

ENVIRONMENTAL ASSESSMENT

Hartwell Dam and Lake Project Master Plan

Savannah River, Georgia and South Carolina

(Hart, Franklin, and Stephens Counties in Georgia and
Anderson, Oconee, and Pickens Counties in South Carolina)

October 2021



**US Army Corps
of Engineers®**
Savannah District

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Table of Contents

1.0 INTRODUCTION..... 1

 1.1 Proposed Action. 1

 1.2 Purpose and Need for the Proposed Action. 3

 1.3 Authority 5

 1.4 Prior Reports..... 5

 1.5 NEPA Scoping 5

2.0 ALTERNATIVES TO THE PROPOSED ACTION..... 5

3.0 AFFECTED ENVIRONMENT 6

 3.1 General..... 6

 3.1.1 Description of the Watershed 6

 3.1.2 Climate 7

 3.1.3 Physiography and Geology 8

 3.1.4 Soils 9

 3.2 Relevant Resources 10

 3.2.1 Wetlands and Aquatic Vegetation 13

 3.2.2 Aquatic Resources and Fisheries..... 14

 3.2.3 Forest, Vegetation, and Bottomland Hardwoods 14

 3.2.4 Wildlife..... 16

 3.2.5 Threatened, Endangered and Other Protected Species..... 17

 3.2.6 Cultural Resources..... 18

 3.2.7 Recreational Resources 19

 3.2.8 Aesthetics..... 20

 3.2.9 Socio-Economic 20

 3.2.10 Environmental Justice and Protection of Children 26

 3.2.11 Air Quality..... 27

 3.2.12 Hydrology, Water Quality, and Water Supply 27

 3.2.13 Hazardous, Toxic and Radioactive Waste (HTRW) 29

4.0 ENVIRONMENTAL CONSEQUENCES 30

 4.1 Wetlands..... 30

 4.1.1 Future Conditions with No Action 30

 4.1.2 Future Conditions with the Proposed Action 30

 4.2 Aquatic Resources/Fisheries 30

4.2.1 Future Conditions with No Action	30
4.2.2 Future Conditions with the Proposed Action	31
4.3 Floodplains	31
4.3.1 Future Conditions with No Action	31
4.3.2 Future Conditions with the Proposed Action	31
4.4 Terrestrial Resources	31
4.4.1 Future Conditions with No Action	31
4.4.2 Future Conditions with the Proposed Action	31
4.5 Bottomland Hardwood Forest	32
4.5.1 Future Conditions with No Action	32
4.5.2 Future Conditions with the Proposed Action	32
4.6 Wildlife	32
4.6.1 Future Conditions with No Action	32
4.6.2 Future Conditions with the Proposed Action	32
4.7 Threatened and Endangered Species (TES).....	32
4.7.1 Future Conditions with No Action	32
4.7.2 Future Conditions with the Proposed Action	32
4.8 Waterbodies.....	33
4.8.1 Future Conditions with No Action	33
4.8.2 Future Conditions with the Proposed Action	33
4.9 Cultural Resources	33
4.9.1 Future Conditions with No Action	33
4.9.2 Future Conditions with the Proposed Action	33
4.10 Recreational Resources	33
4.10.1 Future Conditions with No Action	33
4.10.2 Future Conditions with the Proposed Action	34
4.11 Aesthetics	34
4.11.1 Future Conditions with No Action	34
4.11.2 Future Conditions with the Proposed Action	34
4.12 Socio-Economic Resources.....	34
4.12.1 Future Conditions with No Action	34
4.12.2 Future Conditions with the Proposed Action	34
4.13 Environmental Justice and Protection of Children	35
4.13.1 Future Conditions with No Action	35

4.13.2 Future Conditions with the Proposed Action	35
4.14 Air Quality	35
4.14.1 Future Conditions with No Action	35
4.14.2 Future Conditions with the Proposed Action	35
4.15 Water Quality	35
4.15.1 Future Conditions with No Action	35
4.15.2 Future Conditions with the Proposed Action	36
4.16 Hazardous, Toxic and Radioactive Waste (HTRW)	36
4.16.1 Future Conditions with No Action	36
4.16.2 Future Conditions with the Proposed Action	36
5.0 CUMULATIVE IMPACTS	36
6.0 COORDINATION	37
6.1 Agencies and NGOs	37
6.2 Public Involvement.....	37
7.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS	38
8.0 CONCLUSION	40
9.0 PREPARERS	41
10.0 REFERENCES.....	41

Figures

Figure 1: USGS Hydrologic Units Hartwell Lake	6
Figure 2: Sampling Locations.....	29

Tables

Table 1: Potential Recreational Facilities Development	2
Table 2: Land and Water Classifications	4
Table 3: Weather Summaries and Severe Events (1949 – 2016)	7
Table 4: Relevant Resources	11
Table 5: Wetland Summary.....	13
Table 6: Vegetative Resources	15
Table 7: Protected Species Potentially Present at Hartwell Lake	18
Table 8: 2019 Population Estimates.....	20
Table 9: Percent of Population Estimate by Gender	21
Table 10: Age Distribution	21
Table 11: 2019 Population Estimate by Race/Hispanic Origin	22
Table 12: Population Over 25 Level of Education Attainment	23

Table 13: Employment by Sector (Percentage of Employed Civilian Population)	24
Table 14: Labor Force Employment Rates	24
Table 15: 2019 Households and Household Size	25
Table 16: Median Household and Per Capita Income, 2019	25
Table 17: Population in Poverty, 2019.....	26
Table 18: Relationship of the Proposed Action to Applicable Federal Laws and Policies	38
Table 19: Summary of Potential Effects of the Proposed Action	40

Appendices

- Appendix A: Land Classification Map
- Appendix B: Terrestrial and Aquatic Plants, Animals, and Fish of Hartwell Lake
- Appendix C: Memorandum of Agreement between the U.S. Army Corps of Engineers,
Savannah District and the U.S. Fish and Wildlife Service
- Appendix D: Comments on Environmental Assessment

ENVIRONMENTAL ASSESSMENT

Hartwell Dam and Lake Project Master Plan

Savannah River, Georgia and South Carolina

1.0 INTRODUCTION.

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

1.1 Proposed Action.

The proposed action consists of updating the Hartwell MP which is required for USACE water resource projects and other fee-owned lands where the USACE has administrative responsibility for the management of natural and manmade resources. The current MP was completed in 1981. The MP provides a programmatic approach to the management of all the lands included within the Hartwell Project boundary and serves as the basic document guiding USACE responsibilities pursuant to Federal laws to 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 administrative functions are handled in the Operational Management Plan (OMP) which translates the concepts of the MP into operations terms.

All potential recreational improvements discussed in the MP (Table 1), as well as natural resource management actions, will be reviewed for compliance with applicable laws and regulations, notably the Endangered Species Act, the Fish and Wildlife Coordination Act, the National Historic Preservation Act, and the Clean Water Act. In accordance with ER 200-2-2, Procedures for Implementing NEPA, the proposed activity will be addressed by the appropriate categorical exclusion at the time of implementation. Recreational improvements will occur in areas designated by land classification as high-density recreation. For leased lands, the lessee must submit detailed plans prior to approval of such facilities, infrastructure, or rights-of-way. Engineer approved plans may be required and a feasibility and market analysis along with public comment may be required for larger, revenue producing facilities. All state and local ordinances apply.

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
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 purpose of the proposed action is to update the Hartwell Project MP in accordance with the most recent guidance, EP 1130-2-550, dated 30 January 2013, and update resource objectives and associated design and management concepts, which:

1. Provide the best possible combination of responses to regional needs, resource capabilities and suitability, and expressed public interests and desires consistent with authorized project purposes;
2. Contribute towards providing a high degree of recreation diversity within the region;
3. Emphasize the qualities, characteristics, and potentials of the project;
4. Exhibit consistency and compatibility with national objectives and other state and regional goals and programs.

The MP guidance includes revised categories of Land Classifications used to manage project lands, as well as shifting from a construction-based document to a policy-based document. All lands were acquired for authorized project purposes and allocated for those uses. The classification process further distributes 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 the development, re-evaluation, and supplementation or updating of the MP. Coordination with other agencies and the public is an integral part of the process. Land and water classifications based on the revised categories are in Table 2.

Table 2: Land and Water Classifications

Land Classification	Acres
Project Operations	68.0
High Density Recreation (includes Future/Inactive)	5,875.5
Environmental Sensitive and Natural Areas	7,626.7
MULTIPLE RESOURCE MANAGED LANDS	
Low Density Recreation	8,345.8
Wildlife Management	1,650.0
Vegetative Management	0
TOTAL LANDS	23,566.0
Water Classification	
Surface Water: Restricted	37.6
Surface Water: Designated No-Wake	350.5
Surface Water: Fish and Wildlife Sanctuary	0
Surface Water: Open Recreation	55,562.5
TOTAL WATER	55,950.6

The MP serves two 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 Hartwell Project. Second, it is a land use management tool. This MP sets the stage for the update of many of the resource management plans, such as the Shoreline Management Plan (SMP).

As a land use tool, this MP provides the USACE, resource agencies, and the public with the classification and preferred future uses of project lands. The land classification of project lands allows the USACE and the public to visually evaluate the distribution of uses of project lands (Appendix A). For example, the identification of project lands that are suitable for the development of a new recreation facility by the USACE, a lease holder, or a future development is beneficial. Maintaining an up-to-date MP allows the USACE to respond effectively to internal and external development plans.

The Hartwell Project MP includes a Geographic Information Systems (GIS) database. The database can be continually updated throughout the life of the plan to allow the USACE to take proactive management actions and adapt existing strategies.

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

1.3 Authority

Pursuant to USACE ER 1130-2-550, a MP is required for Civil Works projects and other fee-owned lands for which the USACE has administrative responsibility for management of natural, recreational, and cultural resources throughout the life of the water resource project. A general plan on the comprehensive development of the Savannah River Basin for flood control and other purposes was approved by the Flood Control Act of 17 May 1950 as the second unit in the comprehensive development of the Savannah River Basin.

Development and utilization of reservoir lands for public access and recreational use was authorized by Section 4 of the Flood Control Act of 1944, and as amended in 1946, 1954, and 1962. The Hartwell Powerplant became operational in April 1962. The lake impounded by Hartwell Dam covers 55,950 acres and extends 49 miles up the Tugaloo River and 45 miles up the Seneca River at the normal pool elevation of 660 feet above mean sea level (amsl) for a total shoreline of 962 miles. There are 79,516 acres of land and water in the Hartwell Project. Interstate 85 bisects Hartwell Lake and makes the area easily accessible to visitors.

1.4 Prior Reports

Design Memo	Title
22B(C-5)	Hartwell Reservoir Sept. 1970
	1981 Master Plan Update

1.5 NEPA Scoping

In June 2018, notification letters were sent to all stakeholders requesting input into proposed changes or improvements they would like evaluated and incorporated into the MP update. The Hartwell Project did not receive any responses.

In April 2021, the proposed action was coordinated with appropriate Federal, state, local agencies, businesses, organizations, and the public through a 30-day review and comment period on the draft EA and FONSI. In addition, the documents were posted on the Savannah District website.

2.0 ALTERNATIVES TO THE PROPOSED ACTION

The one alternative to the proposed action considered was no-action, or future without project condition. In the future without project condition (i.e. no-action), Hartwell Project would continue to operate under the 1981 MP. As a result, individual Environmental Assessments could be required for development of facilities or conducting activities not addressed in the 1981 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, therefore, no-action is not a viable alternative.

3.0 AFFECTED ENVIRONMENT

3.1 General

The Hartwell Project extends 49 miles up the Tugaloo River and 45 miles up the Seneca River at the normal pool elevation of 660 feet amsl. There are 79,516 acres of land and water in the entire project. Interstate 85 bisects Hartwell Lake and makes the area easily accessible to visitors. Hartwell Project covers parts of Hart, Franklin, and Stephens Counties in Georgia, and Anderson, Oconee, and Pickens Counties in South Carolina. The Savannah River forms part of the boundary line between the States of Georgia and South Carolina, and the total lake acreage is 55,950 acres. The dam consists of a 204-foot high, 1,900-foot long concrete gravity structure flanked by two earth embankments for a total length of 17,852 feet. Detailed information about the Hartwell Project can be found on the District website at: <https://go.usa.gov/xENpE>.

3.1.1 Description of the Watershed

The Savannah River Basin consists of 34 watersheds. Hartwell Project is in three hydrologic units (HUC) (Figure 3). They are HUC 03060101 (Seneca), 03060102, (Tugaloo), and 03060103 (Upper Savannah) <https://water.usgs.gov/wsc/>.

Figure 1: USGS Hydrologic Units Hartwell Lake



3.1.2 Climate

Hot, humid summers and mild, pleasant winters characterize the area on the shores of Hartwell Lake. The following climate data for 1981-2010 was taken from Anderson County, South Carolina which has a warm humid temperate climate with hot summers and no dry season. The average high annually is 71.8° F and the average low is 50.4° F.

Over the entire year, the most common forms of precipitation are thunderstorms, light rain, and moderate rain. Thunderstorms are more prevalent from May to August. The most rainfall occurs between mid-February and mid-March. The annual average rainfall is 49.59 inches.

