Okatibbee Lake Project

Okatibbee Creek
Lauderdale County, MS

Master Plan

Prepared by the
Mobile District
US Army Corps of Engineers

August 2021

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Okatibbee Lake Project
Master Plan

[Month day, year]

The attached Master Plan for the Okatibbee Lake Project is in compliance with ER/EP 1130-2-550, *Project Operations: Recreation Operations and Maintenance Policies*, and no further action is required.

Master Plan is approved.

Jeremy J. Chapman, P.E.
Colonel, U.S. Army
District Commander

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EXECUTIVE SUMMARY

A Master Plan (MP) is required for each Civil Works project and all fee-owned lands for which the US Army Corps of Engineers (USACE) has administrative responsibility. It serves as a planning document that anticipates what could and should happen at a USACE project, but it is flexible enough to address changing conditions.

The primary goals of this Okatibbee Lake Project Master Plan are to prescribe an overall land and water management plan, 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 to providing a high degree of recreation diversity within the region; (3) emphasize the particular qualities, characteristics, and potentials of the project; and (4) exhibit consistency and compatibility with National objectives and other State and regional goals and programs.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

1.1 PROJECT DESCRIPTION

Operated by the US Army Corps of Engineers (USACE), the Okatibbee Lake Project is located on Okatibbee Creek in Lauderdale County, MS, about 32 miles above its confluence with Chunky River and about 7 miles northwest of Meridian, MS. State Highways 495 and 19 provide access to the project from interchanges with Interstate Highway 20 at Meridian.

The lake has a total storage capacity of 142,350 acre-feet at 359' NGVD 29. The total project acreage of 11,300.66 acres (REMIS) includes a 7,200.66-acre (summer pool 344.00' NGVD 29) buffer around the lake. The shoreline of the upper seasonal (summer) pool is 30 miles long (1997 Water Control Manual). Pertinent data is included in Appendix A.

1.2 PROJECT AUTHORIZATION

The need for an impoundment on Okatibbee Creek was included in a 1944 report submitted to Congress. This report presented the results of a study of Chunky River, the Chickasawhay River, and Pascagoula River in Mississippi (the same area later included in the Pat Harrison Waterway District) for navigation, flood control, and water supply. However, the USACE Chief of Engineers decided that river improvements were not necessary at that time, and plans were abandoned.

In time, the Okatibbee Creek project looked more feasible, particularly when Congress passed a law allowing such projects to serve multiple purposes. A project for flood protection on Chunky River and the Chickasaway and Pascagoula Rivers in Mississippi was authorized by Section 203 of *The Flood Control Act of 1962* (PL 87-874). This act also authorized a reservoir on Okatibbee Creek near Meridian, MS, for flood control and other purposes as outlined in House Document No. 549, 87th Congress, Second Session. Following a 1964 feasibility study, USACE initiated construction of the dam and lake, along with basic facilities for public use. The project was essentially complete at the time of its dedication on 30 May 1969.

The Pat Harrison Waterway District was created in 1962 by the Mississippi legislature to act as the State's agent for developing the Pascagoula River Basin's water resources in Southeast Mississippi. Since the Okatibbee Lake Project falls within the District's boundaries, the District became involved with its development, supplying $1,000,000 of the project's $9,000,000 initial development cost and assuming responsibility for the local obligations inherent in the cooperative project.

In 1977 the Okatibbee Lake Management Office assumed control of all recreational areas leased by the Pat Harrison Waterway District except for Okatibbee Water Park.

1.3 PROJECT PURPOSES

The Okatibbee Lake Project is a multipurpose project authorized for flood control, surface water supply, water quality control, water-related recreation, and fish and wildlife conservation.

1.4 PURPOSE AND SCOPE OF THE MASTER PLAN

1.4.1 PURPOSE

This Master Plan provides a programmatic approach for the responsible stewardship of the Okatibbee Lake Project resources to benefit present and future generations. While it identifies conceptual types and levels of activities, it is not a design document like previous Master Plans. All actions by USACE and the agencies and individuals granted leases to project lands must be consistent with the Master Plan; therefore, the Master Plan must be kept current in order to provide effective guidance for USACE decision-making.

The Master Plan is based on responses to regional and local needs, resource capabilities and suitability, and expressed public interest consistent with authorized project purposes and pertinent legislation and regulations. It provides a District-level policy consistent with national objectives and other State and regional goals and programs. The Master Plan is distinct from the project-level implementation emphasis of the Operational Management Plan (OMP). Policies in the Master Plan are guidelines implemented through provisions of the OMP, specific Design Memoranda (DMs), and the Annual Management Plans. A list of project reports is included in Appendix B.

The broad intent of this Master Plan is to accomplish the following:

- Determine appropriate uses for and levels of development of project resources
- Provide a framework within which the OMP and Annual Management Plan are developed and implemented
- Establish a basis on which outgrants and recreational development proposals may be evaluated

1.4.2 SCOPE

USACE is responsible for managing, conserving, and enhancing environmental and cultural resources at all USACE reservoir projects while providing quality public recreational experiences to serve the needs of present and future generations. This Master Plan includes guidance for the appropriate use, development, enhancement, protection, and conservation of the natural, cultural, and human-made resources at

Okatibbee Lake. The specified land classifications, recreation development, and management practices apply to all project lands at these lakes.

To ensure consideration of natural and cultural resources throughout the Master Plan, a Programmatic Environmental Assessment (PEA) is included in Appendix D. This document specifies the most appropriate degree of stewardship, management activities, and types and levels of recreational use for Okatibbee Lake Project lands. It also identifies potential impacts on the human or natural environment related to the proposed programmatic management approach and indicates how these impacts can be avoided or minimized.

1.4.3 MASTER PLANNING PROCESS

This Master Plan and associated PEA were prepared in accordance with the following USACE guidance:

- Engineer Manual (EM) 1110-1-400, *Engineering and Design—Recreation Planning and Design Criteria*, 01 November 2004.

- Engineer Pamphlet (EP) 1130-2-550, *Project Operations—Recreation Operations and Maintenance Guidance and Procedures*, 15 Nov 1996, 01 Oct 1999 (change 1), 01 Mar 2002 (change 2), 15 Aug 2002 (change 3), 30 Aug 2008 (change 4), 30 Jan 2013 (change 5).

- Engineer Regulation (ER) 200-1-5, *Environmental Quality—Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers Environmental Operating Principles and Doctrine*, 30 Oct 2003.

- Engineer Regulation (ER) 200-2-2, *Environmental Quality—Procedures for Implementing the National Environmental Policy Act (NEPA)*, 4 Mar 1988.

- Engineer Regulation (ER) 1105-2-100, *Planning Guidance*, 22 Apr 2000, 30 Jun 2004, 31 Jan 2007, 30 Jun 2004, 20 Nov 2007.

- Engineer Regulation (ER) 1130-2-550, *Project Operations—Recreation Operations and Maintenance Guidance and Procedures*, 15 Nov 1996, 01 Oct 1999 (change 1), 01 Mar 2002 (change 2), 15 Aug 2002 (change 3), 30 Aug 2008 (change 4), 30 Jan 2013 (change 5).

2 PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.1 DESCRIPTION OF THE RESERVOIR

Okatibbee Lake lies almost entirely within Lauderdale County, MS, with only the extreme northernmost reaches of the flood pool in Kemper County, MS. Constructed in 1968, the earthen gravity dam is 61' high and 6,500' long at its crest.

During normal summer operating level at elevation 344' NGVD (increased from elevation 343' NGVD in 1996/1997) when recreational use is at its peak, the lake's surface is about 9 miles long and covers about 4,100 surface acres. The surface area of the lower seasonal water supply pool at elevation 339' NGVD is about 2,700 surface acres while the surface area of the maximum flood control pool at elevation 359' NGVD is 8,800 surface acres.

The shoreline of the upper seasonal (344' NGVD) pool is 30 miles long. The lake has a total storage capacity of 142,350 acre-feet. Of this total, a maximum of 59,490 acre-feet and a minimum of 42,590 acre-feet are allocated for flood control storage; a maximum of 38,300 and a minimum of 21,400 acre-feet are allocated for water supply and water quality control; and 7,760 acre-feet are allocated for sediment storage. When the lake is operated for maximum flood control storage, the water supply storage is reduced to a minimum, and 53,700 acre-feet of surcharge storage are available above the 100-year flood control pool.

2.2 HYDROLOGY AND GROUND WATER

The Okatibbee Creek basin lies within Kemper, Lauderdale, and Clarke Counties in east-central Mississippi. This small basin, which is only approximately 12 miles across at its widest point (east to west) and 45 miles long (north to south), is part of the northernmost portion of the larger Pascagoula River basin. The watershed for Okatibbee Lake is approximately 154 square miles or about 36% of the total Okatibbee Creek drainage basin. Annual runoff into the lake is about one-third of the total basin's average rainfall of 55".

Okatibbee Creek rises in the rolling plains area of the Southern Red Hills Region of the East Gulf Coastal Plain Province. Except where impounded to form Okatibbee Lake, it has a fall of 24' per mile from its uppermost portion to its confluence with Sowashee Creek and 3' per mile for the remaining length of the stream to its junction with Chunky River. Here these two creeks form the headwaters of the Chickasawhay River which flows into the Pascagoula River. Entrenched in a fairly deep broad valley flanked by low ridges and hills, Okatibbee Creek's channel is 60–100' wide with banks 10–20' high. Bank full channel capacity at Meridian is 2,000 cubic feet per second (cfs). The average annual flow is approximately 340 cfs.

2.3 TOPOGRAPHY, GEOLOGY, AND SOILS

2.3.1 TOPOGRAPHY

Okatibbee Lake lies within the North Central Plateau subdivision of the East Gulf Coastal Plain. This region is characterized by relatively rough topography, constituting the most rugged hills found in the coastal plain. The general area of the Okatibbee Lake Project is a broad valley about 315' above sea level with ridges to 390' on the west and 420' on the east. For the most part, the strata are silty clays, sandy clays, fat clays, and silt sands of the sedimentary deposits of the Gulf Coastal Plain.

2.3.2 GEOLOGY

The Okatibbee Basin is part of the East Gulf Coastal Plain. With elevations generally no higher than 500' above sea level, the East Gulf Coastal Plain is an elevated sea bottom with extensive tracts of marsh land. It is a section of the larger Atlantic and Gulf Coastal Plain, which extends from New England into eastern Mexico.

Paralleling the inner and outer edges of the plain are belts of uplands with gentle slopes falling in a seaward direction and much shorter, steeper slopes falling inland. This landform results from the variability of lithology, which is evidenced by a noticeable difference in the erodability of various rocks. These ridges, called “cuestas,” justify the state’s designation as a “belted coastal plain.” Okatibbee Lake lies in a ridge of hills composed of the Tallahatta formation called the Buhrstone Cuesta.

The Gulf Coastal Plain is formed by gently tilted Mesozoic and Cenozoic deposits, which rest on deformed rocks of the Appalachian and Ouachita Mountains. These deposits consist of sediments laid down in marine, brackish, and fluvial environments. The amount of fall varies 15'–35' per mile. The oldest rocks in Mississippi are in the northeastern corner of the state; they are progressively younger toward the coast as a result of land building out into the ancestral Gulf of Mexico.

Eighty-five percent of the state, including the area surrounding Okatibbee Lake, is covered by deposits of the Cenozoic Age. This era of time is divided into the following epochs: Paleocene, Eocene, Oligocene, Miocene, Pliocene, Pleistocene, and Recent. The Cenozoic Age, as a whole, is the most recent era of geologic history. The Eocene Series of Mississippi is divided into the Wilcox, Claiborne, and Jackson Groups, with the Wilcox Group being the oldest of the three. It underlies the site, falling gently to the southwest at 25'–30' per mile. The Wilcox Group consists of irregularly bedded, unindurated sands and clays with strata of lignite clay, lignite, and some calcareous concentrations. At the Okatibbee Lake Project area, these beds are intermingled with alluvial material, so that no distinct division exists. The lignites are intermediate between peat and coal and have heating values ranging from 8,000 to 10,000 British Thermal Units (BTU). Numerous shark teeth have been found in a few thin marine marls in the east central part of the state. The Wilcox Group is exposed along a 10–20 mile belt,

extending from Meridian to Louisville and Europa and stretching into Benton County at the northern end of the state. The Okatibbee Lake Project lies well in this area.

2.3.3 SOILS

Soils in the Okatibbee Lake Project area fall within only two general soil groups. The floodplains of Okatibbee and Tompeat Creeks contain the Quitman-Daleville-Jena soils group. These deep loamy soils range from poorly drained to well-drained and are found on broad, nearly level, terraces and flood plains. In general, their wetness and potential for flooding can present severe limitations to recreational development. Soils bordering the Okatibbee Lake Project and the major creek floodplains are in the Sweatman-Ora-Smithdale soils group. These deep loamy soils range from moderately well drained to well drained and are found on broad, gently sloping ridges and steep side slopes. Generally, these soils pose only moderate limitations to recreational development; but steep slopes in some areas may create severe limitations.

2.4 RESOURCE ANALYSIS

The Okatibbee Lake Project Natural Resource Management Plan (NRMP) describes the current conditions of natural resources at the project and describes management programs that provide for the conservation of renewable natural resources, preservation of rare and unique resources, and long-term sustainability of ecosystems. It outlines natural resources management (NRM) activities occurring at the project level that will support and be consistent with the Congressionally authorized project purposes while protecting and managing natural resources in accordance with accepted stewardship principles. The NRMP is a living document that is updated more frequently than the Master Plan. For up-to-date information regarding the following subheadings, including species lists, refer to the NRMP.

2.4.1 FISH AND WILDLIFE RESOURCES

Okatibbee Lake is classified as a warm-water fishery. Three categories of fish species inhabit the lake. Warm-water sports fish include striped and largemouth bass, crappie, and assorted bream and sunfish. Commercial fish are primarily catfish, suckers, and carp. Miscellaneous fish include 21 species, such as shad, shiners, minnows, bowfin, and gar.

Many animal species provide game for hunters and enjoyment for non-consumptive users. Game species include white-tailed deer, eastern wild turkey, cottontail and swamp rabbit, gray and fox squirrel, raccoon, bobwhite quail, mourning dove, wood duck migratory waterfowl, and furbearers. A variety of non-game birds, mammals, amphibians, and reptiles exists in the fields, forests and water.

More information, including a complete species list, can be found in the NRMP.

2.4.2 VEGETATIVE RESOURCES

All of Lauderdale County is in the upper coastal plain province of Mississippi, which is separated from the lower coastal plain by "blacklands." At the site of Okatibbee Reservoir, the creek has produced a broad floodplain that is rather unusual for a small river. The width of these flats, as much as 2.5 miles just above the dam site, has had a considerable effect on the proportion of vegetative cover in the bottomland and swamp species. This proportion is high in non-flooded areas, compared to upland species. Among the most prominent species, because of their great numbers, are greenbrier *(Smilax lanceolata),* blackberry *(Rubus cuneifolius),* loblolly pine *(Pinus taeda),* sweetgum *(Liquidambar styraciflua),* water tupelo *(Nyssa biflora),* baldcypress *(Taxodium distichum),* sweetbay *(Magnolia grandiflora),* fetterbush *(Lyonia lucida),* wax myrtle *(Myrica cerifera),* gallberry (*Ilex glabra),* overcup oak *(Quercus lyrata),* water oak *(Quercus nigra),* and coast leucothoe *(Leucothoe axillaris).*

Two species of trees are a prominent part of the watercourse or stream-bank vegetation and bottomlands near these streams. They are river birch *(Betula nigra)* and spruce pine *(Pinus glabra).* A secondary species, sycamore *(Platanus occidentalis),* is seen in considerable numbers along some branch streams.

On upland soils, loblolly pine *(Pinus taeda)* has preempted, or has been planted in formerly cultivated fields or pastures, but with such wide spacing that individual trees have broad crowns and are branched nearly to the ground. On culled-over woods, slopes, and higher ground, shortleaf pine *(Pinus echinata)* grows in mixture with loblolly pine. Also growing on such sites are southern red oak *(Quercus falcata),* pignut hickory *(Carya glabra),* laurel oak *(Quercus laurifolia),* yaupon *(Ilex vomitoria),* American holly *(Ilex opaca),* dogwood *(Cornus florida),* devilwood *(Osmanthus abericanus),* horsesugar *(Symplocos tinctoria),* hog plum *(Prunus umbellate),* and shining sumac *(Rhus copazlina).* Three species of vines are noticeable in the wide flats bordering the stream; Carolina yellow jessamine (*Gelsemium sempervirens),* climbing hydrangea *(Decumaria barbara),* and coral honeysuckle *(Lonicera sempervirens).*

More information, including a complete species list, can be found in the NRMP.

2.4.3 THREATENED AND ENDANGERED SPECIES

Habitats of endangered and threatened plant and animal species identified on the project must be protected and, quite often, avoided when developing an area. The goal of this program is to provide protection and special habitat management for endangered and/or threatened plant and animal species and/or critical habitat identified on the project lands. The Endangered Species Act of 1973 (ESA) mandates that all Federal agencies conserve endangered and threatened species and their critical habitat as well as implement measures supporting species conservation. This act also allows Federal agencies to use their designated authorities to implement measures that support conservation of subject species.

Section 7 of the ESA requires Federal agencies, in consultation with the US Fish and Wildlife Service, to ensure that any actions authorized, funded, or carried out neither jeopardize the existence of any endangered or threatened species nor result in the destruction or adverse modification of critical habitat. To fulfill this requirement, field offices must stay apprised of endangered and threatened species and critical habitat by consulting the USACE Mobile District's Endangered Species Coordinator and the Mississippi Museum of Natural Science (a Division of the Mississippi Department of Wildlife, Fisheries, and Parks [MDWFP]). In addition, routine liaison will be maintained with State and Federal agencies to ensure that current species lists of flora and fauna are available to all management personnel.

Mississippi's endangered species law, *The Nongame and Endangered Species Conservation Act of 1974,* declares that "species or subspecies of wildlife indigenous to the State should be accorded protection in order to maintain and to the extent possible enhance their numbers." An endangered species, as defined by this law, is any species or subspecies of wildlife whose survival and continued welfare in the State is in jeopardy or is likely to become so in the near future. The law prohibits taking, possessing, transporting, exporting, processing, selling, offering to sell, or offering to ship endangered species.

Mississippi's official list of endangered species is revised by the Mississippi Commission on Wildlife, Fisheries, and Parks, the governing body of the State's Department of Wildlife, Fisheries, and Parks. The latter is responsible for management of endangered species and enforcement of *The Nongame and Endangered Species Conservation Act.*

The most current list of identified endangered, threatened, or recently-listed species known to either inhabit or visit the Okatibbee Lake Project annually can be found in the Okatibbee Lake Project NRMP, or with the applicable federal or state agencies.

2.4.4 INVASIVE SPECIES

Exotic, invasive species pose a costly management challenge and have the capacity to cause considerable damage to the natural environment. Project efforts are focused on preventing the introduction of harmful species; coordinating with Federal, State, and local partners to control or eradicate such species; and educating the public.

Some common exotic, invasive, terrestrial plant species known to occur on Okatibbee Lake Project lands include kudzu (*Pueraria montana*), Chinese privet (*Ligustrum sinense*), Chinese tallowtree (*Triadica sebifera*), and cogongrass (*Imperata cylindrica*). Kudzu and Chinese privet have existed on the project from its beginning. Chinese tallowtree and cogongrass are two of the species that have been rapidly expanding throughout the state and recently on the project.

Chinese tallowtree is extremely invasive, has a high reproductive potential, can modify natural habitats by replacing natural vegetation, and is rapidly expanding on Project

lands. It has invaded much of the floodplain forests on the project and persists in all recreation areas and along the shoreline of Okatibbee Lake. Cogongrass is an aggressive, perennial grass which has invaded Mississippi and has been expanding throughout the state from the south to the north. Because this species responds quickly to disturbance and thrives in full sun, it most often occurs in open fields, forest edges, roadsides, utility rights-of-way, and areas with soil disturbance. Patches of cogongrass have been identified on the emergency spillway, along some access roads to recreation sites, and on project lands managed for wildlife management. Control and eradication of cogongrass is necessary not only because of its negative impacts to natural ecosystems, but also because it is highly flammable and creates a severe fire hazard.

Some common exotic, invasive, aquatic species of plants which occur on surrounding flood control reservoirs or state lakes and have the potential to occur at Okatibbee Lake include water hyacinth (*Eichornia crassipes*), hydrilla (*Hydrilla verticilatta*), Eurasion watermilfoil (*Myriophyllum spicatum*), alligator weed (*Alteranthera philoxeroides*), torpedograss (*Panicum repens*), and Cuban bulrush (*Oxycaryum cubense*). A survey to document the presence of these species is needed to determine what, if any, actions are needed to control these species.

More information, including a complete species list, can be found in the NRMP.

2.4.5 ECOLOGICAL SETTING

Okatibbee Lake lies within the Level III Southeastern Plains ecoregion (Chapman, et. al. 2004). This ecoregion comprises most of the eastern half of the state from its northern boundary to the Southern Coastal Plain ecoregion along the Mississippi Gulf Coast. The ecoregion has greater elevations and relief than the Southern Coastal Plain ecoregion to the south and the Mississippi Alluvial Plain in the western part of the state. The cretaceous sands, silts, and clays of this ecoregion are geologically younger than the older metamorphic and igneous rocks of the Piedmont ecoregion and the Paleozoic limestone and shale of the Interior Plateau ecoregion.

Within the Level III Southeastern Plain ecoregion, Okatibbee Lake is more specifically located entirely within the Level IV Southern Hilly Gulf Coastal Plain ecoregion. This mostly forested ecoregion consists of dissected, irregular plains and gently rolling hills extending from Mississippi through Alabama and into the western edge of Georgia. The natural vegetation of mostly oak-hickory-pine forest in the northern part of the ecoregion grades into southern mixed forest to the south with more pine and pine-oak forest with longleaf pine, southern magnolia, beech, and other hardwoods. Floodplain forests contain cypress-gum swamp, bottomland hardwoods, and some pine. Streams are low-to-moderate gradient with mostly sandy bottoms. Land cover is mostly forest, including mixed forest and pine plantations, intermixed with some pasture and minor cropland.

2.4.6 WETLANDS

There are five types of major wetland habitats within the wetland classification system (USFWS 2019a):

- **Marine**—Open ocean overlying the continental shelf and coastline.
- **Estuarine**—Deepwater tidal habitats and adjacent tidal wetlands with that have access to the open ocean and are occasionally diluted by fresh water from the land.
- **Riverine**—Wetlands contained within a channel with periodically or continuously flowing water.
- **Lacustrine**—Wetlands in permanently flooded lakes and reservoirs; this habitat lacks trees, shrubs, and emergent vegetation.
- **Palustrine**—More complex; this habitat includes all non-tidal wetlands dominated by trees, shrubs, and emergent mosses or lichens although it may also lack such vegetation but meet other characteristics. The palustrine system was developed to group vegetated wetlands (such as marshes, swamps, and bogs), but it also includes small, shallow ponds.

The major wetland habitats found on Okatibbee Lake Project lands include approximately 4,175 acres of lacustrine wetlands, approximately 4,114 acres of palustrine wetlands, and approximately 28 acres of riverine wetlands according to the USFWS National Wetlands Inventory database (USFWS 2019b). Most of these wetlands include the actual lake itself (lacustrine) and the USACE-managed portion of the waters feeding into the project. The remaining wetlands consist primarily of locations that may become inundated at different times through fluctuations in the lake elevation during normal operating procedures. The majority of the palustrine wetlands consist of freshwater forested/shrub wetlands (approximately 3,897 acres).

2.5 CULTURAL RESOURCES

2.5.1 NATIONAL HISTORIC PRESERVATION ACT (NHPA)

The National Historic Preservation Act (NHPA) of 1966, as amended, charges Federal agencies with identifying and evaluating historic and archaeological resources under their stewardship and with nominating eligible properties to the National Register of Historic Places (NRHP). In addition, it calls for Federal agencies to consider the effects of planned activities to NRHP-listed or -eligible properties. “Cultural resources” are those resources that represent a culture or society, either past or present. These resources may include buildings, structures, objects, archaeological sites, and districts,

as well as landscapes and traditional cultural properties. “Historic properties” are those cultural resources determined eligible for inclusion in the NRHP.

2.5.2 INTEGRATED CULTURAL RESOURCES MANAGEMENT PLAN (ICRMP)

As of 2020, per Department of Defense Instruction (DODI) 4715.16 (8 September 2018), the cultural resources on the fee-owned lands at the Okatibbee Lake Project operates under an Integrated Cultural Resources Management Plan (ICRMP), which defines the cultural resources management process. This five-year planning tool follows a pattern similar to and integrated with the rolling five-year fiscal program and budget cycle. It ensures that Federal agencies manage cultural resources in a responsible manner to achieve compliance with Sections 106 and 110 of the NHPA as well as other Federal preservation laws and regulations. It also provides procedural guidance for identifying, evaluating, and managing historic properties at fee-owned lands.

According to the *Integrated Cultural Resources Management Plan for USACE, Mobile District, Okatibbee Fee-Owned Lands, Lauderdale and Kemper Counties, Mississippi, 2020-2025,* of the fee-owned terrestrial land at Okatibbee Lake, 5,116.85 acres have been previously surveyed for cultural resources. However, only 539.57 acres of those surveyed meet the current Mississippi Department of Archives and History (MDAH) *Mississippi Standards and Guidelines for Archaeological Investigations*. The MDAH serves as the Mississippi State Historic Preservation Officer (SHPO). This results in 5,192.12 acres that need initial or remedial cultural resources investigation.

The Okatibbee Lake ICRMP assists the Mobile District and its tenant activities in meeting USACE responsibilities toward cultural resources in a manner that supports the military mission and minimizes conflicts with resource protection. As this ICRMP is tailored to the specific cultural resources issues at Okatibbee Lake fee-owned lands, it is meant to serve as a component of the master plan. It covers a period of five years, which means that it is reviewed and revised every five years, but it also requires an annual update (DODI 4715.16). Updates and revisions are a necessary part of maintaining a proactive management plan. Internal ICRMP reviews are made on an annual basis, and updates are included in and appended to the ICRMP. After each five-year period, the installation command staff reviews and revises the ICRMP to reflect changes in the cultural resources inventory as well as changes in Federal or USACE cultural resource regulations.

While the ICRMP serves as a detailed planning tool for Okatibbee Lake, project coordination with cultural resources staff at the Mobile District remains necessary to comply with Section 106 of the NHPA, including consultation with the Mississippi SHPO and appropriate federally recognized tribes for the determination of effects for all Lake Okatibbee undertakings on USACE fee-owned lands.

2.5.3 PREVIOUS CULTURAL RESOURCES INVESTIGATIONS

Previous cultural resources investigations at Okatibbee Lake from 1971 to 2019 have recorded 101 archaeological sites. Based on the MDAH site forms, 80 archaeological sites are ineligible for National Register of Historic Places (NRHP) listing, and 21 sites have an unknown or undetermined NRHP eligibility. No historic standing structures, known cemeteries, or historic districts are on Okatibbee Lake fee-owned lands, but eight bridges are over 50 years old.

Additionally, the 21 recorded sites that have an unknown or undetermined NRHP eligibility need to be further investigated through Phase II testing to determine their eligibility. The eight bridges that are over 50 years old also need further archival research to determine if any are eligible for the NRHP.

2.6 RECREATION FACILITIES, ACTIVITIES, AND NEEDS

The Okatibbee Lake Project experiences many different recreational activities. Some of the more popular activities include developed and primitive camping, boating, hiking, sightseeing, swimming, picnicking, biking, hunting, birding, and fishing.

The Okatibbee Lake Project manages one developed campground, totaling 49 Class A campsites, 12 Class C campsites, and three group camping areas (Willow Camp accommodates six Class A campsites, Persimmon Camp accommodates two Class A campsites, and Cypress Group Camp accommodates 10 Class C campsites); one primitive campground, totaling seven campsites; six day-use areas; four public beaches; numerous trails. There are two leased areas on the project: one marina and one water park.

Due to the abundant fish, small game, and deer, the region of Mississippi in which the Okatibbee Lake Project is located is a haven for fishermen and hunters. The native wildlife as well as the indigenous nature of the project's lands and waters provide a special, but disappearing, "wilderness" opportunity. Therefore, the project must be planned, developed, and operated to sustain this opportunity.

2.6.1 ZONES OF INFLUENCE

Zones of influence, which represent the study areas for evaluating recreation capacities, fall into two classifications: Zone 1 is the area falling within a 25-mile radius of a project area, and Zone 2 is the area falling within a 50-mile radius of a project area. Meridian, MS, and several smaller lakes—including Lake Tom Bailey in Toomsuba, MS, and Dalewood Shore Lake in Lauderdale, MS—fall within Zone 1. Bienville National Forest is located on the Eastern outer perimeter of Zone 2, and Tombigbee National Forest is less than 10 miles from the northern outer perimeter of Zone 2.

2.6.2 VISITATION PROFILE

The Carrying Capacity Study in Appendix C discusses the Okatibbee Lake Project visitation patterns between 2014-2019 in detail. In general, Okatibbee Lake is visited predominately by local residents for overnight stay in campgrounds as opposed to day-use at boat ramps and parks. Peak recreation season is from April to July. Visitation is concentrated during the weekends in both peak and non-peak seasons. Years with lower visitation typically overlap with natural disasters, such as floods or hurricanes. The seven-year (2014-2020) average for visitation to Okatibbee Lake Project was 437,713. The highest visitation in recent years was 553,191 in 2015.

2.6.3 RECREATION ANALYSIS

The recreation analysis evaluated overall visitation. It looked at future population and forecasted future visitation based on current use data as well as proposed changes occurring at Okatibbee Lake. This recreation analysis is included in full in the Carrying Capacity Study in Appendix C.

2.6.4 RECREATIONAL CARRYING CAPACITY

Recreational carrying capacity has been established for general recreation. The carrying capacity estimates were based on use data, current and proposed infrastructure, and best professional judgment. The full analysis is included in the Carrying Capacity Study in Appendix C.

2.7 REAL ESTATE/ACQUISITION POLICY

Okatibbee Lake Project land was acquired in fee to a minimum contour elevation of 360' NGVD to provide an area necessary for flood control. In some areas, blocks of land above elevation 360' NGVD were purchased to provide areas for recreation, public use, and other functions. This land acquisition provided a continuous area of land around the reservoir above the water level to ensure public access along the shore and to accommodate authorized project purposes. All acreage was purchased for and allocated as Project Operations.

2.8 PERTINENT PUBLIC LAWS

- **Public Law 59-209, Antiquities Act of 1906**—The first Federal law established to protect cultural resources on public lands; provides a permit procedure for investigating “antiquities” and consists of two parts, an act for the Preservation of American Antiquities, and Uniform Rules and Regulations.

- **Fish and Wildlife Coordination Act (FWCA) of 1934, ch. 55, 48 Statute 401**—Authorizes the Secretaries of Agriculture and Commerce to provide assistance to

and cooperate with Federal and State agencies to protect, rear, stock, and increase the supply of game ad fur-bearing animals.

- **Public Law 74-292, Historic Sites Act of 1935**—Declares it policy to preserve for (in contrast to protecting from) the public, historic (including prehistoric) sites, buildings, and objects of national significance. This act provides both authorization and a directive for the Secretary of the Interior, through the National Park Service, to assume a position of national leadership in the area of protecting, recovering, and interpreting national archaeological historic resources. It also establishes an Advisory Board on National Parks, Historic Sites, Buildings, and Monuments—a committee of eleven experts in the fields of history, archaeology, architecture, and human geography, appointed by the Secretary to recommend policies to the Department of the Interior.

- **Public Law 78-534, Flood Control Act (FCA) of 1944**—Authorizes the USACE Chief of Engineers to construct, maintain, and operate public parks and recreational facilities in reservoir areas (Section 4, as last amended by Section 207 of Public Law 87-874, Flood Control Act of 1962). This act further authorizes the Secretary of the Army to grant leases and licenses for lands, including facilities, preferably to Federal, State, or local governmental agencies.

- **Public Law 85-624 and Public Law 89-72, Amendments to the Fish and Wildlife Coordination Act (FWCA) of 1934**—Provides that fish and wildlife conservation receive equal consideration with other project purposes and be coordinated with other features of water resource development programs and states that opportunities for improving fish and wildlife resources and adverse effects on these resources be examined along with other purposes which might be served by water resources development.

- **Public Law 86-717, 74 Statute 817, Forest Conservation**—Provides for the protection of forest cover for reservoir areas under the jurisdiction of the Secretary of the Army and the USACE Chief of Engineers.

- **Public Law 88-578, Land and Water Conservation Fund (LWCF) Act of 1965**—Establishes a fund from which Congress can make appropriations for outdoor recreation. Section 2(2) makes possible entrance and user fees at reservoirs by deleting the words “without charge” from Section 4 of the 1944 Flood Control Act, as amended.

- **Public Law 89-90, Water Resources Planning Act of 1965**—Establishes the Water Resources Council, giving it the responsibility for encouraging the development, conservation, and use of the Nation’s water and related land resources on a coordinated and comprehensive basis.

- **Public Law 89-665, National Historic Preservation Act (NHPA) of 1966**—Provides for (1) an expanded National Register of significant sites and objects, (2) matching grants to States undertaking historic and archaeological resource inventories, (3) a program of grants-in-aid to the National Trust for Historic Preservation, and (4) the establishment of an Advisory Council on Historic Preservation. Section 106 requires that the President's Advisory Council on Historic Preservation have an opportunity to comment on any undertaking which adversely affects properties listed, nominated, or considered important enough to be included on the National Register of Historic Places.

- **Public Law 90-483, River and Harbor and Flood Control Act (RHFCA) of 1968**—Restricts collection of entrance fees at USACE lakes and reservoirs to users of highly developed facilities requiring continuous presence of personnel (Section 210).

- **Public Law 91-190, National Environmental Policy Act (NEPA) of 1969**—Declares it a national policy to "encourage productive and enjoyable harmony between man and his environment." Specifically, it declares a "continuing policy of the Federal Government . . . to use all practicable means and measures . . . to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." Section 102 authorized and directed that, to the fullest extent possible, the policies, regulations and public law of the United States must be interpreted and administered in accordance with the policies of the Act.

- **Public Law 91-611, River and Harbor and Flood Control Act (RHFCA) of 1970**—States that people designated by the USACE Chief of Engineers have authority to issue citations for violations of regulations and rules of the Secretary of the Army, published in the Code of Federal Regulations (Section 234).

- **Public Law 92-500, Federal Water Pollution Control Act (FWPCA) Amendments of 1972**—The Federal Water Pollution Control Act of 1948 (PL 845, 80th Congress), as amended in 1956, 1961, 1965 and 1970 (PL 91- 224), established the basic tenet of uniform State standards for water quality. Public Law 92-500 strongly affirms the Federal interest in this area: "The objective of this act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters."

- **Public Law 92-516, Federal Environmental Pesticide Control Act (FEPCA) of 1972**—Completely revises the Federal Insecticide, Fungicide and Rodenticide Act by providing for complete regulation of pesticides, including restrictions on use, actions within a single State, and strengthened enforcement.

- **Public Law 93-81, Amendment to the Land and Water Conservation Fund (LWCF) Act of 1965**—Amends Section 4 of the Land and Water Conservation Act of 1965 to require each Federal agency to collect special recreation use fees for sites, facilities, equipment, or services furnished at Federal expense.

- **Public Law 93-205, Endangered Species Act (ESA) of 1973**—Repeals the Endangered Species Conservation Act, Public Law 91-135 and provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. Section 7 of this act requires Federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of the listed species or modify their critical habitat.

- **Public Law 93-291, Archaeological Conservation Act of 1974**—Tasks the Secretary of the Interior with coordinating all Federal survey and recovery activities authorized under this expansion of the 1960 act. The Federal construction agency may transfer up to 1% of project funds to the Secretary, with such transferred funds considered non-reimbursable project costs.

- **Public Law 93-303, Amendment to the Land and Water Conservation Act (LWCA) of 1965**—Amends Section 4 of the Land and Water Conservation Act of 1965, as amended, to establish less restrictive criteria under which Federal agencies may charge fees for the use of campgrounds developed and operated at Federal areas under their control.

- **Public Law 93-523, Safe Drinking Water Act (SDWA)**—Ensures that water supply systems serving the public meet minimum national standards for protection of public health. The act authorizes the Environmental Protection Agency (EPA) to establish Federal standards applicable to all public water systems for protection from all harmful contaminants and establishes a joint Federal-State system for ensuring compliance with these standards and for protecting underground sources of drinking water.

- **Public Law 94-422, Amendment of the Land and Water Conservation Fund (LWCF) Act of 1965**—Expands the role of the Advisory Council. Title 2 – Section 102a amends Section 106 of the Historical Preservation Act of 1966 by allowing the Council to comment on activities which will have an adverse effect on sites either included in or eligible for inclusion in the National Register of Historic Places.

