begin the conversation by speaking with the appropriate Savannah District staff to understand the processes and requirements for making changes to flow management regimes. We are also interested in discussing other potential means for functionally smoothing downstream flows to mitigate	Flow releases at Thurmond dam are not within the purview of the Master Plan. The Savannah River Basin Water Control Manual, 1996 and the Drought Management Plan, 2012 provide information regarding flows at Thurmond dam. Any changes to flow regimes would be closely coordinated with NMFS and other agencies.

		impacts, if flow management changes at J. Strom Thurmond Dam are not possible. We appreciate your continued coordination on this project and look forward to future conversations.	
1/13/2022	Elizabeth Johnson, SC-SHPO	Our office does not have any comments or questions at this time. The EA notes that the cultural resources at the Project will continue to be managed under the existing Programmatic Agreement for the project dated 2003, and Historic Properties Management Plan updated in April 2001. It also provides a useful summary of the cultural resources surveys that have been carried out at the Project. Our office would concur with the finding in the EA that there would be no adverse effect to cultural resources with the implementation of the proposed action.	Thank you for your letter.
2/4/2022	Jennifer Dixon, GA-SHPO	Based on the information contained in the plan, HPD concurs that there are multiple historic properties within and adjacent to Lake J. Strom Thurmond, including both archaeological and historic resources such as cemeteries, parks, campsites, marinas, buildings, and similar. However, HPD finds that the updating of the master plan will have no adverse effect to historic properties within its area of potential effect (APE), as defined in 36 CFR Part 800.5(d)(1), due to the nature of the planning-only activity. HPD notes that the Historic Properties Management Plan (HPMP, 2001) and the related Programmatic Agreement (PA) remain the guiding documents related to cultural resources within the proposed project's APE. As such, due to the age of the current HPMP and given that no annual reports or updates to the HPMP have been received/reviewed in accordance with Section 14.1. and 14.2 of the HPMP since the document was adopted, HPD recommends updating the HPMP simultaneously with the Master Plan and in accordance with Stipulations 3 and 8 of the PA and Section 14 of the HPMP.	Thank you for your comment. We have requested funding for this effort and will initiate a review and update of the project's HPMP as funding allows.

1/19/2022	Tom Daniel Inland Project Manager, SCDNR	The SCDNR generally supports the efforts to revise the 1995 MP as many of the described revisions would likely result in improved public access to the lake and its natural resources. However, some clarification is needed in order to satisfactorily evaluate the potential for the proposed action to impact aquatic resources/wetlands, fish and wildlife habitat, water quality, and navigation.	Thank you. The Corps looks forward to continuing to work together.
1	MP related	The Public Notice states "The guidance also includes requirements for an interdisciplinary team approach for the development, re-evaluation, and supplementation or updating of the MP." The SCDNR requests that this guidance be provided and included in the MP.	Master Plan Guidance - ER 1130-2-550 is publicly available at: https://www.publications.usace.army.mil/Portals/76/Publications/EngineerRegulations/ER_1130-2-550.pdf; and EP 1130-2-550 is publicly available at: https://www.publications.usace.army.mil/Portals/76/Publications/EngineerPamphlets/EP_1130-2-550.pdf. Both are incorporated by reference into the NEPA documentation. Regarding your specific question, the interdisciplinary team approach was used in developing this document with planners, biologists, foresters, recreation specialists, and compliance coordinators.
2		Page 2. The SCDNR submits that policies and regulations concerning the development practices of the parties mentioned in the MP appear to be missing from this MP. Without explicit guidance or Best Management Practices (BMPs), the MP does not regulate the types of activities allowed on project lands by parties that are not otherwise regulated under the Shoreline Management Plan (SMP) (e.g., public entities and private concessionaires). Therefore, the impacts of said development practices on aquatic resources/wetlands, fish and wildlife habitat, water quality, and navigation cannot be determined with the information provided. SCDNR requests that language explicitly subjecting development activities to the provisions in the SMP be included in the MP (see section 4.4.5.a. for an example)	The Shoreline Management Plan (SMP) is a standalone document that has been through NEPA review and guides all regulations related to private individual docks, permits, and any environmental impacts associated with the implementation of the shoreline management program. Requirements for private docks are not within the purview of this MP guidance. Public entities and commercial concessionaires are not subject to the SMP, but instead are addressed by individual development plans. Although the Corps does not have BMPs specific to public entities and concessionaires, they must submit an individual development plan that is reviewed for navigation safety and to ensure appropriate

		and/or that the following BMPs are explicitly incorporated into the MP: Docks •The area considered for a new floating facility must provide a 50-foot buffer between the proposed facility and any existing facility or mooring buoy at 330 feet mean sea level (msl) elevation. This buffer is defined as the distance between the two closest points on adjacent facilities. This spacing is to provide safe navigational access between facilities and provide sufficient area for boat maneuverability, water level fluctuations and public safety. •The entire dock and walkway must not extend over one third the distance across a cove, measured from the 330 feet msl elevation on the shoreline of both sides. The length of any dock, including any moored vessel, must not interfere with the navigation channel at any time. Approved new docks shall be placed so as to have the least impact on navigation. •The flotation material for all docks shall be fabricated of materials manufactured for marine use. The float and its flotation material shall be 100% warranted for a minimum of eight years against sinking, becoming waterlogged, cracking, and peeling, fragmenting or losing beads. All floats shall resist puncture and penetration and shall not be subject to damage by animals under normal conditions for the area. •Wood treated with creosote may not be used in construction. Bank Stabilization •Vegetative shoreline enhancements are the preferred method to prevent erosion, followed by enhanced or sloping rip rap, with vertical bulkheads used only as an alternative when the aforementioned methods have proven to be ineffective. •Backfill and riprap must consist of clean earthen material and stone free of all potential sources of pollution. •Bulkheads/seawalls and revetments should be constructed abutting the existing erosional scarp. Where such structures are	safety measures or size restrictions are incorporated. The acceptable distance between commercial marina facilities may vary depending upon the size of dock, the marina basin and the size of vessels being moored. Establishing a set distance or specific BMP in the MP, such as 50', may not be adequate in all commercial situations. Each specific site and situation is evaluated separately. Additionally, marinas are typically located in basins where private dock facilities are not present. The requirement to restrict marina facilities to a specific portion of the cove may not be applicable if other facilities will not be installed on the opposite side of the cove. Navigation impacts and safety will be reviewed as part of the approval process. Additionally, impacts to resources will be evaluated on a case-by-case basis and measures to minimize impacts incorporated into the individual development plans at that time. Added to MP Introduction -The MP does not preclude the requirement for submittal and approval of individual development plans for public entities and private concessionaires. All potential improvements, as well as natural resource management actions, will be reviewed for compliance with the Endangered Species Act, the Fish and Wildlife Coordination Act, the National Historic Preservation Act (NHPA), the Clean Water Act, in accordance with ER 200-2-2, Procedures for Implementing NEPA, and will be addressed by the appropriate categorical exclusion at the time of implementation.