Snowfall is uncommon in the region with 32 frozen precipitation events occurring from 1993-2016. The South Carolina State Climatology Office (www.dnr.sc.gov/climate/sco/ClimateData/countyData/county_anderson.php) reported the following climate summaries and severe weather events for Anderson County, SC in Table 3.

Table 3: Weather Summaries and Severe Events (1949 – 2016)

Summary	
Temperature Summary (1952-2016)	
Highest Maximum	108° F, July 29, 1952
Average High	71.8° F
Lowest Minimum	-6° F, January 21, 1985
Average Low	50.4° F
Precipitation Summary (1949-2016)	
Highest Daily Rainfall	12.81 Inches, August 27, 1995
Annual Average Rainfall	49.59 Inches
Wettest Year	77.41 Inches, 1964
Driest Year	29.08 Inches, 2016
Highest Daily Snowfall	9.0 Inches, December 17, 1930
Severe Weather Events	
Tornado	29 Tornadoes (1950-2016)
Thunderstorm Winds	330 Wind events (winds exceeding 50 knots or 58 miles per hour, 1955-2016) Hail (>1.0 inch) 106 events (1955-2016)
Lightning	18 Lightning events (1993-2016)

3.1.3 Physiography and Geology

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

Physiography

The Savannah River basin contains parts of the Blue Ridge, Piedmont, and Coastal Plain physiographic provinces, which extend throughout the southeastern United States. Like 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 Savannah River basin is located within three physiographic provinces: Blue Ridge, Piedmont, and Coastal Plain. The Blue Ridge and Piedmont provinces, which constitute all of the Hartwell project and 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.

The majority 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.

3.1.4 Soils

The Savannah River watershed in Georgia crosses 5 Major Land Resource Areas (MLRA) where soils vary widely, 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. 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 significant 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. Also significant is an area in the lower portion of the Piedmont that has soils formed from Carolina slate. These soils are still clayey but have a higher silt content than typical Piedmont soils. The remainder of the Savannah River watershed does not include the Hartwell area, but approximately 8 percent of the watershed is in the Carolina and Georgia Sand Hills MLRA; 17 percent of the watershed is in the Southern Coastal Plain MLRA; and 9 percent of the watershed is in the Atlantic Coast Flatwoods MLRA.

The predominate soil associations within the Hartwell Project are Cecil, Madison, and Lloyd. Cecil soil associations generally consist of deep, well- drained soils that developed in material weathered from granite, gneiss, and schist. These soils are found

in the uplands on the tops of broad plateaus, ridge tops, and hillsides. Slopes range from 2 to 15 percent. Cecil soils are low in natural fertility, contain little organic matter, and are strongly acid throughout the profile.

The Madison series consists of moderately deep to deep, well-drained soils that are generally high micaceous throughout the profile. These soils formed on uplands in material weathered from quartz and mica schist. Most of the acreage is on broad stream divides and on smooth side slopes ranging from 2 to 15 percent.

Soils in the Lloyd association are situated on the Piedmont uplands with slopes ranging from 2 to 10 percent except for some steep slopes adjacent to drainage ways. They have a service layer of friable, sandy loam and a moderately permeable, dark red, clayey subsoil, relatively high in moisture-holding capacity. The smoothest ridge tops, which make up a large part of this association, are usually well managed and agriculturally productive.

Every soil type existing on project lands was placed into recreation capability categories, depending upon computed potential. For graphic conveyance of general soil potentials around the lake, recreation capability categories were divided into the best recreation potential, restricted recreation potential, and least recreation potential, as follows:

- The "best" soils category is generally composed of soils which have characteristics suitable to development. These soils are best suited for high density recreational activities requiring the least amount of rotational use for area recovery.
- "Restricted recreation potential" soils are those where a potential for recreation exists, but guarded development is required due primarily to slope and erodibility. These soils will support high density recreational use but will require substantial maintenance and more frequent rotational use to protect the natural resources. The soils are better suited for low density recreational use.
- "Least recreation potential" soils are those that include high water tables, susceptibility to frequent flooding, and excessive slopes with rapid runoff. These soils will support limited low-density recreational use but are best suited for natural areas with minimal disturbance.

3.2 Relevant Resources

This section contains a description of the existing conditions of relevant resources that could be impacted by the project (Table 4). The significant 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, hard bottoms, essential fish habitat, and desert plains.

Table 4: Relevant Resources

Resource	Institutionally Important	Technically Important	Publicly Important
Wetlands	Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968, and Fish and Wildlife Coordination Act.	They provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage	The high value of wetland functions and values. Environmental organizations and the public support the preservation of wetlands.
Aquatic Resources Fisheries	Fish and Wildlife Coordination Act of 1958, as amended.	They are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of the various freshwater and marine habitats; and many species are important commercial resources.	The high priority that the public places on their aesthetic, recreational, and commercial value.
Bottomland Hardwood Forest	Section 906 of the Water Resources Development Act of 1986 and the Fish and Wildlife Coordination Act of 1958, as amended.	Provides necessary habitat for a variety of plant, fish, and wildlife species; it often provides a variety of wetland functions and values; it is an important source of lumber and other commercial forest products	The high priority that the public places on its aesthetic, recreational, and commercial value.
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their aesthetic, recreational, and commercial value.
Threatened and Endangered Species	Endangered Species Act of 1973, as amended; Marine Mammal Protection Act of 1972; and Bald and Golden Eagle Protection Act of 1940 (as amended in 1962).	USACE along with other Federal and state agencies to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.

Cultural and Archaeological Resources	National Historic Preservation Act of 1966, as amended; Native American Graves Protection and Repatriation Act of 1990; and Archeological Resources Protection Act of 1979	State and Federal agencies document and protect sites. Their association or linkage to past events, to historically important persons, and to design and construction values; and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.
Recreation Resources	Federal Water Project Recreation Act of 1965 as amended, and Land and Water Conservation Fund Act of 1965 as amended	Provide high economic value to local, state, and national economies.	The public places a high value on public fishing, hunting, and boating areas.
Aesthetics	USACE ER 1105-2-100, and National Environmental Policy Act of 1969.	Visual accessibility to unique combinations of geological, botanical, and cultural features that may be an asset to a study area.	Environmental organizations and the public support the preservation of natural pleasing vistas.
Socio-Economic Resources	River and Harbor Flood Control Act of 1970 (PL 91-611).	N/A	Social concerns and items affecting area economy are of significant interest to community.
Environmental Justice and Protection of Children	Executive Order 12898 and the Department of Defense's Strategy on Environmental Justice of 1995, E.O. 13045, Protection of Children from Environmental and Safety Health Risks	The social, environmental health, and economic welfare of minority, children, and low-income populations may be positively or disproportionately impacted by the tentatively selected plans.	Public concerns about the fair and equitable treatment (fair treatment and meaningful involvement) of all people.
Air Quality	Clean Air Act of 1963	State and Federal agencies recognize the status of ambient air quality in relation to the NAAQS.	Virtually all citizens express a desire for clean air.
Hydrology, Water Quality, and Water Supply	Clean Water Act of 1977; Fish and Wildlife Coordination Act; Coastal Zone Mgt Act of 1972; and Water Supply Act of 1958 (43 US Code §390b)	USACE and other Federal agencies along with State DNR and wildlife/fishery offices recognize value of fisheries and good water quality. National and state standards have been established to assess water quality. State and Federal agencies recognize the value of drinking water and maintain a reliable source of clean water.	Enviro. Org. and public support preservation of water quality, fishery resources and the desire for clean drinking water. This legislation gives communities throughout the Savannah River Basin option to receive water supply allocations from reservoirs. Basin supplies drinking water to more than 1.2 million people in GA and SC from headwaters to the estuary.

The resources listed below are those relevant resources that can be encountered at the Hartwell project: wetlands; aquatic resources/fisheries; forest and vegetation resources; wildlife; threatened and endangered species; cultural and archaeological resources; recreation; aesthetics; and water quality.

3.2.1 Wetlands and Aquatic Vegetation

Based on National Wetlands Inventory (NWI) mapping, there are approximately 1,885 acres of various types of wetlands adjacent to Hartwell Lake (Table 5). Approximately 850 acres are classified as palustrine emergent wetland habitat, 338 acres as palustrine scrub-shrub wetland habitat, and 597 acres are estimated to be palustrine forested wetland. There are approximately 54,518 acres of lacustrine habitat created by the dam, not including riverine habitat that would also be part of the lake.

Table 5: Wetland Summary

Wetland Class	Acres
Palustrine	
Aquatic Bed	3.98
Emergent Wetland	850.17
Forested Wetland	597.12
Scrub-Shrub Wetland	338.94
Unconsolidated Bottom	69.56
Unconsolidated Shore	25.67
Total Palustrine	1,885.44
Riverine	
Streambed	117.81
Unconsolidated Bottom	99.83
Unconsolidated Shore	24.28
Total Riverine	241.92
Lacustrine	54,518.20
Total Wetlands	56,645.56

3.2.2 Aquatic Resources and Fisheries

Since the construction of the Hartwell Project, recreational sport fishing has significantly increased both in terms of fishing pressure and harvest above and below the dam. The major reason for the increased fishery resources is the fishery management program with the cooperation of the Georgia Department of Natural Resources and the South Carolina Department of Natural Resources. Hartwell Lake supports popular cool-water and 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, spotted bass, striped bass, black crappie, hybrid bass (white bass crossed with striped bass), bluegill, red ear sunfish, channel catfish, and flathead catfish. Some game fish are also annually stocked (striped bass, hybrid bass) within the reservoir to support recreational fishing. Other fish naturally enter the system from the reservoir's tributaries. Blueback herring and threadfin shad are important forage fish in Hartwell Lake.

A one-mile stretch of the Savannah River below Hartwell Dam serves as a put-and-take trout fishery. The feasibility of this fishery is due to the cold-water discharges from Hartwell Dam supplemented by routine stocking of trout by Georgia and South Carolina DNR's.

Wetland and open water 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.

3.2.3 Forest, Vegetation, and Bottomland Hardwoods

The Hartwell Project is located in the oak-pine forest region of the United States. Prior to inundation, 64 percent of Hartwell land was timberland. The remaining area was mostly open farm and pastureland on the gently to moderately rolling upland slopes. The major forest types present are pine, pine-hardwood, and oak-hickory. These types are listed in the order of evolution to the climax forest.

Presently, pine forest occurs on approximately 50 percent of the project lands and consists of a mixture of shortleaf pine, loblolly pine, and Virginia pine. Slash and loblolly pine have been planted on abandoned cropland over the past 25 years. The pine-hardwood forest occupies approximately 25 percent of the project lands' upper slopes and ridges and is comprised of the native pines - shortleaf pine, loblolly pine and in limited areas, Virginia pine in combination with hardwood species, such as sweet gum, yellow poplar, black gum, white oaks, post oak, and willow oak.

The oak-hickory forest is the climax forest covering approximately 20 percent of the project area. Species such as white oak, northern red oak, southern red oak, chestnut oak, water oak, willow oak, post oak, black oak, shagbark hickory, pignut hickory,

mockernut hickory, river birch, hackberry, American elm, American beech, and sycamore are strong dominant trees of this hardwood forest type.

The old abandoned home sites in the area are often identified with introduced and exotic species such as northern catalpa, tree of heaven, mimosa, empress tree, and privet which have escaped and become acclimated. These areas generally have a weed/grass cover and occur on about 5 percent of the project lands.

The Hartwell Project, due to its geographic location, provides a large variety of natural plant species. Eastern white pine, eastern hemlock, cucumber-tree, sweet shrub, and mountain laurel are uncommon because they are at the extremes of their natural ranges. Bottomland hardwood forest infrequently occurs at the project. The American chestnut is extremely rare due to its destruction in past years by the chestnut blight disease. Some of these plants represent flora generally found in the Appalachian Mountains. The faded trillium (*Trillium discolor*) is known to occur in the Walker Creek ramp area. In addition, the state-listed Goldenseal (*Hydrastis canadensis*) and Ozark Bunchflower (*Veratrum woodii*) are known to occur on the project near the Stephens County Park.

Other trees and shrubs – fringe tree, strawberry bush, silverberry, sweetshrub, pawpaw, flame azalea, and fragrant azalea are uncommon because they naturally occur infrequently. Oconee bells (*Shortia galacifolia*) are found in the Keowee River portion of the lake in the northern parts of Oconee County and western edge of Pickens County. This area is one of the very few places in North America where this plant is found.

The vegetative resources of the Hartwell Project were classified using information derived from the FY2019 Project Site Vegetative Resource Records reported in Operations and Maintenance Business Information Link (OMBIL). These data are displayed in Table 6.

Table 6: Vegetative Resources

Division	Order	Class	Sub-Class	Acreage
Vegetated	Herb Dominated	Herbaceous Vegetation	Annual Graminoid or forb vegetation	712
Vegetated	Tree Dominated	Closed Canopy	Deciduous Closed Tree Canopy	3,140
Vegetated	Tree Dominated	Closed Canopy	Evergreen Forest	7,325
Vegetated	Tree Dominated	Closed Canopy	Mixed Evergreen-Deciduous Closed Tree Canopy	9,631
Vegetated	Shrub Dominated	Shrub	Deciduous	125
Total Vegetated				20,933

3.2.4 Wildlife

Wildlife species can be found in various habitats within and immediately adjacent to Hartwell Lake. Commonly occurring plants and wildlife are listed in Appendix B. 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 reservoirs. 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.