- **Public Laws 94-587, Water Resource Development Act (WRDA) of 1976**—Gives USACE District Commanders the authority to contract and/or enter into cooperative agreements with States and their political subdivisions to obtain increased law enforcement services at Civil Works water resource projects to

meet needs during peak visitation periods and to augment the citation authorities granted to USACE under 36 CFR Chapter III, Part 327 (Title 36).

- **Public Law 98-63, Chapter IV General Provisions**—Allows the USACE Chief of Engineers to accept the services of volunteers, and to provide for their incidental expenses, to carry out any USACE activity except policymaking or law or regulatory enforcement.

- **Public Law 98-616, Resource Conservation and Recovery Act (RCRA) of 1976**—Establishes Federal standards and requirements for State and regional authorities in regard to solid waste disposal.

- **Public Law 99-662, Water Resources Development Act (WRDA) of 1986**—Provides for the conservation and development of water and water-related resources and for the improvement and rehabilitation of the Nation's water resources infrastructure.

- **Native American Graves Protection and Repatriation Act (NAGPRA) of 1990**—Provides for the protection of Native American graves, including human remains, funerary objects, sacred objects, and objects of cultural patrimony; also establishes procedures for inadvertent discovery or planned excavation of Native American cultural items on Federal lands.

- **Public Law 106-580, Water Resources Development Act (WRDA) of 1992**—Authorizes the Secretary of the Army to accept contributions of cash, funds, materials, and services from people, including governmental entities, but excluding the project sponsor, in connection with carrying out a water resources project for environmental protection and restoration or a water resources project for recreation.

- **Public Law 110-325, Americans with Disabilities Act (ADA) of 1990**—Provides that public entities must provide physical and programmatic access to Americans with disabilities in accordance with U.S. Department of Justice regulations (Title II).

- **Public Law 96-95, Archaeological Resources Protection Act (ARPA) of 1979**—Protects for the present and future benefit of the American people archaeological resources and sites which are on public and Indian lands and fosters increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals.

- **Public Law 94-541, Architectural Barriers Act (ABA) of 1968**—Requires that buildings and facilities that are designed, constructed, or altered with Federal funds, or leased by a Federal agency, comply with Federal standards for physical

accessibility. ABA requirements are limited to architectural standards in new and altered buildings and in newly leased facilities; they do not address the activities conducted in those buildings and facilities. This law was established under Section 502 of the Rehabilitation Act.

3 RESOURCE OBJECTIVES

The Okatibbee Lake Project Master Plan is not a construction document for future recreational facilities. Instead, it provides a programmatic approach to managing project resources by classifying project lands, developing general and site-specific resource objectives, and identifying appropriate development needs. Sound stewardship requires the development and management of project resources for the public benefit, consistent with resource capabilities.

An important component of this approach is the establishment of viable resource objectives, realistically attainable goals for the use, development, and management of natural and manmade resources. These objectives serve as guidelines for attaining maximum public benefit within USACE safety guidelines and security levels (while minimizing the potential for adverse impacts) and for protecting and enhancing environmental quality. They are developed with full consideration of authorized project purposes, applicable federal laws and directives, resource capabilities, regional needs, plans and goals of regional and local governmental units, and expressed public desires. The project-wide resource objectives for the Okatibbee Lake Project, not in order of priority, are as follows:

- Provide a broad spectrum of high-quality dispersed and developed recreational opportunities, which do not impair the productivity of project lands and waters, at sustained levels.

- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

- Maintain and manage project lands to support regional management programs, such as regional water quality initiatives.

- Enhance Architectural Barriers Act (ABA) access to appropriate locations.

- Develop and manage project lands to support various types and levels of recreation activities consistent with carrying capacities, aesthetics, cultural and ecological values, and State wildlife plans.

- Provide recreational opportunities which coincide with peak recreational seasons and are sustained for long-term use.

- Provide public education about the history of the area, project resources, and the role of USACE in developing and managing these resources.

- Carry out natural resources management activities in accordance with the Okatibbee Lake Project Natural Resource Management Plan (NRMP).

- Develop and manage project lands to support a diversity of wildlife habitat using suitable silvicultural practices.

- Preserve and enhance threatened and endangered species and unique and important ecological and aesthetic resources.

- Preserve, monitor, and protect significant cultural resource sites in accordance with the Integrated Cultural Resources Management Plan (ICRMP).

Specific resource objectives for each land classification at the Okatibbee Lake Project are identified in Section 4.2. Site-specific resource objectives for the individual management areas are listed in Section 5.

4 LAND ALLOCATION AND CLASSIFICATION

Land use at the Okatibbee Lake Project is governed by the land use category to which each parcel is assigned based on resource capability as set forth in EP 1130-2-550, Change 5, dated 30 Jan 2013. Combined with the project-wide and site-specific Resource Objectives presented in this section and Section 5, this land use plan provides a programmatic approach to the use, management, and development of all project lands. Together, these elements are the core of this Master Plan.

4.1 LAND ALLOCATION

Project lands are allocated according to the Congressionally authorized purposes for which they were acquired. The entire Okatibbee Lake Project has a land allocation of Project Operations, which means that all project lands were originally acquired to provide safe, efficient operation of the project for its authorized purposes, flood control, water supply, water quality, conservation and enhancement of fish and wildlife, and recreation. No specific parcels were acquired for or assigned to individual purposes of recreation, fish and wildlife conservation and enhancement, or mitigation. However, approximately 8,235 acres of existing project area at Okatibbee Lake Project were designated in 1991 as wildlife mitigation lands for intensive wildlife management.

While designation of these existing project lands for wildlife mitigation did not change the authorized purpose for which these lands were acquired or the land allocation, it prioritized the primary use classification for the designated lands.

4.2 LAND CLASSIFICATION

All lands acquired for project purposes are classified to provide for development and resource management consistent with authorized project purposes and other Federal regulations. The classification process refines the land allocation to fully define the management and use of project lands and considers public preferences and needs, legislative authority, regional and project-specific resource requirements, and suitability. The designated land classification reflects the primary use for which lands are managed with the understanding that other compatible uses may also occur on these lands. Management and use of the lands assigned to each land classification are discussed in connection with the appropriate resource objectives in this section. Their locations within the project are shown in Appendix E.

4.2.1 RESOURCE OBJECTIVES FOR SPECIFIC LAND CLASSIFICATIONS

Resource objectives are attainable goals for resource development and/or management, which are consistent with authorized project purposes, Federal laws and directives, regional needs, resource capabilities, and expressed public preferences and needs. They consolidate the information presented in the previous sections of this Master Plan and are met, whether wholly or partially, through the implementation of the site-specific resource objectives established for each management area (identified in Section 5). The resource objectives developed for each land classification at the Okatibbee Lake Project and the rationale used to develop them are discussed below.

4.2.2 PROJECT OPERATIONS LANDS

The Project Operation classification includes lands required for the dam, spillway, offices, maintenance facilities and other areas that are used solely for the operation of the Okatibbee Lake Project. Approximately 289 acres are classified as Project Operation lands at the Okatibbee Lake Project. Due to their flooding potential, the majority of these lands are below elevation 350' NGVD.

Resource Objectives for Project Operations Lands

- Operate and maintain project structures in a manner that allows them to effectively fulfill project purposes.
- Enhance Architectural Barriers Act (ABA) access to appropriate locations.
- Reserve adequate areas for operations activities that are required to meet overall project purposes.
- Maintain public use areas within USACE safety guidelines and security levels, where such use is feasible and does not interfere with other project purposes.

- Control noxious weeds and other pests in a manner that avoids damage to existing desirable vegetation and sensitive areas (wetlands and streams).

Rationale

The primary purpose of the Project Operations lands, all of which are located in the area of the dam and the Resource Manager's Office at the southern end of the reservoir, is the operation and maintenance of the Okatibbee Lake Project. While reservoir operation falls outside the scope of the master planning process, designation of the portion of the project lands dedicated to supporting operations is an important part of the Master Plan. Uses that interfere with operational activities, compromise the structural integrity of the project or its facilities, or create a safety hazard for visitors or project personnel cannot be allowed. Within these constraints, however, Project Operations lands provide important opportunities for varying levels of recreation.

4.2.3 HIGH-DENSITY RECREATION LANDS

High-Density Recreation lands are designated to accommodate and support the recreational preferences and needs of project visitors. High-Density Recreation Lands are those developed for intensive recreational activities for the visiting public. Permits, licenses, and easements are not issued in these areas for non-compatible manmade intrusions, such as pipelines, overhead transmission lines, and non-project road, except where warranted by the public interest. Approximately 717.1 acres at the Okatibbee Lake Project are classified as High-Density Recreation lands.

Resource Objectives for High-Density Recreation Lands

- Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude.

- Promote consumptive resource use, such as fishing and hunting.

- Provide for camping and day-use opportunities.

- Maintain boating access to the reservoir while enhancing waterfront access for hiking, fishing, and sightseeing.

- Enhance Architectural Barriers Act (ABA) access to appropriate locations.

- Maintain diverse natural communities to enhance hiking and sightseeing opportunities and to control shoreline and soil erosion.

- Manage forest resources and other vegetation for balanced uses of recreation, wildlife, and fisheries.

- Monitor forest conditions to document health and to identify pests.
- Control noxious weeds and other pests in a manner that avoids damage to existing desirable vegetation and sensitive areas (wetlands and streams).
- Preserve and protect existing wetlands and other sensitive or unique habitats that support threatened and endangered species along with other wildlife.
- Interpret cultural resources to benefit visitors' understanding while preserving and monitoring the integrity of those resources.

Rationale

The location and design of recreation areas and facilities take into account the desired recreation experience and standards identified in EM 1110-1-400, *Recreation Facilities and Customer Service Standards*. Areas specifically classified as High-Density Recreation are located throughout the project. However, other classifications can also incorporate visitor use for recreation at a less-intensive level while simultaneously maintaining their primary purposes.

4.2.4 MITIGATION LANDS

The Mitigation classification includes those lands specifically designated to offset or mitigate wildlife habitat losses associated with the development of a USACE project. In 1991, approximately 8,235 acres of existing project area (covering land and water) at Okatibbee Lake were redesignated as wildlife mitigation to compensate for wildlife losses associated with construction and operation of the Tennessee-Tombigbee Waterway. Because the land was not acquired originally for the congressionally authorized purpose of Mitigation, it could not be recognized thereafter for the land allocation of Mitigation per EP 1130-2-550 for the purposes of the Master Plan. Accordingly, this land could not be classed as Mitigation in the Master Plan without initially qualifying for the allocation of Mitigation. For the purposes of the Water Resources Development Act of 1986 (WRDA), however, these designated lands are identified as mitigation lands for the purposes of that Act resulting in a prioritization of the use for which the lands are managed. Such use continues to fit within the Multiple Resources Management Lands classification under the Wildlife Management sub-classification.

4.2.5 ENVIRONMENTALLY SENSITIVE LANDS

The Environmentally Sensitive classification, which may exist within other land classifications, identifies areas where certain physical, ecological, cultural, or aesthetic features have been identified as especially sensitive to adverse environmental impacts. Development of public use on lands within this classification is normally limited or

prohibited to ensure that the sensitive areas are not adversely impacted. No lands at the Okatibbee Lake Project are currently classified as Environmentally Sensitive.

4.2.6 MULTIPLE-RESOURCE MANAGEMENT LANDS

This classification, which contains includes lands managed predominately for one or more of the following activities: Low-Density Recreation, Wildlife Management, Vegetation Management, and Inactive and/or Future Recreation Areas. Past, present, and future management of lands under this classification may include the following subcategories.

- **Low-Density Recreation**—These are lands with minimal development or infrastructure that support passive public recreational use. They are managed for dispersed and/or low-impact recreation use. Emphasis is on providing opportunities for nonmotorized activities, such as hiking, biking, fishing, hunting, sightseeing, and nature study. Site-specific, low-impact activities, such as primitive camping and picnicking, may also be allowed. Development of facilities on these lands is limited to boat ramps, trails, and parking areas as well as camping and picnic facilities. Manmade intrusions, including utility lines, may be allowed under conditions that minimize adverse effects on the natural environment. Vegetation management is allowed for a variety of purposes, including erosion control, retention and improvement of scenic qualities, and wildlife management. Where not in conflict with the safety of visitors and project personnel, hunting and fishing are allowed in accordance with state fish and wildlife management regulations.

- **Wildlife Management**—While all project lands are managed for fish and wildlife habitat in conjunction with other land uses, Wildlife Management lands are designated specifically for stewardship of fish and wildlife resources. They contain valuable wildlife habitat components that are maintained to yield habitat suitable for designated game and non-game species. Licenses, permits, and easements are usually not allowed on these lands for such manmade intrusions as pumping plants, pipelines, cables, transmission lines, and non-project roads although exceptions to this policy are allowable where necessary for the public interest. Wildlife Management lands are available for sightseeing, wildlife viewing, nature study, hiking, and biking. Consumptive uses of wildlife—including hunting, fishing, and trapping—are allowed when compatible with the wildlife objectives for a given area and within Federal and State fish and wildlife management regulations. In 1991, approximately 8,235 acres of existing project area (covering land and water) at Okatibbee Lake were redesignated as wildlife mitigation to compensate for wildlife losses associated with construction and operation of the Tennessee-Tombigbee Waterway. Because the land was not acquired originally for the congressionally authorized purpose of Mitigation, it could not be recognized thereafter for the land allocation or the land classification of Mitigation per EP 1130-2-550 for the purposes of the Master Plan. These

acres are thus classified as Wildlife Management. Approximately 5,858 acres cover land (as seen in the Classification Map in Appendix E) and 2,377 acres cover water. Approximately 1,352 acres are managed by USACE and 6,883 acres are managed by the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP).

- **Vegetation Management**—Management activities on Vegetation Management lands focus on the stewardship of forest resources and vegetative cover. The Okatibbee Lake Project conducts regular vegetation management activities to maintain natural screening around various recreational sites and to accomplish its wildlife habitat mission. Other activities are conducted under the guidance of the project's forest management and wildlife management plans.

- **Inactive and/or Future Recreation Areas**—This sub-classification consists of areas with site characteristics compatible with potential future recreational development or recreation areas that are closed. Until there is an opportunity to develop or reopen these areas, they will be managed for multiple resources. Approximately 142 acres at the Okatibbee Lake Project are classified as Inactive and/or Future Recreation Areas.

Resource Objectives for Multiple Resource Management Lands

- Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude.

- Promote consumptive resource use, such as fishing and hunting.

- Employ good stewardship practices, such as the use of soil conservation measures.

- Enhance natural propagation of diverse game and non-game fish and wildlife species.

- Manage forest resources and other vegetation for appropriate uses of recreation, wildlife, and fisheries.

- Monitor forest conditions to document health and to identify and respond to pests.

- Control noxious weeds and other pests in a manner that avoids damage to existing desirable vegetation and sensitive areas (wetlands and streams).

- Preserve and protect existing wetlands and other sensitive or unique habitats that support threatened and endangered species along with other wildlife.

- Interpret cultural resources to benefit visitors' understanding while preserving and monitoring the integrity of those resources.

- Continue partnership with the MDWFP to facilitate an increased level of wildlife management which seeks to maximize the production of wildlife resources and wildlife uses on lands designated by WRDA as mitigation lands.

Rationale

In addition to the intensively developed recreation areas, the Okatibbee Lake Project provides many opportunities for a variety of dispersed recreation activities, such as boating, fishing, hunting, hiking, and biking. Given the growing demand for these activities on a local, regional, and national scale, use of these lands is expected to increase. Because of its high-quality habitat, the Okatibbee Lake Project is an ideal location for such activities.

4.3 PROJECT EASEMENT LANDS

Project Easement Lands are those for which USACE holds an easement interest, but not fee title. Planned use and management of easement lands will be in strict accordance with the terms and conditions of the easement estate acquired for the project. Easements were acquired for specific purposes and do not convey the same rights or ownership to USACE as other lands. Easement lands, which cover an estimated 345.86 acres, are not included within the boundaries of individual recreation sites but occur primarily along the tributaries above and below the reservoir and on roadways used to access the project. Typically there are three different types of easements—operations, flowage, and conservation.

Resource Objectives for Easement Lands

- Monitor any activities occurring on Project Easement lands to ensure that USACE rights, according to terms and conditions of the legal easement, remain unimpeded.

- Promote an understanding of USACE boundaries and mission by the public and owners of Project Easement lands.

Rationale

Project Easement lands were specifically acquired to ensure adequate flood water storage as well as ingress and egress of USACE-operated facilities. While these lands are not actively managed to meet other project missions, maintaining the conditions established in the easement is vital to project success.

4.3.1 OPERATIONS EASEMENT

Operations easements are easements purchased for the purpose of project operations. Operations easements were purchased for USACE has purchased approximately 3.29 acres of operations easement lands for roads at the Okatibbee Lake Project. These easements consist of 3.19 acres (REMIS) for road easements and 0.10 acres (REMIS) for meteorological data collection.

4.3.2 FLOWAGE AND SLOUGHAGE EASEMENT

Flowage easements are easements purchased for the right to temporarily overflow, flood, and submerge private land during flood risk management operations. Sloughage easements are similar to flowage easements in that they are easements purchased for the right to temporarily overflow, flood, and submerge private land during flood risk management operations; however, the right to saturate, percolate, and erode the land is also stipulated. USACE has purchased approximately 347.57 acres (REMIS) of flowage easement lands and no (0) acres of sloughage easement lands at the Okatibbee Lake Project.

4.3.3 CONSERVATION EASEMENT

Conservation easements are easements purchased for aesthetic, recreation and environmental purposes. There are no conservation easements at the Lake Okatibbee Project.

5 RESOURCE PLAN

A wide variety of factors must be considered when developing Okatibbee Lake Project lands and resources, including physical characteristics; land and lake access; compatibility with adjacent land uses; existing and projected visitation levels and visitor-use pattern; visitor safety and project security; the economics of operation and maintenance; and Federal, State, and local initiatives. The overall objective of the Resource Plan is to maximize the recreational benefits while preserving and enhancing the area's natural resources and scenic qualities.

Since the purpose of this Master Plan is to provide a programmatic approach to the use of project lands, it is important to examine (1) the condition and use of existing facilities and structures and (2) each management area within the various segments in order to determine how each area can be developed to fit with the overall goals of the Okatibbee Lake Project.

Within the Okatibbee Lake Project boundary, there are eight primary recreation areas, ranging from fully developed campgrounds to primitive access points. Six areas are designated as Project Operations areas. Each area is described in detail later in this section.

The other two recreation areas are outgranted and managed under lease agreements. Pelican's Cove Marina, located in the southwestern corner of the lake, is operated under a commercial concession lease. The Pat Harrison Waterway District operates Okatibee Water Park on the east side of the lake.

This Master Plan and the accompanying PEA (Appendix D) provide a programmatic approach, through the land classifications and resource objectives, to allow these plans to move forward. This document also identifies additional development needs that will improve existing recreation areas within the project boundary. In addition, the PEA addresses the impacts of implementing the Master Plan.

The rest of this section provides a detailed description of each management area. The descriptions are organized in the following categories:

- **Management Agency**—The agency responsible for the day-to-day operation of the management area as of the date of this Master Plan.

- **Land Classification**—The designated land use classification (as defined in Section 4.2) for the management area.

- **Recommended Future Use**—The recommended future use of the management area. This may include the existing land classification, a change to a different classification, or a specific activity allowed within the land classification.

- **Rationale**—A discussion of the needs and intent of the management area's identified resource objectives.

- **Location**—A brief description of the management area's location, including visitor access points.

- **Description**—A brief description of the management area, focusing on its natural, cultural, or recreational resources.

- **Site-Specific Resource Objectives**—Identification of site-specific resource objectives that build on the project-wide resource objectives identified in Section 3 and the land classification resource objectives identified in Section 4.2. Resource objectives are attainable goals for the development, conservation, and management of natural, cultural, and manmade resources at the Okatibbee Lake Project. They establish guidelines for attaining maximum public benefit within USACE safety guidelines and security levels while minimizing the potential for adverse impacts to the local environment. Each recreation area has multiple resource objectives, but they are not prioritized. In some of the areas, the resource objectives may not be implemented for some time.

- **Development Needs**—Summary descriptions of the proposed actions to implement the Resource Objectives for each area. These needs, which include a range of potential construction projects and management strategies, are based on input from the public as well as from State and Federal agencies. They will be further refined and detailed in subsequent planning and design documents, including the OMP and future DMs. Final decisions regarding the specific actions to be implemented will be made following coordination between USACE; Federal, State, and local agencies; and other interested parties, where appropriate and as opportunities arise. Prior to site-specific development, additional environmental studies will be conducted, as required.

5.1 CENTER HILL—PLATE OL21MP-OR-01

Management Agency: USACE

Land Classification: Multiple-Resource Management: Future or Inactive Recreation Area

Recommended Future Use: High-Density Recreation

Rationale: The Center Hill area requires a land classification of Multiple-Resource Management: Future or Inactive Recreation Area. This area was previously operated as a High-Density Recreation area but has been closed due to budgetary constraints. Potential partners have expressed interest in leasing and operating it in the future, so the recommended future use classification must be High-Density Recreation to facilitate future partnerships and operation.

Location: The Center Hill area is located on the east bank of the lake's northern reach, south of Center Hill-Martin Road.

Description: Named Meridian Naval Air Station in the mid-to-late 1990s, the mostly wooded, 142-acre Center Hill area includes 15 developed acres and is currently used for USACE lake access. Its hilly-to-steep terrain rises from pool elevation 344' NGVD to elevation 420' NGVD. The area has an asphalt paved access road, a limited parking area, and a single lane boat ramp. However, USACE has not developed any facilities at this area since the Meridian Naval Air Station terminated its lease. This area provides contiguous space to expand recreational development without impacting the total amount of adjacent land set aside for wildlife mitigation.

Site-Specific Resource Objectives:

- Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude; this area has the potential to be used for special events, such as education, training, and/or group functions.

- Manage forest resources and other vegetation for the appropriate uses of recreation, wildlife, and fisheries.

- If the area is leased, manage the lease in accordance with all applicable contract requirements.

- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

***Development Needs*:**

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.

5.2 COLLINSVILLE PARK—PLATE OL21MP-OR-02

Management Agency: USACE

Land Classification: High-Density Recreation

Recommended Future Use: High-Density Recreation

Rationale: Collinsville Park requires a land classification of High-Density Recreation to maintain current operations.

Location: Collinsville Park is located on the west bank of Okatibbee Lake, above the dam. Access is via Hamrick Road, east of the Collinsville community.

Description: The partially wooded, 89-acre Collinsville Park includes 35 developed acres. Its flat-to-rolling terrain rises from pool elevation 344' NGVD up to elevation 380' NGVD. This day-use area is the most visited park on the project. Amenities with separate parking areas include a swimming beach, a dual boat ramp, individual picnic tables and a group picnic shelter, and a multipurpose field. Beach facilities include two waterborne restrooms, individual picnic tables with grills, and a playground. Dual boat ramp facilities include a courtesy dock and a vaulted toilet. The picnic shelter includes a playground and waterborne restrooms. While Collinsville Beach is open only during peak recreation season, the other amenities at Collinsville Park are available year-around.

Site-Specific Resource Objectives:

- Provide appropriate facilities for day-use activities and lake access for boaters.

- Enhance ABA access to appropriate locations.

- Promote consumptive resource use, such as fishing.
- Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

***Development Needs*:**

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Construct a courtesy fishing dock with access sidewalk to expand ABA accessibility.
- Replenish the beach as needed.
- Stabilize shoreline erosion.

5.3 EAST BANK PARK—PLATE OL21MP-OR-03

Management Agency: USACE

Land Classification: High-Density Recreation

Recommended Future Use: High-Density Recreation

Rationale: East Bank Park requires land classification of High-Density Recreation to maintain current operations.

Location: East Bank Park is on the east abutment of the dam adjacent to the emergency spillway. Access is via Okatibbee Dam Road.

Description: The fully developed 25-acre East Bank Park rises steeply from pool elevation 344' NGVD to elevation 400' NGVD to provide an excellent overlook vantage point. The park provides amenities for group and individual picnicking. East Bank Area facilities include an overlook gazebo, a group shelter, and multiple picnic tables, waterborne restrooms, and playgrounds. A combination of paved and unimproved trails are used for both physical fitness by visitors and annual sponsored run events. A cross country trail is also developed in the area.

Site-Specific Resource Objectives:

- Provide for day-use opportunities.
- Accommodate and support non-consumptive resource uses, such as hiking, running, biking, bird watching, photography, nature study, and/or wildlife observation.
- Promote consumptive resource use, such as fishing and hunting.
- Enhance ABA access to appropriate locations.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Stabilize shoreline erosion.

5.4 GIN CREEK PARK—PLATE OL21MP-OR-04

Management Agency: USACE

Land Classification: High-Density Recreation

Recommended Future Use: High-Density Recreation

Rationale: Gin Creek Park requires a land classification of High-Density Recreation to maintain current operations.

Location: Gin Creek Park is on the west bank of the lake's northern reach, south of Center Hill-Martin Road.

Description: Five of Gin Creek Park's 21 acres are developed; 137 acres formerly designated as part of Gin Creek Park for recreation are now designated as mitigation land and are classified as wildlife management (see Appendix E). The park's topography varies from pool elevation 344' NGVD up to elevation 360' NGVD. Facilities include a dual boat ramp with parking, a courtesy dock, a vaulted toilet, a sheltered water spigot, and seven class D campsites for those fishing in the area. Although Gin Creek Park is primarily used for lake access, it is often used for fishing tournaments as well.

Site-Specific Resource Objectives:

- Maintain boating access to the reservoir while enhancing waterfront access for hiking, fishing, and sightseeing.
- Provide appropriate facilities for day-use and primitive camping activities.
- Promote consumptive resource use, such as fishing and hunting.
- Enhance ABA access to appropriate locations.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Provide shoreline stabilization and improve storm water drainage to reduce erosion.

5.5 OKATIBBEE WATER PARK—PLATE OL21MP-OR-05

Management Agency: Pat Harrison Waterway District

Land Classification: High-Density Recreation

Recommended Future Use: High-Density Recreation

Rationale: Okatibbee Water Park requires a land classification of High-Density Recreation to maintain current operations.

Location: Okatibbee Water Park is located midway along the lake's east bank. Access is from Pine Springs Road.

Description: Much of the 278-acre (152 of which are developed) Okatibbee Water Park lies on a prominent peninsula protruding southward toward the dam. This siting allows extensive lake exposure by its surrounding shoreline. The terrain rises from pool level 344' NGVD to elevation 410' NGVD. It varies from flat and sparsely wooded on the lower peninsula to hilly and mostly wooded to the north. Okatibbee Water Park offers an array of recreational facilities, including picnicking for both groups and individuals, boat launches, cabins, and full-service camping. Previously, Okatibbee Water Park offered motel accommodations and a water activity area known as "Splashdown."

***Site-Specific Resource Objectives*:**

- Manage the lease in accordance with all applicable contract requirements.

***Development Needs*:**

- Be guided by the plan of record for the site in accordance with current applicable laws and regulations.

5.6 PELICAN'S COVE MARINA—PLATE OL21MP-OR-06

Management Agency: Private Lessee

Land Classification: High-Density Recreation

Recommended Future Use: High-Density Recreation

Rationale: Pelican's Cove Marina requires a land classification of High-Density Recreation to maintain current operations.

Location: Pelican's Cove Marina is located on the southwest corner of the lake, on the left bank adjacent to West Bank Park and the Site Management Office. Access is via Okatibbee Dam Road.

Description: Previously named Cove's Nest Marina, the partially wooded 30-acre Pelican's Cove Marina includes 21 developed acres. Its flat-to-rolling terrain rises from pool elevation 344' NGVD to 390' NGVD. Amenities include a restaurant, covered and open rental slips and space for dry boat storage.

***Site-Specific Resource Objectives*:**

- Manage the lease in accordance with all applicable contract requirements.

***Development Needs*:**

- Be guided by the plan of record for the site in accordance with current applicable laws and regulations.

5.7 PINE SPRINGS PARK—PLATE OL21MP-OR-07

Management Agency: USACE

Land Classification: High-Density Recreation

Recommended Future Use: High-Density Recreation

Rationale: Pine Springs Park requires a land classification of High-Density Recreation to maintain current operations.

Location: Pine Springs Park is on the east side of the lake, just north of the dam site. Access is via Pine Springs Road.

Description: The linear 55-acre (10 of which are developed) Pine Springs Park follows the shoreline. Prominent ridges rise from pool elevation 344' NGVD to elevation 430' NGVD. The rolling-to-hilly terrain is partly wooded. Amenities with separate parking areas include a swimming beach and a dual boat ramp with a courtesy dock and a vaulted toilet. Beach facilities include waterborne restrooms, individual picnic tables with grills, and a playground. While the beach area is operated during the peak recreation season only, the boat ramp area is open year around. This area is the second most popular park at Okatibbee Lake.

Site-Specific Resource Objectives:

- Enhance ABA access to appropriate locations.
- Maintain boating access to the reservoir while enhancing waterfront access for hiking, fishing, and sightseeing.
- Promote consumptive resource use, such as fishing and hunting.
- Monitor forest conditions to document health and identify pests.
- Control noxious weeds and other pests in a manner that avoids damage to existing facilities.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Construct a courtesy fishing dock with access sidewalk to expand ABA accessibility.
- Replenish the beach as needed.
- Stabilize shoreline erosion.

5.8 TAILRACE AREA—PLATE OL21MP-OR-08

Management Agency: USACE

Land Classification: Operations

Recommended Future Use: Operations

Rationale: The Tailrace Area requires land classification of Operations to maintain current operations.

Location: The Tailrace Area is adjacent to the emergency spillway on the toe south of the dam. Access is via Okatibbee Dam Road.

Description: The 11.5-acre Tailrace Area encompasses the south side of the dam from elevation 308' NGVD to elevation 320' NGVD. It provides amenities for group and individual picnicking, including a handicap accessible vaulted toilet, two water spigots, and picnic sites. The Tailrace Area is very popular with fishermen. Geocaching, a more modern activity, is also growing in popularity in this area.

Site-Specific Resource Objectives:

- Provide for day-use opportunities.
- Accommodate and support non-consumptive resource uses, such as hiking, running, biking, bird watching, photography, nature study, and/or wildlife observation.
- Promote consumptive resource use, such as fishing and hunting.
- Enhance ABA access to appropriate locations.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Replace the previous foot bridge to provide a more accessible fishing opportunity.
- Stabilize shoreline erosion.

5.9 TWILTLEY BRANCH CAMPGROUND—PLATE OL21MP-OR-09

Management Agency: USACE

Land Classification: High-Density Recreation

Recommended Future Use: High-Density Recreation

Rationale: Twiltley Branch Campground requires a land classification of High-Density Recreation to maintain current operations.

Location: Twiltley Branch Campground is on the lake's west bank, north of the dam. Access is via Hamrick Road.

Description: The 190-acre (69 of which are developed) Twiltley Branch Campground is partly wooded with a rolling topography that extends from pool elevation 344' NGVD up to elevation 415' NGVD. It is a Class A Campground open year-round with exception to flooding. Campground amenities include a variety of campsite types, a washhouse, vaulted toilets, a dual boat ramp, courtesy boat docks, and a swimming beach. The Loblolly Loop and Black Gum Loop camping areas provide electricity and a water spigot at each campsite, and each area has its own playground. Black Gum Loop also has two vaulted toilets—one near the playground and one near Willow Camp. A third camping area, Cypress Loop, provides a water spigot at each campsite and a vaulted toilet on the western reach. Three group campsites include a picnic shelter: Willow Camp and Persimmon Camp are located in Black Gum Loop, and Cypress Group Camp is located in Cypress Loop. The boat ramp and swimming beach are located in Cypress Loop. All campsites within Twiltley Branch Campground are equipped with a grill, fire ring, and picnic table. A washhouse equipped with showers and a washer and dryer is available at a central location. In addition, a dump station for camper use is located on the main access road.

Site-Specific Resource Objectives:

- Maintain boating access to the reservoir while enhancing waterfront access for hiking, fishing, and sightseeing.
- Provide for camping opportunities.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.
- Promote consumptive resource use, such as fishing and hunting.
- Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude.

- Maintain diverse natural communities to enhance hiking and sightseeing opportunities and to control shoreline and soil erosion.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Provide electricity to Cypress Loop camp sites.
- Reduce the density of vehicles at the camping sites in Loblolly and Black Gum Loops by providing additional parking in Loblolly Loop. This would help alleviate overcrowding. RVs are larger than they were when the campground was first developed.
- Replenish the beach as needed.
- Stabilize shoreline erosion.

5.10 WEST BANK PARK—PLATE OL21MP-OR-10

Management Agency: USACE

Land Classification: High-Density Recreation

Recommended Future Use: High-Density Recreation

Rationale: West Bank Park requires a land classification of High-Density Recreation to maintain current operations.

Location: West Bank Park is located on the west abutment of the dam. Access is from Okatibbee Dam Road.

Description: The rolling, mostly open land of the 25-acre (19 of which are developed) West Bank Park rises from pool elevation 344' NGVD to elevation 390' NGVD. Amenities include waterborne restrooms, a dual boat ramp, two playgrounds, a group picnic shelter, individual picnic tables, a swimming beach, a physical fitness station, and an athletic field. The dual boat ramp has a handicap-accessible loading ramp.

Site-Specific Resource Objectives:

- Provide for day-use opportunities.
- Enhance ABA access to appropriate locations.

- Maintain boating access to the reservoir while enhancing waterfront access for hiking, fishing, and sightseeing.

- Promote consumptive resource use, such as fishing.

- Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude.

- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.

- Construct a courtesy fishing dock with access sidewalk to expand ABA accessibility.

- Replenish the beach as needed.

- Stabilize shoreline erosion.

6 SPECIAL TOPICS/ISSUES/CONSIDERATIONS

6.1 WILDLIFE MITIGATION

Construction of the Tennessee-Tombigbee Waterway resulted in unavoidable and significant losses of wildlife resources. These losses primarily resulted from conversion of terrestrial habitats to open water or project pools and canals; construction of project facilities; deposition of excavated material; and construction of recreation facilities. Construction of the Waterway adversely impacted approximately 62,800 acres of wildlife habitat. Approximately 34,176 acres of bottomland hardwood and cypress\ tupelo gum habitats were converted to open water and other less valuable habitats. Impacts to habitats produced losses to deer, turkey, waterfowl, and small game animals and furbearers. These population declines resulted in a corresponding loss of man-days of hunting and trapping opportunities. A need existed to reduce and/or compensate for the loss of wildlife resources due to the construction of the TTW project.

The impacts of the TTW on wildlife resources were documented in the 1983 Wildlife Mitigation Feasibility Study (WMFS) Report, which served as the basis for the mitigation plan authorized by the Water Resources Development Act of 1986 (WRDA). Efforts to document the wildlife resources impacts began in June 1974. The Habitat Evaluation

Procedures developed by the FWS were utilized in a joint effort by the Corps and the FWS to determine these impacts. During the WMFS plan formulation activities, Federal, State and other environmental organizations agreed that existing project lands should be managed to benefit wildlife resources and replace project losses. However, it was recognized that there were insufficient existing project lands available to mitigate for all of the wildlife resource losses. As a result, the need for additional separable lands to fully mitigate for project losses was identified.

When the WMFS was prepared, the Corps was required by policy to assume maximum use of the management potential of TTW lands and other project lands to credit against the mitigation requirement for wildlife losses resulting from construction and operation of the Waterway. This step was a prerequisite before a recommendation could be developed to acquire separable mitigation lands. Consequently, the WMFS Report identified a total of approximately 92,600 acres of existing project lands for management in a manner consistent with existing project purposes. These lands were designated at the TTW, Okatibbee Lake, Black Warrior and Tombigbee Lakes, and the Alabama River Lakes projects.

At Okatibbee Lake Project 8,235 acres of Total Land were available for wildlife management. 1,352 acres of land were found “operationally constrained”, meaning that they contain facilities such as locks and dams and surrounding grounds; administrative buildings, grounds and related facilities; disposal sites; and recreation areas. Operationally encumbered lands were not offered to the state of Mississippi for wildlife management. 6,883 acres of land were offered to and accepted by the state of Mississippi for wildlife management through a real estate license. This wildlife mitigation area is named Okatibbee Wildlife Management Area (WMA).

The Water Resources Development Act of 1986 (WRDA) also authorized the acquisition and management of 88,000 acres of separable lands for mitigation of wildlife losses resulting from construction and operation of the TTW. Of the lands acquired under this authorization, not less than 25,000 acres were acquired in the areas of the Pascagoula River, the Pearl River, and the Mississippi River Delta in Mississippi. Approximately 7,295 acres were acquired in the upper reaches of the Pearl River drainage. These lands are referred to as the Nanih Waiya Wildlife Management Area (WMA) and are managed solely by the MDWFP for TTW wildlife mitigation purposes.