		permissible, they should be constructed so that wave energy does not scour stable bottoms or constitute safety hazards •Bulkhead construction should avoid sharp angle turns that may collect trash or cause shoaling or flushing problems. •Bulkheads that require significant backfill and are for the purpose of creating developable high ground will not be permitted.	
3		Page 10. "Emergency procedures for handling oil spills and hazardous substances are contained in the project Spill Prevention, Control and Countermeasures Plan." Where is this plan available?	The Project Spill Prevention, Control, and Countermeasures Plan is available as a hard copy at the Thurmond Project office.
4		Page 13. Protected Species. Please include State-listed species in this section, including the State-Endangered Webster's Salamander (Plethodon websteri). For a current list of state listed species visit www.dnr.sc.gov/species/. Page 15. Table 3. Please include State-listed species in this table.	Because state lists are more extensive and updates are sporadic between Georgia and South Carolina, we have chosen for our operational documents not to include state-listed species. Additionally, because we cover Georgia and South Carolina, each state has some differences in how state-listed species are defined which has changed over time. For example, currently, the Georgia list is more extensive than the South Carolina list; however, in previous years the South Carolina list was much more extensive than the Georgia list. While state-listed species are not listed specifically in the MP, these species, determined from current lists provided by Georgia and South Carolina, are considered in all protected species surveys and avoided when possible. Section 2.8.3, MP and added to 4.6.2 of EA.
5		Page 34. Land Classification. Please include definitions of the land-use classifications and descriptions of which lands are being reclassified. Page 35. Environmentally Sensitive Areas. There appears to be a decrease in the total lands classified as Environmental compared to the 1995 MP (See Table 1 in the 1995	Definitions are found in section 4.2 of the Master Plan for land classifications. There were no lands reclassified except those classified under environmentally sensitive. Those reclassified under environmentally sensitive were only reclassified under the subjective 1995 classification of aesthetics. All

		MP). What is the reason for the discrepancy?	lands classified as wetland, protected species, cultural resources, and other significant features continue to be protected as environmentally sensitive. Other minor adjustments to acreages are a result of more technologically advanced mapping techniques.
6		Page 37. Table 14. Please include the changes to classification acreages being proposed. Page 5. Table 2. Please include the changes to classification acreages being proposed.	There were very few changes to acreages and only affected the environmentally sensitive and multiple resource categories; therefore, we provided a detailed explanation of those changes in section 4.2.4 of the Master Plan.
7		Page 19. Protected species. Please note that the Atlantic Pigtoe and the Brother Spike are also State-Endangered species in SC. Please include SC State-listed species in this section.	See response 4. above regarding state-listed species
8		Page 20. Table 4. Please include State-listed species in this table.	See response 4. above regarding state-listed species
9		Page 40. Section 4.1.2. Please clarify which state agency's BMPs will be applicable.	Clarification has been added to 4.1.2. The state BMP will be used for the state where the activity occurs.
10		Page 42. Section 4.5.2. Please clarify which BMPs will be applicable. BMPs for this activity were not described in the MP.	Clarification has been added. Each state's forestry BMP will be used within the state where the activity occurs. Forestry BMPs for Georgia are "Georgia's Best Management Practices for Forestry", 1999 and for South Carolina, "South Carolina's Best Management Practices for Forestry", 2021, section 4.2.2.
11		Page 42. Section 4.7.2. Please mention State-listed protected species in this section.	See response 4. above regarding state-listed species
12		Page 43. Section 4.8.2. Which erosion control measures and BMPs will be required? The SCDNR finds that more information regarding the BMPs applicable to parties that are not otherwise regulated under the Shoreline Management Plan (e.g., public entities and private concessionaires) is needed to allow for a comprehensive review of the potential environmental consequences of the proposed action.	Public facilities are addressed by individual development plans. Those facilities listed are already covered by the SMP and are not within the purview of the Master Plan. Impacts to resources will be evaluated on a case-by-case basis. Added to MP Introduction -The MP does not preclude the requirement for submittal and approval of individual development plans for public entities

			and private concessionaires. All potential improvements, as well as natural resource management actions, will be reviewed for compliance with the Endangered Species Act, the Fish and Wildlife Coordination Act, the National Historic Preservation Act (NHPA), the Clean Water Act, in accordance with ER 200-2-2, Procedures for Implementing NEPA, and will be addressed by the appropriate categorical exclusion at the time of implementation. Statement added to 4.13.2 regarding stormwater, NPDES permits, section 404 permits and forestry BMPs.
13		Page 45. Section 4.15.2. Will all "natural resources management activities that may impact water quality" be subject to BMPs? Which state agency's BMPs will be applicable? Please incorporate explicit mention of this requirement into the MP. The SCDNR finds that more information regarding these BMPs is needed to allow for a comprehensive review of the potential environmental consequences of the proposed action.	Statements regarding BMPs added to sections 4.1.2, 4.2.2, and 4.13.2. Forestry BMPs will apply to the state where the activity occurs. Also, see response to 2. And 12. above. Added to Section 4.0 Environmental Consequences - In addition, Erosion control measures will be implemented during proposed recreation area development. Construction activities are required to follow state regulations for stormwater and erosion control measures, as well as National Pollution Discharge Elimination System (NPDES) permitting and Section 404 permitting as required. Natural resources management activities that may impact waterbodies will be conducted in accordance with the appropriate Georgia or South Carolina BMPs for stormwater and sediment control, as well as each state's respective forestry BMP manuals.
14		Page 51. Table 14. The SCDNR is concerned with activities which do not appear to be subject to explicit guidance or BMPs in the proposed MP. Without explicit guidance on shoreline stabilization and construction methods, the SCDNR finds that it is	Shoreline stabilization, construction, and docks are not within the purview of this Master Plan.