Similar to 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 in the study area 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 Hartwell 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. 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.

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 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). White-tailed deer, and even black bear in the more isolated areas, often use the bottomlands. Terrestrial species from surrounding areas often use the fresh marsh edge for shelter, food, and water. These include Northern raccoon, Virginia opossum, cottontails, coyote, and bobcat (USACE 1981).

A total of 3,235 acres of project lands are managed as wildlife management areas by the SC DNR. The USACE manages 874 acres as wildlife management and hunting areas.

3.2.5 Threatened, Endangered and Other Protected Species

A copy of the 2010 Memorandum of Agreement between the U.S. Army Corps of Engineers, Savannah District, and the U.S. Fish and Wildlife Service Concerning Protected Species Surveys at J. Hartwell, Richard B. Russell, and Hartwell Lakes is on file at the Hartwell Operations Project Manager's Office (Appendix C). In accordance with this agreement, endangered species surveys are performed by qualified USACE team members prior to the initiation of any land disturbing activities to determine if endangered species or habitat is present in the affected area. This includes recreational development, firebreaks, thinning, regeneration cuts, new food plots and openings, or any "action" authorized under USACE's Regulatory Jurisdiction including rip-rap or headwall placement.

The U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (<http://ecos.fws.gov/ipac/>) website provides a current inventory of federally listed

threatened and endangered species. There are no known individuals or populations of Threatened or Endangered species within the Hartwell Project area. Additionally, there is no listed Critical Habitat on project lands.

Those species federally-protected by other laws include bald eagle, golden eagle, osprey, and peregrine falcon which may be transient visitors during migration. In 2007, the USFWS removed the bald eagle from the list of threatened and endangered species under the ESA (72 FR 37345, July 9, 2007), but the species continues to be protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (the Eagle Act). A condition of the delisting requires the USFWS to work with State wildlife agencies to monitor eagles.

Habitat may exist for the federally-listed northern long-eared bat; however, there are no known occurrences, maternity sites, or hibernacula on the project. Potential habitat may also exist for the eastern black rail though there are no known occurrences on the project. Historically, there have been two active bald eagle nests at Hartwell project. The bald eagle (*Haliaeetus leucocephalus*) is protected under the Federal Bald and Gold Eagle Protection Act, and species listed under the Migratory Bird Treaty Act. Although there are no know individuals or populations of Federally-listed threatened and endangered species on the project site, Table 7 lists species with potential habitat on Hartwell Lake fee lands, as identified by the USFWS.

Table 7: Protected Species Potentially Present at Hartwell Lake

	Status	Has Critical Habitat
Flowering Plants		
Dwarf-flowered Heartleaf	T	No
Mountain sweet pitcherplant	E	No
White fringeless orchid	T	No
Small-whorled Pogonia	T	No
Persistent Trillium	E	No
Smooth Coneflower	E	No
Mammals		
Northern Long-eared Bat	T	No
Reptiles		
Southern Bog Turtle	T(SA)*	No
Birds		
Eastern Black Rail	T	No

* Threatened due to similarity of appearance, not subject to Section 7 consultation

3.2.6 Cultural Resources

The archaeological record details a long and continuous occupation of the Savannah River Valley extending from the Paleoindian period (ca 14,000 to 8,000 BC) through the Historic period (post-1930 AD).

Construction of the Hartwell Dam prompted the first archaeological investigations of the area by Joseph Caldwell in 1952. The reconnaissance-level survey examined the uppermost eight miles of the Savannah River, approximately 40 miles of the Tugaloo River, and 32 miles of the Seneca-Keowee Rivers (Caldwell 1953). Caldwell recorded 54 archaeological sites and provided management recommendations based on a flood pool level of 665 amsl for the proposed lake. Six of the sites were recommended for additional excavations and one site was recommended for additional testing. Among the sites excavated were three mound sites, Chauga, Estatoe, and Tugalo. A recent review of the Caldwell survey indicated that several of the sites had been incorrectly plotted and steps have been taken to provide suggestions on the true locations of the sites (Sweeney and Whitley 2011). Rectification of the data suggests that at least four of the sites noted as inundated are outside of the flood pool (i.e., above 665 feet amsl).

Cultural resources investigations of upland areas at the Hartwell Project were conducted in the late 1970s and early 1980s to comply with Section 106 of the National Historic Preservation Act (NHPA), resulting in the identification of 92 archaeological sites. A large-scale, approximately 3,727-acre Section 110 of the NHPA survey was conducted in 2010 (Sweeney and Whitley 2011). Water levels during the field survey ranged from 660.58 - 661.19 feet amsl which prohibited investigation of shoreline areas. The survey resulted in the recordation of 47 previously unrecorded archaeological sites, none of which were recommended eligible for the National Register of Historic Places (NRHP).

The Hartwell Project manages six archaeological sites that have been determined eligible for the NRHP. Five of the sites are prehistoric sites, one of which is a petroglyph. One site is a historic farmstead. None of the sites are located along the shoreline.

Activities could potentially impact archaeological and historic resources due to the associated ground disturbance. Restrictions and processes in the MP for conducting these activities minimize the potential impacts to intact cultural deposits and historic resources substantially. Ground disturbing activities will be evaluated based on a survey of the area and eligible or potentially eligible sites will be avoided or mitigated.

3.2.7 Recreational Resources

Recreational resources are described in detail within the MP. Recreational opportunities at Hartwell Project include camping, biking, picnicking, hunting, hiking, wildlife viewing, outdoor sports activities, and water sport/leisure activities (boating, swimming, fishing, skiing, wake boarding, etc.). Hartwell Project offers recreation to more than eight million visitors every year. Hartwell Project provides 91 recreation areas with 44 of those areas being managed by the USACE. In addition, there are four state parks, two commercial campgrounds, and four private leases. Hartwell Project also provides 25 boat ramps, five marinas, and nine quasi-public recreation areas that are currently leased to various organizations.

3.2.8 Aesthetics

Hartwell Project contains a large land base consisting primarily of both open areas and woodlands. Although Hartwell has the most shoreline permits in the nation and many public recreation facilities, there are still significant areas of undisturbed shoreline. These extensive woodlands provide a pleasant visual experience and serve to minimize conflicting activities.

The natural beauty of Hartwell 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, hunters, and anglers.

3.2.9 Socio-Economic

The total population for the zone of interest is 484,467 as shown in Table 8. Currently, 2020 census data is not available by county. Therefore, we utilized the best available census data and projections for the zone of interest. Based on the total population within the zone of interest, 42 percent is in Anderson County, 16 percent is in Oconee County, and 26 percent is in Pickens County. Each of the remaining counties makes up less than 6 percent of the zone of interest total population. The zone of interest includes those adjacent counties that would be directly impacted by the management of Hartwell lake.

From 2010 to 2021, the population is projected to increase by 11.51% in Georgia and 13.85% in South Carolina. The distribution of the population by gender is approximately 49 percent male and 51 percent female in the zone of interest (Table 9).

Table 8: 2019 Population Estimates and 2020 Projections

States:	2019 Population Estimate ¹	Growth from April 2010 to July 2019 ¹	2019 Percent of Zone of Interest ¹	2020 Annual Growth Rate ²	Estimated Growth Rate 2010-2021 ²
Georgia	10,711,908			0.81%	11.51%
South Carolina	5,118,714			0.76%	13.85%
Counties:					
Franklin, GA	23,349	5.7%	4.82%	1.33%	8.63%
Hart, GA	26,205	3.9%	5.40%	0.51%	4.89%
Stephens, GA	25,925	-0.9%	5.35%	-0.32%	-1.36%
Anderson, SC	202,558	8.4%	41.81%	1.12%	10.69%
Oconee, SC	79,546	7.1%	16.41%	1.56%	10.32%
Pickens, SC	126,884	6.3%	26.19%	1.31%	9.10%
Total	484,467		100%		

¹Source: U.S. Bureau of the Census, 2019 Estimate.

²2020 Annual Growth and Estimated Growth based on World Population Review projections from 2019 Census Estimate

Table 9: Percent of Population Estimate by Gender

	Male	Percent Male	Female	Percent Female
States:				
Georgia	5,205,988	48.6%	5,505,920	51.4%
South Carolina	2,477,457	48.4%	2,641,256	51.6%
Counties:				
Franklin County, GA	11,441	49%	11,908	51%
Hart County, GA	12,972	49.5%	13,233	50.5%
Stephens County, GA	12,496	48.2%	13,429	51.8%
Anderson County, SC	97,430	48.1%	105,127	51.9%
Oconee County, SC	39,137	49.2%	40,409	50.8%
Pickens County, SC	63,188	49.8%	63,696	50.2%
Zone of Interest	236,664	49%	247,802	51%

Source: U.S. Bureau of the Census, 2019 Estimate

Table 10 shows the population composition by age group. The distribution by age group is similar among the counties, zone of interest, and the state overall. The largest age group is the 18 to 64, with 59 percent of the total population in the zone of interest.

Table 10: Age Distribution

	Under 18	18 to 64	65 and Over
States:			
Georgia	23.6%	62.1%	14.3%
South Carolina	21.6%	60.2%	18.2%
Counties:			
Franklin County, GA	21.8%	59%	19.2%
Hart County, GA	20.7%	57.2%	22.1%
Stephens County, GA	22.5%	57.7%	19.8%
Anderson County, SC	22.7%	59%	18.3%
Oconee County, SC	19.8%	56.6%	23.6%
Pickens County, SC	18.6%	64.7%	16.7%
Zone of Interest	21.0%	59%	19.9%

Source: U.S. Bureau of the Census, 2019 Estimate

Population by Race Alone or in Combination with Other Races is displayed in Table 11. For the zone of interest, 84.7 percent of the population is White, 11.8 percent is Black, 1.9 percent are two or more races, and 1.2 percent are Asian. The remainder of the races make up less than 1 percent of the zone of interest population each and those of Hispanic or Latino origin make up 4.4 percent of the zone of interest.

By comparison, for the state of South Carolina, 68.6 percent of the population is White, 27.0 percent is Black or African American, and the remaining races combined constitute less than 5 percent of the total population with those of Hispanic or Latino origin making

up 6 percent. For Georgia, 60.2 percent of the population is White, 32.6 percent is Black or African American and the remaining races constitute less than 10 percent of the total population. Those of Hispanic or Latino origin comprise 9.9 percent of the Georgia population.

Table 11: 2019 Population Estimate by Race and Hispanic Origin

	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 Origin
States:							
Georgia	60.2%	32.6%	0.5%	4.4%	0.1%	2.2%	9.9%
South Carolina	68.6%	27.0%	0.5%	1.8%	0.1%	2%	6%
Counties:							
Franklin, GA	86.8%	9.5%	0.4%	1.4%	0.1%	1.9%	4.8%
Hart, GA	77.8%	19.1%	0.2%	1.2%	0.0%	1.7%	3.8%
Stephens, GA	85.0%	11.0%	0.6%	0.8%	0.1%	2.5%	3.9%
Anderson, SC	80.5%	16.3%	0.3%	1.0%	0.0%	1.8%	4%
Oconee, SC	89.3%	7.6%	0.4%	0.9%	0.0%	1.9%	5.8%
Pickens, SC	88.6%	7.2%	0.3%	2.0%	0.0%	1.9%	3.9%
Zone of Interest Total	84.7%	11.8%	0.4%	1.2%	0.0%	1.9%	4.4%

Source: U.S. Bureau of the Census, 2019 Estimate

Table 12 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, 83.6 percent of the population attained a high school degree or higher level of educational. A Bachelor's degrees or higher has been attained by 21.1 percent.

By comparison, in Georgia 81.7 percent attained high school graduation or higher, and 31.3 percent have attained a bachelor's degree or higher. For South Carolina, 87.5 percent attended high school graduation or higher, and 28.1 percent have attained a bachelor's degree or higher.

Table 12: Population Over 25 Level of Education Attainment

	High school graduate or higher	Bachelor's degree or higher
South Carolina	87.5%	28.1%
Georgia	81.7%	31.3%
Anderson County, SC	85.3%	22.2%
Oconee County, SC	84.9%	25.8%
Pickens County, SC	85.3%	26%
Hart County, GA	81.5%	15.7%
Franklin County, GA	82.3%	15.9%
Stephens County, GA	82.1%	21%
Zone of Interest	83.6%	21.1%

Source: U.S. Bureau of the Census, 2019 Estimate

Employment by sector is presented in Table 13. 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, with 24.1 percent of the civilian employed population. The second largest sector is manufacturing, which employs 19.7 percent. This is followed by retail trade with 11.5 percent. The remaining sectors each fall under 7 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 21.7 percent, respectively, of the total employment. While manufacturing has importance in both the zone of interest and state, employment is driven by service sector employment.