More information regarding TTW Wildlife Mitigation will be included in the Tennessee-Tombigbee Waterway Master Plan. The USACE Mobile District Point of Contact (POC) in the field for matters pertaining to the administration of these lands is the Supervisory Wildlife Biologist for the Tennessee-Tombigbee Waterway.

6.2 ADJACENT LAND USES

Adjacent land uses deserve special attention when planning recreation development because of their direct impact on the project. While some land uses can be of benefit, others can be a detriment.

6.2.1 TYPES OF LAND USE

The following types of land use are found adjacent to the Okatibbee Lake Project lands:

- **Residential**—Most residential uses in areas surrounding the project are located in the urban development associated with several towns, rural communities, and the city of Meridian, MS. This type of development has existed for many years and has no adverse impact upon project lands. However, concentrations of population can influence use trends and affect locating recreational facilities. Future residential growth patterns must be monitored to accommodate this impact on project development decisions.

- **Commercial**—Commercial and service land uses located in Meridian, MS, and a few rural towns pose no adverse impact on the project, but they are convenient to project users if needed.

- **Agricultural**—Agricultural land, which is found throughout the area adjoining the Okatibbee Lake Project, is used mostly for farms and pastures. Farming activities around project lands can threaten the project's water quality. Contaminants such as pesticides and animal wastes can potentially be washed into the lake from farm lands, and runoff containing soil, fertilizer, and other nutrients can provide a good culture for undesirable aquatic plants. However, as of 2021, there are no serious aquatic plant problems in Okatibbee Lake.

- **Forest**—Forest covers much of the land use surrounding the Okatibbee Lake Project. The importance of the forested lands adjacent to the project cannot be overemphasized since it provides an environmental and scenic buffer which, if removed, could unbalance the ecological integrity of project lands.

6.2.2 TRENDS IN ADJACENT LANDS

Historically, the lands adjacent to the Okatibbee Lake Project have been held as large acreage parcels owned by either an individual or a family—often for several generations. Since the mid-1980s, however, these parcels have been increasingly developed as residential subdivisions to accommodate a movement from urban areas. Residential growth near the lake is increasing. Additional facilities may be needed on the lake to accommodate the increasing population.

In addition, the continued four-lane expansion of Highway 19 to the northwest of the Okatibbee Lake project will probably encourage more industrial growth in the area. Industrial operations might affect air and water quality or create visual and noise intrusions in the natural setting.

Developing private lands adjacent to USACE property can directly affect the Okatibbee Lake Project. Frequently, wildlife habitats are destroyed since timber on much of this land is first sold and clear-cut. This increases the need for USACE to emphasize small game and non-game management in its wildlife program. Furthermore, the resulting increased velocity of rainwater runoff from the nearby developments accelerates erosion and increases sedimentation in the lake. Pesticides, fertilizers, and herbicides used in lawn maintenance may also wash into the lake and affect its water quality.

6.3 ENCROACHMENTS

Encroachment by private landowners on Government property is an ongoing challenge. Existing encroachments must be constantly monitored until resolved, and project lands must be periodically inspected for new encroachments. According to USACE South Atlantic Division (CESAD) policy, encroachments are resolved on a case-by-case basis with proper consideration given to operational and other project requirements as well as to any precedent that might be set by the Federal Government's position.

6.4 WATER QUALITY

Water quality directly affects the recreational use of both the water and its adjacent land. USACE Mobile District water testing follows current EPA recreational water testing guidelines and is conducted during peak recreation season, from March through September. If a state requires more samples or different thresholds for fecal coliform or *Escherichia coli* (*E. coli*), the project applies the more stringent standard. The State of Mississippi has classified water use at Okatibbee Lake as "suitable for recreational purposes, including such water contact activities as swimming and water skiing."

When the State of Mississippi assigns the "water suitable for recreational purposes, including such water contact activities as swimming and water skiing" classification to waters, it considers the relative proximity of waste discharges and recognizes the potential health hazards involved in locating swimming areas nearby. Therefore, the bacterial quality of waters designated as "safe for swimming" does not depend upon adequate waste treatment where the interruption of such treatment would render the water unsafe.

The State of Mississippi standards for the bacterial quality of the water are as follows:

- The bacterial quality of the water is acceptable when a sanitary survey reveals no source of dangerous pollution and when the culturable *Escherichia coli* does not exceed a geometric mean of 126 colonies per 100 ml and the samples examined

during a 30-day period do not exceed 410 colonies per 100 ml more than 10% of the time. A minimum of five samples should be taken over a 30-day period with no less than 12 hours between individual samples in waters other than coastal waters.

- If the geometric mean of the samples exceeds 126 colonies per 100 ml, the appropriate regulatory agency is notified, a beach swimming advisory is posted, and the USACE assists the regulatory agency in determining appropriate action.

The USACE Mobile District performs bacteriological testing of USACE swimming beaches during the peak recreation season, from the week before Memorial Day through mid-June, at designated USACE swim beaches, unless otherwise determined by the District Commander. If the above fecal bacteria standards are exceeded, the affected beach may be closed until the standards are met.

6.5 RECREATIONAL FACILITY DEVELOPMENT

6.5.1 STATE AND LOCAL PARTNERING

Local user trends indicate a need for continuing to provide some limited multipurpose recreational sites to serve both campers and day-users. These few sites provide convenient access to the lakes. The public also continues to desire more first-class recreational developments. However, new USACE development cannot take place without a non-Federal public agency sharing the design and construction costs as well as accepting total management of such facilities. The public must be made aware that their demands for recreation cannot be met by USACE without State or local assistance. Therefore, USACE should actively encourage State and local governmental organizations to participate in meeting local demands.

6.5.2 INTERPRETIVE SERVICES AND OUTREACH PROGRAMS

Interpretive services and outreach programs serve to support project functions, including visitor assistance, recreational management, resource management, and public safety. There are few facilities for interpretive programs at the Okatibbee Lake Project outside of group shelters or the Resource Management Office. Most interpretive programs offered by Okatibbee Lake Natural Resource Specialists occur off project. Future plans to enhance interpretive facilities at Okatibbee Lake may include an amphitheater.

6.5.3 PUBLIC USE AREA PARKING

The visiting public expects adequate parking. As visitation increases at USACE public use areas, the capacities of existing parking areas may be reached, limiting public use. In many areas, providing sufficient additional parking is becoming a greater challenge.

6.5.4 BOAT RAMPS

The project's water is a major recreational resource available to the public. Therefore, the maintenance of boat-launching lanes for general public use should be prioritized. Aging infrastructure should be monitored and addressed as funding allows.

6.6 PROJECT ACCESS AND TRANSPORTATION

USACE Master Plans have previously included an appendix referencing road and parking assets called Rules of the Road: Transportation Asset Structure and Representation. This living document will no longer be included in Master Plans as the data the methods describe collecting has been collected. This work was completed for the Mobile District in 2021.

Additionally, multiple Federal Aid Highway Programs were established to provide funding to assist with managing federally and locally owned/maintained transportation asset structures leading to or on federal lands. This master plan proposes capital improvements for existing access and entrance to recreation and other operational areas in the development needs section of the park descriptions in Chapter 5 and the Programmatic Environmental Assessment in Appendix D. Moving forward, this project will continue to seek funding through annual budgets and supplemental funding sources such as the Federal Land Transportation Program (FLTP) and the Federal Land Access Program (FLAP).

7 AGENCY AND PUBLIC COORDINATION

7.1 USACE POLICY

USACE policy requires close and continuing coordination with Federal, State, and local agencies having interest and responsibilities in the fields of public recreation, fish and wildlife, preservation of archaeological and historic resources, and environmental quality. This coordination must be maintained during the investigation, planning, development, and operation and maintenance of all Civil Works projects.

Development of this Master Plan update involved both written and oral communication and coordination with the appropriate Federal, State, county, and municipal agencies. The following principal agencies and institutions were contacted:

- The U.S. Fish and Wildlife Service, Mississippi Ecological Services Field Office
- Mississippi Emergency Management Agency

7.2 PUBLIC INPUT

This Okatibbee Lake Master Plan is considered a minor revision, and USACE did not seek public input for this Master Plan revision.

8 BIBLIOGRAPHY

Chapman, S.S., G.E. Griffith, J.M. Omernik, J.A. Comstock, M.C. Beiser, and D. Johnson. 2004. *Ecoregions of Mississippi*. U.S. Geological Survey. Scale 1:1,000,000.

U.S. Fish and Wildlife Service (USFWS). (2019a). *Classification of Wetlands and Deepwater Habitats of the United States: Hierarchical Structure*. https://www.fws.gov/wetlands/Documents/classwet/hierarch.htm

U.S. Fish and Wildlife Service (USFWS). (2019b). *National Wetlands Inventory Mapper*. https://www.fws.gov/wetlands/data/Mapper.html

9 GLOSSARY

- **ABA**—Architectural Barriers Act
- **ADA**—Americans with Disabilities Act
- **ARPA**—Archaeological Resources Protection Act
- **BTU**—British Thermal Unit
- **CFR**—Code of Federal Regulations
- **CFS**—Cubic Feet per Second
- **DM**—Design Memoranda
- **DoD**—Department of Defense
- **DODI**—Department of Defense Instruction
- **EM**—Engineer Manual
- **EP**—Engineer Pamphlet
- **EPA**—Environmental Protection Agency
- **ER**—Engineer Regulation
- **ESA**—Endangered Species Act
- **FCA**—Flood Control Act
- **FEPCA**—Federal Environmental Pesticide Control Act

- **FHWA**—Federal Highway Administration
- **FLAP**—Federal Land Access Program
- **FLTP**—Federal Land Transportation Program
- **FWCA**—Fish and Wildlife Coordination Act
- **FWPCA**—Federal Water Pollution Control Act
- **FY**—Fiscal Year
- **HPMP**—Historical Properties Management Plan
- **ICRMP**—Integrated Cultural Resources Management Plan
- **LWCA**—Land and Water Conservation Act
- **LWCF**—Land and Water Conservation Fund
- **MDAH**—Mississippi Department of Archives and History
- **MDWFP**—Mississippi Department of Wildlife, Fisheries, and Parks
- **MP**—Master Plan
- **MSL**—Mean Sea Level
- **NGVD**— National Geodetic Vertical Datum of 1929
- **NAGPRA**—Native American Graves Protection and Repatriation Act
- **NEPA**—National Environmental Policy Act
- **NHPA**—National Historic Preservation Act
- **NRHP**—National Register of Historic Places
- **NRM**—Natural Resources Management
- **NRMP**—National Resource Management Plan
- **OMP**—Operational Management Plan
- **PEA**—Programmatic Environmental Assessment

- **PL**—Public Law
- **POC**—Point of Contact
- **PSA**—Project Site Area
- **PSA**—Project Site Area
- **PUA**—Public Use Area
- **PUAID**—Public Use Area ID
- **RCRA**—Resource Conservation and Recovery Act
- **REMIS**—Real Estate Management Information System
- **RHA**—River and Harbor Act
- **RHFCA**—River and Harbor and Flood Control Act
- **SDSFIE**—Spatial Data Standards for Facilities, Infrastructure, and Environment
- **SDWA**—Safe Drinking Water Act
- **SHPO**—State Historic Preservation Officer
- **SRUF**—Standard Rate and User Fee
- **TTWW**—Tennessee-Tombigbee Waterway
- **USACE**—US Army Corps of Engineers
- **USC**—US Code
- **USFWS**—US Fish and Wildlife Service
- **USGS**—US Geological Survey
- **USPS**—US Postal Service
- **WALROS**—Water and Land Recreation Opportunity Spectrum
- **WMA**—Wildlife Management Area
- **WRDA**—Water Resources Development Act

APPENDIX A—PERTINENT DATA

A.1 RECREATION AUTHORIZATION

Section 203 of the Flood Control Act of 1962 (PL 87-874) and House Document No. 549, 87th Congress, Second Session

A.2 LOCATION

On the Okatibbee Creek about 32 miles above its confluence with Chunky River and about 7 miles northwest of Meridian, MS; almost entirely in Lauderdale County, MS, with only the extreme northernmost reaches of the flood pool in Kemper County, MS

A.3 PURPOSES

Flood control, municipal water supply, water quality control, water-related recreation, tourism, and fish and wildlife conservation

A.4 CONSTRUCTION

Dam construction 1968

A.5 MAIN RESERVOIR

Maximum depth.....30'
Area at normal summer pool elevation 344' NGVD.....4,100 acres
Total project area .....11,302 acres
Shoreline length at elevation 344' NGVD .....30 miles
Drainage area above dam site ..... 154 square miles

A.6 RECREATION

Day-use areas.....4
Campgrounds.....2
Campsites 69
Boat ramps.....5
Swimming beaches 4
Annual visitation, 5-year average (FY2014-2019) 431,848.33
Highest visitation in 5-year period (2015 est.) 519,237
Concessionaires..... 1 full-service marina

APPENDIX B—PRIOR DESIGN MEMORANDA AND REPORTS

TITLE	SUBMISSION DATE
Design Memorandum No. 3A *Preliminary Master Plan for Okatibbee Reservoir, Okatibbee Creek, Mississippi*	*1968*
Final Environmental Impact Statement for Okatibbee Dam and Lake, Mississippi (Flood Control, Water Quality Control, Water Supply, and Recreation)	Sep 1975
Okatibbee Lake Revised Water Control Manual, Pascagoula River Basin	Jun 1997
Okatibbee Lake Test Release, Pascagoula River Basin	Jun 1991
Proposed Okatibbee Lake Waterfowl Impoundment, Lauderdale County	Feb 1996
Tennessee-Tombigbee Waterway Wildlife Mitigation Project: Mitigation Implementation Plan for the Okatibbee Lake Project and Nanih Waiya Wildlife Management Area	Jul 1997
Wildlife Mitigation Feasibility Study and Environmental Impact Statement for the Tennessee-Tombigbee Waterway, Alabama-Mississippi (Final Report)	Jul 1983

APPENDIX C—CARRYING CAPACITY STUDY

CONTENTS

C.1 PURPOSE

The Recreation Carrying Capacity Study evaluates the ability of the Okatibbee Lake Project to accommodate existing and future recreation uses and assess whether these uses are suitable given the potential effects on recreational, environmental, and social resources. Carrying capacity can be defined as the amount and type of use that an area can sustain over a given period of time. Carrying capacities can protect users' experiences by preventing overcrowding, which can cause deterioration of the natural attributes and impede users' ability to move freely and to fully enjoy the natural setting without undue stress and distraction.

C.2 REGIONAL RECREATION RESOURCES

C.2.1 PROJECT LOCATION

The Okatibbee Lake Project is located on Okatibbee Creek in Lauderdale County, MS, about 32 miles above its confluence with the Chunky River and about 7 miles northwest of Meridian, MS. State Highways 495 and 19 provide access to the project from interchanges with Interstate Highway 20 at Meridian.

C.2.2 PROJECT DESCRIPTION

The Okatibbee Creek basin lies within Kemper, Lauderdale, and Clarke Counties in east-central Mississippi. This small basin, which is only approximately 12 miles across at its widest point (east to west) and 45 miles long (north to south), is part of the northernmost portion of the larger Pascagoula River basin. The watershed for Okatibbee Lake is approximately 154 square miles or about 36% of the total Okatibbee Creek drainage basin.

At the minimum water-quality control elevation of 328' NGVD, the lake covers approximately 1,280 surface acres and contains 7,760 acre-feet of storage. At the December through March elevation of 339' NGVD, it covers approximately 2,700 surface acres and contains a flood-control storage of 42,590 acre-feet. At the May through 15 October elevation of 344' NGVD, it covers approximately 4,100 surface acres and contains a flood-control storage of 59,490 acre-feet. Finally, at the spillway crest elevation of 359' NGVD, the lake covers approximately 8,800 surface acres and contains a total storage capacity of 142,350 acre-feet. A maximum of 59,490 acre-feet and a minimum of 42,590 acre-feet are allocated for flood control storage; a maximum of 38,300 acre-feet and a minimum of 21,400 acre-feet are allocated for water supply and water quality storage.

The shoreline of the upper pool is 30 miles long.

C.2.3 RECREATION AREAS

Okatibbee Lake is home to one full-service campground, six day-use parks with four designated swimming areas and four boat ramps, a multipurpose park, and three public beaches. USACE recreational facilities are developed on approximately 300 acres. USACE constructed and is operating seven of these areas at full Federal cost. Two properties are outgranted for public recreation purposes—the Pat Harrison Waterway District maintains a public park known as Okatibbee Water Park on the east side of Okatibbee Lake and Pelican’s Cove Marina on the west side of Okatibbee Lake provides marina services

There are 6,883 acres of land and flooded woodlands licensed to the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) for wildlife management to offset or mitigate wildlife habitat loss associated with the development of the Tennessee-Tombigbee Waterway (TTWW). The Okatibbee Wildlife Management Area (WMA) is located directly north of the lake and is managed by the MDWFP for game and nongame species. Consumptive uses of wildlife—including hunting, fishing, and trapping—are allowed when compatible with the wildlife objectives for a given area and within Federal and State fish and wildlife management regulations.

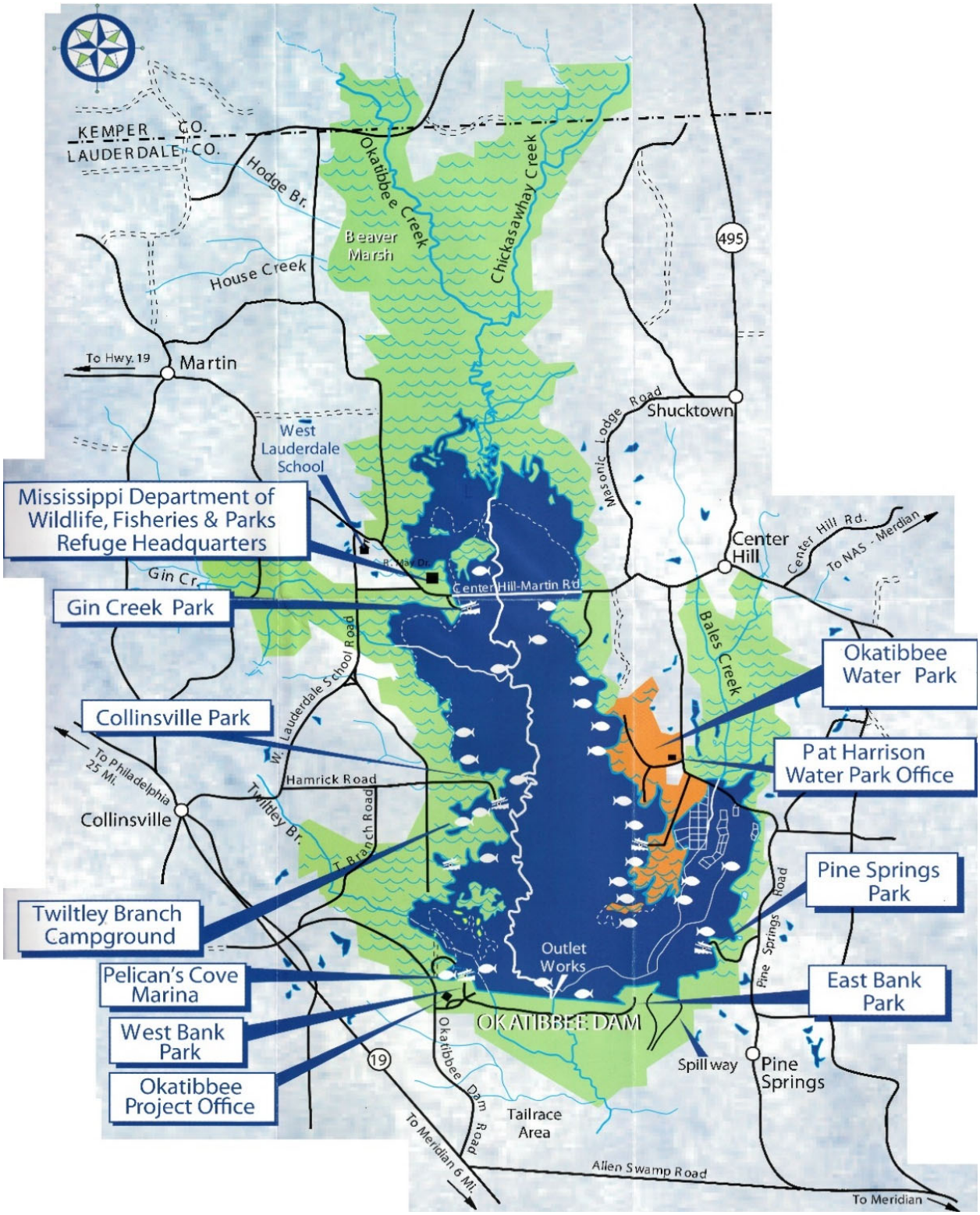


Figure C-1: Okatibbee Lake

C.3 VISITATION

C.3.1 VISITATION PROFILE

In general, Lake Okatibbee is visited predominately by local residents during the peak recreation season from April to July. Visitation at USACE sites is generally concentrated during the weekends in both peak and non-peak seasons. The Carrying Capacity Study discusses the Lake Okatibbee visitation patterns in detail. Overall project visitation was examined from 2014 through 2019.

C.3.2 PROJECT VISITATION

Project visitation and area population for 2014 through 2019 are displayed in Tables C-1 and C-2, respectively. Area population includes five counties in Mississippi: Clarke, Kemper, Lauderdale, Neshoba, and Newton. These populations of these counties are used because they are within a 60-mile radius of the project and were used in previous Lake Okatibbee capacity studies.

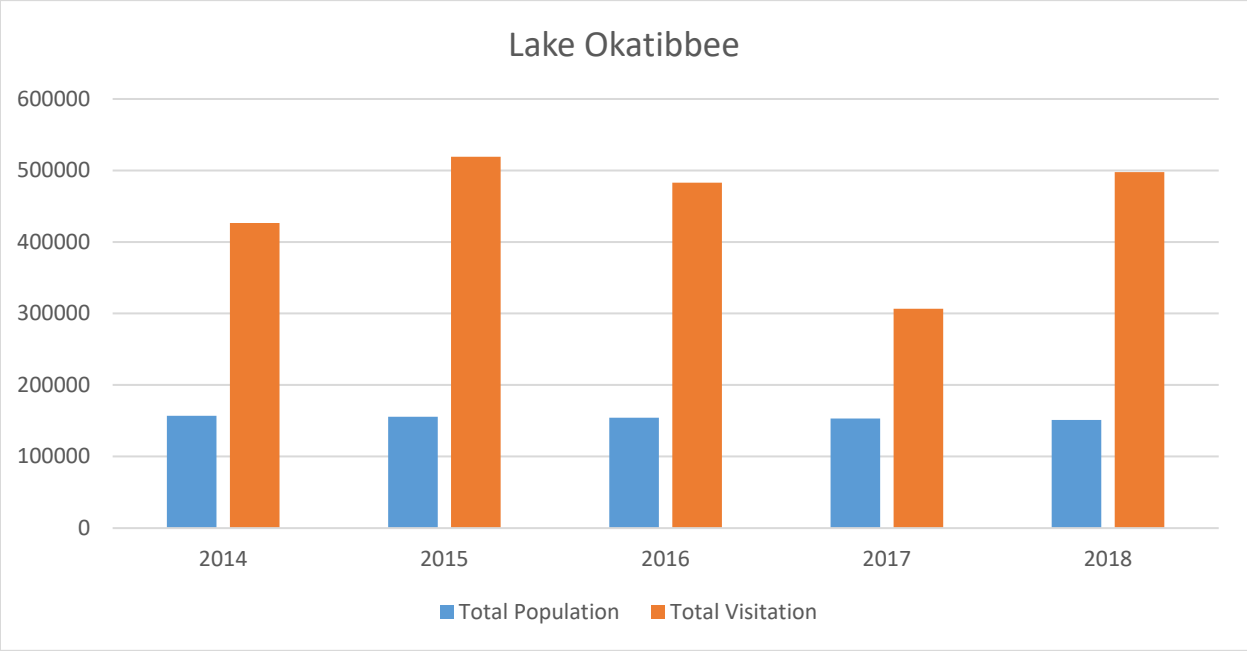
Table C-1: Visitation Per Year

Year	Visitation
2014	426,469
2015	519,237
2016	482,845
2017	306,549
2018	497,568
2019	358,512

Table C-2: Population per Year Estimates Based on the U.S. Census

County	2014	2015	2016	2017	2018	2019
Clarke County	16,276	16,022	15,896	15,805	15,585	15,541
Kemper County	10,222	10,111	10,035	10,093	9,733	9,742
Lauderdale County	79,266	78,348	77,376	76,309	75,238	74,125
Neshoba County	29,460	29,481	29,473	29,435	29,151	29,118
Newton County	21,706	21,569	21,461	21,396	21,355	21,018
Total Population	**156,930**	**155,531**	**154,241**	**153,038**	**151,062**	**149,544**

Population versus visitation for 2014 through 2019 is plotted in Figure C-2.



* *Source: USACE (2020) Mobile District's Visitation FY2014–FY2019 and the U.S. Census Bureau (https://www.census.gov/data/tables/time-series/demo/popest/2010s-counties-total.html)*

Figure C-2: Population v. Visitation

Population projections for 2020 through 2045 is displayed below in 5-year increments. A decrease in 30,775 people is expected over the next 25 years per the U.S. Census and forecasting based on those numbers.

Table C-3: Area Population Through 2045

Year	Population
2020	148,313
2025	142,158
2030	136,003
2035	129,848
2040	123,693
2045	117,538

C.3.3 PER CAPITA USE RATE

Visitation data and population data for the area were used for 2014 through 2019 to determine the current per capita visitation rate for the region of influence (Figure C-3). The average per capita use rate is 2.813.

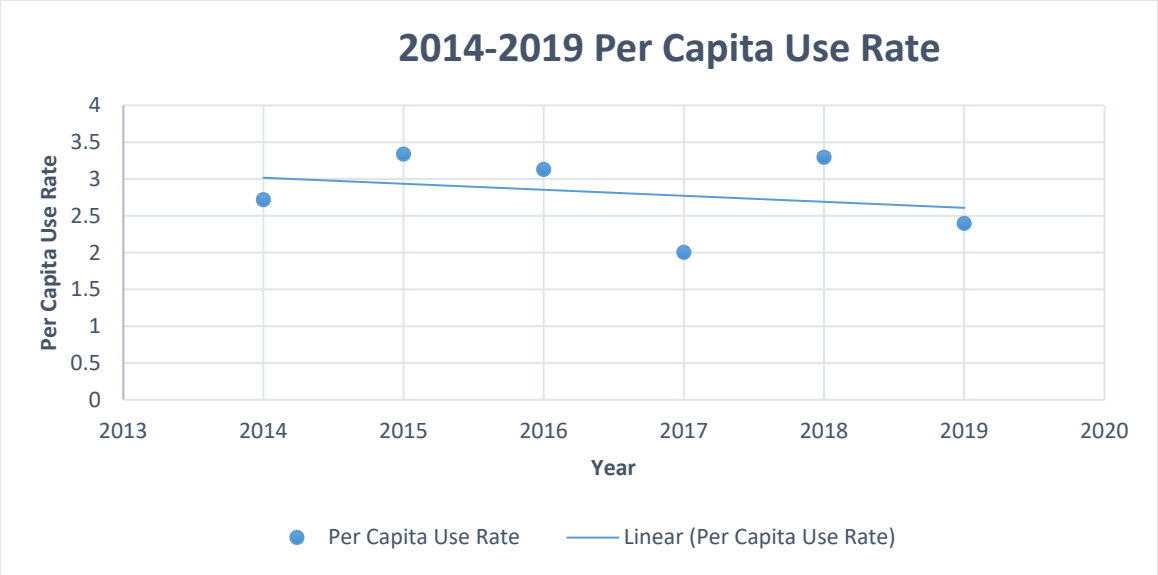


Figure C-3: 2014-2019 Per Capita Use Rate and Trendline.

The visitation estimates through 2045 are determined by multiplying the future population data (Table C-2) by the average per capita use rate of 2.813. Table C-4 shows the projected visitation and per capita use rate through 2045. Some of the monthly population data has been extrapolated from other known data in the Lake Okatibbee Project. For example, East Bank Park was missing data for May 2014, so the data for April 2014 and June 2014 were averaged to provide an estimate for May 2014.

Table C-4: Population and Visitation Estimates Through 2045

Year	Area Population (50-Mile Radius)*	Visitation	Per Capita Use Rate**
2014	156,930	426,469	2.718
2015	155,531	519,237	3.338
2016	154,241	482,845	3.13
2017	153,038	306,549	2.003
2018	151,062	497,568	3.294
2019	149,544	358,512	2.397
2020	148,313	417,205	2.813
2025	142,158	399,891	2.813
2030	136,003	382,576	2.813
2035	129,848	365,262	2.813
2040	123,693	347,948	2.813
2045	117,538	330,634	2.813

** Area population numbers after 2019 are projections based on State and American Fact Finder data.*
***Per Capita Use Rate is determined by visitation divided by area population.*

C.3.4 PROJECT SITE AREA VISITATION

Figures C-4 through C-13 show recreation data for each area at the Okatibbee Lake Project that was available from 2014 through 2019. The x axis displays the month and year of the visitation data, and the y axis identifies the amount of visitation. The visitation figures include visitors to both USACE-managed areas and leased areas. Some graphs do not show all months/years because concrete data is not available for those months/years. It must be noted that the graphs are estimates, and it is recognized there are some anomalies. However, all decisions are based on averages or trends.

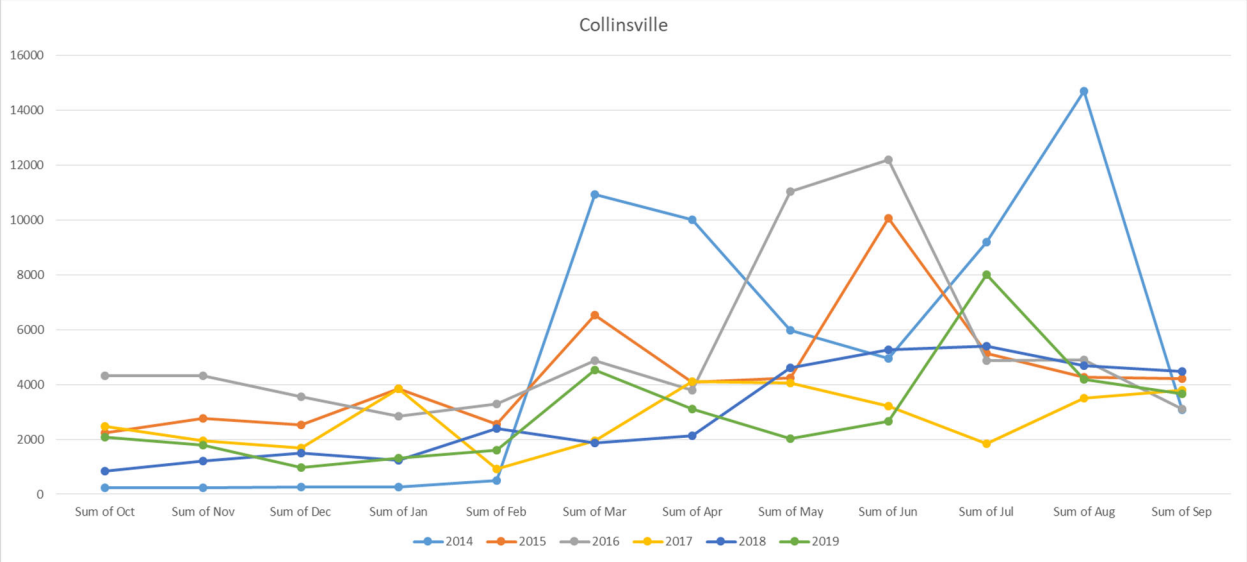


Figure C-4: Collinsville Park.

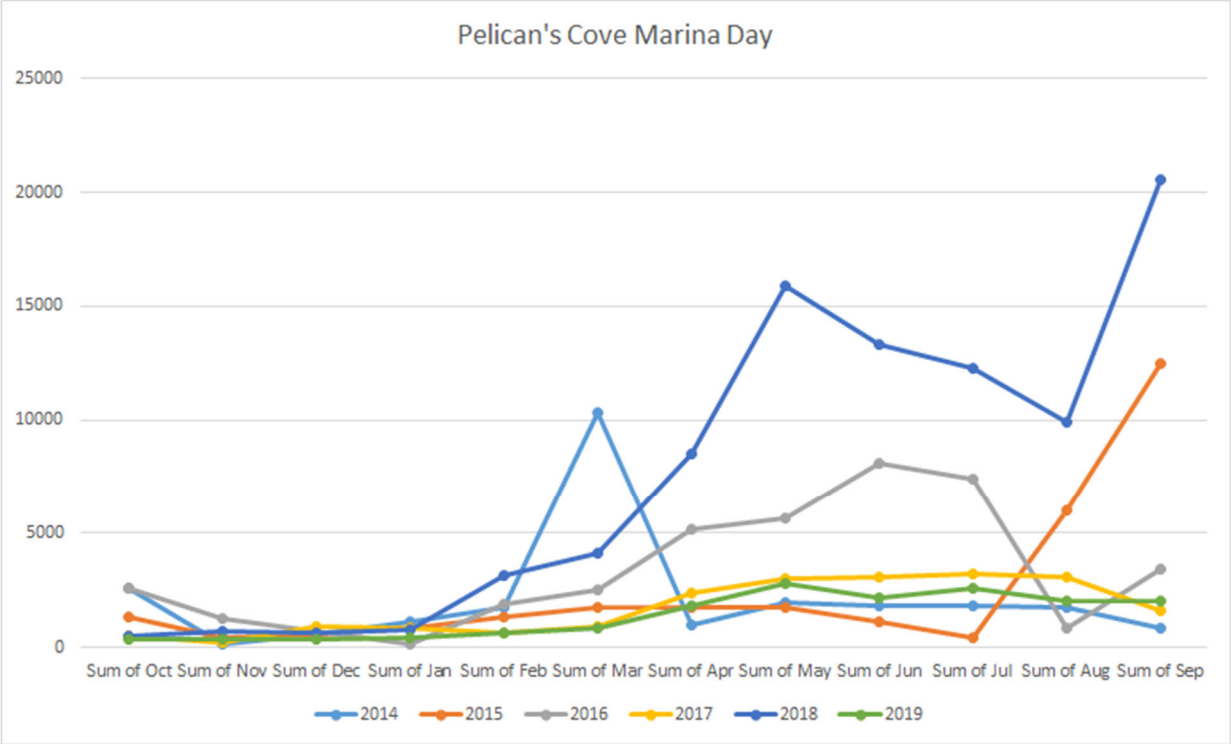


Figure C-5: Pelican's Cove Marina Day.

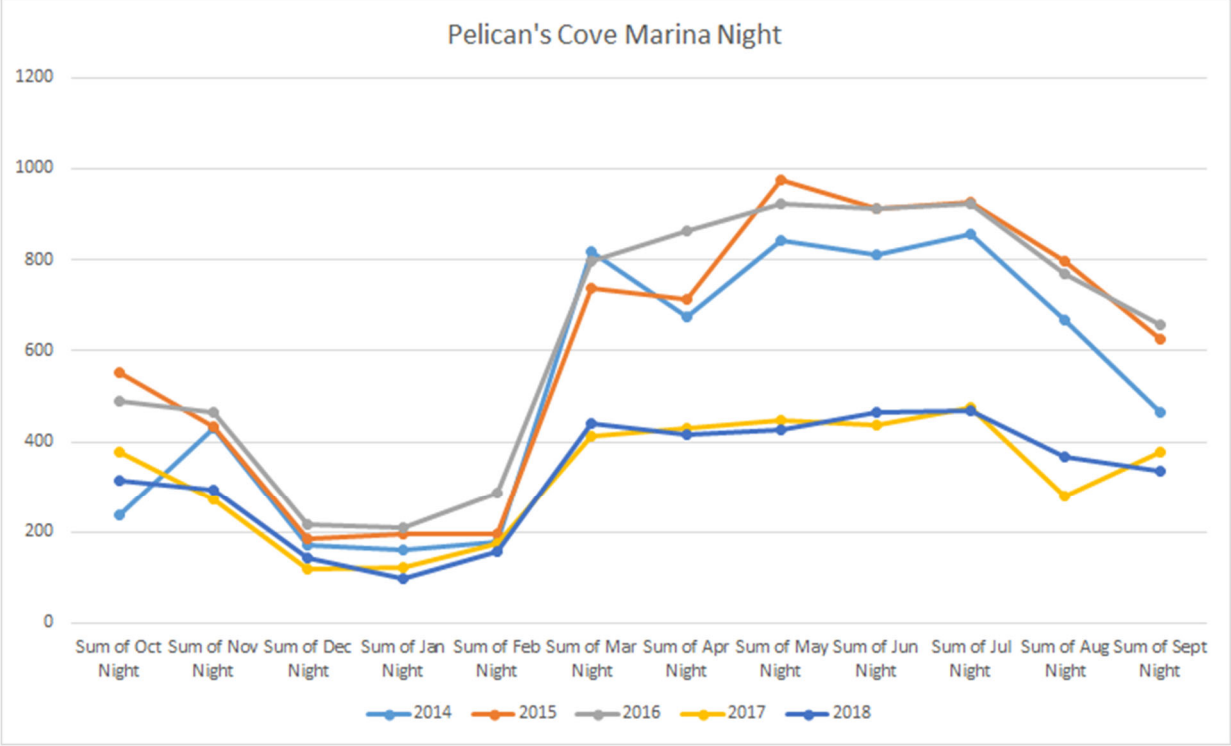


Figure C-6: Pelican's Cove Marina Night.