		premature to claim insignificant impacts to the following categories in Table 14: aquatic resources/wetlands, fish and wildlife habitat, and water quality. Without explicit guidance on dock spacing and sizing, the SCDNR finds that it is premature to claim insignificant impacts to navigation.	
15	Appendices comments	Appendix C. The species name for Warmouth should be changed to Lepomis gulosus, and there appears to be a typo in the common name for Chain Pickerel. Also, the term "rough fish" can be viewed as an antiquated, pejorative term; it may be more appropriate to categorize these groups into 'game fish' and 'non-game fish' (see Section 50-13 of the South Carolina Code of Laws). American Alligator should be listed as Crocodilian	Changes made as requested
16		Appendix D Under Item 49. Future Marina Sites: "Area description for Mt. Carmel Campground, Hesters Ferry Campground, and Parkway Boat Ramp are found in their respective sections listed above." Please note that the sections provided do not appear to match any sections in the MP, EA or in the appendices. Where can these area descriptions be found?	Descriptions are included in Appendix D - Resource plans; additional information has been provided in para. 51.
17	FONSI comments	As described above, without explicit guidance on shoreline stabilization and construction methods, the SCDNR finds that it is premature to claim insignificant impacts to the following categories: aquatic resources/wetlands, fish and wildlife habitat, and water quality. Without explicit guidance on dock spacing and sizing, the SCDNR finds that it is premature to claim insignificant impacts to navigation.	Thank you for your comments, we have updated the effects analysis in Section 4 of the EA. The changes being considered from the 1995 MP to this MP to recreation facilities and natural resources management practices as detailed in the MP are consistent with current regulations and policies. All individually proposed improvements, as well as natural resource management actions, will be reviewed for compliance with the Endangered Species Act, the Fish and Wildlife Coordination Act, the National Historic Preservation Act, the Clean Water Act, etc., in accordance with ER 200-2-2, Procedures for Implementing NEPA, and will be addressed by the appropriate NEPA

			compliance, generally a categorical exclusion when in accordance with this MP. Significant impacts will not be approved through our categorical exclusion process.
1/20/2022	John Bowers, GA DNR Wildlife Resources Division	GA DNR WRD appreciates the opportunity to provide comments on the Draft MP, EA, and FONSI. We support Alternative 2 - Preferred Alternative - Update Master Plan and have several comments on the Draft MP and the Draft EA as follows: Regarding the Draft MP in Section 2.3 relating to Sedimentation and Shoreline Erosion (Page 7), the sedimentation reports are from 22 years ago (1999). We would expect significant changes since then, especially in the Broad River and potentially GA Little River. The "nuisance and aesthetic loss" to "residents and recreationalists in shoal areas" documented in 1999 are likely worse now and potentially affect the important springtime fish habitat the shoals provide. We would like to see a plan to resurvey sedimentation to reflect present day conditions more accurately. Additionally, in Section 2,4, relating to Water Quality and Supply (Page 8), the MP states, "water quality in Thurmond Lake is measured by Georgia and South Carolina natural resource State agencies." However, Figure 2 lists only USACE sampling sites as indicated on the figure. The section goes on to describe the water quality monitoring conducted by the USACE. In Section 3.2.12 of the EA (Page 33), this paragraph is slightly different but specifies that these same sampling sites are SCDHEC sites; therefore, it is unclear who is responsible for conducting sampling at these sites. In Section 2.8.4, relating to Invasive Species (Page 16), the table indicates "significant to major" hydrilla occurrence but the note at the bottom of the table references that no hydrilla was observed in a cursory study conducted in the fall of 2019. This concurs with our observations and measurements on the Project. We suggest that the table be updated to reflect that condition. Finally, in	A whole lake bathymetry survey was conducted in 2017 and compared to the pre-impoundment survey from 1954. The comparison revealed a 2.9% decrease in reservoir storage in the JST Lake pool between elevation 330 and 305 due to sedimentation. The survey results were not analyzed for specific tributaries. The 2017 dredge information has been added to section 2.3. We have previously evaluated, along with representatives from both states, the potential for dredging Broad River below the shoals as you suggest. One of the primary issues was locating an adjacent site for dewatering and disposal. The majority of the area has steep topography, with the exception of the campground area. The north side of the Broad River includes mitigation for Richard B. Russell and several archeological sites. We will explore the dredging potential again, but the site has some significant limitations. We have made changes as requested to clarify surface water sampling in section 2.4 of the MP and 3.2.12 of the EA. Both figures reflect USACE sampling locations. Regarding invasive species in section 2.8.4 and Table 4, the 2019 hydrilla survey was not a formal survey and covered only a fraction of the area covered by previous surveys. Based on those results, we did not identify hydrilla at any of those locations; however, in 2022 we will conduct a lake-wide survey assessing all points previously surveyed in 2010 and 2015. At that time, we can

		Section 2.13,3, relating to Recreational Analysis (Page 28), the MP states, "while there are an ample number of boat ramps around the lake, parking is insufficient at many boat ramps especially on the lower end of the lake." It seems to us that the Master Plan should clearly allow for boat ramp parking lot expansion. Also, Table 16 (Section 5.2, Page 41), "Potential Recreational Facilities Development", states "Designated parking lot(s) not to exceed 100 spaces". We are unclear why there is a cap at 100 parking lot spaces. We believe this statement should be rephrased, particularly if additional spaces are, or might be, warranted and feasible. Concerning the Draft EA, we offer several editorial comments to Section 3.2.2, relating to Aquatic Resources/Fisheries, as follows: Add Spotted Bass and Blue Catfish to the list of popular sportfish and note that they are non-native species. Add Gizzard Shad to the list of important forage fish. The second paragraph begins with another list of sport fish. This list should be edited to match the other sport fish list. The description of Marone sp. stockings only includes Georgia. A more general statement, "Both Georgia DNR and SCDNR produce striped bass and hybrid bass to stock into Thurmond Lake as fingerlings", would be more accurate.	provide you with aquatic plant data that can be compared to previous surveys. Section 5.2 and Table 16 of the Master Plan provide expansion limits that are covered by this EA. While 100 designated parking spaces is listed as the capacity at a boat ramp, additional capacity will be considered on a case-by-case basis but may require additional environmental documentation including a new analysis under the NEPA. We concur with fisheries changes in section 3.2.2 and have made changes as recommended.

From: Erin Leach <erin.h.leach@gmail.com>
Sent: Monday, December 6, 2021 11:23 AM
To: CESAS-Planning <CESAS-Planning@usace.army.mil>
Subject: [Non-DoD Source] Public comment on "J. Strom Thurmond" project

There is no justification whatsoever for spending even one more dime of federal tax dollars on projects named after virulent white supremacists. It is a dishonor to the millions of American citizens who deserved dignity and equal representation in government, and instead they got segregation and the likes of Strom Thurmond.

Why is a federal agency continuing to participate in this disgrace?

Sincerely,

Erin Leach
Charleston, SC

-----Original Message-----
From: office@bobbybrownpark.com <office@bobbybrownpark.com>
Sent: Wednesday, December 8, 2021 12:56 PM
To: Boyd, Susan R CIV USARMY CESAS (USA) <Susan.R.Boyd@usace.army.mil>
Subject: [Non-DoD Source] Re: J. Strom Thurmond Project Master Plan - Public Comment

Susan,

The plan looks great and I know a lot of work went into the plan by many different people. The plan for Bobby Brown Park looks accurate and we can't think of any other additions to the plan for our park at this time.