Table 13: Employment by Sector (Percentage of Employed Civilian Population)

	Agriculture, forestry, fishing and hunting, and	Construction	Manufacturing	Wholesale trade	Retail trade	Transportation and warehousing, and utilities	Information	Finance and insurance, and real estate and rental	Professional, scientific, and management, and administrative and waste	Educational services, and health care and social	Arts, entertainment, and recreation, and accommodation and food	Other services, except public administration	Public administration
South Carolina	1.0	6.5	13.8	2.6	12.2	4.8	1.8	5.7	9.9	21.7	10.4	5.1	4.6
Georgia	1.1	6.5	10.6	2.9	11.8	6.2	2.5	6.3	11.8	20.8	9.4	4.9	5.1
Anderson County, SC	0.7	5.7	21.3	3.3	12.5	3.7	1.3	3.9	7.9	24.0	8.0	4.9	3.0
Oconee County, SC	1.2	7.9	20.0	1.3	9.2	5.3	1.0	4.1	8.2	22.5	11.2	5.7	2.4
Pickens County, SC	0.9	7.2	16.0	2.5	11.0	5.5	1.1	4.5	7.8	25.6	9.9	4.9	3.1
Hart County, GA	5.2	6.9	24.2	1.9	14.0	4.8	1.1	3.5	5.7	16.4	7.4	3.6	5.3
Franklin County, GA	4.2	8.2	18.6	2.0	11.0	5.2	1.1	4.0	5.3	24.9	6.3	5.3	3.7
Stephens County, GA	1.5	6.6	21.2	3.0	10.8	2.8	1.8	3.3	4.5	28.5	5.3	5.7	5.0
Zone of Interest	1.2 %	6.7 %	19.7 %	2.6 %	11.5 %	4.5 %	1.2 %	4.0 %	7.5%	24.1 %	8.8%	5.0 %	3.2 %

Source: U.S. Bureau of the Census, 2017 Estimate

As shown in Table 14, the percent of civilian labor force employed are 54.7 percent.

Table 14: Labor Force Employment Rates

	% Civilian Labor Force Employed
South Carolina	59.7%
Georgia	62.6%
Anderson County, SC	60.7%
Oconee County, SC	53.4%
Pickens County, SC	57.3%
Hart County, GA	49.6%
Franklin County, GA	52.5%
Stephens County, GA	54.9%
Zone of Interest	54.7%

Source: U.S. Bureau of the Census, 2019 Estimate

There are approximately 184,566 households in the zone of interest with an average household size of 2.5 persons. For Georgia, there are 3.7 million households and in South Carolina, 1.9 million, with an average size of households at 2.7 for Georgia and 2.5 for South Carolina, as shown in Table 15.

Table 15: 2019 Households and Household Size

	Households	# per Household
South Carolina	1,921,862	2.5
Georgia	3,758,798	2.7
Anderson County, SC	76,798	2.5
Oconee County, SC	31,978	2.4
Pickens County, SC	47,934	2.4
Hart County, GA	9,853	2.5
Franklin County, GA	8,460	2.6
Stephens County, GA	9,543	2.6
Zone of Interest	184,566	2.5

Source: U.S. Bureau of the Census, 2019 Estimate

As shown in Table 16, households in the zone of interest were generally poorer than the Georgia and South Carolina state averages in 2019. In the counties in zone of interest, the median household income ranges from \$42,488 in Franklin County to \$50,865 in Anderson County. These all fall below the Georgia median household income of \$58,700 and the South Carolina median household income and \$53,199.

Similarly, many counties in the zone of interest had a lower 2019 per capita income. Per capita incomes ranged from \$23,187 in Franklin County to \$29,844 in Oconee County. The Georgia counties all fall below the Georgia per capita income of \$31,067 and Anderson and Pickens counties fall below the South Carolina per capita income of \$29,426.

Table 16: Median Household and Per Capita Income, 2019

	Median Household Income (2019 Dollars)	Per Capita Income (2019 Dollars)
South Carolina	\$ 53,199	\$ 29,426
Georgia	\$ 58,700	\$ 31,067
Anderson County, SC	\$ 50,865	\$ 27,552
Oconee County, SC	\$ 49,134	\$ 29,844
Pickens County, SC	\$ 49,573	\$ 26,061
Hart County, GA	\$ 43,204	\$ 23,181
Franklin County, GA	\$ 42,488	\$ 23,187
Stephens County, GA	\$ 47,164	\$ 23,546

Source: U.S. Bureau of the Census, 2019 Estimate

The percentage of persons whose income was below the poverty level in the zone of interest was higher than the overall percentage for either Georgia or South Carolina (Table 17). A “low-income person” is defined as a person whose household income is at or below the income level stated in the U.S. Department of Health and Human

Services' poverty guidelines, which in the 2019 guidelines was \$21,330 for a family of three.

Counties in the zone of interest showed between 12.9 and 17.3 percent of the population below the poverty level. Anderson County had the lowest percentage below the poverty threshold at 12.9 percent. Franklin County had the highest percentage below the poverty threshold at 17.3 percent.

Table 17: Population in Poverty, 2019

	Percent in Poverty
South Carolina	13.8%
Georgia	13.3%
Anderson County, SC	12.9%
Oconee County, SC	13.1%
Pickens County, SC	15.3%
Hart County, GA	14.6%
Franklin County, GA	17.3%
Stephens County, GA	15%
Zone of Interest	14.7%

Source: U.S. Bureau of the Census, 2019 Estimate

3.2.10 Environmental Justice and Protection of Children

Executive Order 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 17). The order also directs each agency to develop a strategy for implementing environmental justice. Minority populations are those persons who identify themselves as Black, 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.

Executive Order 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).

3.2.11 Air Quality

Hartwell Project includes Anderson, Oconee, and Pickens counties in South Carolina, and Hart, Franklin, and Stephens 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 with these standards, portions of the Hartwell project area are at times subjected to temporary impacts to air quality resulting from activities such as large-scale construction projects and prescribed burning.

Minor, localized influences on air quality within the project boundary may occur from 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). 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 United States Environmental Protection Agency (EPA), the South Carolina Department of Health and Environmental Control (SC DHEC), and GA DNR Environmental Protection Division (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.

3.2.12 Hydrology, Water Quality, and Water Supply

Water quality in Hartwell Lake is measured by Georgia and South Carolina DNR's. There are seven SC DHEC monitoring stations (Figure 2) along Hartwell Lake. Aquatic life and recreational uses are fully supported at all SC DHEC monitoring sites. Both states have identified fish consumption advisories for all species in the Seneca River and 12-Mile Creek arms for Polychlorinated biphenyls (PCBs), and for Hybrid/Striped bass, Largemouth bass, Spotted bass, and Channel catfish throughout the lake due to potential mercury levels.

The presence of PCBs in Twelve Mile Creek/Hartwell Lake was discovered when surface water, sediment, and fish from the area were sampled in the mid-1970s. The source of this contamination was determined to be the Sangamo-Weston, Inc. capacitor manufacturing plant in Pickens, South Carolina. Sangamo-Weston, Inc. operated the plant from 1955 to 1987. The liabilities associated with that operation were subsequently assumed by Schlumberger Technology Corporation (STC). Dielectric fluids, used in the manufacture of capacitors until 1977, contained PCBs, and materials containing these fluids were disposed via land burial. In addition, PCBs were present in discharges from the plant to Town Creek (a tributary of Twelve Mile Creek). Surface water and sediment contaminated by the discharged PCBs eventually migrated downstream to Twelve Mile Creek and Hartwell Lake.

In 1994, the United States Environmental Protection Agency (EPA) issued a Record of Decision (ROD) for the Twelve Mile Creek/Hartwell Lake area that included natural recovery of PCB-contaminated sediments. This alternative was supported by studies showing that PCB-contaminated sediments are expected to be continually buried by sediment entering Twelve Mile Creek and Hartwell Lake. In addition, the ROD called for ongoing monitoring of biota, adoption of risk-based guidelines for human consumption of Hartwell Lake fish, and a public education program designed to increase public awareness of the current fish consumption advisory.

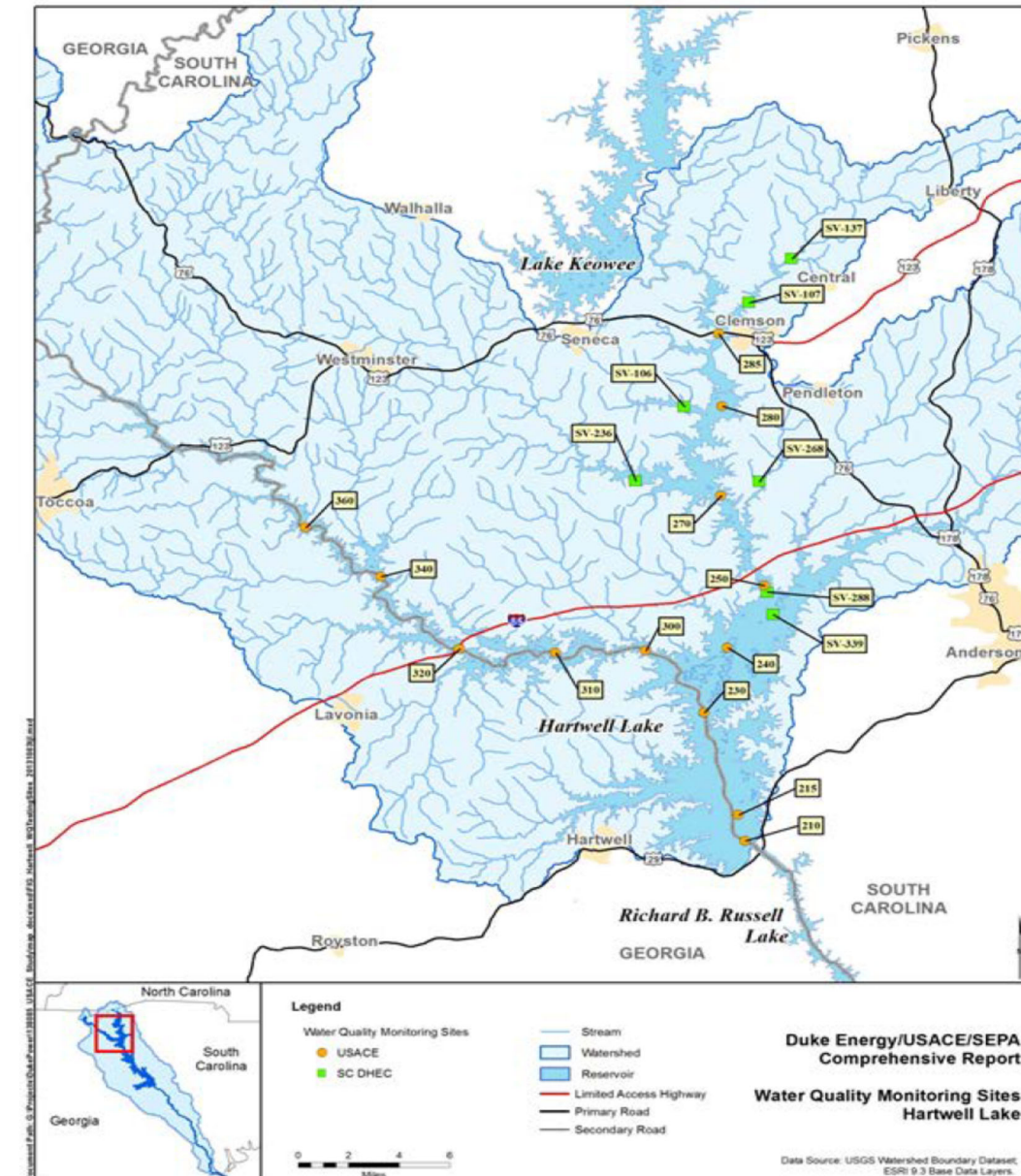
The U.S. District Court for the District of South Carolina entered a Consent Decree in May 2006 which resolved a natural resource damages claim brought by the natural resource trustees, including the USACE, Department of the Interior, the State of Georgia and the State of South Carolina, against STC for PCB contamination at or from the site known as Sangamo Weston/Twelve Mile Creek/Hartwell Lake PCB Contamination Superfund Site. Under the terms of the Consent decree STC paid \$11,960,000 into the Hartwell Lake Restoration Account which financed projects to restore, replace and/or protect natural resources damages as a result of the PCB contamination. In addition, STC removed two hydroelectric power dams know as Woodside I and Woodside II on Twelve Mile Creek to address the ecological injury to Twelve Mile Creek and Hartwell Lake.

Reduced Dissolved Oxygen (D.O.) levels resulting from reservoir stratification are monitored both upstream and downstream of the Hartwell Dam. Temperature, D.O., and specific conductance are monitored continuously. In general, D.O. concentrations downstream of the dam are approximately 1 to 2 mg/L higher than the upstream D.O. concentrations. The increase in D.O is the result of turbine venting and other re-aeration effects in the tailrace area.

The Hartwell Project conducts monthly sampling of dissolved oxygen 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 oxygen concentrations are near saturation. From April through November, stratification drives reservoir processes that lead to reduced oxygen conditions, and the reservoir is sampled at 12 established locations throughout the mainstem and major tributaries. Sampling locations are shown in Figure 2. Additional sampling may occasionally be required for special studies (i.e. blueback herring entrainment).

Hartwell Lake experiences thermal stratification from April to September. 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°F 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.

Figure 2: Samplina Locations



3.2.13 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. This policy avoids the use of project funds for HTRW removal and remediation activities.