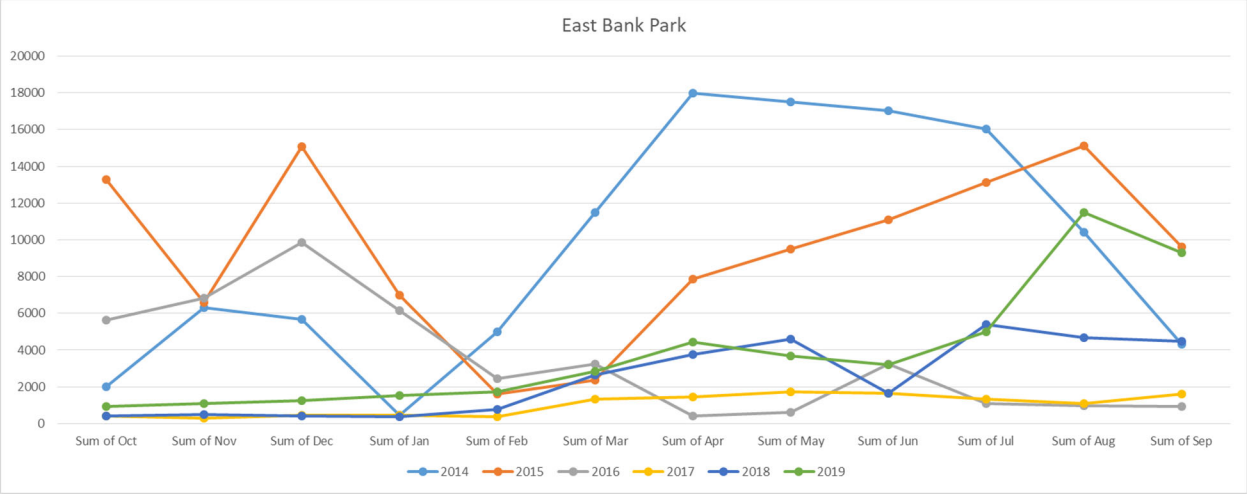
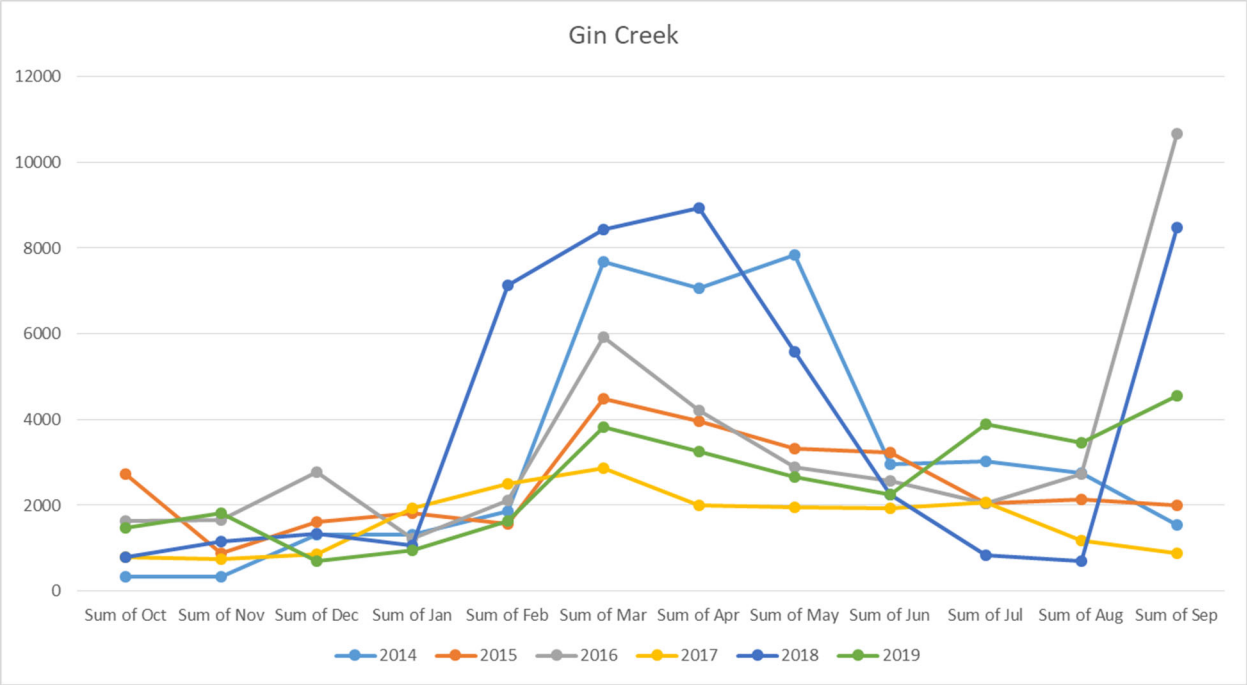


Figure C-7: East Bank Park.



**Increased use due to only ramp being open in September 2016.*

Figure C-8: Gin Creek Park.

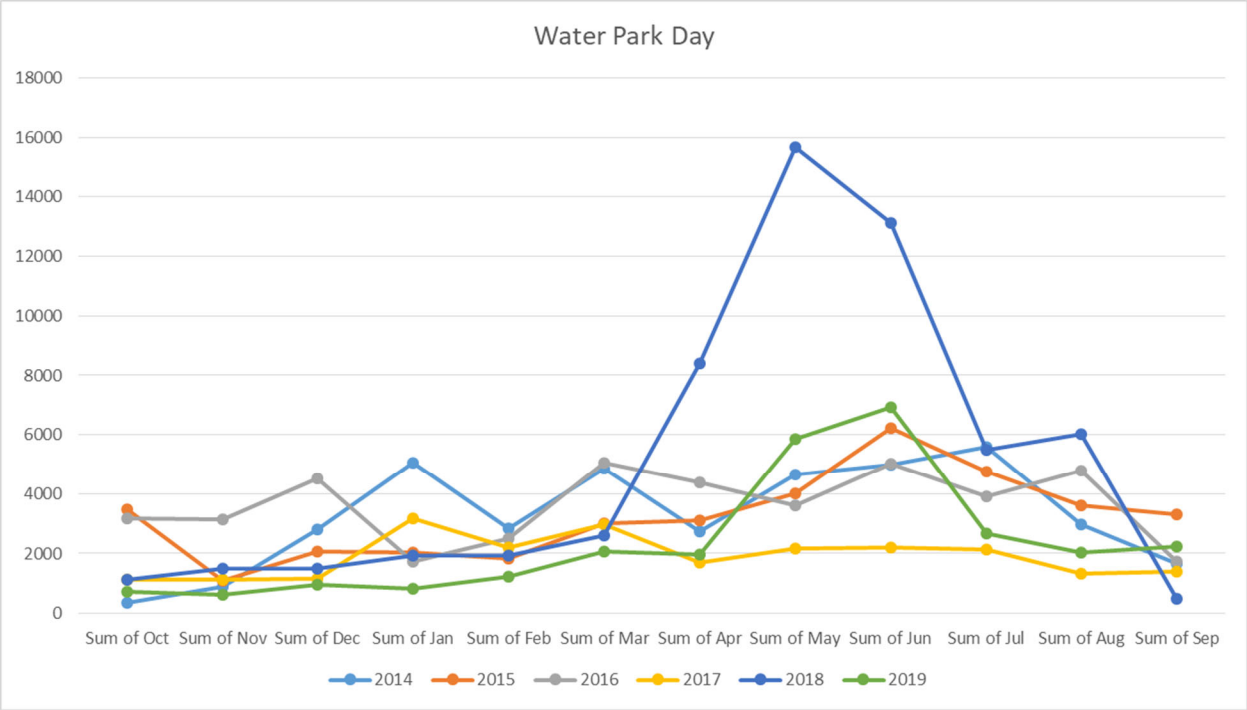


Figure C-9: Okatibbee Water Park Day.

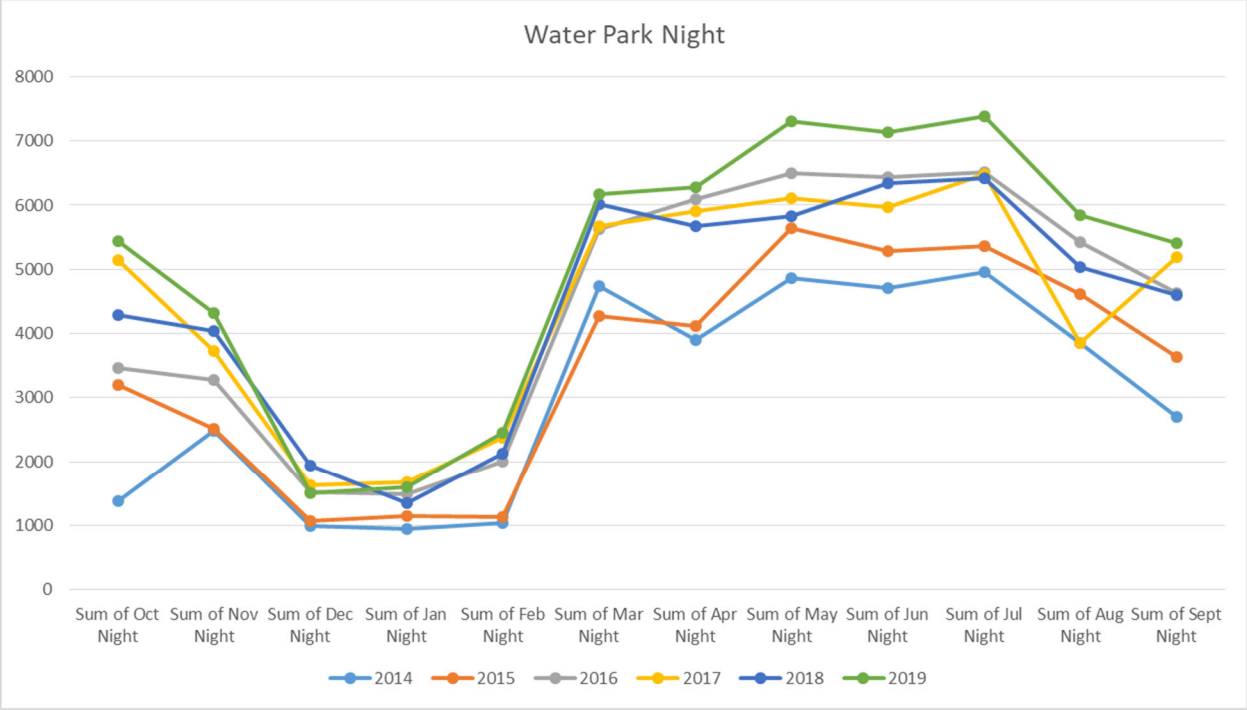


Figure C-10: Okatibbee Water Park Night.

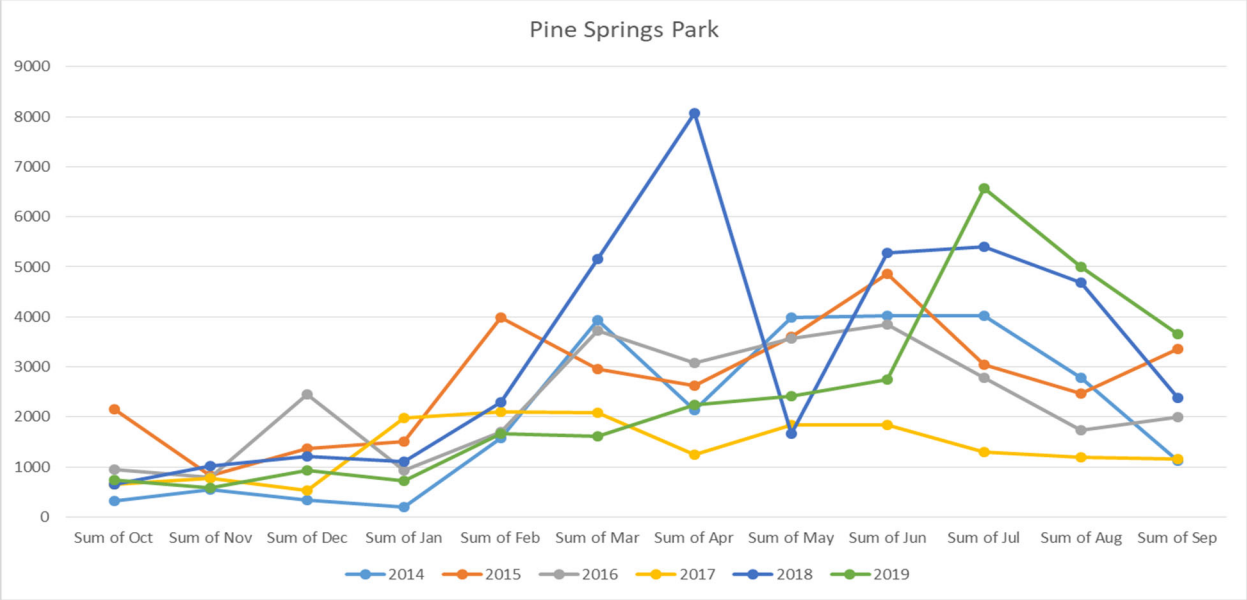


Figure C-11: Pine Springs Park.

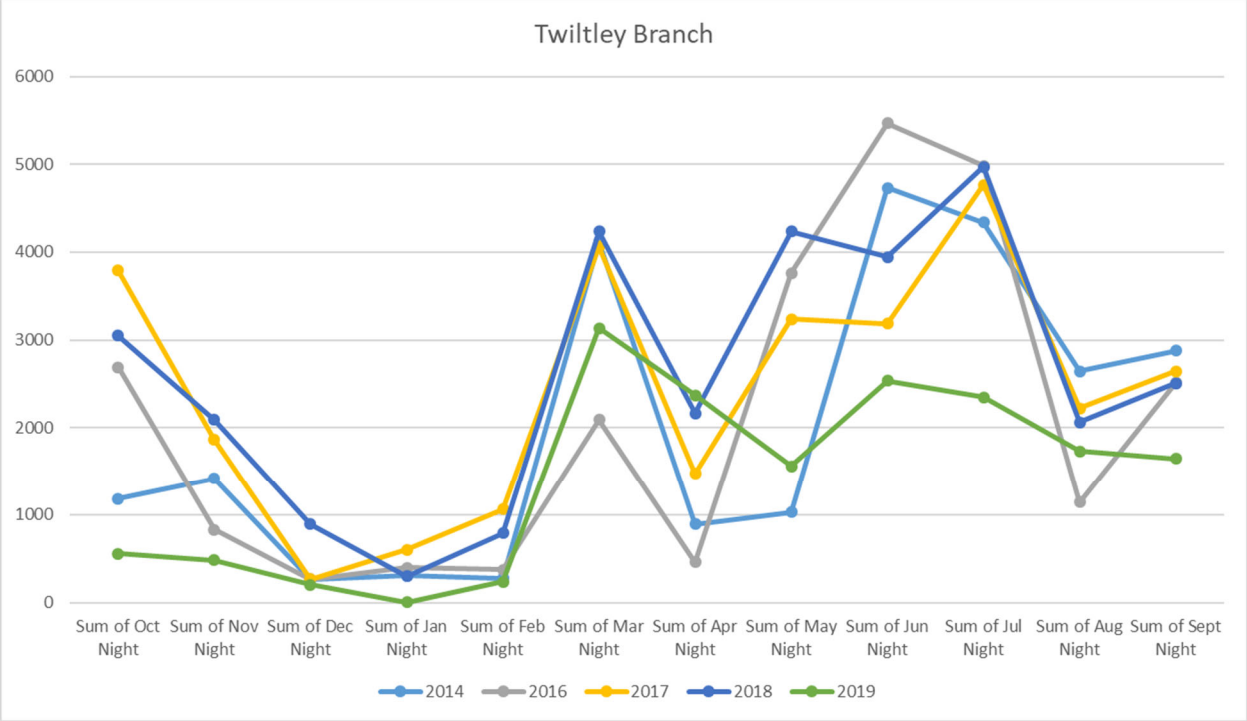


Figure C-12: Twiltley Branch Campground.

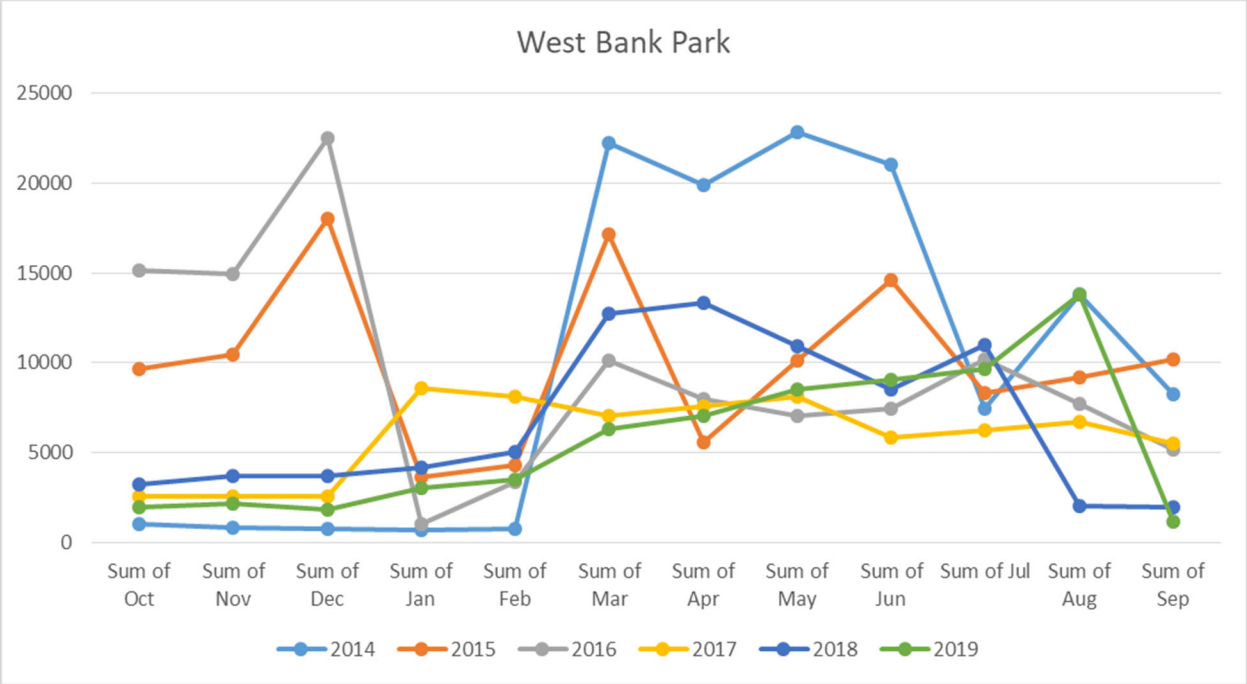


Figure C-13: West Bank Park.

C.4 RECREATION CARRYING CAPACITY

It is important to establish the carrying capacity of a project so that there are appropriate parking and facilities and so that the quality of the recreation experience is maintained. Recreation carrying capacity can be analyzed in several ways. For this analysis, the parking spaces and general visitation data were used to establish general recreation carrying capacity. In order to determine peak season weekend day visitation, the visitation for April, June, and July is summed, using 2014-2019 to determine the average base values. Design load is calculated using the following formula:

$$\frac{\text{Number of Peak Season Visits x Percent of Visitation Occurring on Weekends}}{\text{Number of Peak Season Weekend Days}}$$

Table C-5 shows the values used to establish the base design load.

There is some uncertainty in the analysis related to multiple factors including population projections, individual Project Site Area (PSA) turnover rates, and variance in per capita use rate from year to year. The net difference in parking capacity, therefore, can vary from what is displayed below.

Table C-5: Base Year Design Load

Year	Peak Season (Apr–Jul)	Annual Visits	Peak Season Visitation (% of Total)	Weekends in Peak Season	Percent of Visitation Occurring on Weekends	Number of Weekend Days	Design Load
2014	240,422	426,469	0.5637502	17	75.00%	34	5,303.4265
2015	153,447	519,237	0.2955240	17	75.00%	34	3,384.8603
2016	152,767	482,845	0.3163893	17	75.00%	34	3,369.8603
2017	93,900	306,549	0.3063132	17	75.00%	34	2,071.3235
2018	222,575	497,568	0.4473258	17	75.00%	34	4,909.7426
2019	128,045	358,512	0.3571568	17	75.00%	34	2,824.5221

Table C-6: Future Design Load

Year	Peak Season (Apr–Jul)	Annual Visits	Peak Season Visitation (% of Total)	Weekends in Peak Season	Percent of Visitation Occurring on Weekends	Number of Weekend Days	Design Load
2014	240,422	426,469	0.5637502	17	75.00%	34	5,303.4265
2015	153,447	519,237	0.2955240	17	75.00%	34	3,384.8603
2016	152,767	482,845	0.3163893	17	75.00%	34	3,369.8603
2017	93,900	306,549	0.3063132	17	75.00%	34	2,071.3235
2018	222,575	497,568	0.4473258	17	75.00%	34	4,909.7426
2019	128,045	358,512	0.3571568	17	75.00%	34	2,824.5221
2020	158,987	417,205	0.3810766	17	75.00%	34	3,507.0662
2025	152,389	399,891	0.3810766	17	75.00%	34	3,361.5221
2030	145,791	382,576	0.3810766	17	75.00%	34	3,215.9779
2035	139,193	365,262	0.3810766	17	75.00%	34	3,070.4338
2040	132,595	347,948	0.3810766	17	75.00%	34	2,924.8897
2045	125,997	330,634	0.3810766	17	75.00%	34	2,779.3456

In order to determine the parking demand at the project, the design load is used with assumptions for turnover rate (calculated as hours the project is open divided by the average day-use hours per person), persons per vehicle, and existing parking. The values for Day-Use Hours Per Visitor and Visitors per Vehicle for the total project were taken from assumptions used for other total projects and were determined with project data specific to each individual survey type.

Table C-7: Total Project Existing and Future Park Demand

Year	Design Load	Day-Use Hours per Visitor	Turnover (12/Day-Use Hours per Visitor)	Visitors per Vehicle	Parking Space Demand	Existing Parking Space Supply	Net Differences
2014	5,303	3.95	3.04	2.49	701	1,054	353
2015	3,385	3.95	3.04	2.49	447	1,054	607
2016	3,370	3.95	3.04	2.49	445	1,054	609
2017	2,071	3.95	3.04	2.49	274	1,054	780
2018	4,910	3.95	3.04	2.49	649	1,054	405
2019	2,825	3.95	3.04	2.49	373	1,054	681
2020	3,507	3.95	3.04	2.49	463	1,054	591
2025	3,362	3.95	3.04	2.49	444	1,054	610
2030	3,216	3.95	3.04	2.49	425	1,054	629
2035	3,070	3.95	3.04	2.49	406	1,054	648
2040	2,925	3.95	3.04	2.49	386	1,054	668
2045	2,779	3.95	3.04	2.49	367	1,054	687

* *Source: USACE (2020) Mobile District's Visitation FY2014–FY2019*

The analysis of parking demand and supply shows that there is likely adequate parking through the year 2045.

Design load and parking demand for each individual recreation area was also calculated using the same method as used in Tables C-6 and C-7.

Table C-8: Collinsville Park Design Load

Year	Peak Season (Apr–Jul)	Annual Visits	Total Project Visitation	Area Visitation (% of Total)	Peak Season Visitation (% of Total)	Weekends in Peak Season	Percent of Visitation Occurring on Weekends	Number of Weekend Days	Design Load
2014	30,148	60,314	426,469	14.14%	49.99%	17	75.00%	34	665.0294
2015	23,505	52,473	519,237	10.11%	44.79%	17	75.00%	34	518.4926
2016	31,886	90,591	482,845	18.76%	35.20%	17	75.00%	34	703.3676
2017	13,230	33,368	306,549	10.89%	39.65%	17	75.00%	34	291.8382
2018	17,406	35,630	497,568	7.16%	48.85%	17	75.00%	34	383.9559
2019	15,794	35,933	358,512	10.02%	43.95%	17	75.00%	34	348.3971
2020	21,617	49,424	417,205	11.85%	43.74%	17	75.00%	34	476.8456
2025	20,720	47,373	399,891	11.85%	43.74%	17	75.00%	34	457.0588
2030	19,823	45,322	382,576	11.85%	43.74%	17	75.00%	34	437.2721
2035	18,926	43,271	365,262	11.85%	43.74%	17	75.00%	34	417.4853
2040	10.029	41,220	347,948	11.85%	43.74%	17	75.00%	34	397.6985
2045	17.132	39,169	330,634	11.85%	43.74%	17	75.00%	34	377.9118

Table C-9: Collinsville Park Parking Demand

Year	Design Load	Day-Use Hours per Visitor	Turnover (12/Day-Use Hours per Visitor)	Visitors per Vehicle	Parking Space Demand	Existing Parking Space Supply	Net Differences
2014	665	2.5	4.8	2.1	66	359	293
2015	518	2.5	4.8	2.1	51	359	308
2016	703	2.5	4.8	2.1	70	359	289
2017	292	2.5	4.8	2.1	29	359	330
2018	384	2.5	4.8	2.1	38	359	321
2019	348	2.5	4.8	2.1	35	359	324
2020	477	2.5	4.8	2.1	47	359	312
2025	457	2.5	4.8	2.1	45	359	314
2030	437	2.5	4.8	2.1	43	359	316
2035	417	2.5	4.8	2.1	41	359	318
2040	398	2.5	4.8	2.1	39	359	320
2045	378	2.5	4.8	2.1	38	359	321

Table C-10: East Bank Park Design Load

Year	Peak Season (Apr–Jul)	Annual Visits	Total Project Visitation	Area Visitation (% of Total)	Peak Season Visitation (% of Total)	Weekends in Peak Season	Percent of Visitation Occurring on Weekends	Number of Weekend Days	Design Load
2014	68,537	114,241	426,469	26.79%	59.99%	17	75.00%	34	1,511.8460
2015	41,552	112,230	519,237	21.61%	37.02%	17	75.00%	34	916.5882
2016	5,342	41,387	482,845	8.57%	12.91%	17	75.00%	34	117.8382
2017	6,152	12,141	306,549	3.96%	50.67%	17	75.00%	34	135.7059
2018	15,385	29,688	497,568	5.97%	51.82%	17	75.00%	34	339.3750
2019	16,340	46,520	358,512	12.98%	35.12%	17	75.00%	34	360.4412
2020	22,915	55,541	417,205	13.31%	41.26%	17	75.00%	34	505.4779
2025	21,964	53,237	399,891	13.31%	41.26%	17	75.00%	34	484.5000
2030	21,013	50,931	382,576	13.31%	41.26%	17	75.00%	34	463.5221
2035	20,062	48,626	365,262	13.31%	41.26%	17	75.00%	34	442.5441
2040	19,111	46,321	347,948	13.31%	41.26%	17	75.00%	34	421.5662
2045	18,160	44,017	330,634	13.31%	41.26%	17	75.00%	34	400.5882

Table C-11: East Bank Park Parking Demand

Year	Design Load	Day-Use Hours per Visitor	Turnover (12/Day-Use Hours per Visitor)	Visitors per Vehicle	Parking Space Demand	Existing Parking Space Supply	Net Differences
2014	1,512	1.75	6.86	2.1	105	118	13
2015	917	1.75	6.86	2.1	64	118	54
2016	118	1.75	6.86	2.1	8	118	110
2017	136	1.75	6.86	2.1	9	118	109
2018	339	1.75	6.86	2.1	24	118	94
2019	360	1.75	6.86	2.1	25	118	93
2020	505	1.75	6.86	2.1	35	118	83
2025	485	1.75	6.86	2.1	34	118	84
2030	464	1.75	6.86	2.1	32	118	86
2035	443	1.75	6.86	2.1	31	118	87
2040	422	1.75	6.86	2.1	29	118	89
2045	401	1.75	6.86	2.1	28	118	90

Table C-12: Gin Creek Park Design Load

Year	Peak Season (Apr–Jul)	Annual Visits	Total Project Visitation	Area Visitation (% of Total)	Peak Season Visitation (% of Total)	Weekends in Peak Season	Percent of Visitation Occurring on Weekends	Number of Weekend Days	Design Load
2014	20,892	38,032	426,469	8.92%	54.93%	17	75.00%	34	460.8529
2015	12,574	29,832	519,237	5.75%	42.15%	17	75.00%	34	277.3676
2016	11,728	40,478	482,845	8.38%	28.97%	17	75.00%	34	258.7059
2017	7,936	19,674	306,549	6.42%	40.34%	17	75.00%	34	175.0588
2018	17,601	46,668	497,568	9.38%	37.72%	17	75.00%	34	388.2574
2019	12,046	30,459	358,512	8.50%	39.55%	17	75.00%	34	265.7206
2020	13,367	32,917	417,205	7.89%	40.61%	17	75.00%	34	294.8603
2025	12,813	31,551	399,891	7.89%	40.61%	17	75.00%	34	282.6397
2030	12,258	30,185	382,576	7.89%	40.61%	17	75.00%	34	270.3971
2035	11,703	28,819	365,262	7.89%	40.61%	17	75.00%	34	258.1544
2040	11,149	27,453	347,948	7.89%	40.61%	17	75.00%	34	245.9338
2045	10,594	26,087	330,634	7.89%	40.61%	17	75.00%	34	233.6912

Table C-13: Gin Creek Park Parking Demand

Year	Design Load	Turnover (36/Day-Use Hours Per Visitor)	Maximum People Per Campsite	Campsites	Maximum Campground Occupancy	Net Differences	Campsites Needed or Left Over
2014	461	1	8	7	56	-405	-51
2015	277	1	8	7	56	-221	-28
2016	259	1	8	7	56	-203	-25
2017	175	1	8	7	56	-119	-15
2018	388	1	8	7	56	-332	-42
2019	266	1	8	7	56	-210	-26
2020	295	1	8	7	56	-239	-30
2025	283	1	8	7	56	-227	-28
2030	270	1	8	7	56	-214	-27
2035	258	1	8	7	56	-202	-25
2040	246	1	8	7	56	-190	-24
2045	234	1	8	7	56	-178	-22

Table C-14: Okatibbee Water Park Design Load

Year	Peak Season (Apr–Jul)	Annual Visits	Total Project Visitation	Area Visitation (% of Total)	Peak Season Visitation (% of Total)	Weekends in Peak Season	Percent of Visitation Occurring on Weekends	Number of Weekend Days	Design Load
2014	17,916	39,342	426,469	9.23%	45.54%	17	75.00%	34	395.2059
2015	18,088	38,521	519,237	7.42%	46.96%	17	75.00%	34	399.0000
2016	16,908	57,410	482,845	11.89%	29.45%	17	75.00%	34	372.9706
2017	8,197	22,648	306,549	7.39%	36.19%	17	75.00%	34	180.8162
2018	42,726	59,817	497,568	12.02%	71.43%	17	75.00%	34	942.4853
2019	17,394	28,098	358,512	7.84%	61.90%	17	75.00%	34	383.6912
2020	18,842	38,787	417,205	9.30%	48.58%	17	75.00%	34	415.6324
2025	18,060	37,177	399,891	9.30%	48.58%	17	75.00%	34	398.3824
2030	17,278	35,568	382,576	9.30%	48.58%	17	75.00%	34	381.1324
2035	16,496	33,958	365,262	9.30%	48.58%	17	75.00%	34	363.8824
2040	15,714	32,348	347,948	9.30%	48.58%	17	75.00%	34	346.6324
2045	14,933	30,739	330,634	9.30%	48.58%	17	75.00%	34	329.4044

Table C-15: Okatibbee Water Park Parking Demand

Year	Design Load	Day-Use Hours per Visitor	Turnover (12/Day-Use Hours per Visitor)	Visitors per Vehicle	Parking Space Demand	Existing Parking Space Supply	Net Differences
2014	395	2.5	4.8	2.25	37	280	243
2015	399	2.5	4.8	2.25	37	280	243
2016	373	2.5	4.8	2.25	35	280	245
2017	181	2.5	4.8	2.25	17	280	263
2018	942	2.5	4.8	2.25	87	280	193
2019	384	2.5	4.8	2.25	36	280	244
2020	416	2.5	4.8	2.25	39	280	241
2025	398	2.5	4.8	2.25	37	280	243
2030	381	2.5	4.8	2.25	35	280	245
2035	364	2.5	4.8	2.25	34	280	246
2040	347	2.5	4.8	2.25	32	280	248
2045	329	2.5	4.8	2.25	30	280	250

Table C-16: Okatibbee Water Park Night Design Load

Year	Peak Season (Apr–Jul)	Annual Visits	Total Project Visitation	Area Visitation (% of Total)	Peak Season Visitation (% of Total)	Weekends in Peak Season	Percent of Visitation Occurring on Weekends	Number of Weekend Days	Design Load
2014	18,425	36,559	426,469	8.57%	50.40%	17	75.00%	34	406.4338
2015	20,414	41,992	519,237	8.09%	48.61%	17	75.00%	34	450.3088
2016	25,537	52,966	482,845	10.97%	48.21%	17	75.00%	34	563.3162
2017	24,460	53,719	306,549	17.52%	45.53%	17	75.00%	34	539.5588
2018	24,262	53,666	497,568	10.79%	45.21%	17	75.00%	34	535.1912
2019	28,102	60,825	358,512	16.97%	46.20%	17	75.00%	34	619.8971
2020	24,010	50,694	417,205	12.15%	47.36%	17	75.00%	34	529.6324
2025	23,013	48,590	399,891	12.15%	47.36%	17	75.00%	34	507.6397
2030	22,017	46,486	382,576	12.15%	47.36%	17	75.00%	34	485.6691
2035	21,020	44,382	365,262	12.15%	47.36%	17	75.00%	34	463.6765
2040	20,024	42,278	347,948	12.15%	47.36%	17	75.00%	34	441.7059
2045	19,028	40,175	330,634	12.15%	47.36%	17	75.00%	34	419.7353

Table C-17: Okatibbee Water Night Park Parking Demand

Year	Design Load	Day-Use Hours per Visitor	Turnover (12/Day-Use Hours per Visitor)	Visitors per Vehicle	Parking Space Demand	Existing Parking Space Supply	Net Differences
2014	406	2.5	4.8	2.25	38	280	242
2015	450	2.5	4.8	2.25	42	280	238
2016	563	2.5	4.8	2.25	52	280	228
2017	540	2.5	4.8	2.25	50	280	230
2018	535	2.5	4.8	2.25	50	280	230
2019	620	2.5	4.8	2.25	57	280	223
2020	530	2.5	4.8	2.25	49	280	231
2025	508	2.5	4.8	2.25	47	280	233
2030	486	2.5	4.8	2.25	45	280	235
2035	464	2.5	4.8	2.25	43	280	237
2040	442	2.5	4.8	2.25	41	280	239
2045	420	2.5	4.8	2.25	39	280	241

Table C-18: Pelican's Cove Marina Design Load

Year	Peak Season (Apr–Jul)	Annual Visits	Total Project Visitation	Area Visitation (% of Total)	Peak Season Visitation (% of Total)	Weekends in Peak Season	Percent of Visitation Occurring on Weekends	Number of Weekend Days	Design Load
2014	6,639	25,778	426,469	6.04%	25.75%	17	75.00%	34	146.4485
2015	4,990	29,607	519,237	5.70%	16.85%	17	75.00%	34	110.0735
2016	26,300	39,660	482,845	8.21%	66.31%	17	75.00%	34	580.1471
2017	11,691	20,375	306,549	6.65%	57.38%	17	75.00%	34	257.8897
2018	49,938	90,146	497,568	18.12%	55.40%	17	75.00%	34	1,101.574
2019	9,359	16,433	358,512	4.58%	56.95%	17	75.00%	34	206.4485
2020	15,923	34,286	417,205	8.22%	46.44%	17	75.00%	34	351.2426
2025	15,262	32,863	399,891	8.22%	46.44%	17	75.00%	34	336.6618
2030	14,601	31,440	382,576	8.22%	46.44%	17	75.00%	34	322.0809
2035	13,940	30,017	365,262	8.22%	46.44%	17	75.00%	34	307.5000
2040	13,280	28,594	347,948	8.22%	46.44%	17	75.00%	34	292.9412
2045	12,619	27,171	330,634	8.22%	46.44%	17	75.00%	34	278.3603