Thanks,

Greg

On 2021-12-07 08:46, Boyd, Susan R CIV USARMY CESAS (USA) wrote:
> Good Morning All,
>
> I am pleased to announce that the Thurmond Project draft Master Plan
> is available on the Savannah District website for review and comment.
> The comment period will run 45 days, closing on January 20, 2022. The
> master plan was last updated in 1995 and no longer reflects current
> development and resource management objectives at the lake. The draft
> plan is the culmination of multiple years of work and planning and
> attempts to consider future development and resource management for at
> least the next twenty years.
>
> Please review the plan and provide any comments or input regarding
> future development at the lake or within your specific recreation
> areas. The attached public notice contains links to the plan and an
> environmental assessment on our website.
>
> Please don't hesitate to reach out to me if you have any questions
> about the plan.
Respectfully,

Susan R. Boyd
Natural Resources Manager
J. Strom Thurmond Project
510 Clarks Hill Highway
Clarks Hill, SC 29821
864-333-1102

From: George Selfridge <gcsjr@alum.mit.edu>
Sent: Sunday, December 12, 2021 1:56 PM
To: Boyd, Susan R CIV USARMY CESAS (USA) <Susan.R.Boyd@usace.army.mil>; Hyatt, Scott M CIV USARMY CESAS (USA) <Scott.M.Hyatt2@usace.army.mil>
Cc: Bea McClain <bea@plumbranch.com>; Janet Hollenbeck <janethollenbeck@yahoo.com>
Subject: [Non-DoD Source] NEW MASTER PLAN

Dear Susan,

1. Do I need to be concerned about the 10% limitations like those shown below about the limitations on the potential growth of PBYC? Where can I find the "original footprint" of PBYC. Draft appears not to have a PBYC map.

Table 16: Potential Recreational Facilities Development

Public Marinas: Facilities approved on the lease development plan.

Replacement, relocation, and/or modernization of existing facilities not to exceed 10 percent of the original facility's footprint.

2. On Page 43, the Table list Hester's Bottom as being operated by Lincoln County, SC v. the Stewarts and Jones.

3. On Page 44, the Table lists that there are four (4) sites set aside for New Marinas. Where are these sites located?

I will keep reading the document.

Please note, Bea and I will be leaving January 3, 2022 until March 1 , 2022.

GCS, Jr.

From: George Selfridge <gcsjr@alum.mit.edu>
Sent: Sunday, December 26, 2021 12:44 PM
To: Boyd, Susan R CIV USARMY CESAS (USA) <Susan.R.Boyd@usace.army.mil>; Hyatt, Scott M CIV USARMY CESAS (USA) <Scott.M.Hyatt2@usace.army.mil>
Cc: Bea McClain <bea@plumbranch.com>; Eddie Wilson <wilsonedward420@gmail.com>; Buatte, Carla J CIV USARMY CESAS (USA) <Carla.J.Buatte@usace.army.mil>
Subject: [Non-DoD Source] MASTER PLAN - 10% RULE

Susan & Scott,

I require clarification about this Rule verses Projects that are approved by the District.

I am working on plans for approximately twenty (20) new campground sites and a bathhouse on Harbour Point. At present, PBYC has 56 camp ground sites. According to the Master Plan, PBYC is allowed to have ONLY six (6) more camp ground sites.

The development of Harbour Point cannot be justified based upon only six (6) new sites. I will be working with SCDNR, SCDHEC and a Licensed Engineer to develop an overall plan for Harbour Point. Hopefully by mid-2022, I will be able to present this plan to you.

GCS, Jr.

From: George Selfridge <gcsjr@alum.mit.edu>
Sent: Monday, December 27, 2021 4:10 PM
To: Boyd, Susan R CIV USARMY CESAS (USA) <Susan.R.Boyd@usace.army.mil>; Hyatt, Scott M CIV USARMY CESAS (USA) <Scott.M.Hyatt2@usace.army.mil>
Subject: [Non-DoD Source] MASTER PLAN POPULATION DATA

Susan,

How "picky" do you want me to be?? On Pages 21 -22, the MP is using 2019 data when the 2020 Census data is available!

Contrary to the data shown in these Tables, McCormick has actually GROWN these past two (2) years. In 2021, 107 new houses were built in SLV alone!! This is why all the County Council Districts are being redrawn.

GCS, Jr.

From: Donna Faulkner <dbfaulkner@hotmail.com>
Sent: Tuesday, December 14, 2021 11:23 AM
To: CESAS-Planning <CESAS-Planning@usace.army.mil>
Subject: [Non-DoD Source] Comment about the Lake Thurmond Master Plan

Dear Planning Branch,

Regarding the Lake Thurmond Master Plan, I want to tell you how happy we are to see that there is a proposal to add a marina for those of us at the north end of the lake. My family has had a property on Newford Creek since 1983, and the addition of a marina would be so welcome. We saw the map of the proposed spots and they seem convenient for many. Thank you for the good work you do.

Sincerely,
Donna Faulkner
1075 Doe Run Road
Tignall, GA 30668

From: Lindsey Jones <lindseyjotucker@hotmail.com>
Sent: Monday, January 10, 2022 2:56 PM
To: Boyd, Susan R CIV USARMY CESAS (USA) <Susan.R.Boyd@usace.army.mil>
Subject: [Non-DoD Source] ACOE Master Plan

Hi Susan,

I have reviewed the Master Plan and there are a few things that I have considered for expansion opportunities that have not come up in the past. Now that I am open, I have some new ideas that I would love for the board to consider for Hester's Bottoms. I am not sure if this is the appropriate forum to mention them, so please let me know if I need to develop a formal proposal and request.

As mentioned in my original plan, I would like to add more RV sites (approximately 15), some of which would be full hook-ups with sewage. I would also like to add cabins or tiny houses to the park, as well as 4 covered group pavilions for activities and events. I have considered dry storage as well as extra vehicle parking for day passes. Another thing that would be more of a long-term addition is a marina style dock with wet and transient slips. Finally, I would love to expand the amenities of the park to include another playground (and/or expand the current one), golf cart trails (which were in the original plan, and I hope to do very soon) and a splash pad.

Thank you for including me in the process and let me know if I need to do anything else for these to be included for long term consideration,
Lindsey

From: McCoy, Thomas <thomas_mccoy@fws.gov>
Sent: Tuesday, December 7, 2021 8:20 AM
To: Gose, Cynthia A CIV USARMY CESAS (USA) <Cynthia.A.Gose@usace.army.mil>
Cc: Faustini, John <john_faustini@fws.gov>; Olds, Melanie J <melanie_olds@fws.gov>
Subject: [Non-DoD Source] RE: [EXTERNAL] RE: Thurmond Master Plan, Environmental Assessment and FONSI available for Public Review

Hello.