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 areas around the lake that are operated by the USACE, as well as

outgrant areas for commercial concession (marinas) and state parks. USACE tracks the results and findings of these inspections in the OMBIL to better track any needed corrective 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.

4.0 ENVIRONMENTAL CONSEQUENCES

The changes being considered from the 1981 MP to this revision are consistent with regulations and policies. All proposed improvements, as well as natural resource management actions, will be individually reviewed for compliance with 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 categorical exclusion at the time of implementation. Consequences were considered only for those resources that could be affected by activities resulting from the revised MP.

4.1 Wetlands

4.1.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no additional direct or indirect adverse impacts to the wetland resources.

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 A 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 BMPs will require permits in accordance with Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act.

4.2 Aquatic Resources/Fisheries

4.2.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no additional direct or indirect adverse impacts to the aquatic resources/fisheries.

4.2.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there may be direct positive impacts to the aquatic resources/fisheries. Improved angler access and proposed improvements to aquatic plant habitat would have minor positive impacts by potentially increasing the abundance of game and non-game fish and access to the fishery.

4.3 Floodplains

4.3.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no additional direct or indirect adverse impacts to floodplains or management of floodplains.

4.3.2 Future Conditions with the Proposed Action

With implementation of the proposed action there would be no adverse impacts to floodplains or management of floodplains.

4.4 Terrestrial Resources

4.4.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no additional direct or indirect 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 impacts 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.

4.5 Bottomland Hardwood Forest

4.5.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no additional direct or indirect adverse impacts to the bottomland hardwoods.

4.5.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there would be no additional direct or indirect adverse impacts to the bottomland hardwoods. Adverse impacts will be minimized using BMP for forest roads and accepted trail construction standards.

4.6 Wildlife

4.6.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no additional direct or indirect adverse impacts to the wildlife.

4.6.2 Future Conditions with the Proposed Action

With implementation of the proposed action, minor positive 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.

4.7 Threatened and Endangered Species (TES)

4.7.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no direct or indirect adverse impacts to any TES, or their designated critical habitats.

4.7.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there would be no direct or indirect adverse impacts to any TES and their critical habitats. Recreation area development will not occur in critical habitats or if a TES is present. TES will be better protected as maps of Environmentally Sensitive Areas are maintained within the GIS and made available to natural resources management personnel. A protected species survey will be completed prior to constructing any new facilities to ensure no adverse effects to any Federally listed TES or their habitat. Protected species surveys are valid for two years in accordance with the Memorandum of Agreement between the USACE and the USFWS dated May 28, 2010.

4.8 Waterbodies

4.8.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no additional direct or indirect adverse impacts to Hartwell Lake and its tributaries.

4.8.2 Future Conditions with the Proposed Action

The proposed action would result in no adverse impacts to Hartwell Lake and its tributaries. Erosion control measures will be implemented during proposed recreation area development and BMP will be followed during timber harvest and wildlife management activities.

4.9 Cultural Resources

4.9.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no direct or indirect impacts on any cultural resources. Management of cultural resources would continue in accordance with the Hartwell 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 Hartwell Lake Project, Georgia and South Carolina, dated 2003. This plan and agreement define policies and procedures implemented at Hartwell Project to assure compliance with federal cultural resources laws and regulations.

4.9.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there would be no direct adverse impacts on any cultural resources. Management of cultural resources would continue in accordance with the Hartwell 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 Hartwell Lake Project, Georgia and South Carolina, dated 2003. This plan and agreement define policies and procedures implemented at Hartwell Project to assure compliance with federal cultural resources laws and regulations.

4.10 Recreational Resources

4.10.1 Future Conditions with No Action

Without implementation of the proposed action, there would be minor direct and indirect 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 visitation.

4.10.2 Future Conditions with the Proposed Action

There could be both direct and indirect minor positive 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.

4.11 Aesthetics

4.11.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no adverse impacts to aesthetics or any view of the watershed.

4.11.2 Future Conditions with the Proposed Action

With implementation of the proposed action, additional recreational facilities would not have an adverse impact to the aesthetics or view of the watershed since these areas are already used for recreation and the view would not change.

4.12 Socio-Economic Resources

4.12.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no direct or indirect adverse impacts on the socio-economic resources.

4.12.2 Future Conditions with the Proposed Action

Implementation of the proposed action provides for economically and socially productive uses of the project. Minor positive 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 to the benefit of the local economy. Proper management of the natural resources will have a minor positive impact on the timber industry and business that support outdoor enthusiasts. Minor positive 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.

4.13 Environmental Justice and Protection of Children

4.13.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no direct or indirect adverse impacts on environmental justice.

4.13.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there would be no direct or indirect adverse impacts on environmental justice.

4.14 Air Quality

4.14.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no additional direct or indirect adverse impacts on air quality.

4.14.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there would be no additional direct or indirect adverse impacts on air quality.

All of these counties are considered to be in “Attainment” for all federal air quality standards (EPA 2014). Despite being in compliance with these standards, portions of the area that contains the Reservoir are at times subjected to temporary impacts to air quality as a result of activities like large-scale construction projects on and off Project lands.

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 and prescribed burning). The large open area that is created by the reservoir allows for strong air currents to reduce and/or eliminate any localized air quality concerns caused by these pollutants. Air quality is strongly influenced by external factors, such as urban areas, factories, and the proximity to Interstate 85.

4.15 Water Quality

4.15.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no additional direct or indirect adverse impacts on water quality.

4.15.2 Future Conditions with the Proposed Action

With implementation of the proposed action, there could be minor direct or indirect adverse impacts on water quality due to an increased number of boats, construction projects, and timber logging operations. The impacts of increased number of boats would be minimal due to the reservoir size. Construction activities are required to follow state regulations for stormwater and erosion control measures and permitting as required. Natural resources management activities that may impact water quality will be conducted in accordance with the appropriate state BMPs. Off-site activities such as major construction, road maintenance, timber logging operations, and agricultural uses have the largest impact of water quality.

4.16 Hazardous, Toxic and Radioactive Waste (HTRW)

4.16.1 Future Conditions with No Action

Without implementation of the proposed action, there would be no direct or indirect adverse impacts on HTRW.

4.16.2 Future Conditions with the Proposed Action

With implementation of the proposed action, the probability of encountering HTRW is low. Any change in the storage or use of hazardous materials must comply with federal and state regulations. The Hartwell Project is responsible for ensuring compliance with EPA, SC DHEC, and GA DNR EPD regulations on public lands at the Hartwell Project. The EPA EnviroMapper website was researched and identified no known hazardous waste sites at the Hartwell Project.

5.0 CUMULATIVE IMPACTS

The Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) 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 the Hartwell 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. The proposed MP would update the prescribed overall land and water management plan, resource objectives, and associated design and management concepts, which would not have any effects on the natural resources.

6.0 COORDINATION

Preparation of this EA and FONSI is being 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 Non-Governmental Organizations (NGOs) that were contacted during the evaluation and will receive a copy of the EA for review.

6.1 Agencies and NGOs

Federal Agencies

- U.S. Department of the Interior - Office of Environmental Policy & Compliance
- U.S. Fish and Wildlife Service

State Agencies

South Carolina

- South Carolina Department of Archives and History
- South Carolina Department of Health and Environmental Control
- South Carolina Department of Natural Resources
- South Carolina Department of Parks, Recreation & Tourism

Georgia

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

Conservation Groups

- The Nature Conservancy
- The Georgia Conservancy

6.2 Public Involvement

The Master Plan was made available for public comment through the USACE website and by public notice. The 30-day comment period was used to develop the Hartwell

MP. Please see Appendix D for comments that were received and responses to those comments.

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;
- Receipt of the Georgia and South Carolina Historic Preservation Officer concurrence in the District’s determination of No Effect on cultural resources;
- Receipt and acceptance or resolution of all USFWS Fish and Wildlife Coordination Act recommendations; and

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

Table 18: 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 <i>et. seq.</i>	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 <i>et. seq.</i>	Full Compliance
Endangered Species Act of 1973	16 U.S.C. §1531 <i>et. seq.</i>	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 <i>et. seq.</i>	Full Compliance

National Historic Preservation Act of 1966, as amended	54 U.S.C. §300101 <i>et. seq.</i>	Full Compliance
Noise Control Act of 1972, as amended	42 U.S.C. §4901 <i>et. seq.</i>	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, E.O., 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, E.O., or other environmental requirement.

Not Applicable: No requirements for the statute, E.O, or other environmental requirement for the current stage of planning.

8.0 CONCLUSION

The proposed action consists of updating the Hartwell Project MP. The USACE has assessed the environmental impacts of the proposed action and has determined that it would have no adverse impact upon cultural resources, protected species, and either not adverse impact or potentially only minor adverse cumulative impacts on other resources. The creation of additional recreation facilities within existing recreation areas would provide for additional recreational benefits to lake visitors with a net positive socioeconomic benefit.

The Proposed Plan is not expected to adversely affect the quality of the environment; therefore, an EIS would not be required. The appropriate application of mitigation is to formulate an alternative that first avoids adverse impacts, then minimizes adverse impacts, and lastly, compensates for unavoidable impacts. At this time, compensation for unavoidable impacts is not warranted, nor included as part of the proposed action. 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 19:

Table 19: Summary of Potential Effects of the Proposed Action

	Insignificant effects	Insignificant effects due to mitigation*	Resource unaffected by action
Aesthetics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air quality	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Aquatic resources/wetlands	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish and wildlife habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threatened/Endangered species/critical habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historic properties	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other cultural resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floodplains	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hazardous, toxic & radioactive waste	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hydrology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Navigation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise levels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public infrastructure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Insignificant effects	Insignificant effects due to mitigation*	Resource unaffected by action
Socio-economics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental justice	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soils	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tribal trust resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9.0 PREPARERS

This EA and the associated FONSI were prepared by Cynthia Gose, Environmental Engineer, Nathan Dayan, Biologist, Sandy Campbell, Hartwell Natural Resources Program Manager, Jeff Brooks, Wildlife Biologist, James Sykes, Fisheries Biologist, Kenneth Bedenbaugh, Hartwell Recreation Program Manager, and Kat Pavolillo, District Recreation Program Manager.

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

10.0 REFERENCES

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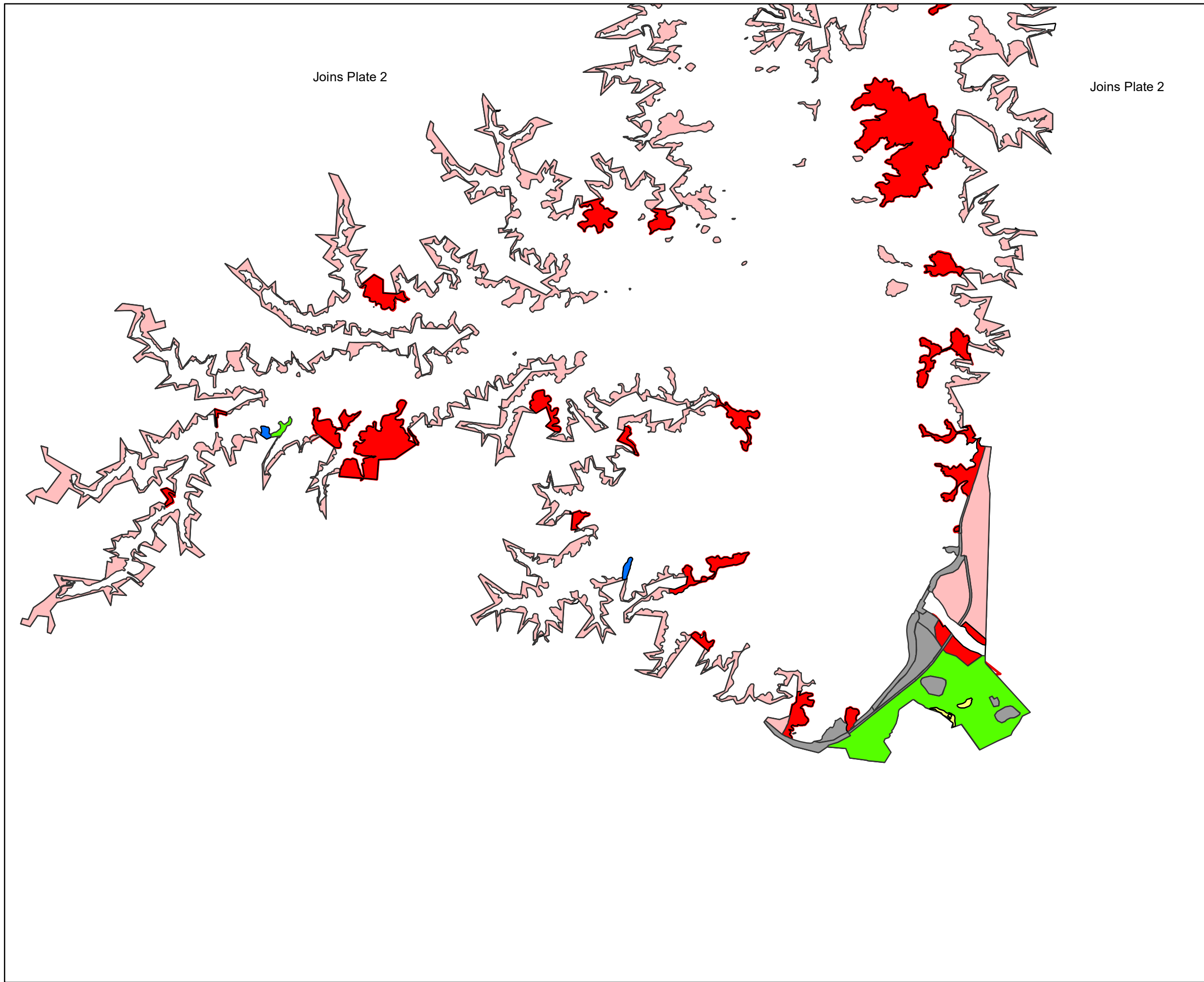
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APPENDIX A