Table C-19: Pelican's Cove Marina Parking Demand

Year	Design Load	Day-Use Hours per Visitor	Turnover (12/Day-Use Hours per Visitor)	Visitors per Vehicle	Parking Space Demand	Existing Parking Space Supply	Net Differences
2014	146	3.25	3.69	2.25	18	17	-1
2015	110	3.25	3.69	2.25	13	17	4
2016	580	3.25	3.69	2.25	70	17	-53
2017	258	3.25	3.69	2.25	31	17	-14
2018	1,102	3.25	3.69	2.25	133	17	-116
2019	206	3.25	3.69	2.25	25	17	-8
2020	351	3.25	3.69	2.25	42	17	-25
2025	337	3.25	3.69	2.25	41	17	-24
2030	322	3.25	3.69	2.25	39	17	-22
2035	308	3.25	3.69	2.25	37	17	-20
2040	293	3.25	3.69	2.25	35	17	-18
2045	278	3.25	3.69	2.25	33	17	-16

Table C-20: Pine Springs Design Load

Year	Peak Season (Apr–Jul)	Annual Visits	Total Project Visitation	Area Visitation (% of Total)	Peak Season Visitation (% of Total)	Weekends in Peak Season	Percent of Visitation Occurring on Weekends	Number of Weekend Days	Design Load
2014	14,179	25,019	426,469	5.87%	56.67%	17	75.00%	34	312.7721
2015	14,137	32,748	519,237	6.31%	43.17%	17	75.00%	34	311.8456
2016	13,292	61,812	482,845	12.80%	21.51%	17	75.00%	34	293.2500
2017	6,239	16,714	306,549	5.45%	37.33%	17	75.00%	34	137.6250
2018	20,412	38,910	497,568	7.82%	52.46%	17	75.00%	34	450.2647
2019	13,986	28,919	358,512	8.07%	48.36%	17	75.00%	34	308.5147
2020	13,928	32,204	417,205	7.72%	43.25%	17	75.00%	34	307.2353
2025	13,350	30,867	399,891	7.72%	43.25%	17	75.00%	34	294.4853
2030	12,772	29,531	382,576	7.72%	43.25%	17	75.00%	34	281.7353
2035	12,194	28,194	365,262	7.72%	43.25%	17	75.00%	34	268.9853
2040	11,616	26,858	347,948	7.72%	43.25%	17	75.00%	34	256.2353
2045	11,038	25,522	330,634	7.72%	43.25%	17	75.00%	34	243.4853

Table C-21: Pine Springs Parking Demand

Year	Design Load	Day-Use Hours per Visitor	Turnover (12/Day-Use Hours per Visitor)	Visitors per Vehicle	Parking Space Demand	Existing Parking Space Supply	Net Differences
2014	313	3.1	3.87	2.6	31	136	105
2015	312	3.1	3.87	2.6	31	136	105
2016	293	3.1	3.87	2.6	29	136	107
2017	138	3.1	3.87	2.6	14	136	122
2018	450	3.1	3.87	2.6	45	136	91
2019	309	3.1	3.87	2.6	31	136	105
2020	307	3.1	3.87	2.6	31	136	105
2025	294	3.1	3.87	2.6	29	136	107
2030	282	3.1	3.87	2.6	28	136	108
2035	269	3.1	3.87	2.6	27	136	109
2040	256	3.1	3.87	2.6	25	136	111
2045	243	3.1	3.87	2.6	24	136	112

Table C-22: Twiltley Branch Campground Night Design Load

Year	Peak Season (Apr–Jul)	Annual Visits	Total Project Visitation	Area Visitation (% of Total)	Peak Season Visitation (% of Total)	Weekends in Peak Season	Percent of Visitation Occurring on Weekends	Number of Weekend Days	Design Load
2014	10,989	24,079	426,469	5.65%	45.64%	17	75.00%	34	242.4044
2015	—	—	519,237	—	—	17	75.00%	34	—
2016	14,677	24,977	482,845	5.17%	58.76%	17	75.00%	34	323.7574
2017	12,662	29,176	306,549	9.52%	43.40%	17	75.00%	34	279.3088
2018	15,315	31,247	497,568	6.28%	49.01%	17	75.00%	34	337.8309
2019	8,813	16,802	358,512	4.69%	52.45%	17	75.00%	34	194.4044
2020	9,042	21,766	417,205	5.22%	41.54%	17	75.00%	34	199.4559
2025	8,667	20,863	399,891	5.22%	41.54%	17	75.00%	34	191.1838
2030	8,292	19,960	382,576	5.22%	41.54%	17	75.00%	34	182.9118
2035	7,917	19,056	365,262	5.22%	41.54%	17	75.00%	34	174.6397
2040	7,541	18,153	347,948	5.22%	41.54%	17	75.00%	34	166.3456
2045	7,166	17,250	330,634	5.22%	41.54%	17	75.00%	34	158.0735

Table C-23: Twiltley Branch Campground Night Parking Demand

Year	Design Load	Turnover (36/Day-Use Hours per Visitor)	Maximum People per Campsite	Campsites	Maximum Campground Occupancy	Net Differences	Campsites Needed or Left Over
2014	242	1	8	62	496	254	32
2015	—	1	8	62	496	—	—
2016	324	1	8	62	496	172	22
2017	279	1	8	62	496	217	27
2018	338	1	8	62	496	158	20
2019	194	1	8	62	496	302	38
2020	199	1	8	62	496	297	37
2025	191	1	8	62	496	305	38
2030	183	1	8	62	496	313	39
2035	175	1	8	62	496	321	40
2040	166	1	8	62	496	330	41
2045	158	1	8	62	496	338	42

Table C-24: West Bank Park Design Load

Year	Peak Season (Apr–Jul)	Annual Visits	Total Project Visitation	Area Visitation (% of Total)	Peak Season Visitation (% of Total)	Weekends in Peak Season	Percent of Visitation Occurring on Weekends	Number of Weekend Days	Design Load
2014	71,122	119,573	426,469	28.04%	59.48%	17	75.00%	34	1,568.8680
2015	38,601	182,960	519,237	35.24%	21.10%	17	75.00%	34	851.4926
2016	32,632	112,644	482,845	23.33%	28.97%	17	75.00%	34	719.8235
2017	27,793	71,551	306,549	23.34%	38.84%	17	75.00%	34	613.0809
2018	43,792	80,397	497,568	16.16%	54.47%	17	75.00%	34	966.0000
2019	34,313	68,272	358,512	19.04%	50.26%	17	75.00%	34	756.9044
2020	42,577	100,926	417,205	24.19%	42.19%	17	75.00%	34	939.1985
2025	40,810	96,737	399,891	24.19%	42.19%	17	75.00%	34	900.2206
2030	39,043	92,549	382,576	24.19%	42.19%	17	75.00%	34	861.2426
2035	37,276	88,360	365,262	24.19%	42.19%	17	75.00%	34	822.2647
2040	35,509	84,172	347,948	24.19%	42.19%	17	75.00%	34	783.2868
2045	33,742	79,983	330,634	24.19%	42.19%	17	75.00%	34	744.3088

Table C-25: West Bank Park Parking Demand

Year	Design Load	Day-Use Hours per Visitor	Turnover (12/Day-Use Hours per Visitor)	Visitors per Vehicle	Parking Space Demand	Existing Parking Space Supply	Net Differences
2014	1,569	3.1	3.87	2.6	156	44	-122
2015	851	3.1	3.87	2.6	85	44	-41
2016	720	3.1	3.87	2.6	72	44	-28
2017	613	3.1	3.87	2.6	61	44	-17
2018	966	3.1	3.87	2.6	96	44	-52
2019	757	3.1	3.87	2.6	75	44	-31
2020	939	3.1	3.87	2.6	93	44	-49
2025	900	3.1	3.87	2.6	89	44	-45
2030	861	3.1	3.87	2.6	86	44	-42
2035	822	3.1	3.87	2.6	82	44	-38
2040	783	3.1	3.87	2.6	78	44	-34
2045	744	3.1	3.87	2.6	74	44	-30

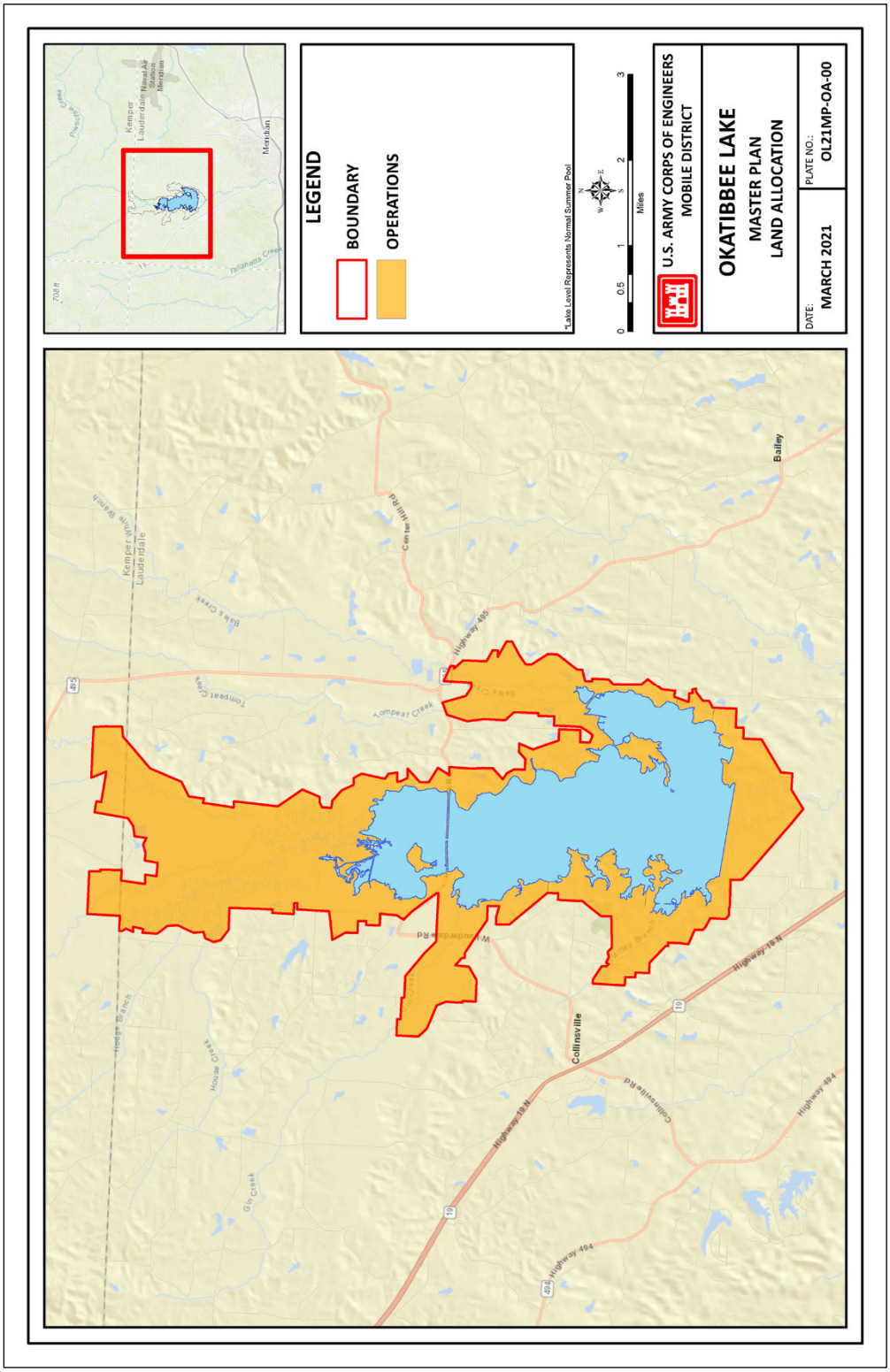
APPENDIX D—FINDING OF NO SIGNIFICANT IMPACT (FONSI) AND PROGRAMMATIC ENVIRONMENTAL ASSESSMENT (PEA)

D.1. FINDING OF NO SIGNIFICANT IMPACT (FONSI)

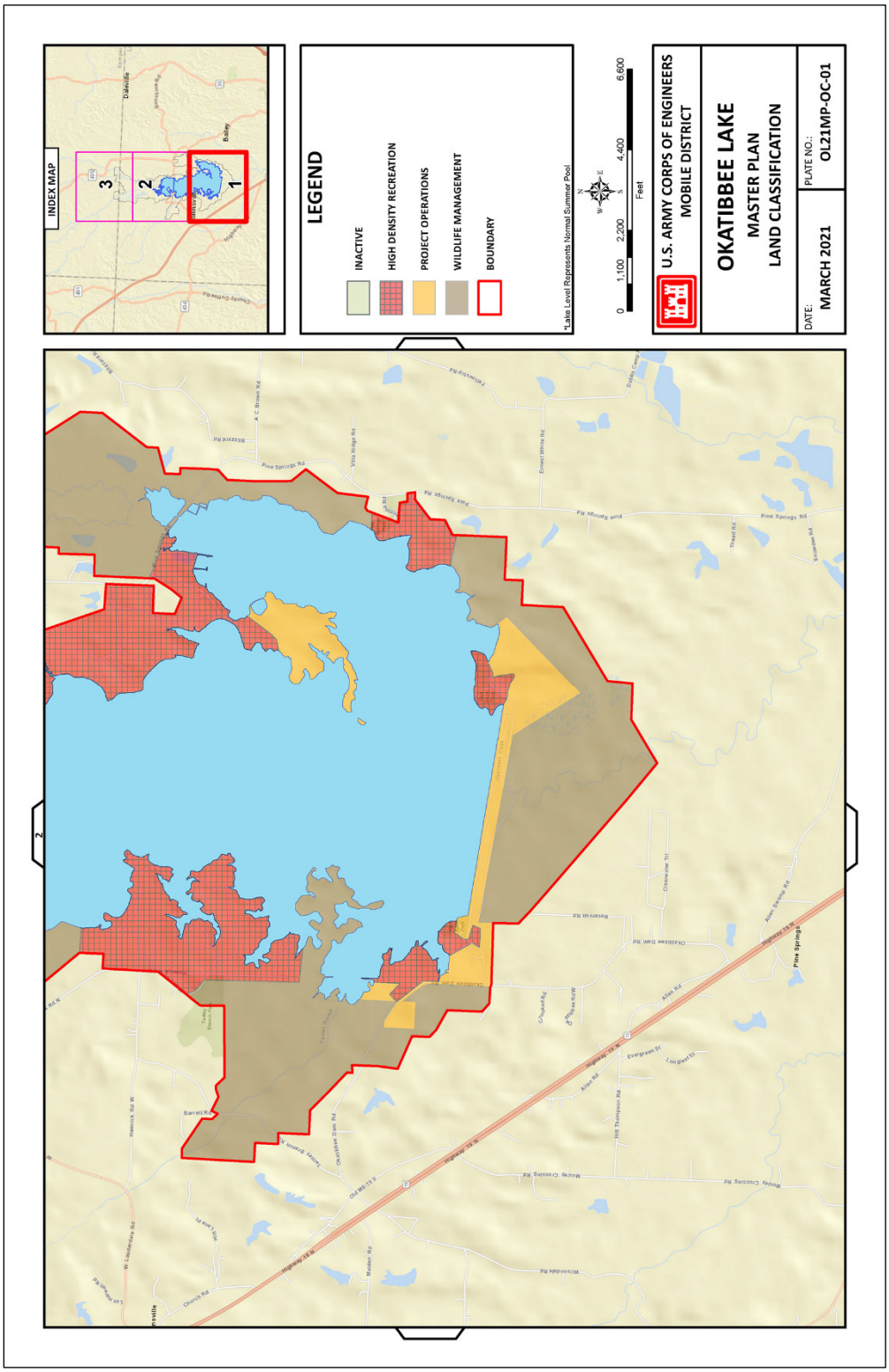
D.2 PROGRAMMATIC ENVIRONMENTAL ASSESSMENT (PEA)

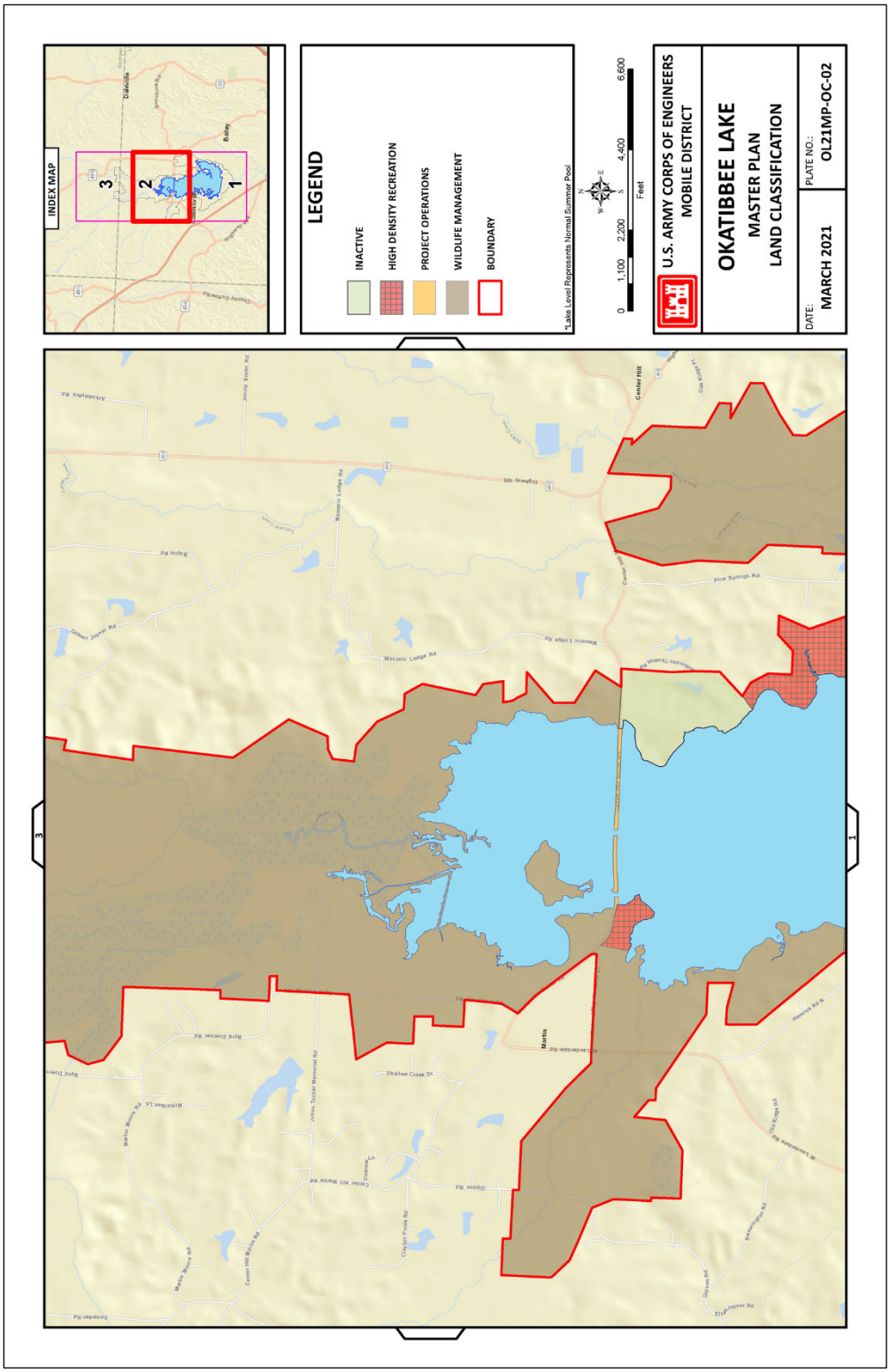
APPENDIX E—PLATES

E.1 ALLOCATION MAP



E.2 CLASSIFICATION MAPS

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PROJECT OPERATIONS
WILDLIFE MANAGEMENT
BOUNDARY
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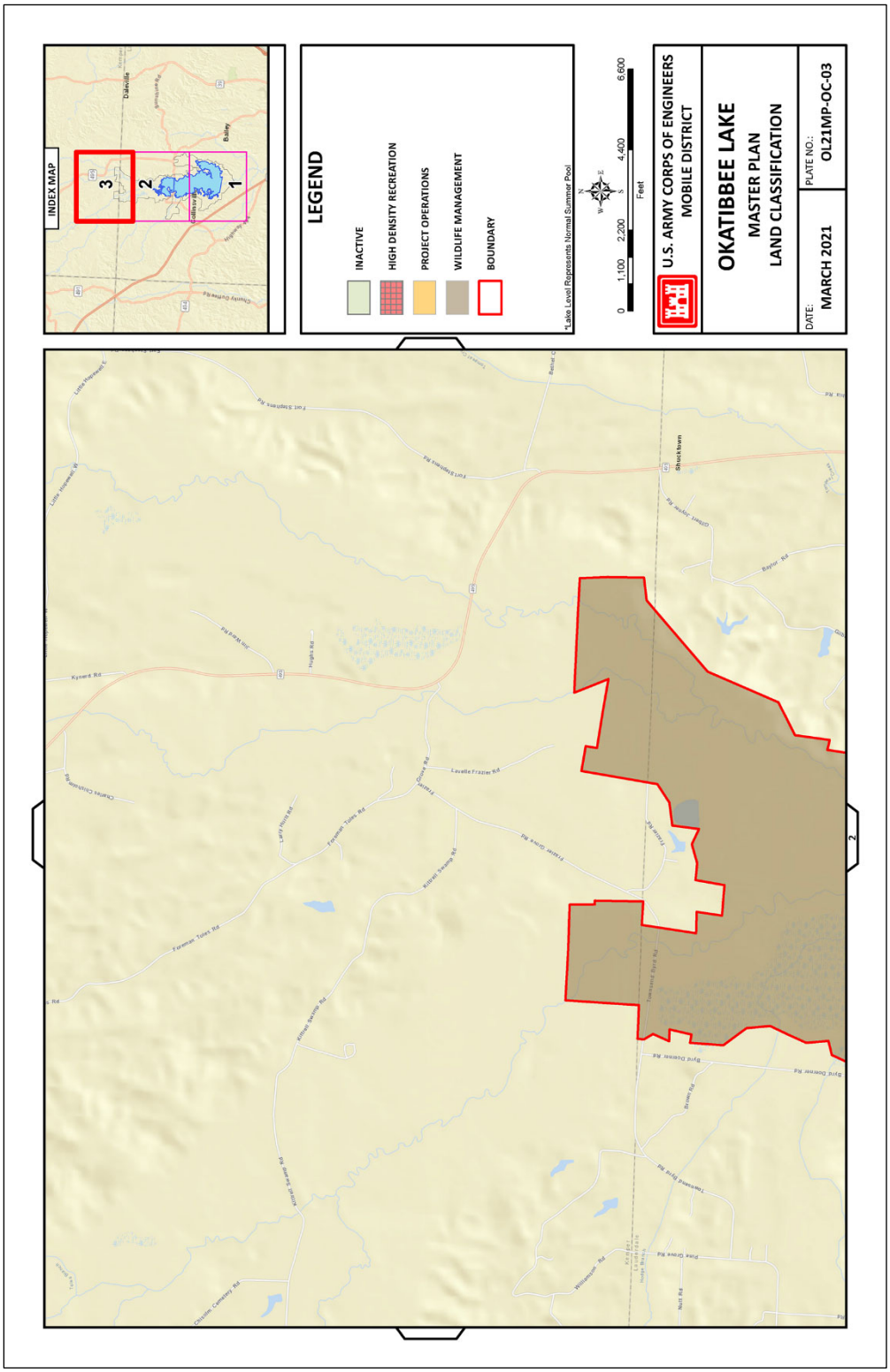
2,200
4,400
6,600
Feet
U.S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
OKATIBBEE LAKE
MASTER PLAN
LAND CLASSIFICATION
DATE:
MARCH 2021
PLATE NO.:
OL21MP-OC-02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INACTIVE
HIGH DENSITY RECREATION
PROJECT OPERATIONS
WILDLIFE MANAGEMENT
BOUNDARY
*Lake Level Represents Normal Summer Pool
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1,100
2,200
4,400
6,600
Feet
U.S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
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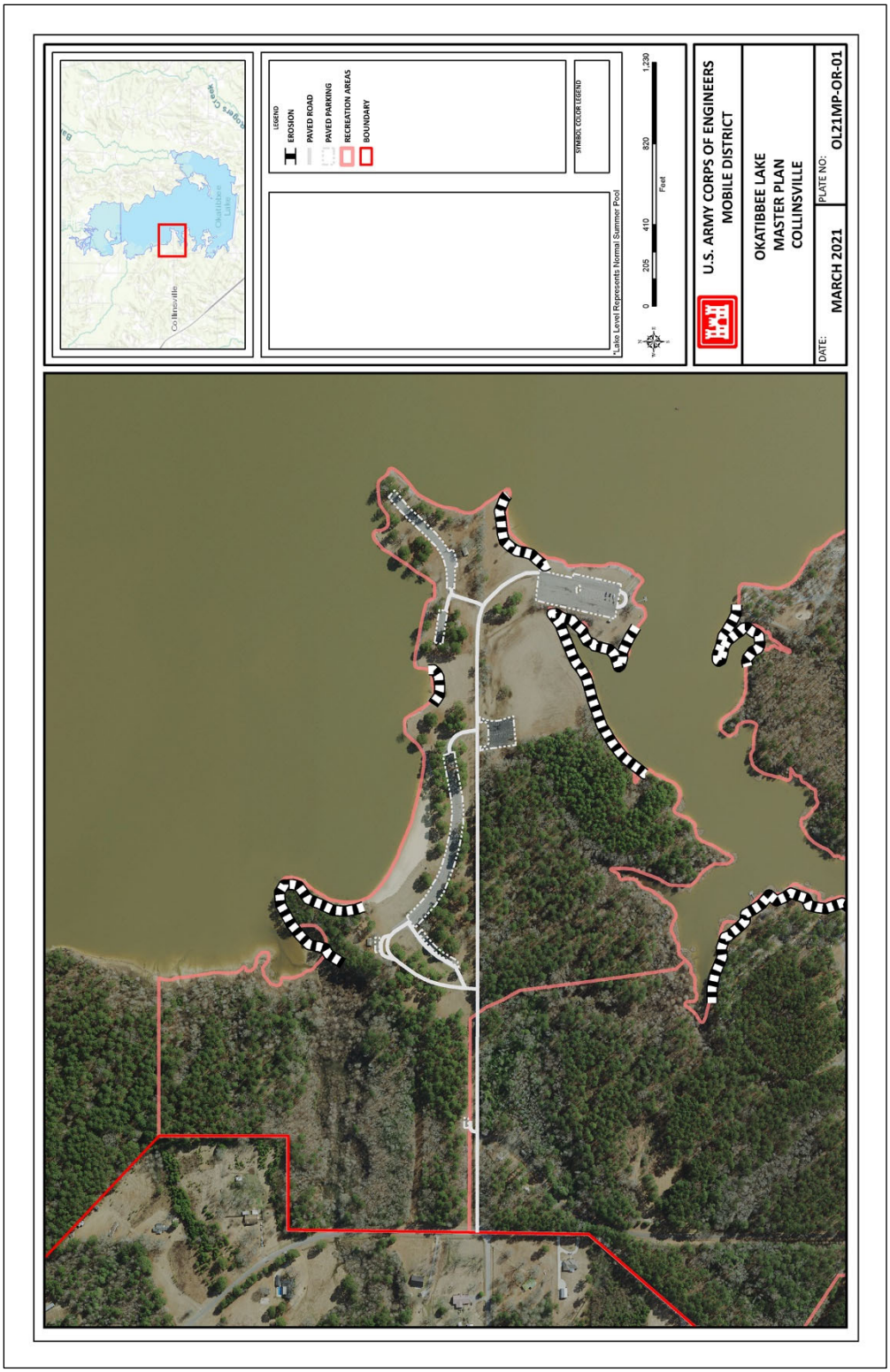
MASTER PLAN
LAND CLASSIFICATION
DATE:
MARCH 2021
PLATE NO.:
OL21MP-OC-03

E.3 EROSION MAPS




U.S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
OKATIBBEE LAKE
MASTER PLAN
EAST BANK
DATE:
MARCH 2021
PLATE NO:
OL21MP-OR-02
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EROSION
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BOUNDARY
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220
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Okatibbee Lake
Collinsville
Chapel Creek


Okatibbee Lake
Collinsville
LEGEND
EROSION
PAVED ROAD
PAVED PARKING
RECREATION AREAS
BOUNDARY
SYMBOL COLOR LEGEND
*Lake Level Represents Normal Summer Pool
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190
380
570
Feet
U.S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
OKATIBBEE LAKE
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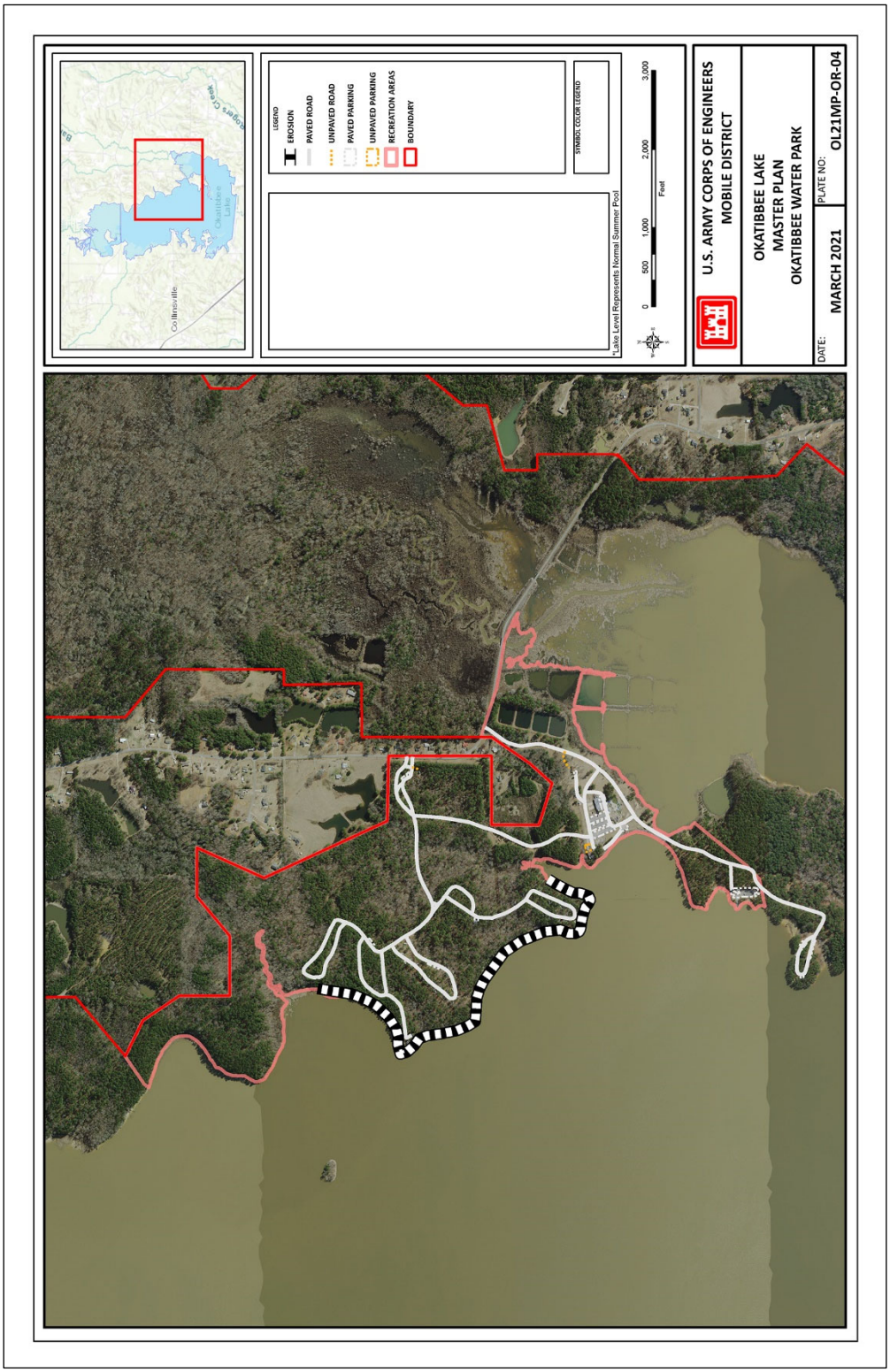
DATE:
MARCH 2021
PLATE NO:
OL21MP-OR-03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EROSION
PAVED ROAD
UNPAVED ROAD
PAVED PARKING
UNPAVED PARKING
RECREATION AREAS
BOUNDARY
SYMBOL COLOR LEGEND
*Lake Level Represents Normal Summer Pool
0
500
1,000
2,000
3,000
Feet
U.S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
OKATIBBEE LAKE
MASTER PLAN
OKATIBBEE WATER PARK
DATE:
MARCH 2021
PLATE NO:
OL21MP-OR-04