The U.S. Fish and Wildlife Service has reviewed the J. Strom Thurmond Lake Master Plan and have no comments to provide.

Thank you for the opportunity to review.

Tom

Thomas (**Tom**) D. McCoy, Field Supervisor for Ecological Services

Department of the Interior - U.S. Fish and Wildlife Service

South Atlantic - Gulf Region (Region 2)

South Carolina Ecological Services Field Office

176 Croghan Spur Road, Suite 200

Charleston, South Carolina 29407

Main Phone Line: 843.727.4707

Direct Phone Line: 843.300.0431

Cell Phone: 843.576.9862

Fax Line: 843.300.0204

Email: thomas_mccoy@fws.gov

Visit our Web Site for more information about our office:

https://www.fws.gov/southeast/charleston

United States Department of the Interior

Fish and Wildlife Service
Georgia Ecological Services
355 East Hancock Ave, Room 320, Box 7
Athens, Georgia 30601
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
P.O. Box 52560
Ft. Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

Coastal Georgia Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

January 19, 2022

Kimberly L. Garvey, Planning Branch Chief
Department of the Army
U.S. Army Corps of Engineers, Savannah District
100 W. Oglethorpe Avenue
Savannah, Georgia 31401-3604
ATTN: Mrs. Cynthia Gose

Re: J Strom Thurmond Lake Master Plan; FWS Log Number CG-22-066

Dear Mrs. Garvey:

Thank you for your December 6, 2021 requesting a review of the United States Army Corps of Engineers' (Corps) proposed update to the J Strom Thurmond Lake Master Plan. The U.S. Fish and Wildlife Service (Service) has reviewed the proposed update to the J Strom Thurmond Lake Master Plan and the accompanying draft environmental analysis. The proposed actions are located in the vicinity of J Strom Thurmond Lake in Columbia, Lincoln, and Elbert counties of Georgia and McCormick county of South Carolina. The Master Plan provides a programmatic approach to the management of all the lands included within the J Strom Thurmond Project boundary. We submit the following comments under provisions of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et. seq.), Migratory Bird Treaty Act (16 U.S.C. 703, et seq.), The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), and the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.).

Based on the information provided, the Corps has determined that the update to the master plan will have no adverse impacts on federally listed Threatened or Endangered species or critical habitat because recreation area development will not occur in critical habitats or if a TES is present. The Corps proposes to conduct surveys for protected species prior to the construction of any new facilities to ensure no adverse effects to any Federally listed threatened for endangered species in accordance with the Memorandum of Agreement between the U.S. Army Corps of Engineers, Savannah District and the U.S. Fish and Wildlife Service, May 28, 2010. If protected species are discovered during these surveys the Corps will then consult with the Service. The Service agrees with this approach and does not anticipate impacts to protected species or critical habitat as a result of the update to the J Strom Thurmond Lake Master Plan.

The Service would like to bring it to the attention of the Corps that the Monarch Butterfly (*Danaus plexippus*) also may occur within the boundaries of the J Strom Thurmond Project. In December 2020, after an extensive status assessment of the monarch butterfly, USFWS determined that listing the monarch under the Endangered Species Act is warranted but precluded at this time by higher priority listing actions. With this finding, the monarch butterfly becomes a candidate for listing; we will review its status each year until we are able to begin developing a proposal to list the monarch. There are generally no section 7 requirements for candidate species (see our Section 7 Questions and Answers on the monarch here - https://www.fws.gov/savethemonarch/FAQ-Section7.html), but we encourage all agencies to take advantage of any opportunity they may have to help conserve the species.

The monarch is found in open habitats state-wide in Georgia and relies heavily on a variety of native milkweed species and nectar producing plants. Recommended but voluntary conservation measures include: (1) planting (recommended) or seeding of native milkweed and native nectar plants (organically grown Georgia sourced plants are best; note that *Asclepias syriaca* is not native to Georgia and is an invasive concern) with an aim for diversity of species and bloom timing; (2) brush removal to promote habitat for native milkweed and native nectar-producing plants; (3) targeted hardwood control when thinning woodlands on timber lands and selecting herbicides that preserve the herbaceous layer of plants when doing soil prep; (4) prescribed burning (outside the growing season for native milkweeds; in patches or smaller units is recommended) to promote suitable habitat on a 2-3 year rotation in the Piedmont, 2 year rotation on the coastal plain, and 3-5 year rotation in the mountains; (5) creating or preserving suitable habitat on idle lands or set-asides (see link below for additional guidance); (6) conservation mowing (i.e. mowing only November – March) to enhance native floral resource habitat; (7) targeted herbicide treatments (outside the growing season of native milkweeds) to restore suitable habitat; and (8) invasive species management. Information on milkweed plants native to Georgia and links to additional resources can be found at https://botgarden.uga.edu/wp-content/uploads/2018/03/milkweedinformation.pdf.

The Service would also like to express its interest in working with the Corps on any future updates to any Corps project operations that impact water management (e.g. timing, duration, and volume of flows) in the Savannah River to conserve and enhance populations of rare and protected species in the lower Savannah River. The Service notes that there are important spawning grounds in the lower Savannah River below the New Savannah Bluff Lock and Dam for endangered shortnose (*Acipenser brevirostrum*) and Atlantic (*Acipenser oxyrinchus oxyrinchus*) sturgeons as well as Georgia State endangered robust redhorse (*Moxostoma robustum*). Thus, water management at all Corps projects on the Savannah River is important for the conservation of these species. In particular, discharge from the J Strom Thurmond Dam accounts for the majority (70-90%) of flow in the lower Savannah River at baseflow conditions (July-December) and accounts for 22-48% of the variations in lower river discharges (Duncan and Cantrell, 2014). Duncan and Cantrell (2014) hypothesized that discharge from Thurmond Dam, reregulation, and the operation of the New Savannah Bluff Lock and Dam gates accounted for water level and flow fluctuations at these sensitive spawning areas. Observed, daily and hourly fluctuations in flow at these spawning sites were noted to cause conditions unsuitable to spawning for robust redhorse and these fluctuations could reduce egg and fry survival (Cantrell et al., 2014). Thus, proper flow management is crucial to the conservation and recovery of these species in the lower Savannah River.

Obligations of section 7(a)(2) of the Act have been satisfied, and formal consultation is not required. However, obligations under the Act must be reconsidered if: (1) the project is modified in a manner not considered by this assessment; (2) a new species is listed or critical habitat is determined that may be affected by the project; or (3) new information indicates that the project may affect listed species or critical habitat in a manner not previously considered.