Land Classification Maps



Location Map

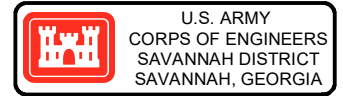
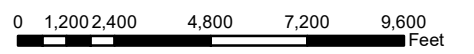


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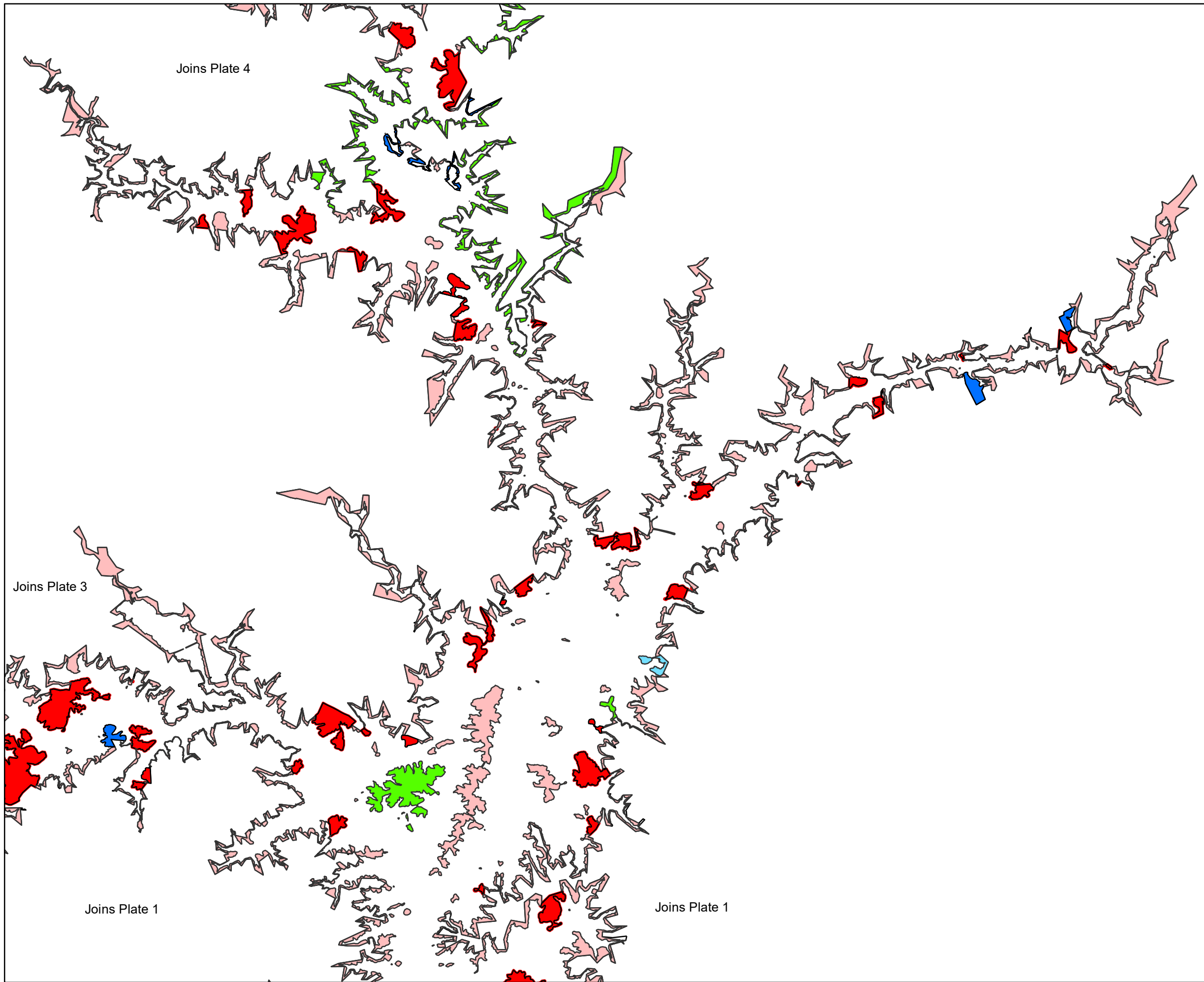
Land Use

- PROJECT OPERATIONS-ADMINISTRATIVE
- PUBLIC RECREATION - LOW DENSITY
- RECREATION - INTENSIVE USE
- RECREATION-EXISTING LEASED CLUB SITE
- RECREATION-EXISTING LEASED QUASI-PUBLIC SITE
- SENSITIVE AREA
- WILDLIFE MANAGEMENT
- Boundary Line

Land Use Plate 1



Hartwell Lake
Georgia and South Carolina
MASTER PLAN
2021 Update



Location Map

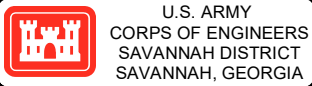
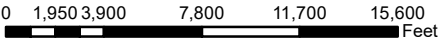


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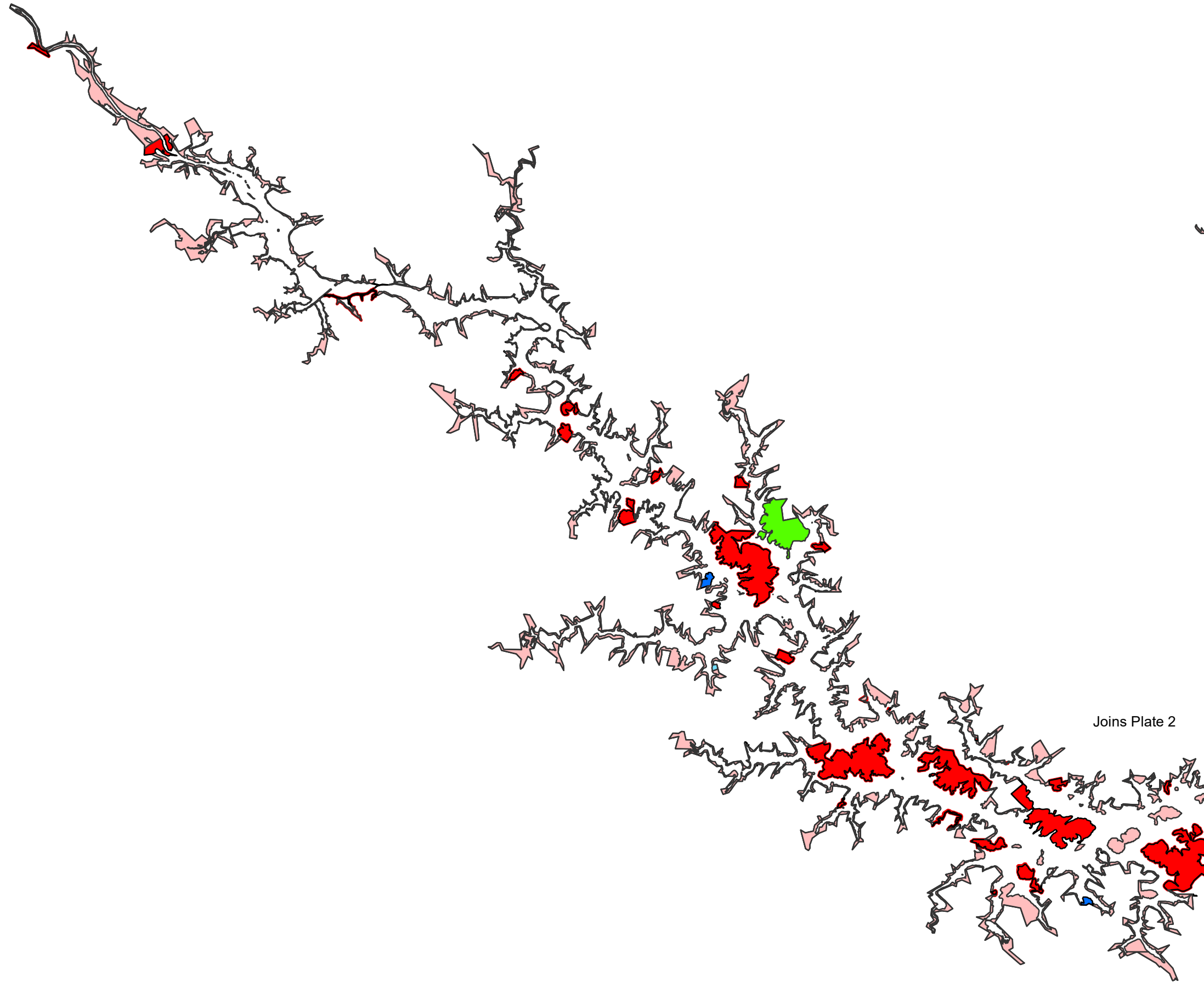
Land Use

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- PUBLIC RECREATION - LOW DENSITY
- RECREATION - INTENSIVE USE
- RECREATION-EXISTING LEASED CLUB SITE
- RECREATION-EXISTING LEASED QUASI-PUBLIC SITE
- SENSITIVE AREA
- WILDLIFE MANAGEMENT
- Boundary Line

Land Use Plate 2



Hartwell Lake
Georgia and South Carolina
MASTER PLAN
2021 Update



Location Map

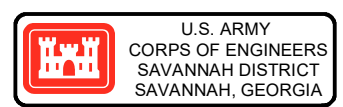
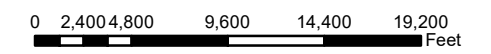


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Land Use

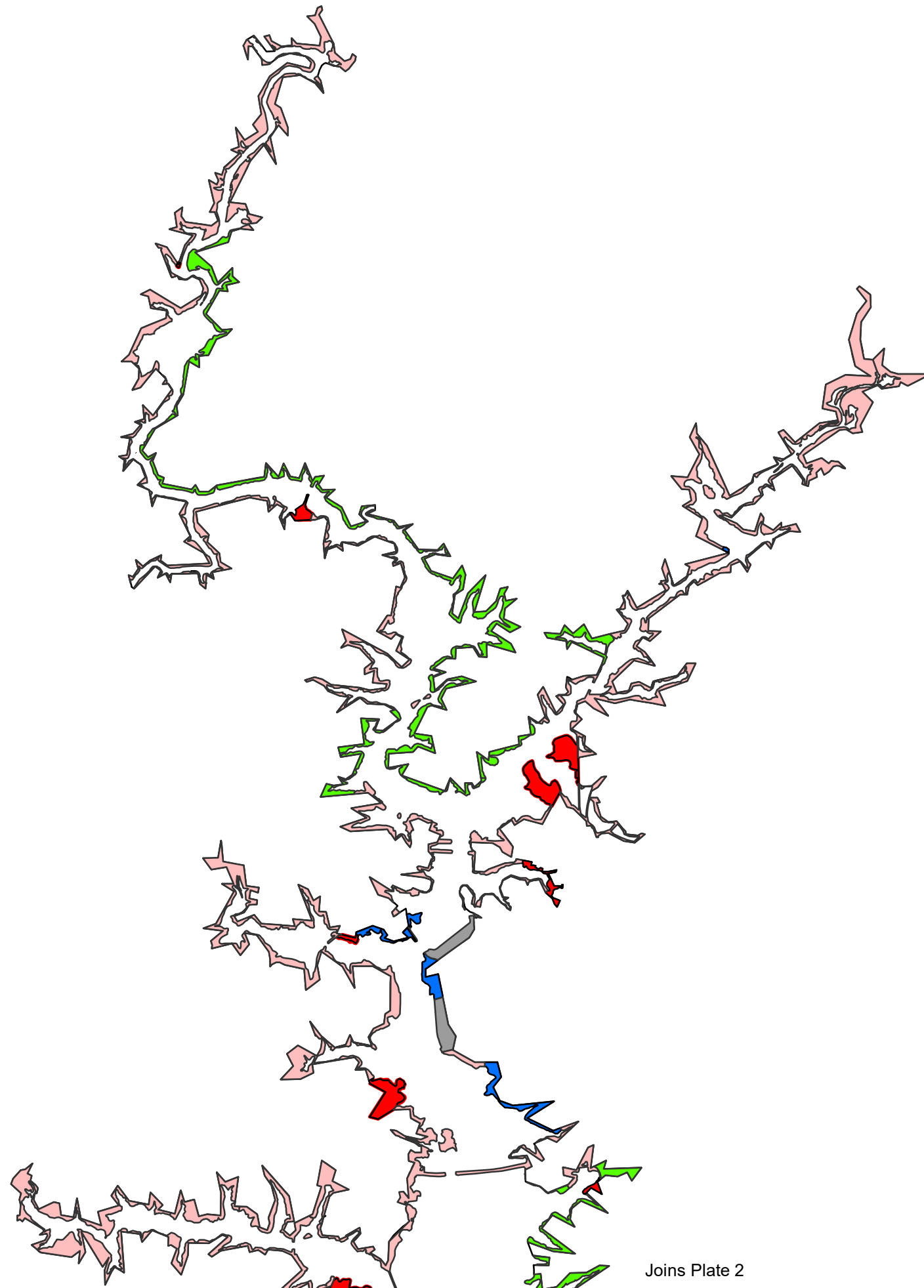
- PROJECT OPERATIONS-ADMINISTRATIVE
- PUBLIC RECREATION - LOW DENSITY
- RECREATION - INTENSIVE USE
- RECREATION-EXISTING LEASED CLUB SITE
- RECREATION-EXISTING LEASED QUASI-PUBLIC SITE
- SENSITIVE AREA
- WILDLIFE MANAGEMENT
- Boundary Line