U.S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
OKATIBBEE LAKE
MASTER PLAN
PELICANS COVE MARINA
DATE:
MARCH 2021
PLATE NO:
OL21MP-OR-05
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EROSION
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*Lake Level Represents Normal Summer Pool
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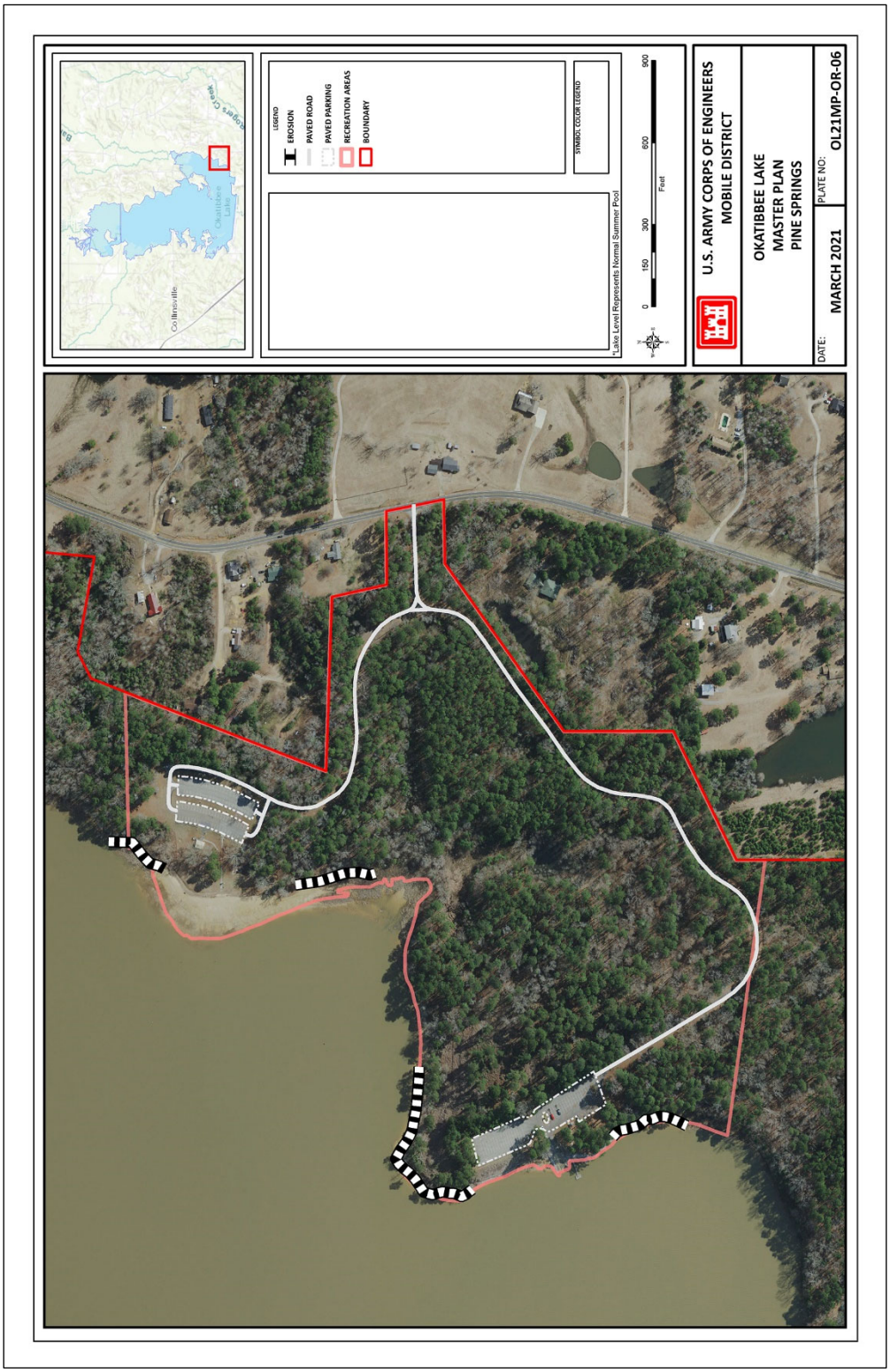
Feet
Okatibbee Lake
Collinsville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PINE SPRINGS
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MARCH 2021
PLATE NO:
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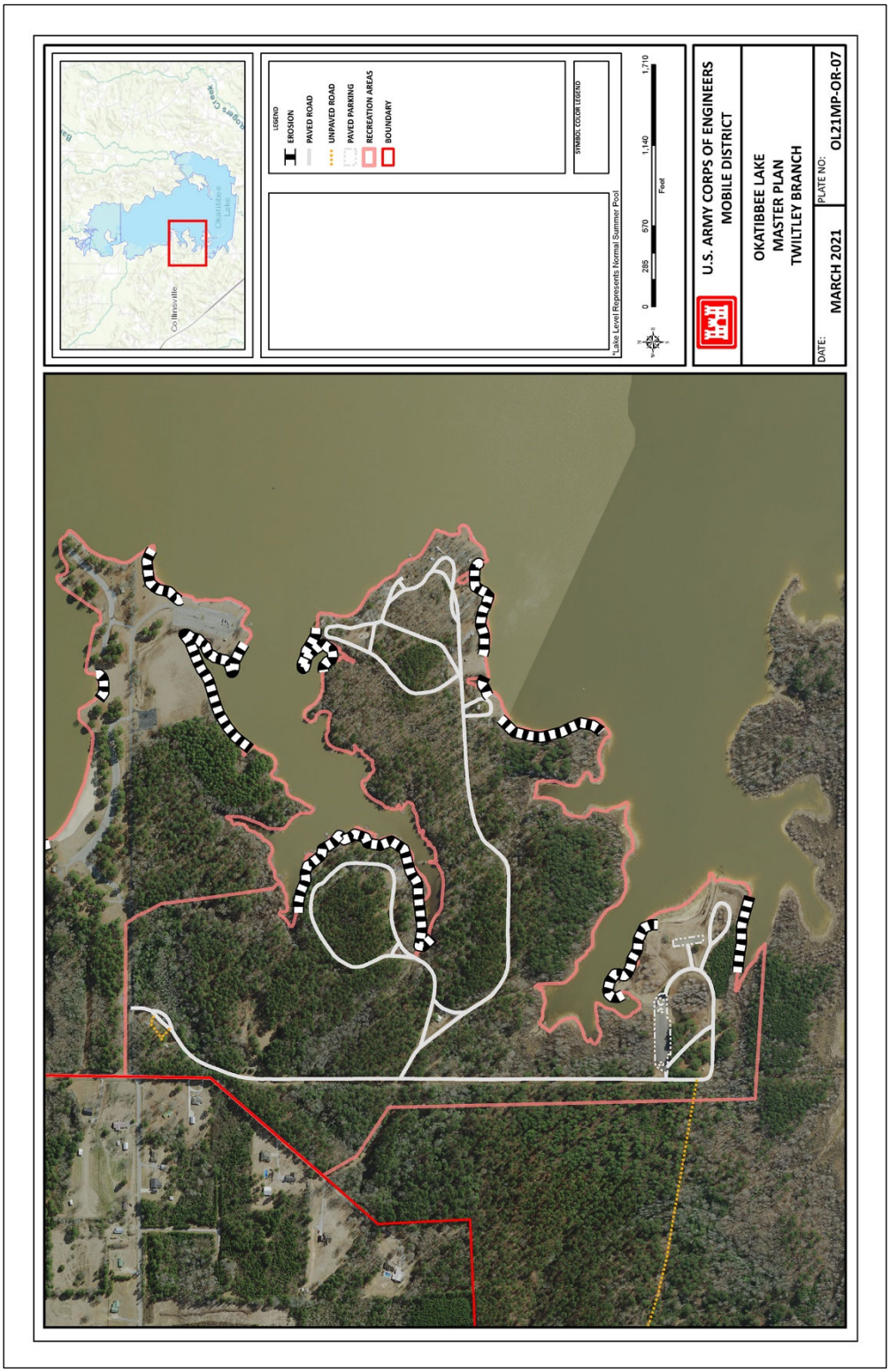
600
900
Feet


U.S. ARMY CORPS OF ENGINEERS
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MASTER PLAN
TWILTLEY BRANCH
DATE:
MARCH 2021
PLATE NO:
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PAVED ROAD
UNPAVED ROAD
PAVED PARKING
RECREATION AREAS
BOUNDARY
SYMBOL COLOR LEGEND
*Lake Level Represents Normal Summer Pool
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Feet
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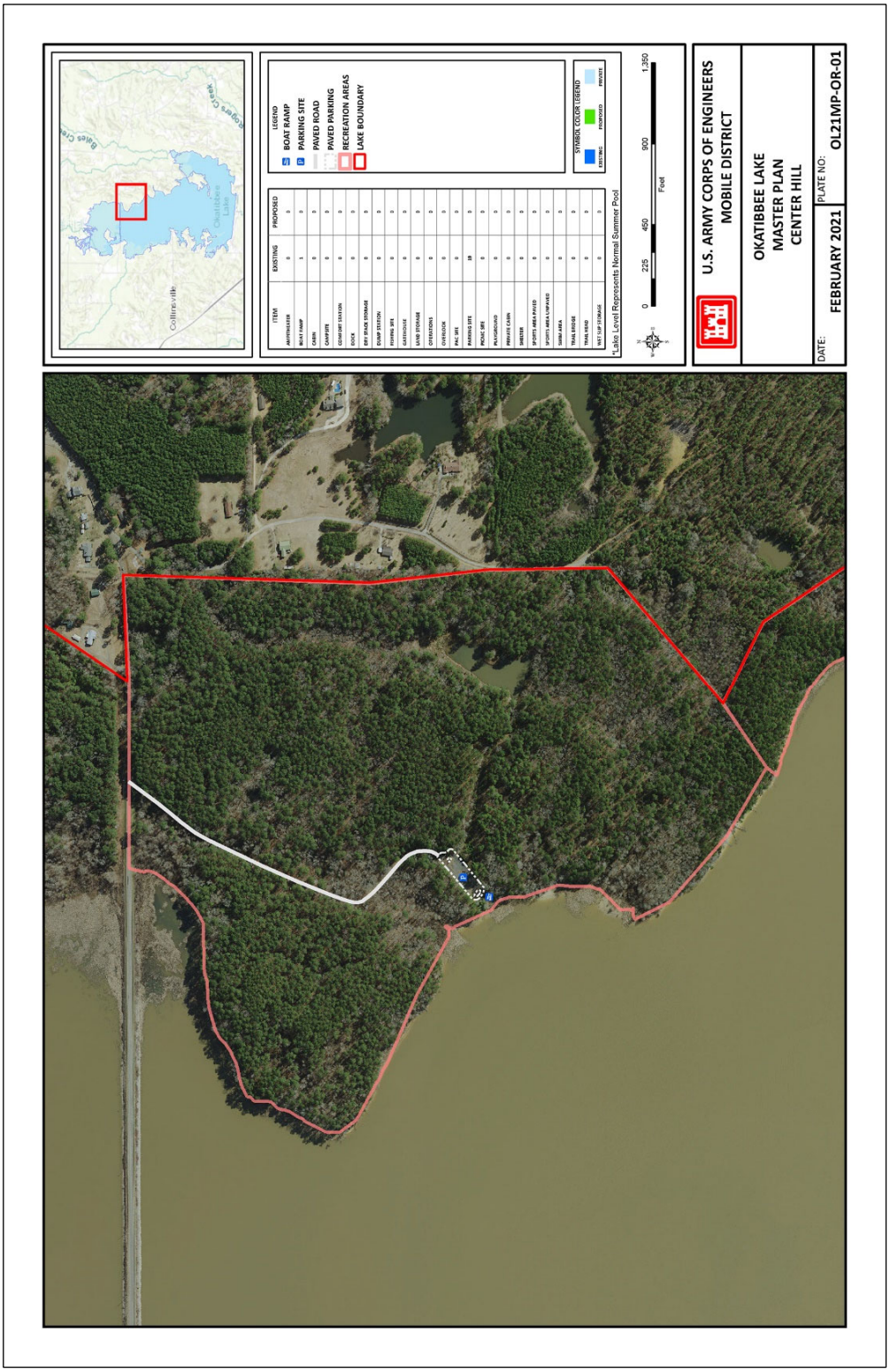
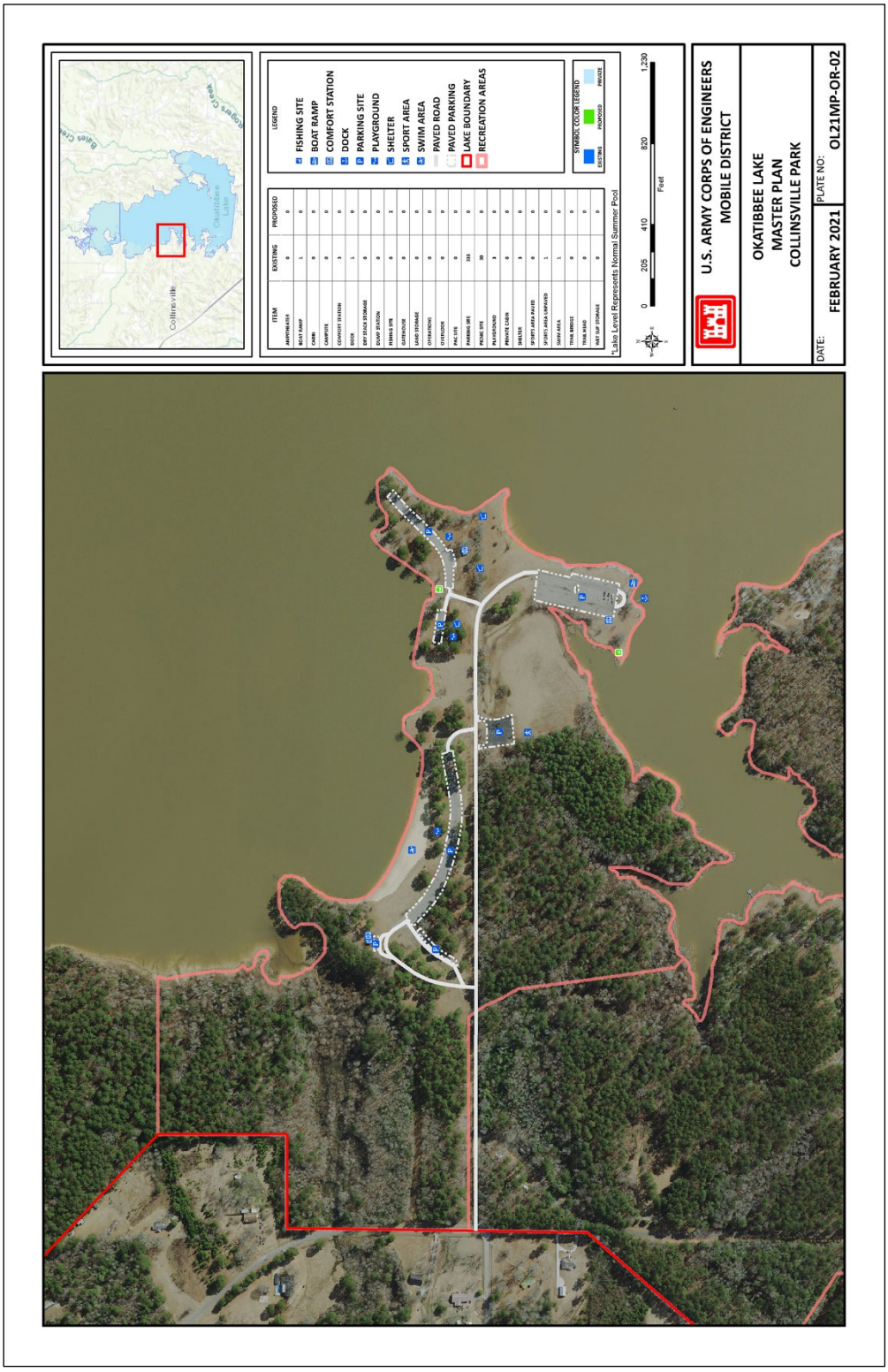
Collinsville
Cooper's Creek

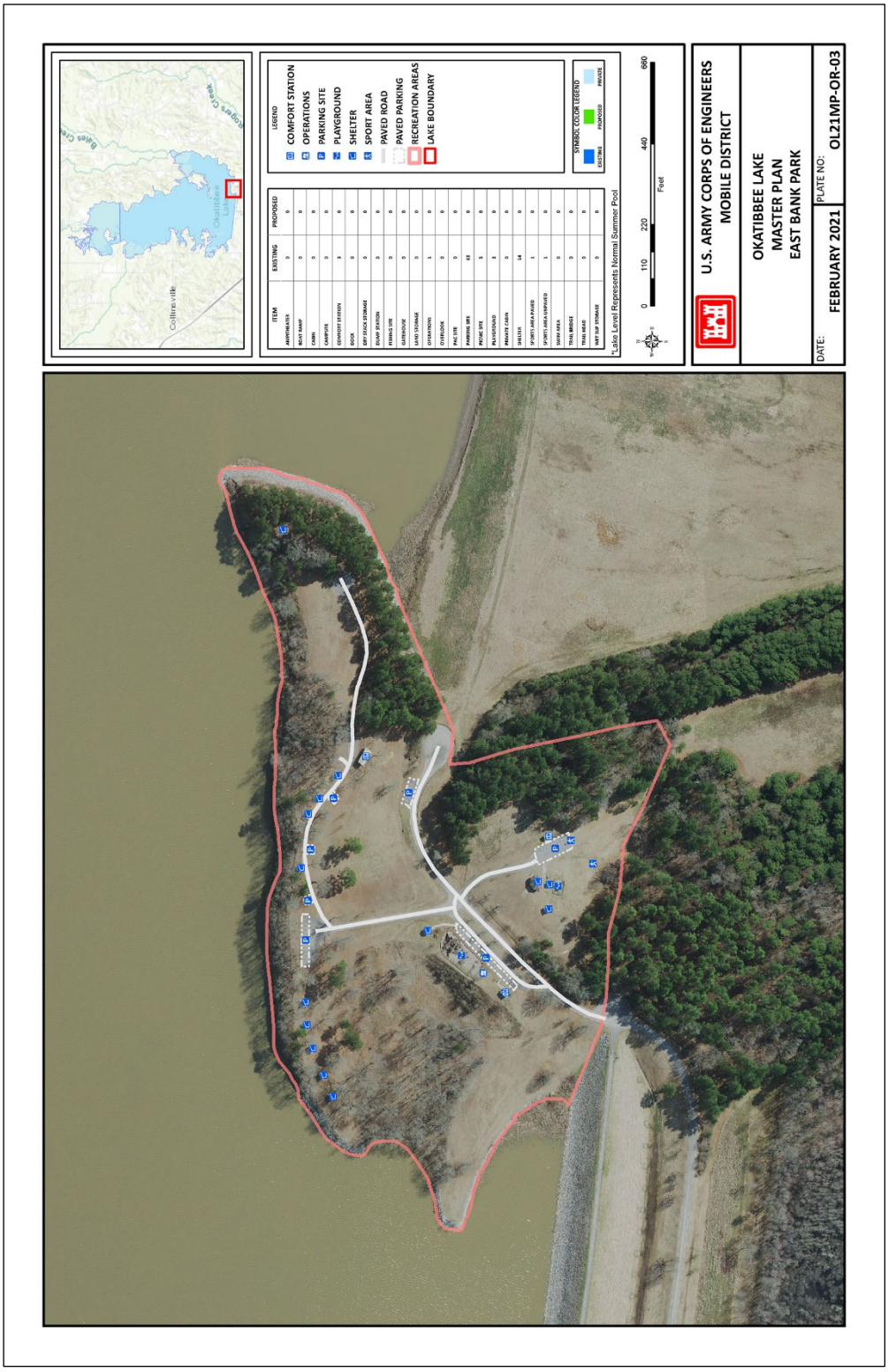
E.4 CENTER HILL—PLATE OL21MP-OR-01



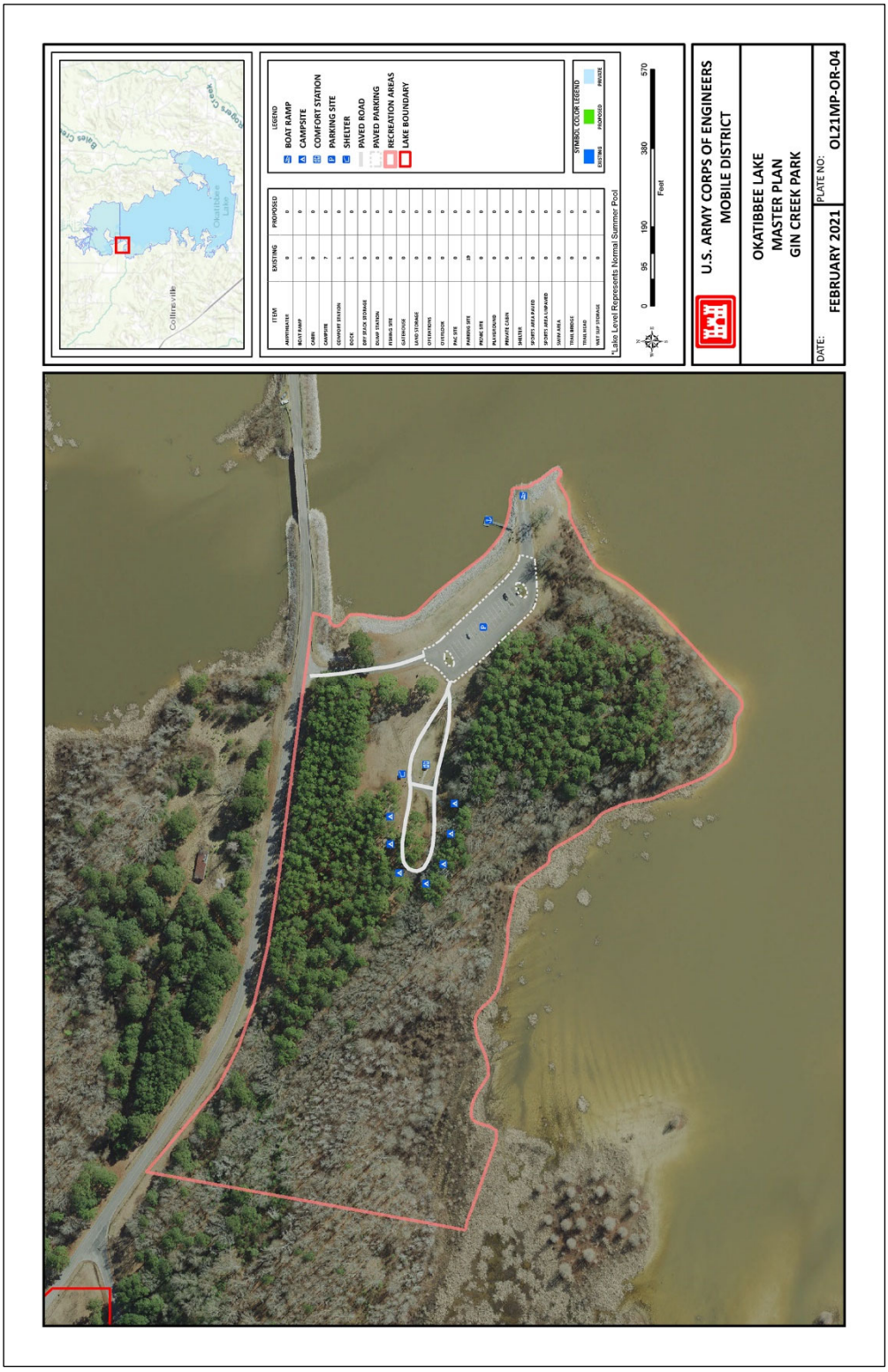
E.5 COLLINSVILLE PARK—PLATE OL21MP-OR-02



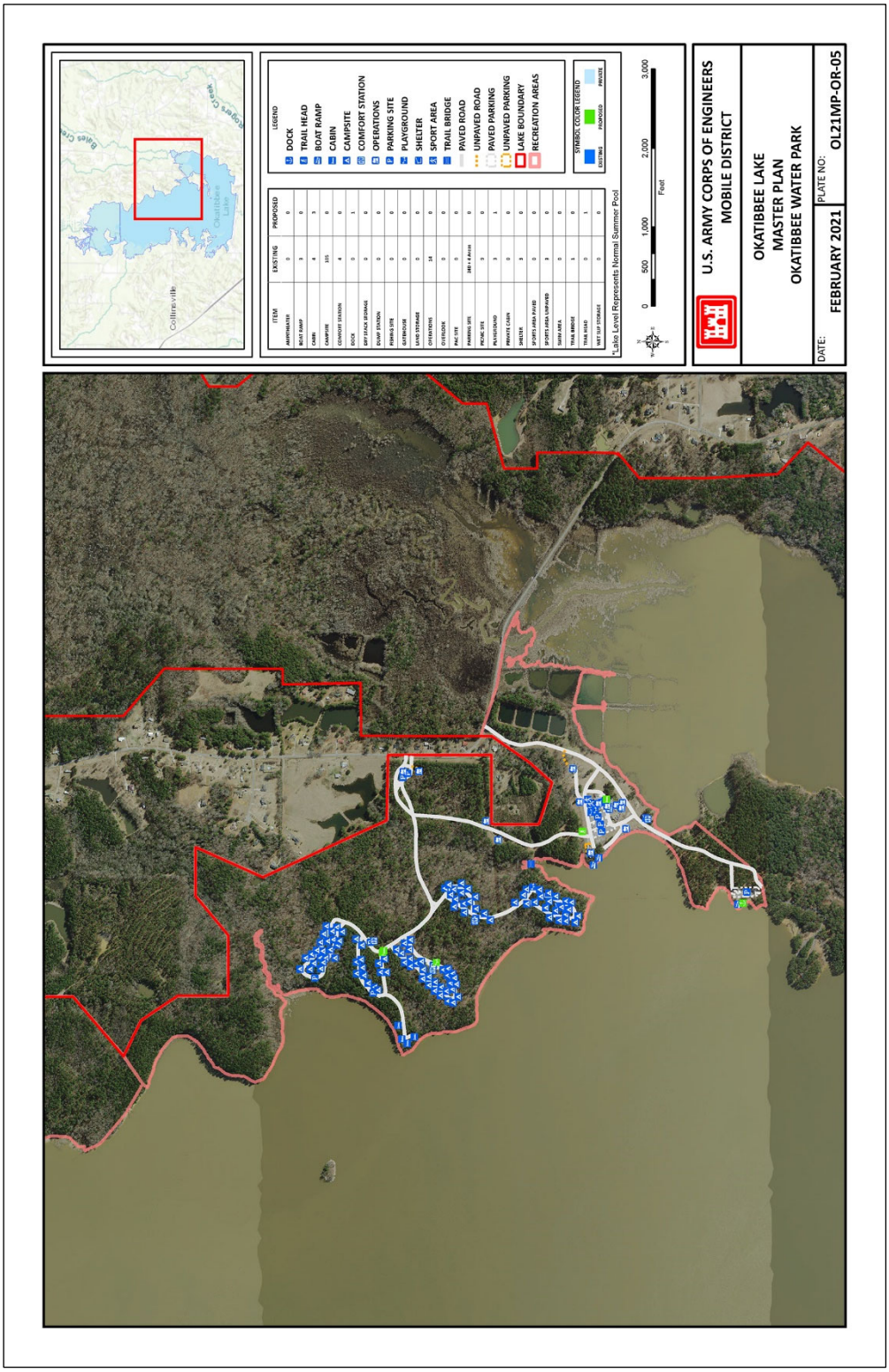
E.6 EAST BANK PARK—PLATE OL21MP-OR-03



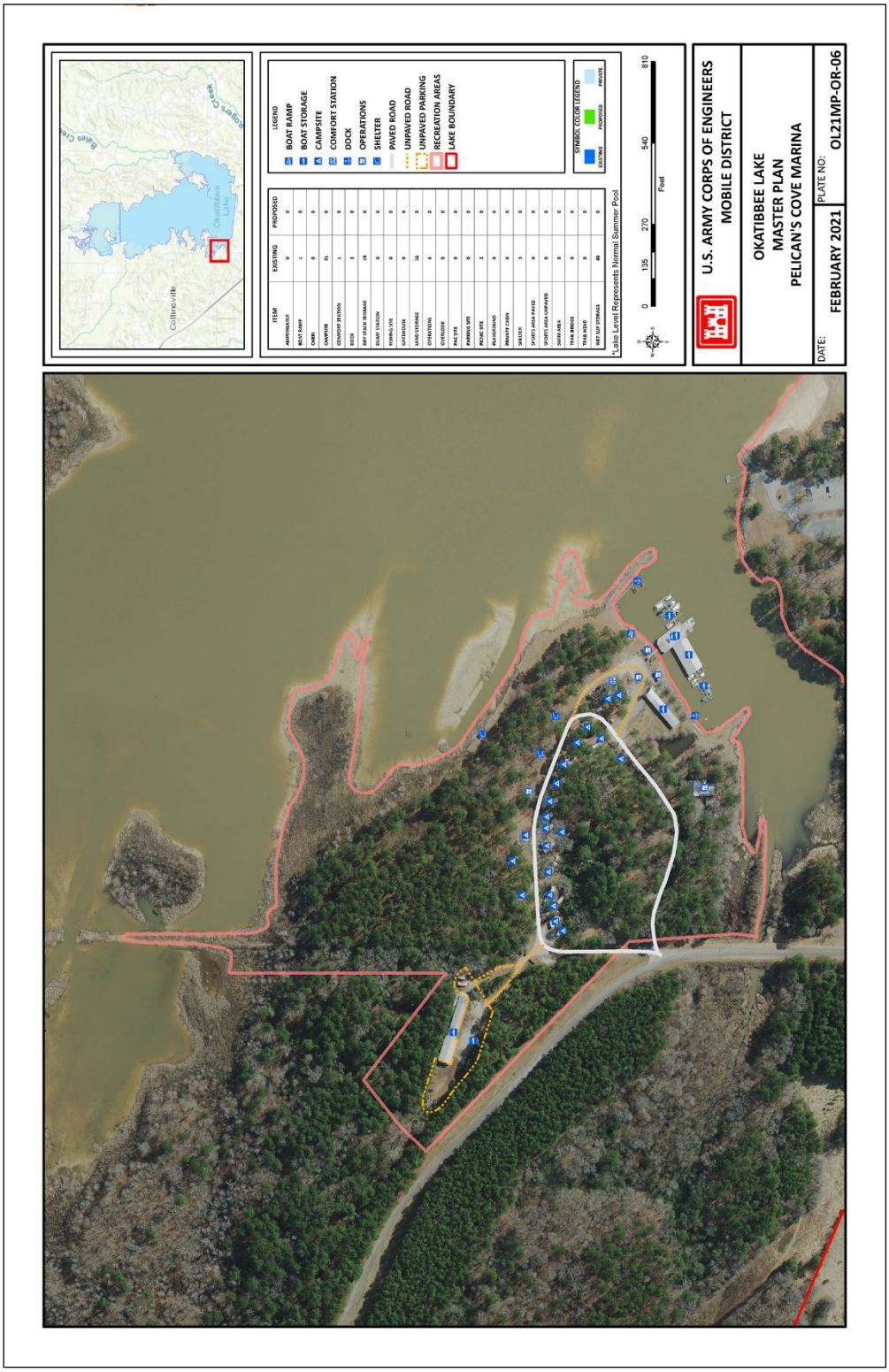
E.7 GIN CREEK PARK—PLATE OL21MP-OR-04



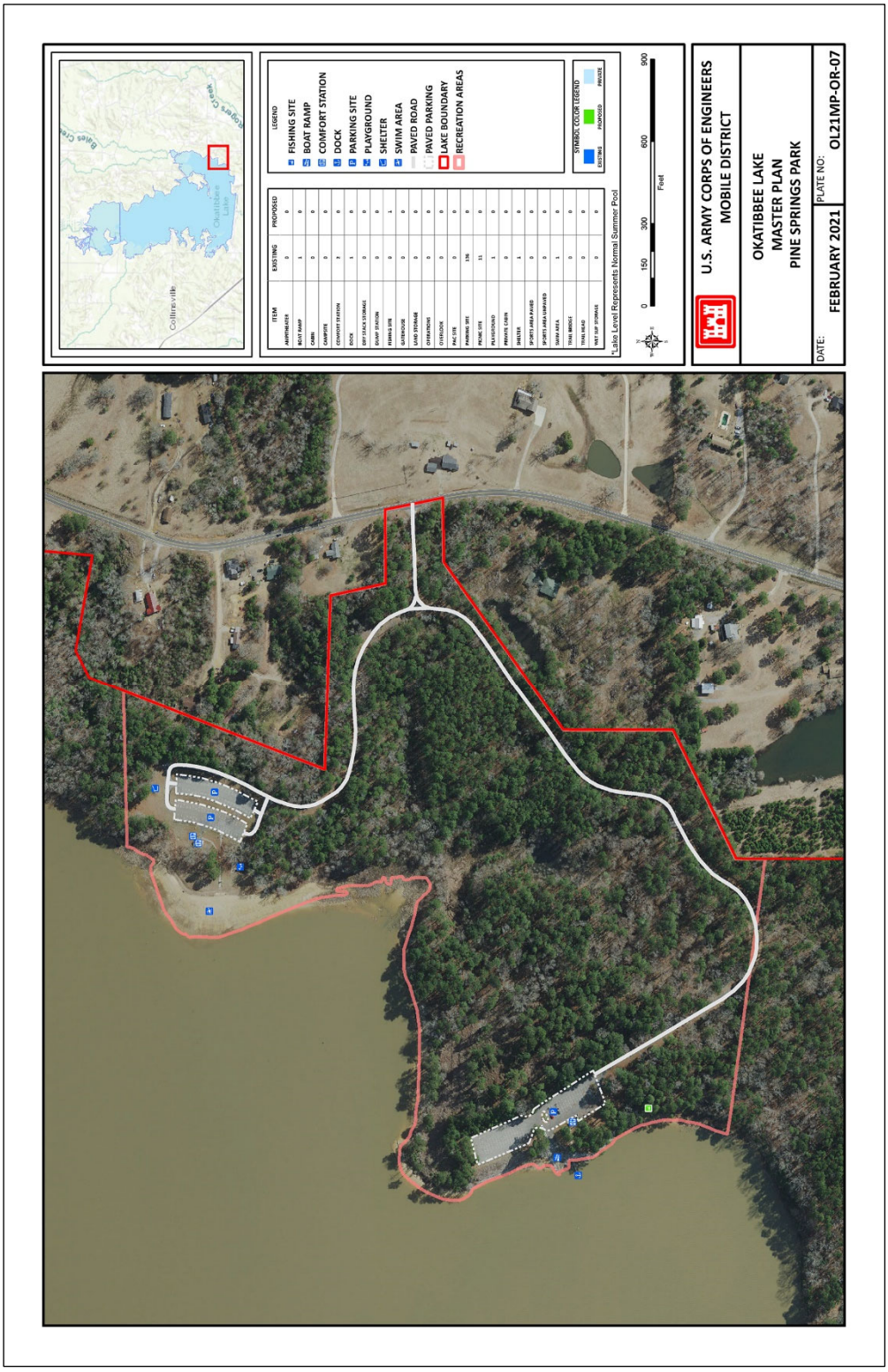
E.8 OKATIBBEE WATER PARK—PLATE OL21MP-OR-05



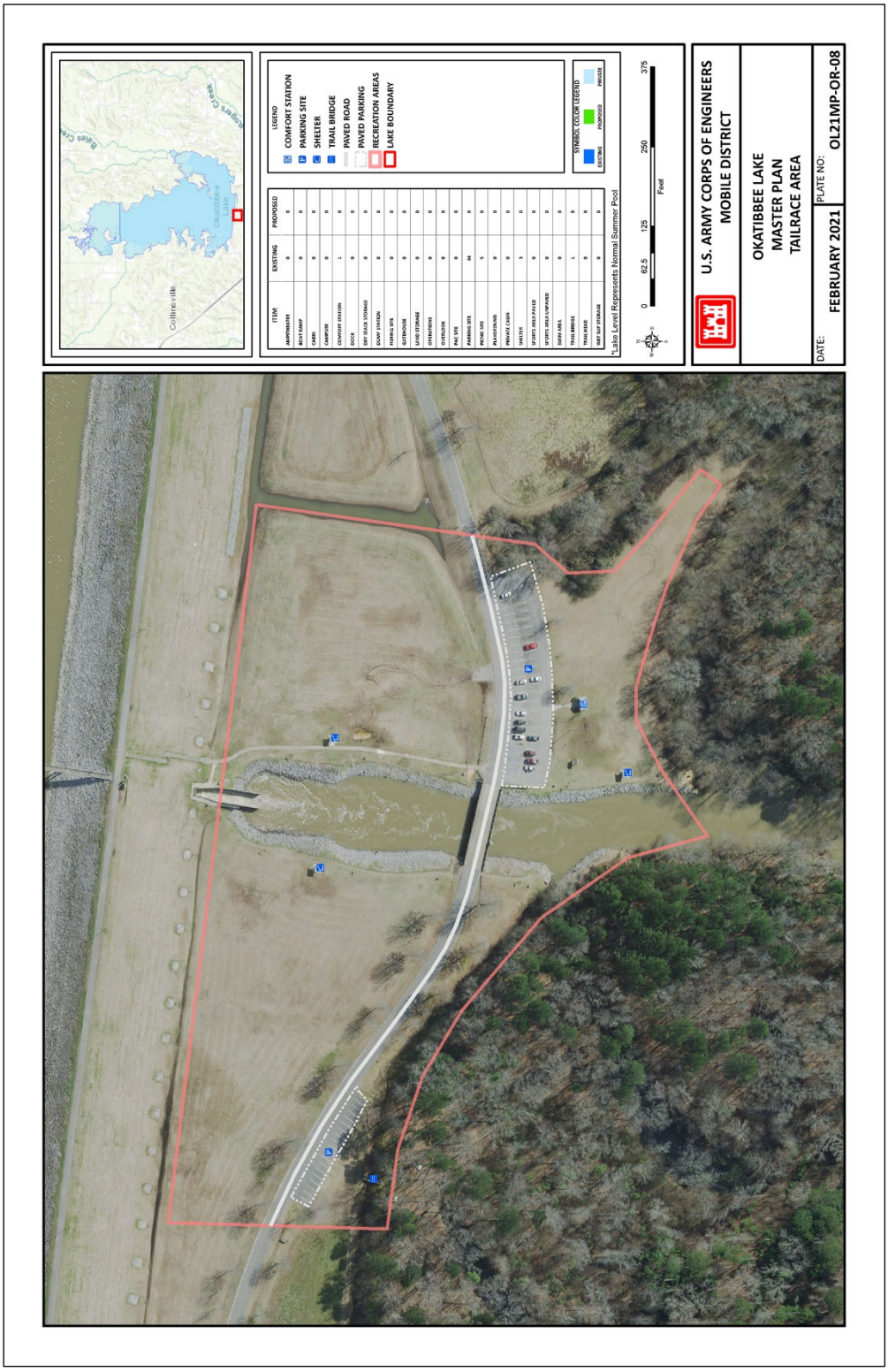
E.9 PELICAN'S COVE MARINA—PLATE OL21MP-OR-06