Thank you for the opportunity to provide comments on the updated Master Plan for the J Strom Thurmond Project. If you need additional assistance, please contact staff biologist Eric Bauer at our North Georgia Office at 706-208-7519, or eric_bauer@fws.gov.

Sincerely,

Peter Maholland
Acting Field Supervisor

References:

Duncan, W.W. and M.A. Cantrell. 2014. A hydrological foundation for evaluating effects of low flows on river and oxbow habitats and biota. USFWS report to the U.S. Army Corps of Engineers, Part I of "A compendium of Savannah River studies conducted by the U.S. Fish and Wildlife Service intended to inform flow management."

Cantrell, M.A., W.W. Duncan, and E. Krueger. 2014. Evaluation of low discharge effects on Savannah River mid-channel gravel bars, with an emphasis on habitat suitability for spawning Robust Redhorse (Moxostoma robustum). USFWS Report to the U.S. Army Corps of Engineers, Part II of "A compendium of Savannah River studies conducted by the U.S. Fish and Wildlife Service intended to inform flow management."

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
https://www.fisheries.noaa.gov/region/southeast

F/SER 31:AH

01/28/2022

Colonel Joseph R. Geary, District Commander
Savannah District, Corps of Engineers
100 W. Oglethorpe Avenue
Savannah, Georgia 31401-3640

Re: J. Strom Thurmond Lake Master Plan

Attention: Ms. Gose and Ms. Garvey

Dear Colonel Geary:

NOAA's National Marine Fisheries Service received your December 6, 2021, request for comment on the Environmental Assessment and Finding of No Significant Impact for the updated J. Strom Thurmond Lake Master Plan. The proposed management plan updates policies and regulations regarding the management, and future development, of the Thurmond Project; provides responses to regional needs, resource capabilities and suitability, and expressed public interests and desires consistent with authorized project purposes; addresses changes in land uses, recreational uses, and natural resources management; provides for the development of recreation facilities by lessees and the Corps; and ensures that program management actions are based on current information and regulations via collaboration with stakeholders. We have no comments on the proposed changes to these aspects of the master plan.

However, we maintain our long-standing concern over the ecological impacts of the current peaking-flow releases from J. Strom Thurmond Dam on NOAA trust resources downstream of the dam. We believe ecological impacts could be diminished if, in lieu of pulsed releases, the same daily flow volumes were released more consistently throughout the course of the day. We recognize managing these flows is complex and requires balancing the competing needs of multiple stakeholders and interests, while still meeting the power generation needs of the region.

With those complexities in mind, we wish to start a dialog with the Savannah District, and other downstream users and stakeholders, to identify challenges and opportunities for addressing peaking flow operations. We would like to begin the conversation by speaking with the appropriate Savannah District staff to understand the processes and requirements for making changes to flow management regimes. We are also interested in discussing other potential means for functionally smoothing downstream flows to mitigate impacts, if flow management changes at J. Strom Thurmond Dam are not possible.

SOUTH CAROLINA DEPARTMENT OF
ARCHIVES & HISTORY
EST. 1905

January 13, 2022

Andrea Farmer
Savannah District
Corps of Engineers
Andrea.Adams.Farmer@usace.army.mil

Re: Updated Master Plan for Thurmond Dam and Lake Project
Environmental Assessment and Finding of No Significant Impact
Abbeville and McCormick Counties, South Carolina
SHPO Project No. 16-ED0081

Dear Andrea Farmer:

Our office has received the letter dated December 6, 2021 that you submitted as part of your agency's National Environmental Policy Act (NEPA) process for the documents referenced above to update the J. Strom Thurmond Project Master Plan. As requested, the State Historic Preservation Office (SHPO) is also providing comments to the Corps of Engineers 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.

Thank you for providing the draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for our review. Our office does not have any comments or questions at this time. The EA notes that the cultural resources at the Project will continue to be managed under the existing Programmatic Agreement for the project dated 2003, and Historic Properties Management Plan updated in April 2001. It also provides a useful summary of the cultural resources surveys that have been carried out at the Project. Our office would concur with the finding in the EA that there would be no adverse effect to cultural resources with the implementation of the proposed action.

Please refer to SHPO Project Number 16-ED0081 in any future correspondence regarding this project. If you have any questions, please contact me at (803) 896-6168 or at ejohnson@scdah.sc.gov.

Sincerely,

Elizabeth M. Johnson

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

Brian P. Kemp
Governor

Georgia® Department of Community Affairs

Christopher Nunn
Commissioner

February 4, 2022

Kimberly Garvey
Chief, Planning Branch
U.S. Army Corps of Engineers, Savannah District
100 West Oglethorpe Avenue
Savannah, Georgia 31401-3604
Attn: Andrea Farmer, Archaeologist, Planning Branch

Re: Lake J. Strom Thurmond/Clarks Hill Lake Master Plan
Columbia, Elbert, Lincoln, McDuffie, Warren, Wilkes Counties, Georgia
HP-220106-003

Dear Ms. Garvey:

The Historic Preservation Division (HPD) has received the report entitled, *J. Strom Thurmond Lake Master Plan,* dated November 2021. Our comments are offered to assist the US Army Corps of Engineers (USACE) in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Based on the information contained in the plan, HPD concurs that there are multiple historic properties within and adjacent to Lake J. Strom Thurmond, including both archaeological and historic resources such as cemeteries, parks, campsites, marinas, buildings, and similar. However, HPD finds that the updating of the master plan will have **no adverse effect** to historic properties within its area of potential effect (APE), as defined in 36 CFR Part 800.5(d)(1), due to the nature of the planning-only activity. HPD notes that the Historic Properties Management Plan (HPMP, 2001) and the related Programmatic Agreement (PA) remain the guiding documents related to cultural resources within the proposed project's APE. As such, due to the age of the current HPMP and given that no annual reports or updates to the HPMP have been received/reviewed in accordance with Section 14.1. and 14.2 of the HPMP since the document was adopted, HPD recommends updating the HPMP simultaneously with the Master Plan and in accordance with Stipulations 3 and 8 of the PA and Section 14 of the HPMP.

As projects present themselves, HPD should be given the opportunity to review and comment on any plans, reports or other documents related to Lake J. Strom Thurmond, as they become available, and in accordance with the HPMP and PA. HPD looks forward to continued collaboration in the preservation of this important resource.

Please refer to project number **HP-220106-003** in any future correspondence regarding this project. If we may be of further assistance, please contact Stacy Rieke, Environmental Review Historian, at Stacy.Rieke@dca.ga.gov or by telephone at (404) 486-6434 or Aspen Kemmerlin, Compliance Archaeologist, at aspen.kemmerlin@dca.ga.gov or by telephone at (404) 486-6396.