Land Use Plate 3



U.S. ARMY
CORPS OF ENGINEERS
SAVANNAH DISTRICT
SAVANNAH, GEORGIA

Hartwell Lake
Georgia and South Carolina
MASTER PLAN
2021 Update



Joins Plate 2



Location Map

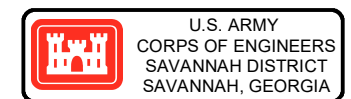
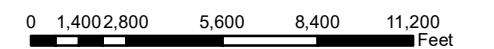


Legend

Land Use

- PROJECT OPERATIONS-ADMINSTRATIVE
- PUBLIC RECREATION - LOW DENSITY
- RECREATION - INTENSIVE USE
- RECREATION-EXISTING LEASED CLUB SITE
- RECREATION-EXISTING LEASED QUASI-PUBLIC SITE
- SENSITIVE AREA
- WILDLIFE MANAGEMENT
- Boundary Line

Land Use Plate 4



Hartwell Lake
Georgia and South Carolina
MASTER PLAN
2021 Update

Appendix B

Commonly Occurring Terrestrial and Aquatic Plants, Mammals, Reptiles, Amphibians, Birds, and Fish of Hartwell Project

Commonly Occurring Plant Species

Overstory

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

Midstory

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

Ground Covers

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

Aquatic Plants

Common Name	Scientific Name
Water primrose	<i>Ludwigia hexapetala</i>
Parrotfeather	<i>Myriophyllum aquaticum</i>
American lotus, lotus lily	<i>Nelumbo lutea</i>
Alligatorweed	<i>Alternanthera philoxeroides</i>
Fanwort	<i>Cabomba caroliniana</i>
Coontail, hornwort	<i>Ceratophyllum demersum</i>
Chara, musk grass	<i>Chara sp.</i>
Marsh Hibiscus	<i>Hibiscus moscheutos</i>
Southern watergrass	<i>Hydrochloa caroliniensis</i>
Water pennywort	<i>Hydrocotyle umbellata</i>
Waterwillow	<i>Justicia americana</i>
Southern naiad	<i>Najas guadalupensis</i>
Slender naiad, spiny-leaf naiad	<i>Najas minor</i>
Fragrant waterlily	<i>Nymphaea odorata</i>
Water paspalum	<i>Paspalum fluitans</i>
Pickerelweed	<i>Pontederia cordata</i>
Pondweed	<i>Potamogeton sp.</i>
Arrowheads	<i>Sagittaria sp.</i>
Cattail	<i>Typha sp.</i>
Bladderwort	<i>Utricularia sp.</i>

Exotics

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

Commonly Occurring Bird Species

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

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

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

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

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

Reptiles	Scientific Name
Snakes	
Eastern Black Racer	<i>Coluber constrictor</i>
Corn Snake	<i>Elaphe guttata</i>
Rat Snake	<i>Elaphe obsoleta</i>
Eastern Hognose Snake	<i>Heterodon platirhinos</i>
Southern Hognose	<i>Heterodon simus</i>
Mole Snake	<i>Lampropeltis calligaster</i>
Eastern King Snake	<i>Lampropeltis getula</i>
Scarlet King	<i>Lampropeltis triangulum elapsoides</i>
Coachwhip	<i>Masticophis flagellum</i>
Plain-bellied Watersnake	<i>Nerodia erythrogaster</i>
Northern Watersnake	<i>Nerodia sipedon</i>
Brown Watersnake	<i>Nerodia taxispilota</i>
Rough Green Snake	<i>Opeodrys aestivus</i>
Queen Snake	<i>Regina septemvittata</i>
Brown Snake	<i>Storeria dekayi</i>
Red-bellied Snake	<i>Storeria occipitomaculata</i>
Southeastern Crowned Snake	<i>Tantila coronata</i>
Eastern Ribbon Snake	<i>Thamnophis suaritus</i>
Common Garter Snake	<i>Thamnophis sirtalis</i>
Rough Earth Snake	<i>Virginia striatula</i>
Smooth Earth Snake	<i>Virginia valeriae</i>
Copperhead	<i>Agkistrodon contortrix</i>
Timber Rattlesnake	<i>Crotalus horridus</i>
Pygmy Rattlesnake	<i>Sistrurus miliarius</i>
Lizards	
Common Name	Scientific Name
Eastern Fence Lizard	<i>Sceloporus undulatus</i>
Green Anole	<i>Anolis carolinensis</i>
Five-lined Skink	<i>Eumeces fasciatus</i>
Southeastern Five-lined Skink	<i>Eumeces inexpectatus</i>
Six-lined Racerunner	<i>Cnemidophorus sexlineatus</i>
Slender Glass Lizard	<i>Ophisaurus attenuatus</i>
Eastern Glass Lizard	<i>Ophisaurus ventralis</i>
Broadhead Skink	<i>Eumeces laticeps</i>
Ground Skink	<i>Scincella lateralis</i>
Turtles	
Common Name	Scientific Name
Common Snapping Turtle	<i>Chelydra serpentina</i>
Eastern Box Turtle	<i>Terrapene carolina</i>
Pond Slider	<i>Trachemys scripta</i>
Painted Turtle	<i>Chrysemys picta</i>
River Cooter	<i>Pseudemys coninna</i>

Eastern Musk Turtle	<i>Kinosternon subrubrum</i>
Common Musk Turtle	<i>Sternotherus odoratus</i>
Spiny Softshell	<i>Apalone spinifera</i>

Amphibians	
Common Name	Scientific Name
Frogs and Toads	
American Toad	<i>Bufo americanus</i>
Fowler's Toad	<i>Bufo fowleri</i>
Northern Cricket Frog	<i>Acris crepitans</i>
Bird-voiced Treefrog	<i>Hyla avivoca</i>
Cope's Gray Treefrog	<i>Hyla chrysoscelis</i>
Green Treefrog	<i>Hyla cinerea</i>
Barking Treefrog	<i>Hyla gratiosa</i>
Squirrel Treefrog	<i>Hyla squirella</i>
Spring Peeper	<i>Pseudacris crucifer</i>
Upland Chorus Frog	<i>Pseudacris feriarum</i>
Southern Chorus Frog	<i>Pseudacris nigrita</i>
Eastern Narrowmouth Toad	<i>Gastrophryne carolinensis</i>
Eastern Spadefoot Toad	<i>Scaphiopus holbrookii</i>
Bullfrog	<i>Rana catesbeiana</i>
Green Frog / Bronze Frog	<i>Rana clamitans</i>
Pickerel Frog	<i>Rana palustris</i>
Southern Leopard Frog	<i>Rana sphenoccephala</i>
Salamanders	
Spotted Salamander	<i>Ambystoma maculatum</i>
Marbled Salamander	<i>Ambystoma opacum</i>
Mole Salamander	<i>Ambystoma talpoideum</i>
Two-toed Amphiuma	<i>Amphiuma means</i>
Spotted Dusky Salamander	<i>Desmognathus conanti</i>
Two-lined Salamander	<i>Eueycea bislineata complex</i>
Three-lined Salamander	<i>Eueycea guttolineata</i>
Atlantic Coast Slimy Salamander	<i>Plethodon chlorobryonis</i>
Savannah Slimy Salamander	<i>Plethodon savannah</i>
Mud Salamander	<i>Pseudotriton montanus</i>
Red Salamander	<i>Pseudotriton ruber</i>

**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	<i>Serranidae</i>
Striped bass*	<i>Morone saxatilis</i>
Hybrid bass*	<i>Morone saxatilis x Morone chrysops</i>
White perch	<i>Morone americana</i>
Sunfish	<i>Centrarchidae</i>
Largemouth bass	<i>Micropterus salmoides</i>
Spotted bass	<i>Micropterus punctulatus</i>
Black crappie	<i>Pomoxis nigromaculatus</i>
White crappie	<i>Pomoxis annularis</i>
Bluegill	<i>Lepomis macrochirus</i>
Redbreast	<i>Lepomis auritus</i>
Green sunfish	<i>Lepomis cyanellus</i>
Pumpkinseed	<i>Lepomis gibbosus</i>
Flier	<i>Centrarchus macropterus</i>
Warmouth	<i>Chaenobryttus coronaris</i>
Redear	<i>Lepomis microlophus</i>
Perch	<i>Percidae</i>
Yellow perch	<i>Perca flavescens</i>
Walleye	<i>Stizostedion vitreum</i>
Rough Fish	
Catfish	<i>Lepisosteidae</i>
Channel catfish	<i>Ictalurus punctatus</i>
White catfish	<i>Ictalurus catus</i>
Brown bullhead	<i>Ictalurus nebulosus</i>
Flathead catfish	<i>Pylodictis olivaris</i>
Other	
Longnose gar	<i>Lepososteus osseus</i>
Chain pickerel (jack)	<i>Esox niger</i>
Redhorse sucker	<i>Maxostoma spp.</i>
Northern hogsucker	<i>Hypentelium nigricans</i>
Spotted sucker	<i>Minytrema melanops</i>
Carp	<i>Cyprinus carpio</i>

* Stocked Species

Commonly Occurring Fish Species

Forage Species	
Shad and herring	<i>Clupeidae</i>
Gizzard shad	<i>Dorosoma cepedianum</i>
Threadfin shad	<i>Dorosoma petenense</i>
Blueback herring	<i>Alosa aestivalis</i>
Minnows	<i>Cyprinidae</i>
Spottail shiner	<i>Notropis hudsonius</i>
Golden shiner	<i>Notemigonus chrysoleucas</i>
Livebearers	<i>Poeciliidae</i>
Mosquito fish	<i>Gambusia affinis</i>

APPENDIX C

Memorandum of Agreement between the U.S. Army Corps of Engineers, Savannah District and the U.S. Fish and Wildlife Service



RECEIVED

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

MAY 20 2010

RECEIVED

ATHENS, GA
USFWS

MAY 20 2010

ATHENS, GA
USFWS

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS, 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.

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

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.

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

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.

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

[Signature]
 JEFFREY M. HALL
 Colonel, EN
 Commanding
 12 Jul 2010
 Date

Date
[Signature]
 JAY HERRINGTON
 Field Supervisor
 U.S. Fish and Wildlife Service
 Charleston, South Carolina
 June 8, 2010
 Date