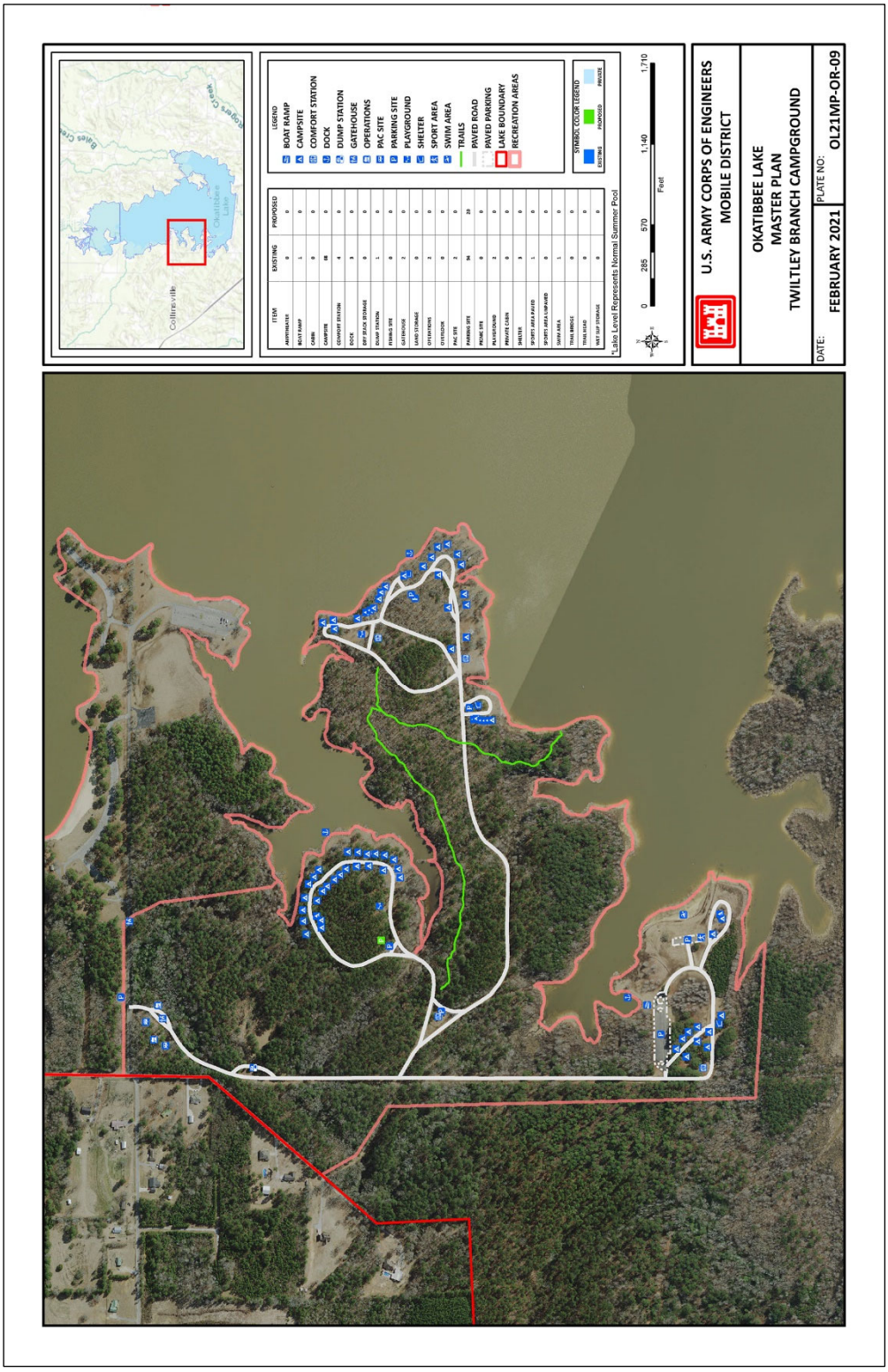
E.10 PINE SPRINGS PARK—PLATE OL21MP-OR-07



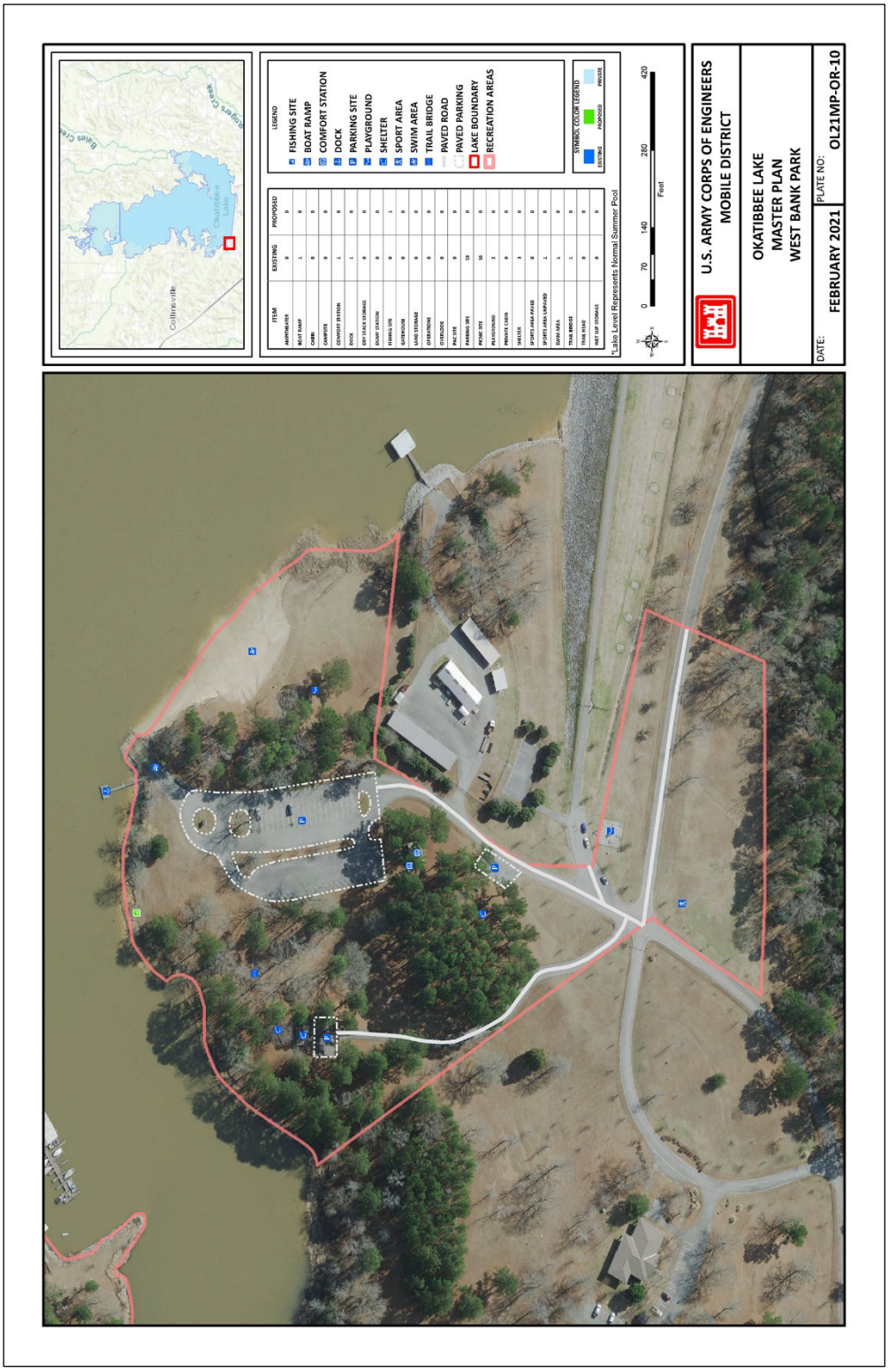
E.11 TAILRACE AREA—PLATE OL21MP-OR-08



E.12 TWILTLEY BRANCH CAMPGROUND—PLATE OL21MP-OR-09



E.13 WEST BANK PARK—PLATE OL21MP-OR-10



DRAFT PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
FOR
OKATIBBEE LAKE PROJECT MASTER PLAN

Prepared by

U.S. Army Corps of Engineers, Mobile District
Planning and Environmental Division
Environment and Resources Branch
Inland Environment Team

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Table of Contents

Figures

Tables

1.0 INTRODUCTION

Pursuant to the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR, 1500-1508), and the U.S. Army Corps of Engineers (USACE) implementing regulation (Engineer Regulation (ER) 200-2-2 *Policy and Procedures for Implementing NEPA*), Federal actions require the preparation of documentation in order to evaluate the potential impacts to health and the human environment of a proposed action. The CEQ published its Final Rule updating the regulations implementing the procedural provisions of the NEPA in the Federal Register on July 16, 2020. The new CEQ NEPA regulations went into effect September 14, 2020. However, the preparation of this programmatic Environmental Assessment (EA) began prior to the 2020 CEQ regulations; therefore, this programmatic EA is prepared under the 1978 CEQ regulations.

This programmatic EA was prepared to evaluate the impacts of a revised Master Plan, which provides a programmatic approach to the management of all the lands included within the Okatibbee Dam and Lake Project boundary. The Master Plan is the basic document guiding USACE responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop the Okatibbee Lake Project lands, waters, and associated resources. This programmatic EA utilizes a systematic, interdisciplinary approach integrating the natural and social sciences and the design arts with planning and decision making. The proposed action and its alternative are evaluated in multiple contexts for short-term and long-term effects and for adverse and beneficial effects. This assessment indicates the effects on the human environment are well known and do not involve unique or unknown risk. It is not anticipated that this is a precedent-setting action, nor does it represent a decision in principle about any future consideration.

Individual implementation plans will need to be evaluated on a case-by-case basis to ensure compliance with NEPA and related laws and regulations.

1.1 Location

Operated by the USACE, the Okatibbee Lake Project is located on the Okatibbee Creek, mainly in Lauderdale County, MS (Figure 1-1). Okatibbee Dam is located approximately 37.7 miles above its confluence with Chunky River and 7 miles northwest of Meridian, MS (USACE 1997). Okatibbee Lake's main water body extends approximately 9 miles (USACE 1997), with the lake's upper reaches of the flood pool extending into Kemper County (Figure 1-1). The project's shoreline stretches approximately 30 miles at the 344 feet (using National Geodetic Vertical Datum 1929 – NGVD) summer pool level and contains 4,100 acres of open water (USACE 1997). The total project acreage is 11,300.66 acres (Real Estate Management Information System - REMIS); the lake's total water storage capacity is 142,350 acre-feet at 359 ft NGVD pool elevation (USACE 1997).

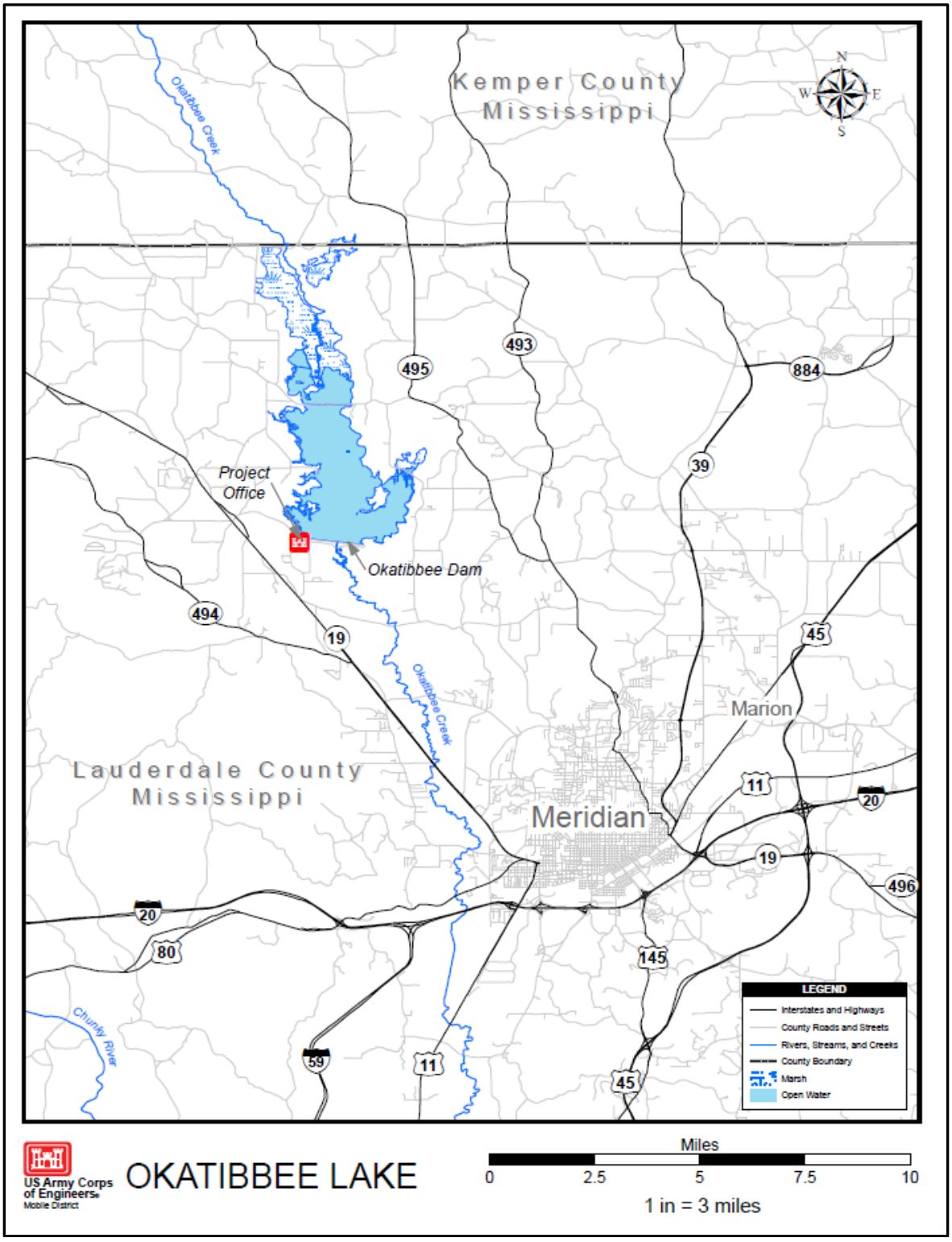

Figure 1-1: Okatibbee Lake Vicinity Map.

1.2 Proposed Action

The proposed Master Plan revision involves updating and documenting changes to land classifications to meet authorized project purposes, natural resource management objectives, and recreation management objectives. In addition to updating the land classifications, the proposed action includes documenting the development at the Okatibbee Lake Project that has occurred since 1965 and adding development features at various public use recreation parks. Section 3.2 of this EA contains information regarding each recreational site located at the Okatibbee Lake Project and the proposed development features/improvements within them. Appendix E of the revised Master Plan contains associated plate maps of each recreational area and approximate location of the existing and proposed project improvements (also referred to as development features or amenities).

1.3 Purpose and Need

The intent of the proposed Okatibbee Lake Master Plan revision (also referred to as "revised Master Plan" or "revised MP") is to document the existing improvements that have taken place since the 1965 Preliminary Master Pan (Design Memorandum No. 3A or DM No. 3A), to classify and/or reclassify project lands, which documents the current stewardship of natural resources in the project area, and to update the operation of public use recreation areas and lease sites in compliance with NEPA. The need for development at each park is based on the ability to continue to provide a justified level of service to the public (which includes updating and upgrading aging facilities and facility infrastructure in the future, as needed) to improve operational efficiencies and to better meet visitor needs, including improved accessibility, per the Architectural Barriers Act (ABA) Standards.

The revised Master Plan is based on responses to regional and local needs, as well as resource capabilities and suitability consistent with authorized project purposes and pertinent legislation and regulations. It provides a District-level policy consistent with national objectives and other State and regional goals and programs. The revised Master Plan is distinct from the project-level implementation emphasis of the Operational Management Plan (OMP). Policies in the revised Master Plan are guidelines implemented through provisions of the OMP, specific Design Memoranda, and the Annual Management Plans. The broad intent of the revised Master Plan includes: 1) determining appropriate uses and levels of development of project resources, 2) providing a framework within which the OMP and Annual Management Plans are developed and implemented, and 3) establishing a basis on which outgrants and recreational development proposals may be evaluated. The revised Master Plan is not intended to address the specifics of regional water quality, shoreline management, or water level management; these areas are covered in a project's shoreline management plan or water control manual.

The revised Master Plan provides a programmatic approach for the responsible stewardship of Okatibbee Lake Project resources to benefit present and future generations. All actions by USACE and granted leases to project lands must be consistent with the Master Plan; therefore, the Master Plan should be kept current to

provide effective guidance in USACE decision-making. While the Master Plan identifies conceptual types and levels of activities, it is not a design document; therefore, this programmatic EA will require individual evaluation for each implementation plan that is submitted to the USACE, Mobile District for approval to ensure compliance with NEPA and associated laws and regulations.

1.4 Authority

The Okatibbee Dam and Lake Project was authorized by Section 203 of The Flood Control Act of 1962 (Public Law (PL) 87-874). This act authorized a reservoir on Okatibbee Creek near Meridian, MS, for flood control and other purposes as outlined on House Document No. 549, 87th Congress, Second Session. Construction began in June 1965 and was completed in 1969. The primary purposes of the Okatibbee Dam and Lake Project include flood control, surface water supply, water quality control, water-related recreation, and fish and wildlife conservation (USACE 1992).

Section 4 of the Flood Control Act of 1944 (16 U.S.C. 460d), as amended in 1946, 1954, 1962 and 1975 authorizes the use of water resource development project lands for public recreation by specifically allowing "…to construct, maintain, and operate public parks and recreational facilities at water resource development projects under the Secretary of the Army, to permit the construction of such facilities by local interest..." Additional authorizations of development of public recreation at power, flood control and navigation projects are included in Section 209 of the Flood Control Act of 1954, Section 207 of the Flood Control Act 1962, and by the Land and Water Conservation Fund Act of 1965.

2.0 ENVIRONMENTAL SETTING WITHOUT THE PROJECT

Okatibbee Dam and Lake Project is located on Okatibbee Creek, a headwater stream of the Pascagoula River. Okatibbee Creek originates near the Neshoba-Kemper County line and drains an area of approximately 427 square miles along the western half of Lauderdale and Clarke counties in the North Central Hills Region of the Gulf Coastal Plain Physiographic Province (USACE 1974; USACE 1997). Okatibbee Creek meanders south to its junction with the Chunky River, where the Chickasawhay River is then formed, near Enterprise, MS. The confluence of the Chunky River with Leaf River forms the Pascagoula River, near Merrill, MS.

Okatibbee Lake is within the Level IV *Southern Hilly Gulf Coastal Plain* ecoregion of the Level III *Southeastern Plains* ecoregion (USEPA 2019). The ecoregions, which consist of dissected, irregular plains and gently rolling hills, extend, in part, from eastern Mississippi through Alabama and into Georgia (USEPA 2019).

2.1 Topography

The *Southern Hilly Gulf Coastal Plain* ecoregion has more rolling topography, higher elevations, and more relief than the bordering *Flatwoods/Blackland Prairie Margins* ecoregion on the northeast border. However, the terrain of this ecoregion has less hills

and is more regular than the bordering *Buhrstone/Lime Hills* ecoregion to the south (USEPA 2019).

The general area around Okatibbee Lake is a broad valley at approximately elevation 320 ft NGVD with ridges to 390 ft NGVD on the west and 420 ft NGVD on the east (USACE 1997).

2.2 Geology and Soils

The *Southern Hilly Gulf Coast Plain* ecoregion developed over diverse bands of Eocene, Oligocene, and Miocene sand, clay and marl formations and has a mix of clayey, loamy, and sandy soils (USEPA 2019). The Wilcox formation of the Eocene age underlies the site and dips gently to the southwest at 25 to 30 feet per mile. The Wilcox consists of irregularly bedded, unindurated sands and clays with strata of lignitic clay, lignite, and some calcareous concretions. At the site these beds are intermingled with alluvial material (USGS 2019; USGS 2020).

Soils in the Okatibbee Lake project area fall within two general soil groups. The floodplains of Okatibbee Creek contain the Quitman-Daleville-Jena soils group and the soils bordering the Okatibbee Lake Project and the major creek floodplains in the area are in the Sweatman-Ora-Smithdale soils group. The Quitman-Daleville-Jena soils group is described as containing deep, loamy soils that range from poorly drained to well-drained and are found on broad, nearly level terraces and floodplains. The potential for flooding in this soil group area can present severe limitations to recreational development. The Sweatman-Ora-Smithdale soils group is described as containing deep, loamy soils that range from moderately well-drained to well-drained and are found on broad, gently sloping ridges and steep side slopes. Generally, these soils present only moderate limitations to recreational development; however, steep slopes in some areas may create severe limitations (Chapter 2.3.3 of the revised Master Plan).

2.3 Climate

The climate in the Southern Plains and Gulf Coast Region is subtropical; the area experiences hot and humid summers with an average mean temperature of 80.4 degrees Fahrenheit (°F) and winters with an average mean temperature of 35.7°F (NOAA 2020c). The mean annual precipitation for the region is 36.96 inches. The climate data for the state of Mississippi and East Central Division of the state (where Okatibbee Lake is located) are comparable to the regional data; however, the mean annual precipitation for the state is recorded at 55.47 inches (NOAA 2020d) and at 53.40 inches for the East Central Division of the state (NOAA 2020b), both of which are almost 20 inches more precipitation than the annual mean precipitation for the region.

Okatibbee Lake is mostly located within Lauderdale County, MS, with the upper most portion of the project boundaries located within Kemper County, MS (Figure 1-1). During the summer months (June – August), the mean average temperature in Lauderdale County is 79.4°F with a mean maximum temperature of 90.8°F (NOAA 2020a). The mean average temperature and maximum temperature for Kemper County are 79.5°F and 90.8°F, respectively (NOAA 2020a). During the winter months

(December – February), the mean average temperature in Lauderdale County is 47.2°F with a mean minimum temperature of 35.8°F (NOAA 2020a). The mean average temperature and minimum temperature for Kemper County are 46.5°F and 35.3°F, respectively (NOAA 2020a). The mean annual precipitation for Lauderdale and Kemper counties is 55.85 inches and 54.11 inches, respectively (NOAA 2020a).

The aforementioned climate data was obtained from the National Oceanic Atmospheric Administration (NOAA), using 1901 – 2000 as the period of record. The climate data for the region, state, division, and counties are presented in Table 2-1.

Table 2-1: NOAA Climate Data for the Region, State, Division, and County for the Okatibbee Lake Project. Period of record used is 1901 – 2000.

	Southern Plains and Gulf Coast Region[1]	**State[2]**	**East Central Mississippi Division[3]**	**Lauderdale County[4]**	**Kemper County[4]**
Mean Average Temperature Summer Months (June – Aug)	80.4°F	79.8°F	79.4°F	79.4°F	79.5°F
Mean Maximum Temperature Summer Months (June – Aug)	92.1°F	91.1°F	90.9°F	90.8°F	90.8°F
Mean Average Temperature Winter Months (Dec – Feb)	47.7°F	46.8°F	45.4°F	47.2°F	46.5°F
Mean Minimum Temperature Winter Months (Dec – Feb)	35.7°F	35.9°F	34.6°F	35.8°F	35.3°F
Mean Annual Precipitation	36.96 inches	55.47 inches	53.40 inches	55.85 inches	54.11 inches

[1](NOAA 2020c), [2](NOAA 2020d), [3](NOAA 2020b), [4](NOAA 2020a)

2.4 Air Quality

Under the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) establishes primary air quality standards to protect public health. The EPA sets standards for the health of sensitive populations such as people with asthma, children, and older adults, and sets secondary standards to protect public welfare (MDEQ 2019a). This includes protecting ecosystems, including plants and animals, from harm, as well as protecting against decreased visibility and damage to crops and vegetation (MDEQ 2019a).

The EPA has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants in accordance with the CAA, which are called criteria air pollutants: carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, lead, and particulate matter (PM10

and PM25). The General Conformity Rule, published by the EPA on November 30, 1993, designates and implements Section 176(c) of the CAA for geographic areas in non-attainment for criteria pollutants and in those attainment areas subject to maintenance plans required by CAA Section 175(a) (USEPA 2021b). The CAA General Conformity Rule applies to Federal actions.

The Mississippi Department of Environmental Quality (MDEQ) Air Division is charged with controlling, preventing, and abating air pollution to achieve compliance with regulations set for by the EPA under the CAA, as well as with regulations pursuant to the Mississippi Air and Water Pollution Control Act (MDEQ 2020a). The MDEQ monitors for ground-level ozone, particulate matter, nitrogen dioxide, sulfur dioxide, and carbon monoxide. MDEQ monitored the criteria pollutants in 2019 at various monitoring sites in Mississippi (MDEQ 2019a), compared the levels to the NAAQS set by the EPA, and has determined that Mississippi is meeting all of the NAAQS (USEPA 2020a). The study area (which includes Lauderdale and Kemper counties in Mississippi) is not located in any designated nonattainment or maintenance areas for any criteria air pollutants (USEPA 2020a).

MDEQ monitors five areas within the State from which an Air Quality Index (AQI) is computed. The AQI converts measured pollutant concentrations in a community's air to a number on a scale ranging from 0 to 500. An AQI level in excess of 100 means that a pollutant is in the unhealthful range on a given day, while an AQI level below 100 means that a pollutant reading is in the satisfactory range. The nearest air quality monitoring station to Okatibbee Lake is located at Jackson, MS, which is approximately 94 miles west of the lake. The AQI data indicate that the air quality of Jackson generally occurs within a satisfactory range (USEPA 2020b).

Greenhouse gases (GHGs) are components of the atmosphere that contribute to the greenhouse effect and climate change. Some GHGs occur naturally in the atmosphere, while others result from human activities such as burning fossil fuels. Federal agencies, states, and local communities address climate change by preparing GHGs inventories and adopting policies that will result in a decrease of greenhouse gases emissions. The major GHGs are carbon dioxide and methane. GHGs emissions caused by human activities have increased by 2 percent from 1990 to 2019 in the United States; however, since 2005, the total GHGs have decreased by 12 percent (USEPA 2021a).

Sea level potentially changes as a result of climate change and USACE projects can be impacted as a consequence. In accordance with the guidance provided in USACE's ER 1100-2-8162 *Incorporating Sea Level Change in Civil Works Programs*, the first step in determining impacts is to decide whether the project would occur in a coastal, tidal, or estuarine zone or in an area bordering such zones. The Okatibbee Lake Project is not located in or adjacent to any coastal, tidal, or estuarine zones.

2.5 Fishery Resources

The original fishery habitat on Okatibbee Creek has been supplanted by the impoundment and subsequent creation of the lake. Creation of the reservoir has greatly

increased fishing opportunities for the public. Okatibbee Lake is characterized as a warm-water fishery and has become a site of numerous fishing tournaments. The most common sport fish are crappie (*Promoxis* spp.), striped bass (*Morone saxatilis*), largemouth bass (*Micropterus salmoides*), bream (*Lepomis* spp.), and catfish (*Ictalurus* spp.). Common non-game species are common carp (*Cyprinus carpio*), suckers (*Carpiodes* spp.), and miscellaneous fish including bowfin (*Amia calva*), gar (*Atractosteus spatula*), shad (*Dorosomo* spp.), and various species of shiners and minnows (Chapter 2.4.1 of the revised Master Plan).

Wildlife and fisheries are managed cooperatively with the Mississippi Department of Wildlife Fisheries and Parks (MDWFP). To aide in fishery populations, USACE conducts annual Fish Spawn Operations, which involves USACE managing the level of the lake elevations to support the fish spawn season as conditions are favorable.

2.6 Wildlife Resources

Wildlife species are sought by hunters and enjoyed by non-consumptive users on Okatibbee Lake Project lands. In the 50 years since the project was completed, management efforts undertaken by USACE and MDWFP have contributed to an overall improvement in wildlife habitat on project lands for both game and non-game species.

Game species that occur on Okatibbee Lake Project lands include whitetail deer (*Odocoileus virginianus*), eastern wild turkey (*Meleagris gallopavo silvestris*), cottontail and swamp rabbits (*Sylvilagus floridanus and S. aquaticus*), gray and fox squirrels (*Sciurus carolinensis and S. niger*), raccoon (*Procyon lotor*), bobwhite quail (*Colinus virginianus*), mourning dove (*Zenaida macroura*), and wood duck migratory waterfowl (*Aix sponsa*). Some common wildlife species include woodchuck (*Marmota monax*), red fox (*Vulpes fulva*), gray fox (*Urocyon cinereoargenteus*), eastern chipmunk (*Tamias striatus*), beaver (*Castor canadensis*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), and Eastern spotted skunk (*Spilogale putorius*). In addition to game species, a variety of common songbirds, waterfowl, reptiles, and amphibians are found in the fields, forests, and water throughout the Okatibbee Lake Project (Chapter 2.4.1 of the revised Master Plan).

Section 2.8 provides a listing of the protected mammal and bird species that may occur, or are known to occur, at the Okatibbee Lake Project.

2.7 Vegetation

Within the *Southern Hilly Gulf Coastal Plain* ecoregion, the natural vegetation of mostly oak-hickory-pine forest transitions into a more southern mixed forest (with more beech, southern magnolia, and other hardwoods and pines) and longleaf pine forest further south (USEPA 2019). At the site of Okatibbee Lake, the creek has a broad floodplain; these flats are as much as 2.5 miles wide just above the dam, which has had a considerable effect on the proportion of the vegetative cover in the bottom land and swamp species. Among the most prominent species are green brier (*Smilax smallii*), blackberry (*Rubus cuneifolius*), loblolly pine (*Pinus taeda*), sweetgum (*Liquidambar styraciflua*), water tupelo (*Nyssa biflora*), bald cypress (*Taxodium distichum*), sweetbay

(*Magnolia virginiana*), fetterbush (*Lyonia lucida*), wax myrtle (*Myrica cerifera*), gallberry (*Ilex glabra*), overcup oak (*Quercus lyrata*), water oak (Quercus nigra), and coast leucothoe (*Leucothoe axillaris*).

Two species of trees are prominent in part of the watercourse or stream-bank vegetation and bottom lands near the streams; they are river birch (*Betula nigra*) and spruce pine (*Pinus glabra*). Sycamore (*Platanus occidentalis*), a secondary species, is seen in considerable numbers along some branch streams.

On upland soils, loblolly pine has been planted in formerly cultivated fields or pastures, but with such wide spacing, individual trees have broad crowns and are branched nearly to the ground. On culled-over woods, slopes, and higher ground, shortleaf pine *(Pinus echinata)* grows in mixture with loblolly pine. Also growing on such sites are southern red oak *(Quercus falcata),* pignut hickory *(Carya glabra),* laurel oak *(Quercus laurifolia),* yaupon *(Ilex vomitoria),* American holly *(Ilex opaca),* dogwood *(Cornus florida),* devilwood *(Osmanthus americanus)*, horsesugar *(Symplocos tinctoria),* hog plum *(Prunus umbellata),* and shining sumac *(Rhus copallinum).* Some vines found bordering the stream include Carolina yellow jessamine (*Gelsemium sempervirens),* climbing hydrangea *(Decumaria barbara),* and coral honeysuckle (*Lonicera sempervirens*) (Chapter 2.4.2 of the revised Master Plan).

2.8 Invasive Species

Executive Order (EO) 13751 *Safeguarding the Nation from the impacts of Invasive Species* amends EO 13112 *Invasive Species* and outlines requirements of federal agencies whose actions may affect the status of invasive species. EO 13751 requires, in part, federal agencies to use relevant agency programs and authorities (subject to availability of appropriations, and within administrative, budgetary, and jurisdictional limits) to prevent the introduction, establishment, and spread of invasive species and to detect and respond rapidly to eradicate or control populations of such species. EO 13751 also includes requirements for federal agencies to monitor invasive species populations, to provide restoration of native species, ecosystems, and other assets that have been impacted by invasive species, to conduct research on invasive species and develop and apply technologies to prevent their introduction, and to promote public education and action on invasive species, their pathways, and ways to address them. Federal agencies are to also refrain from authorizing, funding, or implementing actions that are likely to cause or promote the introduction, establishment, or spread of invasive species, unless the agency has determined and made public its determination that the benefits of the action clearly outweigh the potential harm caused by invasive species. Federal agencies are to include all feasible measures to minimize the risk of harm from such actions.

The EO defines an invasive species as “a non-native organism whose introduction causes or is likely to cause economic or environmental harm, or harm to human, animal, or plant health.” Pathways of invasive species include human introduction via intentional and/or unintentional release into the environment usually as ornamental plantings, attachment to watercraft, etc. Pathways of invasive species also include

modes of natural dispersal mechanisms such as hydrologic connectivity, reproduction habitat, and/or via wildlife through attachment or indigestible consumption.

Invasive plant species known to occur on Okatibbee Lake Project lands are predominantly comprised of kudzu (*Pueraria montana*), Chinese privet (*Ligustrum sinese*), cogongrass (*Imperata cylindrica*), Chinese tallow tree (*Triadica sebifera*), and Japanese honeysuckle (*Lonicera japonica*).

Some common invasive aquatic species of plants which occur on surrounding flood control reservoirs or state lakes and have the potential to occur at Okatibbee Lake include water hyacinth (*Eichhornia crassipes*), hydrilla (*Hydrilla verticillata*), Eurasian watermilfoil *(Myriophyllum spicatum*), alligator weed (*Alternanthera philoxeroides*), torpedograss (*Panicum repens*), and Cuban bulrush (*Oxycaryum cubense*).

The red-imported fire ant (*Solenopsis invicta*) is the only known invasive insect known to occur on Okatibbee Lake Project lands.

2.9 Protected Species

Two federally protected species are known or believed to occur at the Okatibbee Lake Project (USFWS 2020a). The wood stork (*Mycteria americana*) was originally listed as endangered in 1984 under the Endangered Species Act of 1973 (ESA), as amended; however, the breeding population of the species was down-listed to threatened in 2014 (USFWS 2020b). The northern long-eared bat (*Myotis septentrionalis*) was listed as threatened in 2015, with a rule under Section 4(d) of the ESA in 2016 (USFWS 2019d). No critical habitat has been designated for either of these species.

The wood stork is a large (approximately 50 inches tall) wading bird that primarily utilizes freshwater habitats, such as marshes, swamps, lagoons, ponds, flooded fields, and sometimes brackish wetlands for both foraging and nesting. Nesting occurs mostly in upper parts of cypress trees, mangroves, or dead hardwoods in close proximity to a body of water.

In the final rule to reclassify the breeding population from endangered to threatened, the U.S. Fish and Wildlife Service (USFWS) noted that wood storks occur in Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina, with breeding and nesting documented in only Florida, Georgia, North Carolina and South Carolina (79 FR 37078). The USFWS Mississippi Ecological Services Field Office (ESFO) notes having records for wood stork occurrence at Okatibbee Lake (email correspondence 17 July 2019).

The northern long-eared bat is a medium-sized bat around 3 to 3.7 inches long with a wingspan of about 9 to 10 inches. During the summer, bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines. The bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found roosting in structures like

barns and sheds; however, this is a rare occurrence. Northern long-eared bats spend the winter hibernating in caves and mines, called hibernacula. They typically use various sized caves or mines with constant temperatures, high humidity, and with no air currents. Within hibernacula, surveyors find them in small crevices or cracks, often with only the nose and ears visible.

At the time of its listing, the USFWS noted the range of the northern long-eared bat included eastern and north central states. Per the USFWS Mississippi ESFO (email correspondence 17 July 2019), there are no known maternity roost trees in the state and only one known hibernaculum is in Tishomingo County (documented in 2004). Additionally, the state wildlife agency surveys all accessible caves and mines annually and has not documented the bat since 2004.

The bald eagle was removed from the endangered and threatened species list in 2007; however, it is now protected under the Bald and Golden Eagle Protection Act (BGEPA), as well as the Migratory Bird Treaty Act (MBTA) (USFWS 2017). Bald eagles require suitable wetland areas for hunting and undisturbed lakeshore or coastal regions with larges trees for roosting and nesting. Bald eagles nest in Mississippi from December through mid-May in mature trees, near fresh, open water (USFWS 2017). Bald eagles are wintering visitors to the Lake Okatibbee Project lands. The first pair of bald eagles successfully nested at the Okatibbee Lake Project in 1996. This nesting can be attributed to the interagency bald eagle hacking program conducted at the project in 1992.

In addition to the bald eagle, six other species of birds protected under the MBTA are known or believed to occur within the Okatibbee Lake Project area (USFWS 2020a). They are the Bachman's sparrow (*Aimophila aestivalis*), Kentucky warbler (*Oporornis formosus*), prairie warbler (*Dendroica discolor*), prothonotary warbler (*Protonotaria citrea*), red-headed woodpecker (*Melanerpes erythrocephalus*), and wood thrush (*Hylocichla mustelina*) (USFWS 2020a).

2.10 Cultural Resources and Historic Properties

The USACE, Mobile District has the responsibility to inventory and manage historic properties on its lands. Authorities include Section 106 and Section 110 of the National Historic Preservation Act (NHPA) of 1966, as amended, and EO 11593 *Protection and Enhancement of the Cultural Environment* and ER 1130-2-438 *Environmental Stewardship Operations and Maintenance Policies*, and other federal preservation laws and regulations.

An Integrated Cultural Resources Management Plan (ICRMP) has been implemented at Okatibbee Lake with stewardship responsibilities outlined (*Integrated Cultural Resources Management Plan for USACE, Mobile District, Okatibbee Fee-Owned Lands, Lauderdale and Kemper Counties, Mississippi 2020-2025)*. According to the Okatibbee ICRMP, previous cultural resources investigations at Okatibbee Lake from 1971 to 2019 have recorded 101 archaeological sites. Based on the Mississippi Department of Archives and History (MDAH), 80 of these archaeological sites are

ineligible for the National Register of Historic Places (NRHP), and 21 sites have an unknown or undetermined NRHP eligibility. Further investigation is needed to determine potential NRHP eligibility of these sites, especially in the event of potential adverse effects that may be affected by Master Plan projects. No historic standing structures, known cemeteries, or historic districts are on Okatibbee Lake fee-owned lands.