Sincerely,

Jennifer Dixon, MHP, LEED Green Associate
Program Manager
Environmental Review & Preservation Planning

JAD/smr

cc: Anne Floyd, Central Savannah River Area Regional Commission
Lydia Joffray, Northeast Georgia Regional Commission

South Carolina Department of
Natural Resources

PO Box 167
Columbia, SC 29202
(803) 734-3766
danielt@dnr.sc.gov

Robert H. Boyles, Jr
Director
Lorianne Riggin
Director, Office of
Environmental Programs

January 19, 2022

Mrs. Cynthia Gose
U.S. Army Corps of Engineers
100 W Oglethorpe Avenue
Savannah, GA 30643

Electronic submission

RE: Proposed Draft Master Plan (MP), Draft Environmental Assessment (EA), and Draft Finding of No Significant Impact (FONSI) for J. Strom Thurmond Project

Dear Mrs. Gose,

Personnel with the South Carolina Department of Natural Resources (SCDNR) have reviewed the proposed Draft Master Plan (MP), Draft Environmental Assessment (EA), and Draft Finding of No Significant Impact (FONSI) for J. Strom Thurmond Project and offer the following comments.

The proposed action consists of updating the MP which is required for Civil Works projects and other fee-owned lands which USACE has administrative responsibility for management of natural and manmade resources. The current MP, completed in 1995, provides a programmatic approach to the management of all the lands included within the Thurmond Project boundary and serves as the basic document guiding USACE responsibilities pursuant to Federal laws to preserve, conserve, maintain, manage, and develop Thurmond Projects' lands, waters, and associated resources. The purpose of the proposed action to update the MP would update the prescribed overall land and water management plan, resource objectives, and associated design and management concept. The MP guidance also includes revised categories of Land Classifications used to define project lands.

The SCDNR generally supports the efforts to revise the 1995 MP as many of the described revisions would likely result in improved public access to the lake and its natural resources. However, some clarification is needed in order to satisfactorily evaluate the potential for the proposed action to impact aquatic resources/wetlands, fish and wildlife habitat, water quality, and navigation. The SCDNR respectfully submits the following comments for consideration.

JST Draft Master Plan

1. The Public Notice states *"The guidance also includes requirements for an interdisciplinary team approach for the development, re-evaluation, and supplementation or updating of the MP."* The SCDNR requests that this guidance be provided and included in the MP.

2. Page 2. *"The proposed MP update meets the following goals: incorporates updates to policies and regulations pertaining to the management and future development of Thurmond Project."* The SCDNR submits that policies and regulations concerning the development practices of the parties mentioned in the MP appear to be missing from this MP. Without explicit guidance or Best Management Practices (BMPs), the MP does not regulate the types of activities allowed on project lands by parties that are not otherwise regulated under the Shoreline Management Plan (SMP) (e.g., public entities and private concessionaires). Therefore, the impacts of said development practices on aquatic resources/wetlands, fish and wildlife habitat, water quality, and navigation cannot be determined with the information provided. SCDNR requests that language explicitly subjecting development activities to the provisions in the SMP be included in the MP (see section 4.4.5.a. for an example) and/or that the following BMPs are explicitly incorporated into the MP:

   Docks

   - The area considered for a new floating facility must provide a 50-foot buffer between the proposed facility and any existing facility or mooring buoy at 330 feet mean sea level (msl) elevation. This buffer is defined as the distance between the two closest points on adjacent facilities. This spacing is to provide safe navigational access between facilities and provide sufficient area for boat maneuverability, water level fluctuations and public safety.
   - The entire dock and walkway must not extend over one third the distance across a cove, measured from the 330 feet msl elevation on the shoreline of both sides. The length of any dock, including any moored vessel, must not interfere with the navigation channel at any time. Approved new docks shall be placed so as to have the least impact on navigation.
   - The flotation material for all docks shall be fabricated of materials manufactured for marine use. The float and its flotation material shall be 100% warranted for a minimum of eight years against sinking, becoming waterlogged, cracking, and peeling, fragmenting or losing beads. All floats shall resist puncture and penetration and shall not be subject to damage by animals under normal conditions for the area.
   - Wood treated with creosote may not be used in construction.

   Bank Stabilization

   - Vegetative shoreline enhancements are the preferred method to prevent erosion, followed by enhanced or sloping rip rap, with vertical bulkheads used only as an alternative when the aforementioned methods have proven to be ineffective.
   - Backfill and riprap must consist of clean earthen material and stone free of all potential sources of pollution.
   - Bulkheads/seawalls and revetments should be constructed abutting the existing erosional scarp. Where such structures are permissible, they should be constructed so that wave energy does not scour stable bottoms or constitute safety hazards
   - Bulkhead construction should avoid sharp angle turns that may collect trash or cause shoaling or flushing problems.
   - Bulkheads that require significant backfill and are for the purpose of creating developable high ground will not be permitted.
3. Page 10. *"Emergency procedures for handling oil spills and hazardous substances are contained in the project Spill Prevention, Control and Countermeasures Plan."* Where is this plan available?
4. Page 13. Protected Species. Please include State-listed species in this section, including the State-Endangered Webster's Salamander (*Plethodon websteri*). For a current list of state listed species visit www.dnr.sc.gov/species/.
5. Page 15. Table 3. Please include State-listed species in this table.

6. Page 34. Land Classification. Please include definitions of the land-use classifications and descriptions of which lands are being reclassified.
7. Page 35. Environmentally Sensitive Areas. There appears to be a decrease in the total lands classified as Environmental compared to the 1995 MP (See Table 1 in the 1995 MP). What is the reason for the discrepancy?
8. Page 37. Table 14. Please include the changes to classification acreages being proposed.

JST Draft Environmental Assessment

9. Page 5. Table 2. Please include the changes to classification acreages being proposed.
10. Page 19. Protected species. Please note that the Atlantic Pigtoe and the Brother Spike are also State-Endangered species in SC. Please include SC State-listed species in this section.
11. Page 20. Table 4. Please include State-listed species in this table.
12. Page 40. Section 4.1.2. Please clarify which state agency's BMPs will be applicable.
13. Page 42. Section 4.5.2. Please clarify which BMPs will be applicable. BMPs for this activity were not described in the MP.
14. Page 42. Section 4.7.2. Please mention State-listed protected species in this section.
15. Page 43. Section 4.8.2. Which erosion control measures and BMPs will be required? The SCDNR finds that more information regarding the BMPs applicable to parties that are not otherwise regulated under the Shoreline Management Plan (e.g., public entities and private concessionaires) is needed to allow for a comprehensive review of the potential environmental consequences of the proposed action.
16. Page 45. Section 4.15.2. Will all "natural resources management activities that may impact water quality" be subject to BMPs? Which state agency's BMPs will be applicable? Please incorporate explicit mention of this requirement into the MP. The SCDNR finds that more information regarding these BMPs is needed to allow for a comprehensive review of the potential environmental consequences of the proposed action.
17. Page 51. Table 14. The SCDNR is concerned with activities which do not appear to be subject to explicit guidance or BMPs in the proposed MP. Without explicit guidance on shoreline stabilization and construction methods, the SCDNR finds that it is premature to claim insignificant impacts to the following categories in Table 14: aquatic resources/wetlands, fish and wildlife habitat, and water quality. Without explicit guidance on dock spacing and sizing, the SCDNR finds that it is premature to claim insignificant impacts to navigation.