APPENDIX D

Comments on Environmental Assessment

	Date Received	Commenter	Comment	Response
1	5/20/2021	Eric F. Bauer, PhD US FWS	<p>Based on the information provided, the Corps has determined that no federally listed Threatened or Endangered species occur within the project boundary. However, the Corps notes that habitat may exist for Northern long-eared bat, smooth purple coneflower, and the recently listed Eastern Black Rail but notes that there are no known occurrences on Hartwell Project. The Corps' Master Plan also specifies that if a survey for a project site discovers any Threatened or Endangered species that the Corps will consult with the Service. The Service agrees with this approach.</p> <p>The Service suggests that the Corps follow the Service's provided guidelines for disturbance activities within 660 ft of bald eagle nests if any project actions would occur near this confirmed nest. The Service's guidelines can be found at https://www.fws.gov/pacific/ecoservices/documents/NationalBaldEagleManagementGuidelines.pdf. 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.</p>	<p>Thank you for your letter verifying the Corps approach. The Corps will review each proposed project for compliance with the May 2007 National Bald Eagle Management Guidelines and consult with the Service if necessary.</p>
2	5/24/2021	John and Donna Black	<p>Request a change in zoning to the USACE property adjacent to our property located in Reed Creek, on the Tugaloo branch of Lake Hartwell. Most all of the property in our area are in the green zone, and dockable lots.</p>	<p>The Corps cannot make site specific allocation changes. Any allocation changes could only be made as part of a comprehensive review of all shoreline allocations to ensure a balance between permitted private uses and resource protection for general public use is maintained. A comprehensive review of shoreline allocation was not funded as part of the recent Master Plan revision. Shoreline Use Permits do not fall within the purview of the Master Plan. Those issues would be addressed during the next revision of the Shoreline Management Plan (SMP). The current SMP, which became effective November 15, 2020, can be viewed at https://www.sas.usace.army.mil/About/Divisions-and-Offices/Operations-Division/Hartwell-Dam-and-Lake/Shoreline-Management/</p>
3	5/25/2021	Bruce Burnett	<p>I noticed after reading the JP you have a master plan devoted to erosion, but you do not seem to have any interest in controlling the use of wakeboard boats in the creeks that are less than 200 yds across. Living in on of these creeks the wakes from these boats tear up the shoreline and the private docks of the residents. These boats should be confined to the big water and not allowed in these smaller creeks where enormous erosion damage is done. Please advise what the Corp would propose to limit this destructive activity.</p>	<p>The erosion section in the Master Plan is not considered as an erosion control plan but rather a snap shot of the existing erosion around the lake. The Corps installs erosion control features adjacent to our parks to protect infrastructure and we also can authorize adjacent property owners to install rip rap on public land adjacent to their private property. The operation of wake board vessels on state waterways is regulated by the states and their respective legislature. Currently there is state law that requires all vessels to be at slow/no wake speed within 50/100 ft (SC & GA) of the shoreline or dock. Department of Natural Resources (DNR) – Law Enforcement Division for each state regulates distance boats may operate near a dock or other vessels. Georgia DNR Region 2 in Gainesville can be reached at 770-535-5499. South Carolina DNR Region 1 in Clemson can be reached at 864-654-1671.</p>
4	5/25/2021	Greg Ayers	<p>I have property (red zone) across the cove from the cabins formerly Hart State Park. I purchased the property in 2020 believing it to be yellow zone according to the map online. Due to Covid, the management office was not open to visitors so I could not examine the map. I was informed afterwards that the yellow zone ended at the lot next door to my property. It's my understanding that it was not green zone due to close proximity to the State park. Can I get a variance to change my lot to yellow if not green since it was indicated as being yellow online and the State park no longer exists.</p>	<p>The Corps cannot make site specific allocation changes. Any allocation changes could only be made as part of a comprehensive review of all shoreline allocations to ensure a balance between permitted private uses and resource protection for general public use is maintained. A comprehensive review of shoreline allocation was not funded as part of the recent Master Plan revision. Shoreline Use Permits do not fall within the purview of the Master Plan. Those issues would be addressed during the next revision of the Shoreline Management Plan (SMP). The current SMP, which became effective November 15, 2020, can be viewed at https://www.sas.usace.army.mil/About/Divisions-and-Offices/Operations-Division/Hartwell-Dam-and-Lake/Shoreline-Management/</p>

5	5/26/2021	David Thompson Chairman Hart County Board of Assessors	I have been on the Board of Assessors for about 6 years (Chairman for last 2 years) and Hart County has seen a significant increase in population and growth in 5 of the last 6 years and we expect this trend to continue well into the future. In 2019 and 2020 we have seen about a 10% increase, 2021 is trending to be a larger increase, in home sales for the entire county and a explosion of home sales around Lake Hartwell. Hart County has also seen a significant increase in business and commercial companies moving into the county. I tell a lot of people in Hart County that Lake Hartwell and Hart County is the only lake in Georgia/South Carolina that still has developable land and where the USACE is still issuing new dock permits. We are seeing a lot of established home and land being bought and either completed remodel or torn down and new home being constructed. We are also seeing a significant increase of people moving from other states and relocating to Hart County and the surrounding area.	The data has been updated with the most current information available. The Corps assessed percent growth from 2010 – 2019, the 2060 column was renamed to Growth from 2010-2019 using this data. The census has the population growth for Hart County as 0.51% for 2019, 2020 and 2021.
6	5/26/2021	Hart County Board of Commissioners	We are writing chiefly to urge you to correct what we believe to be the substantially incorrect projection in Table 7 which appears on page 21 of the draft Master Plan. That table shows Hart County (unlike the other five counties discussed) will lose population by the year 2060. We also write to request that you consider the "Zone of Interest" about Lake Hartwell to include the two major cities within a two- hour drive of the lake: Greenville SC and Atlanta GA.	The data has been updated with the most current information available. The Corps assessed percent growth from 2010 – 2019, the 2060 column was renamed to Growth from 2010-2019 using this data. The census has the population growth for Hart County as 0.51% for 2019, 2020 and 2021. The "Zone of Interest" refers to those adjacent counties that would be directly impacted by the management of Hartwell lake. The "Zone of Interest" population demographics are, in part, used in our consideration of impacts of our management to adjacent communities and includes poverty levels, employment, age, and race demographics. However, we also acknowledge in the MP that there is a "zone of influence" that does include a 100-mile radius that impacts visitation which is in Section 2.10.2 of MP. Statements of clarification have been added to Section 3.2.9 of EA and 2.9.2 of the MP.
7	5/27/2021	Dixie Cordell SEPA	While the proposed changes to the Master Plan contain no specific references to reallocations of storage from Hartwell lake, any potential reallocations that are results of the updated Master Plan are of great interest to SEPA.	The Master Plan does not address hydropower, water levels, storage, or availability. The Corps will coordinate closely with SEPA on any potential reallocation requests.
8	5/28/2021 with attachment	Linda Goodman	My particular interest, in this correspondence, is the enjoyment of Lake Hartwell by all who live in, and visit our community. More specifically, Accessibility, as defined by the Architectural Barriers Act and the Americans with Disabilities Act; to all the amenities our beautiful lake has to offer. In reading the draft I did not see included in the body of the Master Plan language regarding Accessibility. As a result, I would like to see language included in the body of the Master Plan highlighting the Department of Defense Memorandum, Subject: Access for People with Disabilities, dated October 31, 2008, (and attached for your reference) and thereby elevating through the Master Plan the importance of accessibility improvements to our beautiful lake's amenities.	Thank you for bringing this to the Corps attention. Revisions have been made to the Master Plan as requested. The Corps has added the following statement regarding project-wide resource objectives to the Master Plan, Section 3.1. Develop and manage the area for maximum enjoyment of the recreating public to the extent compatible with other authorized purposes. It is a goal of the Corps to make its facilities accessible to persons with disabilities. The Corps will comply with standards of the Architectural Barriers Act (ABA) of 1968 to the maximum extent practicable and feasible without compromising the facility's function.
9	5/28/2021	Tim Wieson	The lakefront that borders my property is currently a red zone. I am writing to lobby for it to be converted to a yellow zone, as (unfortunately) I do not think that this section of shoreline is suitable for a dock. Converting it to a yellow zone will maintain natural/unblemished quality of the shoreline while simultaneously, allowing homeowners adjacent to this section to apply for an underbrush permit. This would greatly improve the view of the lake from the houses located on this section of the peninsula. For reference, a similar zoning arrangement has already been implemented on the other side of the road. From my perspective, I don't see a reason as to why we would be unable to mimic that setup on our side of the road. I believe this logic can be applied to the section of shoreline highlighted in the yellow box, but as it is visible from the state park, I could understand having some reservations about changing it.	The Corps cannot make site specific allocation changes. Any allocation changes could only be made as part of a comprehensive review of all shoreline allocations to ensure a balance between permitted private uses and resource protection for general public use is maintained. A comprehensive review of shoreline allocation was not funded as part of the recent Master Plan revision. Shoreline Use Permits do not fall within the purview of the Master Plan. Those issues would be addressed during the next revision of the Shoreline Management Plan (SMP). The current SMP, which became effective November 15, 2020, can be viewed at https://www.sas.usace.army.mil/About/Divisions-and-Offices/Operations-Division/Hartwell-Dam-and-Lake/Shoreline-Management/
10	5/28/2021 with 2 attachments	Rhea Dignam	Unfortunately, the draft Master Plan relies on outdated and inaccurate data when projecting the population of Hart County in the years to come. The Corps needs to correct this before issuing a final Master Plan. The Corps also needs to recognize that how it manages Lake Hartwell impacts people in the metropolitan Atlanta area, much of which lies within a 100-mile radius of the Hartwell Lake and Dam Project (the "Project"). If you consider metropolitan Atlanta to be within the economic and other "zone of interest" for the Project, you will easily see that Georgia is impacted as much or more than is South Carolina by what the Corps does vis a vis Lake Hartwell.	The data has been updated with the most current information available. The Corps assessed percent growth from 2010 – 2019, the 2060 column was renamed to Growth from 2010-2019 using this data. The census has the population growth for Hart County as 0.51% for 2019, 2020 and 2021. See response to #6 above for zone of interest comments.

11	6/1/2021	Mr. Horn	Bridge clearance is a major obstacle in certain parts of the lake. I think as a long-term perspective it should be evaluated to see if raising the bridges to a minimum of 15 or 20 foot clearance would make economic sense. As use of the lake continues to grow increased clearance would facilitate use instead of cutting off certain sections of the lake.	The Georgia and South Carolina state Department of Transportation (DOT) offices determine bridge height. The Corps participates in the process of bridge replacement as we evaluate easements for the bridge to cross public land and water. The Corps requires the state(s) to maintain a boating corridor during construction to minimize impacts to boaters. Further, the Corps expresses our desire for higher bridge clearances from the lake if possible with DOT funding constraints. However, the DOT has a budget to work within and many times it does not include additional funding to raise the elevation of the approach on either side of the bridge in order to increase the height of the bridge.
12	5/27/2021	Mary D. Shahid	On behalf of Clemson Family Investors, LLC, and Lakeside Lodge-Clemson Owners Association, Inc., the owners desire that this flexibility be applied if Oconee County seeks a lease for purposes of public access. As an alternative to a lease, the flexibility afforded the Corps in the Master Plan justifies Owners' request for a shoreline allocation change to allow additional public access to Lake Hartwell.	Public land adjacent to the Hartwell Village development, to include Lakeside Lodge Clemson is allocated at "protected." Public land must be allocated as "public recreation" to make it available for lease to an government entity. The Corps cannot make site specific allocation changes. Any allocation changes could only be made as part of a comprehensive review of all shoreline allocations to ensure a balance between permitted private uses and resource protection for general public use is maintained. A comprehensive review of shoreline allocation was not funded as part of the recent Master Plan revision. Shoreline Use Permits do not fall within the purview of the Master Plan. Those issues would be addressed during the next revision of the Shoreline Management Plan (SMP). The current SMP, which became effective November 15, 2020, can be viewed at https://www.sas.usace.army.mil/About/Divisions-and-Offices/Operations-Division/Hartwell-Dam-and-Lake/Shoreline-Management/
13	5/27/2021	David Dixon	Being a government employee, I understand that the number one limiting factor is financial funding for such projects. One way to allocate additional funds for such project would be to lessen the restrictions on issuance of dock permits for certain shoreline protection areas. For instance, yellow shoreline protection zones should be allowed to install docks if all required setbacks can be met. Example, my property at meets all the requirements (ie greater than 75' of property adjacent to Corps line, greater than 50' from neighboring docks, etc...) AND there is clear evidence that a dock was once on this property prior to me purchasing. The dock anchoring hardware is still on the shoreline. Yet I have been told that I'm not allowed to have a dock(?) What makes this even more odd is that there are 10-15 docks presents in this cove and my property and one other property owner continues to be denied a permit. I'm not sure how 1-2 additional docks in this cove will adversely effect the aesthetics of the lake(?) If anything, it would improve aquatic habitat plus generate permit fees needed for proposed projects around the lake. All of which would be beneficial for the entire lake as well as public experience.	We have received your comment regarding the draft Master Plan for the Lake Hartwell Project in a timely manner. There will be a spreadsheet of all the comments and responses added to the Appendix of the Environmental Assessment. Specifically to address your comment, you are correct, there was previously a dock permitted on the lake associated with 3178 Reed Creek Hwy, Hartwell, GA. The dock was originally authorized under the 1998 Shoreline Management Plan (SMP) and a 10x20 dock was approved and installed since there was no requirement for 75' of shared boundary line adjacent to public property zoned for Limited Development (aka green zone). At some point, the approved dock was removed from the lake and was not replaced. In 2008, the Corps announced and gave notice to all persons with permit for docks that did not have a dock currently installed to install their docks before Jan. 1, 2010, since some of these properties would not qualify for a dock under the new SMP. This property was inspected in May 2010 and the dock was not in place and as such, the dock portion of the permit was cancelled. When you purchased the property in 2019, your application for a dock was reviewed under the criteria in the 2008 SMP, which requires 75' of shared boundary line adjacent to public property zoned for Limited Development (aka green zone). Your property only shares 40 of boundary line allocated as Limited Development and therefore does not qualify to reinstall a dock at this location. The Corps cannot make site specific allocation changes. Any allocation changes could only be made as part of a comprehensive review of all shoreline allocations to ensure a balance between permitted private uses and resource protection for general public use is maintained. A comprehensive review of shoreline allocation was not funded as part of the recent Master Plan revision. Shoreline Use Permits do not fall within the purview of the Master Plan. Those issues would be addressed during the next revision of the Shoreline Management Plan (SMP). The current SMP, which became effective November 15, 2020, can be viewed at https://www.sas.usace.army.mil/About/Divisions-and-Offices/Operations-Division/Hartwell-Dam-and-Lake/Shoreline-Management/
14	6/23/2021	GA HPD	Edits suggested for four sections of the Hartwell Master Plan and one section of Appendix C (Public Laws.)	All modifications were implemented, and GA HPD was notified that all revisions were incorporated on 7/6/2021. Updated versions of the files were sent as attachments to the email for their reference.