Appendices Thurmond MP and Thurmond EA

18. Appendix C. The species name for Warmouth should be changed to *Lepomis gulosus*, and there appears to be a typo in the common name for Chain Pickerel. Also, the term "rough fish" can be viewed as an antiquated, pejorative term; it may be more appropriate to categorize these groups into 'game fish' and 'non-game fish' (see Section 50-13 of the South Carolina Code of Laws). American Alligator should be reclassified as a crocodilian and not a 'lizard.' Lastly, the SCDNR suggests adding mollusks to this list.

Appendix D of JST MP – Resource Plans

19. Under Item 49. Future Marina Sites: *"Area description for Mt. Carmel Campground, Hesters Ferry Campground, and Parkway Boat Ramp are found in their respective sections listed above."* Please note that the sections provided do not appear to match any sections in the MP, EA or in the appendices. Where can these area descriptions be found?

Finding of No Significant Impact (FONSI)

20. As described above, without explicit guidance on shoreline stabilization and construction methods, the SCDNR finds that it is premature to claim insignificant impacts to the following categories: aquatic resources/wetlands, fish and wildlife habitat, and water quality. Without explicit guidance on dock spacing and sizing, the SCDNR finds that it is premature to claim insignificant impacts to navigation.

Thank you for the opportunity to review this project and provide comments. Should you have any questions or need more information, please do not hesitate to contact me by email at DanielT@dnr.sc.gov or by phone at 803.734.3766.

Sincerely,

Tom Daniel
Office of Environmental Programs

We appreciate your continued coordination on this project and look forward to future conversations. Please contact Mr. Andrew Herndon (Andrew.Herndon@noaa.gov) directly with any questions.

Sincerely,

David Bernhart
Assistant Regional Administrator
for Protected Resources

File: 1514-22.F.3

cc: F/SER3, Bernhart, Farmer, Herndon
F/SER4, Rohde, Wilber, Cheatwood
F/HC2, Lake

GEORGIA
DEPARTMENT OF NATURAL RESOURCES

WILDLIFE RESOURCES DIVISION

MARK WILLIAMS
COMMISSIONER

TED WILL
DIRECTOR

January 20, 2022

U.S. Army Corps of Engineers
100 W. Oglethorpe Ave.
Savannah, Georgia 30643
ATTN: PM-P-Gose

RE: Proposed Draft Master Plan J. Strom Thurmond Project

Dear Mrs. Gose:

This letter is responsive to the Proposed Draft Master Plan (MP), Draft Environmental Assessment (EA), and Draft Finding of No Significant Impact (FONSI) for the U.S. Army Corps of Engineers (USACE) J. Strom Thurmond Project (hereinafter, Project). The Georgia Department of Natural Resources, Wildlife Resources Division (WRD), appreciates the opportunity to provide comments on the Draft MP, EA, and FONSI. Our staff have reviewed the Draft MP and its supporting documents.

WRD is the entity with primary authority for the science-based management and regulation of fish and wildlife, especially State Trust species, in Georgia. WRD's mission is to conserve Georgia's wildlife resources and habitats, and promote fishing, hunting and wildlife conservation through management, education, and scientific research. We support Alternative 2 – Preferred Alternative – Update Master Plan and have several comments on the Draft MP and the Draft EA as follows.

Regarding the Draft MP in Section 2.3 relating to Sedimentation and Shoreline Erosion (Page 7), the sedimentation reports are from 22 years ago (1999). We would expect significant changes since then, especially in the Broad River and potentially GA Little River. The "nuisance and aesthetic loss" to "residents and recreationalists in shoal areas" documented in 1999 are likely worse now and potentially affect the important springtime fish habitat the shoals provide. We would like to see a plan to resurvey sedimentation to reflect present day conditions more accurately.

Additionally, in Section 2.4, relating to Water Quality and Supply (Page 8), the MP states, "water quality in Thurmond Lake is measured by Georgia and South Carolina natural resource State agencies." However, Figure 2 lists only USACE sampling sites as indicated on the figure. The section goes on to describe the water quality monitoring conducted by the USACE. In Section 3.2.12 of the EA (Page 33), this paragraph is slightly different but specifies that these same sampling sites are SCDHEC sites; therefore, it is unclear who is responsible for conducting sampling at these sites.

In Section 2.8.4, relating to Invasive Species (Page 16), the table indicates "significant to major" hydrilla occurrence but the note at the bottom of the table references that no hydrilla was observed in a cursory study conducted in the fall of 2019. This concurs with our observations and measurements on the Project. We suggest that the table be updated to reflect that condition.

Finally, in Section 2.13.3, relating to Recreational Analysis (Page 28), the MP states, "while there are an ample number of boat ramps around the lake, parking is insufficient at many boat ramps especially on the lower end of the lake." It seems to us that the Master Plan should clearly allow for boat ramp parking lot expansion. Also, Table 16 (Section 5.2, Page 41), "Potential Recreational Facilities Development", states "Designated parking lot(s) not to exceed 100 spaces". We are unclear why there is a cap at 100 parking lot spaces. We believe this statement should be rephrased, particularly if additional spaces are, or might be, warranted and feasible.

Concerning the Draft EA, we offer several editorial comments to Section 3.2.2, relating to Aquatic Resources/Fisheries, as follows:

- Add Spotted Bass and Blue Catfish to the list of popular sportfish and note that they are non-native species.
- Add Gizzard Shad to the list of important forage fish.
- The second paragraph begins with another list of sport fish. This list should be edited to match the other sport fish list.
- The description of *Morone* sp. stockings only includes Georgia. A more general statement, "Both Georgia DNR and SCDNR produce striped bass and hybrid bass to stock into Thurmond Lake as fingerlings", would be more accurate.

Again, thank you for the opportunity to provide comment and input for your thoughtful consideration on this important effort. If you have any questions or wish to discuss further, please feel free to contact Scott Robinson, Chief of Fisheries Management, at scott.robinson@dnr.ga.gov or (706) 557-3236.

Sincerely,

Ted Will

TW/jwb

cc: Thom Litts
John Bowers
Scott Robinson
Jon Ambrose
Alan Isler