Per the ICRMP, of the fee-owned terrestrial land at Okatibbee Lake, 5,116.85 acres have been previously surveyed for cultural resources. However, only 539.57 acres of those surveyed meet the current MDAH Guidelines for Archaeological Investigations and Report standards. The MDAH serves as the Mississippi State Historic Preservation Officer (SHPO). This results in 5,192.12 acres that need initial or remedial cultural resources investigation. Each proposed implementation plan will be reviewed by the Mobile District Archaeologist prior to construction to ensure Section 106 compliance and to avoid adverse impacts to potential historic properties.

2.11 Water Quality

Section 303(d) of the Clean Water Act (CWA) requires states to submit a list of all waters that are not meeting their designated uses and that have Total Maximum Daily Loads (TMDLs) written for them; TMDLs establish the maximum amount of a pollutant allowed in a water body (USEPA 2020c). The EPA reviews and approves the State's listing of impaired or threatened bodies of water every two years. The MDEQ Surface Water Division establishes minimum water quality standards in coordination with the EPA and is responsible for determining if surface waters in Mississippi meet those standards established for their designated use (MDEQ 2020b).

Okatibbee Lake is used for general water-related recreation including swimming, boating and fishing. Okatibbee Creek is listed as impaired for Aquatic Life Use Support due to biological impairment, pH, and total nitrogen (MDEQ 2018a). Water quality directly affects the recreational use of both the water and its adjacent land. The state of Mississippi has assigned water use classifications "Public Water Supply" and "Recreation" for Okatibbee Lake (MDEQ 2018b). For waters with these classifications, the State standards for the bacterial quality of the water are as follows (MDEQ 2018b):

- The bacterial quality of the water is acceptable when a sanitary survey reveals no source of dangerous pollution and when the geometric mean fecal coliform (*Escherichia coli* or *E. coli*) organism density does not exceed a geometric mean of 126 per 100 ml, nor shall the samples examined during a 30-day period exceed 410 per 100 ml more than 10% of the time. There should be a minimum of five samples taken over a 30-day period with no less than 12 hours between individual samples in waters other than coastal waters.
- When the geometric mean fecal coliform organism density exceeds these levels, the bacterial water quality shall be considered acceptable only if a second detailed sanitary survey and evaluation discloses no significant public health risk in the use of the water.

Okatibbee Project personnel monitor water quality at the open beach areas during the recreation season (Memorial Day through Labor Day weekend). If the above fecal bacteria standards are exceeded, the affected beach may be closed for until the standard is met. The downstream water quality is monitored on a continuous basis.

In addition to Section 303(d) of the CWA, Sections 401, 402, and 404 of the CWA protect waters of the United States (waters of the U.S.). Waters of the U.S. are defined within the CWA and jurisdiction is addressed by the EPA and the USACE. These agencies assert jurisdiction over (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-around or have continuous flow at least seasonally, and (4) wetlands directly adjacent to such tributaries.

Section 401 protects waters from any discharge into waters resulting from an activity permitted or licensed by a federal agency and Section 402 protects waters from non-exempt construction activity, as well as municipal, industrial, and commercial facilities discharging wastewater or stormwater directly from a point source. Section 404 protects waters of the U.S. from discharge of dredged or fill material from non-exempt actions. The MDEQ is responsible for enforcing Sections 401 and 402 of the CWA. Section 404 of the CWA authorizes the Secretary of the Army, acting through the USACE Chief of Engineers, to issue permits for the discharge of dredge or fill into waters of the U.S., including wetlands.

2.12 Wetlands

Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into waters of the U.S, which includes wetlands, from non-exempt actions. Therefore, encroachment into wetlands requires a permit from the USACE, as discussed in the previous section (Section 2.11).

There are five types of major wetland habitats within the wetland classification system; they are Marine, Estuarine, Riverine, Lacustrine, and Palustrine (USFWS 2019a). The major wetland habitats found on Okatibbee Lake Project lands include Riverine, Lacustrine, and Palustrine (USFWS 2019b). A Riverine System includes wetlands contained within a channel where water is periodically or continuously flowing. A Lacustrine System includes wetlands permanently flooded lakes and reservoirs and lacking trees, shrubs, and emergent vegetation. A Palustrine System is more complex; this system includes all non-tidal wetlands dominated by trees, shrubs, and emergent mosses or lichens, or it can lack this vegetation but meet other characteristics. The Palustrine System was developed to group vegetated wetlands, referred to as marshes, swamps, bogs, etc.; however, the system also includes small, shallow ponds.

The Okatibbee Lake Project includes approximately 4,175 acres of lacustrine wetlands, approximately 4,114 acres palustrine wetlands, and approximately 28 acres riverine wetlands, according to the USFWS National Wetlands Inventory (NWI) database (USFWS 2019b; USFWS 2019c). Most of these wetlands include the actual lake itself (lacustrine) and the USACE-managed portion of the waters feeding into the project.

The remaining wetlands consist primarily of locations that may become inundated at different times through fluctuations in the lake elevation during normal operating procedures. The majority of the palustrine wetlands consist of freshwater forested/shrub wetlands (approximately 3,897 acres) (USFWS 2019b). It's important to note that verification of this wetland data from the NWI database is subject to official jurisdictional wetland determinations made by the USACE, Mobile District Regulatory Division. The data from the NWI is provided only as estimated wetland data for the Okatibbee Lake Project.

2.13 Floodplain

The natural floodplain of Okatibbee Creek was inundated by the original construction of Okatibbee Lake Dam, which was completed in 1969. Okatibbee Lake controls runoff from 154 square miles of the 427-square mile drainage area of Okatibbee Creek. (USACE 1997). The lake is currently managed within specified guide curves; a winter pool level of 339 ft NGVD and a summer pool level of 344 ft NGVD (USACE 1997). Actual water level depends on hydrologic conditions. At the normal conservation pool elevation of 344 ft NGVD, the reservoir area is 4,100 acres, whereas at the top of flood-storage pool elevation (352 ft NGVD), the reservoir area is 6,580 acres and at the spillway crest elevation (359 ft NGVD), the reservoir area is 8,800 acres (USACE 1997). At the maximum flood pool elevation of 352 ft NGVD, the reservoir has a total flood pool storage of 42,590 acre-feet between summer pool elevations 344 ft NGVD and 352 ft NGVD and has 59,490 acre-feet of total flood storage between winter pool elevations 339 ft NGVD to 352 ft NGVD (USACE 1997).

As noted in the Water Control Manual, over the years there has been a reduction in Okatibbee Creek's hydraulic capacity due to bank sloughing, bridge construction, and land use intensity (USACE 1997). The channel capacity of the creek downstream of the dam is limited; in 1997, it was noted to be limited to 1,200 cubic feet per second (cfs) (USACE 1997).

Section 1 of EO 11988 *Floodplain Management* states that "each agency is to provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for 1) acquiring, managing, and disposing of Federal lands, and facilities; 2) providing Federally undertaken, finances, or assisted construction and improvements; and 3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities."

In carrying out the aforementioned activities, agencies have a responsibility to evaluate the potential effects of any actions it may take in a floodplain. USACE's ER 1165-2-26 *Implementation of Executive Order 11988 on Flood Plain Management* applies to planning, design and construction of Civil Works projects, activities under the operation and maintenance program, and to the real estate program of the agency.

Portions of the Okatibbee Lake Project are within the 100-year floodplain (Zone A) (FEMA n.d.; FEMA 2020).

2.14 Navigation

Okatibbee Lake is not a part of a commercial navigation system. However, there is boat traffic on the lake for recreational activities such as hunting, fishing, and water skiing. Recreational boat traffic on the lake can be heavy during the recreation season and fishing tournaments.

2.15 Land Use

Land adjacent to Okatibbee Lake Project consists largely of agricultural (mostly farms and pastures) and forest areas. Residential and commercial areas are in the urban development in the city of Meridian, MS, and in the several towns and rural communities near Okatibbee Lake (Chapter 6.2.1 of the revised Master Plan).

Okatibbee Lake Project lands were acquired to a minimum contour elevation of 360 ft NGVD for necessary flood risk management, and other congressionally authorized project purposes as discussed in Section 1.3, to provide safe, efficient operation of the project. In some areas, land above elevation 360 ft NGVD were acquired to provide areas for recreation, public areas, and other functions. The Water Resources Development Act of 1986 (PL 99-662) (referred to as WRDA 1986) authorized the initial development and management of existing project lands in Mississippi and Alabama to compensate for wildlife losses associated with construction and operation of the Tennessee-Tombigbee Waterway (TTWW). The 1983 Wildlife Mitigation Feasibility Study identified a total of approximately 92,600 acres of existing project lands for management in a manner consistent with existing project purposes; lands at Okatibbee Lake project were included as part of this mitigation. While designation of these existing project lands for wildlife mitigation did not change the authorized purpose for which these lands were acquired (the land allocation), it did prioritize the primary use classification for the designated lands.

Land classifications at all USACE lake project lands include Project Operations, High Density Recreation, Mitigation, Environmentally Sensitive Areas, and Multiple Resource Management Lands. Lands at Okatibbee Lake Project are classified as Project Operations, High Density Recreation, and Multiple Resource Management Lands (which includes Wildlife Management and Future or Inactive Recreation Areas classifications). Plate maps OL21MP-OC-01 through OL21MP-OC-03 in Appendix E of the revised Master Plan presents the proposed land classifications for the lands at the Okatibbee Lake Project.

2.16 Recreation

Okatibbee Lake is used for a variety of recreational activities; some of the more popular activities include camping (at developed and primitive sites), boating, hunting, birding, fishing, hiking, swimming, picnicking, biking, sightseeing, and observing wildlife.

The Okatibbee Lake Project manages one developed campground, totaling 49 Class A campsites, 12 Class C campsites, and three group camping areas with a total of eight Class A campsites and 10 Class C campsites; one primitive campground, totaling seven campsites; six day-use areas; four public beaches; and numerous trails. There are two leased areas on the project: one marina and one water park.

The 10-public use recreation areas, which include the day-use areas and campsite areas, are:

1. Center Hill
2. Collinsville Park
3. East Bank Park
4. Gin Creek Park
5. Okatibbee Water Park
6. Pelican Cove Marina
7. Pine Springs Park
8. Tailrace Area
9. Twiltley Branch Campground
10. West Bank Park

In addition to the public use recreation areas, an area of about 6,883 acres of land and flooded woodlands is licensed to the MDWFP for wildlife management (to offset or mitigate wildlife habitat loss associated with the development of the TTWW). The area, known as Okatibbee Wildlife Management Area, is managed for game and nongame species. Consumptive uses of wildlife, including hunting, fishing, and trapping, are allowed when compatible with wildlife objectives for a given area and within Federal and State fish and wildlife management regulations.

2.17 Noise

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, the distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities that are part of everyday life, such as construction or traffic.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dBA noise metric describes steady noise levels. Very few noises are constant; therefore, a noise metric, *Day-Night Sound Level* (DNL), has been developed. The Noise Control Act of 1972 (P.L. 92-574) directs Federal agencies to comply with applicable Federal, state, and local noise control regulations. In 1974, the EPA provided information suggesting that continuous and long-term noise levels in excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals.

Noise levels at the Okatibbee Lake Project are commensurate with recreational activities, which includes human presence (hunting, hiking, swimming, playing sports, camping, etc.) and recreational boating traffic. Noise levels around the dam are elevated due to volume of water passing through dam to the tailwaters and temporary alarms at the dam are also typical to warn public users of an increase in release volumes through the dam.

2.18 Aesthetics

Several locations at the public recreation areas have mowed vistas provided for scenic enjoyment. Shade trees are prevalent throughout the project lands. Camping and day use activities are located at a reasonable distance from the water's edge so that everyone can enjoy unrestricted use of the shoreline without intruding on another's site and privacy. Additionally, there are nature trails and an overlook at the Okatibbee Lake Project, which enhance the aesthetic experience for visitors.

2.19 Hazardous, Toxic and Radiological Waste

There are no known hazardous, toxic, or radioactive waste (HTRW) sites located on government property at Okatibbee Lake. And there are no known hazardous sites located adjacent to Okatibbee Lake Project within Lauderdale County or Kemper County according to the Mississippi Emergency Management Agency (MEMA 2020).

The use of materials, such as pesticides, paints, solvents, and petroleum products, would be expected during the operation and maintenance of USACE-managed facilities, shoreline, vehicles, and equipment. The use of petroleum products would also be expected from the operation of the marina and Okatibbee Water Park, which are managed by the lessee of the park areas. The handling, use, storage, and disposal of such materials must be in accordance with label recommendations, USACE regulations (e.g., ER 200-2-3 *Environmental Compliance Polices*), and local, state, and federal regulatory guidelines.

2.20 Socioeconomics

Okatibbee Lake is in Lauderdale County, MS. A 50-mile zone of influence was used for the 2019 Capacity Study conducted for the revised Master Plan (Appendix C of the revised MP); the study updated the recreation and visitation analysis for the lake. The counties that lie entirely within the 50-mile zone of influence and those counties with more than 50% within the same 50-mile zone of influence are considered in the socioeconomics analysis conducted for this programmatic EA. In Mississippi, five counties (Clarke, Newton, Lauderdale, Kemper and Neshoba counties) are entirely within the zone of influence and the majority of six counties (Jasper, Scott, Leake, Winston, Noxubee, and Smith) are within the zone of influence. The majority of two counties (Sumter and Choctaw) in Alabama are within the zone of influence as well and are included in the socioeconomic analysis for this programmatic EA.

Table 2-2 and Table 2-3 represent estimated 2018 population demographic data for the five counties in Mississippi located entirely within the zone of influence as obtained by the U.S. Census Bureau (2018) and the six counties with majority of area located within

the zone of influence, respectively. Each table also includes population data for the state of Mississippi and the United States for reference. Table 2-4 represents estimated 2018 population demographic date for the two counties in Alabama with majority of area located within the zone of influence; the table also includes population data for the state of Alabama and the United States for reference as well.

Of the counties located entirely within the zone of influence, the data shows that Lauderdale County has the largest population base, with a population of 75,317. Neshoba County had the second largest population with 19,125 people. Newton, Clarke, and Kemper counties had populations of 21,443 people, 15,604 people, and 10,027 people, respectively (Table 2-2). Of the counties with majority of area located within the zone of influence, the three counties with the largest population are Scott County, Leake County, and Winston County, with 28,287 people, 22,763 people, and 18,165 people, respectively; each of the counties are located in Mississippi (Tables 2-3 and 2-4).

The estimated 2018 Census data also includes the racial makeup and the percentage of the population of a certain age. In 2018, the most populated county (Lauderdale County), which is where Okatibbee Lake is located, was comprised of 53.6 percent (%) white, 44.1 % black, and 2.2% Hispanic or Latino (Table 2-2). The proportion of the Lauderdale County population under 5 and under 18 years of age is 6.3% and 23.4%, respectively, while 17.4% are 65 years of age and older (Table 2-2).

The racial makeup of all other counties ranges from 25.3% to 75.0% white in Sumter County, AL and Smith County, MS, respectively; from 21.3% to 72.1% black in Neshoba County, MS, and Noxubee County, MS, respectively; and from 0.9% to 11.5% Hispanic or Latino in Kemper County, MS, and Scott County, MS, respectively (Tables 2-2 through 2-4). The age make-up of the younger members of the population ranges from 4.4% to 7.8% in Kemper County, MS, and Scott County, MS, respectively, for persons under 5 years of age (Table 2-2 through 2-4). For persons under 18 years of age, the population ranges from 18.2% to 27.8% in Kemper County, MS, and Neshoba County, MS, respectively (Tables 2-2 through 2-4). For persons age 65 and over, the population ranges from 15.1% to 23.0% in Scott County, MS, and Choctaw County, AL, respectively (Tables 2-2 through 2-4).

The median household income (in 2017 dollars) ranged from $21,663 to $41,340 in Sumter County, AL and Lauderdale County, MS, respectively (Tables 2-2 through 2-4). For comparison, the median household income for the state of Mississippi was $42,009 and for the state of Alabama was $46,472; the national median household income was $57,652.

The percentage of persons living below poverty ranged from 16.3% to 35.9% in Smith County, MS, and Sumter County, AL, respectively; Lauderdale County, MS, which has the largest population noted 20.5% of persons in poverty (Tables 2-2 through 2-4). For comparison, the persons in poverty for the state of Mississippi was 19.8% and for the

state of Alabama was 16.9%; the national percent of persons in poverty was 12.3% (Tables 2-2 through 2-4).

Table 2-2: 2018 U.S. Census Data for Counties Entirely Located within 50-mile Radius of the Okatibbee Lake Project. Statistics are provided for states and counties, and for cities and towns with a population of 5,000 or more (U.S. Census Bureau 2018).

	Clarke County	**Newton County**	**Lauderdale County***	**Kemper County***	**Neshoba County**	***Mississippi***	***United States***
Population							
Population estimates, Census July 1, 2018	15,604	21,443	75,317	10,027	29,125	*2,986,530*	*327,167,434*
Age and Sex (percent)							
Persons under 5 years	5.7	6.4	6.3	4.4	7.2	*6.2*	*6.1*
Persons under 18 years	22.0	25.2	23.4	18.2	27.8	*23.6*	*22.4*
Persons 65 years and over	20.4	16.7	17.4	20.2	15.8	*15.9*	*16.0*
Race and Hispanic Origin (percent)							
White alone	64.0	61.6	53.6	34.3	59.3	*59.1*	*76.5*
Black or African American alone	34.6	31.0	44.1	61.0	21.3	*37.8*	*13.4*
American Indian and Alaska Native alone	0.5	5.6	0.3	3.5	17.2	*0.6*	*1.3*
Asian alone	0.2	0.5	0.9	0.2	0.4	*1.1*	*5.9*
Native Hawaiian and Other Pacific Islander alone	Z**	Z**	0.1	0.0	0.1	*0.1*	*0.2*
Two or More Races	0.7	1.2	1.0	0.9	1.7	*1.3*	*2.7*
Hispanic or Latino	1.1	2.0	2.2	0.9	2.1	*3.4*	*18.3*
White alone, not Hispanic or Latino	63.1	60.3	52.1	33.9	58.1	*56.5*	*60.4*
Income and Poverty							
Median household income (in 2017 dollars), 2013-2017	$37,626	$37,643	$41,340	$27,016	$36,755	*$42,009*	*$57,652*
Per capita income in past 12 months (in 2017 dollars), 2013-2017	$20,564	$21,177	$23,339	$15,790	$19,243	*$22,500*	*$31,177*
Persons in poverty (percent)	20.8	20.4	20.5	29.8	22.4	*19.8*	*12.3*

*County Okatibbee Lake is located.
**Z notes a value greater than zero but less than half unit of measure shown.

Table 2-3: 2018 U.S. Census Data for Counties in Mississippi with Majority of Area Located within a 50-mile Radius of the Okatibbee Lake Project (U.S. Census Bureau 2018).

	Jasper County	Scott County	Leake County	Winston County	Noxubee County	Smith County	*MS*	*United States*
Population								
Population estimates, Census July 1, 2018	16,428	28,287	22,763	18,165	10,535	16,002	*2,986,530*	*327,167,434*
Age and Sex (percent)								
Persons under 5 years	6.0	7.8	6.4	5.3	7.3	5.7	*6.2*	*6.1*
Persons under 18 years	22.5	26.7	25.6	22.6	24.4	23.1	*23.6*	*22.4*
Persons 65 years and over	20.4	15.1	16.3	20.0	16.4	19.6	*15.9*	*16.0*
Race and Hispanic Origin (percent)								
White alone	45.3	58.4	49.5	50.6	26.5	75.0	*59.1*	*76.5*
Black or African American alone	53.5	38.4	42.2	46.8	72.1	23.9	*37.8*	*13.4*
American Indian and Alaska Native alone	0.3	0.7	6.6	1.2	0.3	0.2	*0.6*	*1.3*
Asian alone	0.1	0.6	0.5	0.3	0.3	0.1	*1.1*	*5.9*
Native Hawaiian and Other Pacific Islander alone	Z*	0.4	Z*	Z*	Z*	Z*	*0.1*	*0.2*
Two or More Races	0.9	1.5	1.1	0.9	0.8	0.7	*1.3*	*2.7*
Hispanic or Latino	1.4	11.5	4.7	1.3	1.4	1.7	*3.4*	*18.3*
White alone, not Hispanic or Latino	44.4	49.2	46.8	49.7	25.6	73.7	*56.5*	*60.4*
Income and Poverty								
Median household income (in 2017 dollars), 2013-2017	$35,271	$33,601	$35,578	$33,313	$30,808	$37,697	*$42,009*	*$57,652*
Per capita income in past 12 months (in 2017 dollars), 2013-2017	$20,619	$20,520	$18,825	$23,527	$16,591	$21,864	*$22,500*	*$31,177*
Persons in poverty (percent)	23.8	21.9	21.7	22.5	34.5	16.3	*19.8*	*12.3*

*Z notes a value greater than zero but less than half unit of measure shown.

Table 2-4: 2018 U.S. Census Data for Counties in Alabama with Majority of Area Located within a 50-mile Radius of the Okatibbee Lake Project (U.S. Census Bureau 2018).

	Sumter County	**Choctaw County**	***AL***	***United States***
Population				
Population estimates, Census July 1, 2018	12,691	12,841	*4,887,871*	*327,167,434*
Age and Sex (percent)				
Persons under 5 years	5.7	5.2	*6.0*	*6.1*
Persons under 18 years	19.0	20.0	*22.3*	*22.4*
Persons 65 years and over	18.0	23.0	*16.9*	*16.0*
Race and Hispanic Origin (percent)				
White alone	25.3	57.2	*69.1*	*76.5*
Black or African American alone	71.8	41.7	*26.8*	*13.4*
American Indian and Alaska Native alone	0.1	0.2	*0.7*	*1.3*
Asian alone	2.0	0.2	*1.5*	*5.9*
Native Hawaiian and Other Pacific Islander alone	Z*	0.0	*0.1*	*0.2*
Two or More Races	0.8	0.7	*1.7*	*2.7*
Hispanic or Latino	1.2	1.0	*4.4*	*18.3*
White alone, not Hispanic or Latino	24.6	56.4	*65.4*	*60.4*
Income and Poverty				
Median household income (in 2017 dollars), 2013-2017	$21,663	$32,122	*$46,472*	*$57,652*
Per capita income in past 12 months (in 2017 dollars), 2013-2017	$14,739	$20,994	*$25,746*	*$31,177*
Persons in poverty (percent)	35.9	23.7	*16.9*	*12.3*

*Z notes a value greater than zero but less than half unit of measure shown.

2.21 Public Safety

Public safety issues, such as swimming and boating accidents, drowning, and other accidents related to camping and use of recreational facilities (e.g., tripping, cuts and scrapes, and animal/insect bites, etc.) exist at the Okatibbee Lake project. Additional safety risks identified at the lake include the shoreline erosion issues at the public recreation parks, the stormwater drainage issue at Gin Creek, and personal and watercraft injury at Okatibbee Water Park's double boat ramp.

USACE has an established safety awareness and education program to reduce such accidents to the greatest extent possible.

2.22 Prime and Unique Farmland

According to the U.S. Department of Agriculture (USDA), the definition of "prime farmland" is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses (NRCS 2019a). It has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if it is treated and managed according to acceptable farming methods. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable levels of acidity or alkalinity, and content of salt or sodium, and has few or no rocks. Its soils are permeable to water and air. Prime farmland is not excessively eroded or saturated with water for long periods of time, and does not flood frequently during the growing season, or is protected from flooding.

Land that does not meet the criteria for prime or unique farmland, but still includes areas of soils that nearly meet those requirements and that economically produce high yields of crops when treated and managed according to acceptable farming methods is considered to be farmland of statewide importance (NRCS 2019a).

The Farmland Protection Policy Act requires federal and state agencies to: 1) use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland; 2) consider alternative actions, as appropriate, that could lessen adverse effects; and 3) ensure that their programs, to the extent practicable, are compatible with state and units of local government and private programs and policies to protect farmland. Approximately 1,448 acres (13%) of the lands at Okatibbee Lake are designated as prime farmland and approximately 288 acres (7.6%) are designated as farmland of statewide importance. Table 2-5 lists the types of prime and unique farmland soils and farmland of statewide importance located within the boundary of Okatibbee Lake Project lands. Information for the soil data was generated using the USDA Natural Resources Conservation Service Web Soil Survey (NRCS 2019b).

Table 2-5: Web Soil Survey Data for Prime Farmland at the Okatibbee Lake Project.

Symbol	Soil Description[1]	Approximate acres / percentage of Okatibbee Lake Project lands[1]	Soil Type Designation[2]
Aa	Annemaine fine sandy loam	3.5 acres / 0%	All areas are prime farmland
CaA	Cahaba fine sandy loam, 0 to 2 percent slopes	25.4 acres / 0.2%	All areas are prime farmland
Ka	Kirkville fine sandy loam, 0 to 2 percent slopes, occasionally flooded	287.3 acres / 2.6%	All areas are prime farmland
OrB	Ora fine sandy loam, 2 to 5 percent slopes	18.2 acres / 0.2%	All areas are prime farmland
OrC	Ora fine sandy loam, 5 to 8 percent slopes	96.9 acres / 0.9%	Farmland of statewide importance
PtA	Prentiss fine sandy loam, 0 to 2 percent slopes	48.8 acres / 0.4%	All areas are prime farmland
QaA	Quitman loam, 0 to 2 percent slopes	538.4 acres / 4.9%	All areas are prime farmland
RnC2	Ruston fine sandy loam, 5 to 8 percent slopes, eroded	0.3 acres / 0%	Farmland of statewide importance
RuB	Ruston fine sandy loam, 2 to 5 percent slopes	20.6 acres / 0.2%	All areas are prime farmland
RuC	Ruston fine sandy loam, 5 to 8 percent slopes	37.5 acres / 0.3%	All areas are prime farmland
SaA	Savannah fine sandy loam, 0 to 2 percent slopes	216.8 acres / 2.0%	All areas are prime farmland
SaB	Savannah fine sandy loam, 2 to 5 percent slopes	235.6 acres / 2.0%	All areas are prime farmland
SaC2	Savannah fine sandy loam, 5 to 8 percent slopes, moderately eroded	0.8 acres / 0%	Farmland of statewide importance
SmB2	Sweatman fine sandy loam, 2 to 5 percent slopes, moderately eroded	16.7 acres / 0.2%	All areas are prime farmland
SmC2	Sweatman fine sandy loam, 5 to 8 percent slopes, moderately eroded	190.0 acres / 1.7%	Farmland of statewide importance

[1](NRCS 2019b), [2](NRCS 2019a)

3.0 ALTERNATIVES

3.1 No Action Alternative

Inclusion of the No Action Alternative (NAA) is prescribed by the CEQ regulations and serves as the benchmark against which federal actions are evaluated. Under the NAA, the District would not approve the revised MP and would not meet current regulations or goals, per USACE policy. The 1965 Preliminary Master Plan (DM No. 3A) would continue to provide the only source of comprehensive management guidance. Information provided in the Preliminary Master Plan is outdated and no longer adequately addresses the needs of the district, other management partners, or use of

the Okatibbee Lake Project. Furthermore, the Preliminary Master Plan does not include revised land classifications in accordance with current USACE regulations.

For these reasons, this alternative was not considered as a viable alternative.

3.2 Proposed Action – Adopt the Revised Okatibbee Lake Master Plan

Under this alternative, the Master Plan revision would be approved for the Okatibbee Lake Project to provide management guidance and would replace the 1965 Preliminary Master Plan (DM No. 3A). The revised Master Plan addresses important updates due to the considerable amount of time since the Preliminary Master Plan; it addresses current recreation demand, existing and proposed amenities (also referred to as development features) within the public use areas, current environmental conditions, and pertinent laws and policies.

3.2.1 Scope and Objectives of the Master Plan Revision

The revised Master Plan provides guidelines and direction for future project development and use, which are based on authorized project purposes and USACE policies and regulations. The revised Master Plan carefully considers regional and local needs, as well as resource capabilities and suitable uses.

The proposed Master Plan revision involves two elements, they are: 1) documenting changes to land classifications to meet authorized project purposes, natural resource management objectives, and recreation management objectives (per ER 1130-2-550 *Recreation Operations and Maintenance Policies*), and 2) implementing projects identified as development needs for the public use areas. Furthermore, adoption of the Master Plan revision will also document improvements which have been made at Okatibbee Lake Project since implementation of the 1965 Preliminary Master Plan.

Land classifications are designated at USACE projects to identify the primary use for which project lands are managed (Engineer Pamphlet (EP) 1130-2-550 *Recreation Operations and Maintenance Guidance and Procedures*). Updated land classifications now include: Project Operations, High Density Recreation, Mitigation, Environmentally Sensitive Areas, and Multiple Resource Management Lands. The Multiple Resource Management Lands designation includes: Low Density Recreation, Wildlife Management, Vegetative Management, and Future or Inactive Recreation Areas. A complete description of each land classification is provided in Chapter 4 of the revised Master Plan and in EP 1130-2-550. The proposed changes to land classification for project lands at Okatibbee Lake are provided as Element 1 and are describe in detail in Section 3.2.2.

The updated public use recreation park descriptions are provided in Section 3.2.1.1 and include, in part: 1) the land classification of the park area, 2) the resource objectives for the park area, and 3) the proposed improvement projects (development features) to be added to address the development needs at each park area. The proposed improvement projects (identified as “Development Needs” in the park descriptions) are provided as Element 2 and are described in detail in Section 3.2.3. The updated park

design with proposed development feature locations can be found on the coordinating plate map for each public use recreation park (Appendix E of the revised Master Plan).

Adoption of the Master Plan revision also documents improvements which have been made at the lake since the 1965 Preliminary Master Plan. Improvements made throughout the various recreation parks, lease areas, and other sites since 1965 include: access roads, boat ramps, cabins, campsites, comfort stations, docks, dry stack storage, dump station, fishing sites, gatehouses, land storage, a marina (includes a fueling facility and store with food service), operation buildings, overlook, pac sites, parking sites, picnic sites, playgrounds, shelters, sports areas (paved and unpaved), swim areas, trail bridges, trail heads, a wash house, and wet slip storages. The plate maps for each public use recreation park (Appendix E of the revised Master Plan) also include locations of these existing features.

3.2.1.1 Descriptions of the Public Use Areas

Center Hill — Plate OL21MP-OR-01
Management Agency: USACE

Land Classification: Multiple Resource Management Lands: Future or Inactive Recreation Area

Location: The Center Hill area is located on the east bank of the lake's northern reach, south of Center Hill-Martin Road.

Description: The 142-acre Center Hill, which is mostly wooded, includes 15 developed acres. The area is currently used for USACE lake access. Its hilly-to-steep terrain rises from pool elevation 344 ft NGVD to elevation 420 ft NGVD. The area has an asphalt paved access road, a limited parking area, and a single lane boat ramp. USACE has not developed any facilities at this area since the Meridian Naval Air Station terminated its lease. This area provides contiguous space to expand recreational development without impacting the total amount of adjacent land set aside for wildlife mitigation.

Site-Specific Resource Objectives:

- Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude; this area has the potential to be used for special events, such as education, training, and/or group functions.
- Manage forest resources and other vegetation for the appropriate uses of recreation, wildlife, and fisheries.
- If the area is leased, manage the lease in accordance with all applicable contract requirements.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

***Development Needs*:**

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.

For the location of existing and proposed features at Center Hill, refer to the Plate Map OL21MP-OR-01 in Appendix E of the revised Master Plan.

Collinsville Park — Plate OL21MP-OR-02
Management Agency: USACE

Land Classification: High Density Recreation

Location: Collinsville Park is located on the west bank of Okatibbee Lake, above the dam. Access is via Hamrick Road, east of the Collinsville community.

Description: The 89-acre Collinsville Park, which is partially wooded, includes 35 developed acres. Its flat-to-rolling terrain rises from pool elevation 344 ft NGVD up to elevation 380 ft NGVD. Amenities with separate parking areas include a swimming beach, a dual boat ramp, individual picnic tables and a group picnic shelter, and a multipurpose field. Beach facilities include two waterborne restrooms, individual picnic tables with grills, and a playground. Dual boat ramp facilities include a courtesy dock and a vaulted toilet. The picnic shelter includes a playground and waterborne restrooms. While Collinsville Beach is open only during peak recreation season, the other amenities at Collinsville Park are available year-around.

Site-Specific Resource Objectives:

- Provide appropriate facilities for day-use activities and lake access for boaters.
- Enhance ABA access to appropriate locations.
- Promote consumptive resource use, such as fishing.
- Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Construct a courtesy fishing dock with access sidewalk to expand ABA accessibility.
- Stabilize shoreline erosion.
- Replenish sand at the swim beach as needed.

For the location of existing and proposed features at Collinsville Park, refer to the Plate Map OL21MP-OR-02 in Appendix E of the revised Master Plan.

East Bank Park — Plate OL21MP-OR-03
Management Agency: USACE

Land Classification: High Density Recreation

Location: East Bank Park is on the east abutment of the dam, adjacent to the emergency spillway. Access is via Okatibbee Dam Road.

Description: The 25-acre East Bank Park area is fully developed. The park area rises steeply from pool elevation 344 ft NGVD to elevation 400 ft NGVD to provide an excellent overlook vantage point. The park provides amenities for group and individual picnicking. East Bank Area facilities include an overlook gazebo, a group shelter, and multiple picnic tables, waterborne restrooms, and playgrounds. Paved and unimproved trails are used for both physical fitness by visitors and annual sponsored run events. A cross country trail is also developed in the area.

Site-Specific Resource Objectives:

- Provide for day-use opportunities.
- Accommodate and support non-consumptive resource uses, such as hiking, running, biking, bird watching, photography, nature study, and/or wildlife observation.
- Promote consumptive resource use, such as fishing and hunting.
- Enhance ABA access to appropriate locations.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Stabilize shoreline erosion.

For the location of existing and proposed features at East Bank Park, refer to the Plate Map OL21MP-OR-03 in Appendix E of the revised Master Plan.

Gin Creek Park — Plate OL21MP-OR-04
Management Agency: USACE

Land Classification: High Density Recreation

Location: Gin Creek Park is on the west bank of the lake's northern reach, south of Center Hill-Martin Road.

Description: Five acres of the 21-acre Gin Creek Park are developed. The park's topography varies from pool elevation 344 ft NGVD up to elevation 360 ft NGVD. Facilities include a dual boat ramp with parking, a courtesy dock, a vaulted toilet, a sheltered water spigot, and seven class D campsites for those fishing in the area. Although Gin Creek Park is primarily used for lake access, it is often used for fishing tournaments as well.

Site-Specific Resource Objectives:

- Maintain boating access to the reservoir while enhancing waterfront access for hiking, fishing, and sightseeing.
- Provide appropriate facilities for day-use and primitive camping activities.
- Promote consumptive resource use, such as fishing and hunting.
- Enhance ABA access to appropriate locations.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Provide shoreline stabilization and improve stormwater drainage to reduce erosion.

For the location of existing and proposed features at Gin Creek Park, refer to the Plate Map OL21MP-OR-04 in Appendix E of the Master Plan.

Okatibbee Water Park — Plate OL21MP-OR-05
Management Agency: Pat Harrison Waterway District

Land Classification: High Density Recreation

Location: Okatibbee Water Park is located midway along the lake's east bank. Access is from Pine Springs Road.

Description: Much of the 278-acre (of which 152 acres are developed) Okatibbee Water Park lies on a prominent peninsula protruding southward toward the dam. This siting allows extensive lake exposure by its surrounding shoreline. The terrain rises from pool level 344 ft NGVD to elevation 410 ft NGVD. The park area varies from flat and sparsely wooded on the lower peninsula to hilly and mostly wooded to the north. The park offers an array of recreational facilities, including picnicking for both groups and individuals, boat launches, cabins, and full-service camping.

Site-Specific Resource Objectives:

- Manage the lease in accordance with all applicable contract requirements.

***Development Needs*:**

- Be guided by the plan of record for the site in accordance with current applicable laws and regulations.

- Stabilize shoreline erosion.

For the locations of existing and proposed features at Okatibbee Water Park, refer to the Plate Map OL21MP-OR-05 in Appendix E of the revised Master Plan.

Pelican's Cove Marina — Plate OL21MP-OR-06
Management Agency: Private Lessee

Land Classification: High Density Recreation

Location: Pelican's Cove Marina is located on the southwest corner of the lake, on the left bank adjacent to West Bank Park and the Site Management Office. Access is via Okatibbee Dam Road.

Description: Previously named Cove's Nest Marina, the partially wooded 30-acre Pelican's Cove Marina includes 21 developed acres. Its flat-to-rolling terrain rises from pool elevation 344 ft NGVD to 390 ft NGVD. Amenities include a restaurant, covered and open rental slips and space for dry boat storage.

Site-Specific Resource Objectives:

- Manage the lease in accordance with all applicable contract requirements.

***Development Needs*:**

- Be guided by the plan of record for the site in accordance with current applicable laws and regulations.

- Stabilize shoreline erosion.

For the location of existing and proposed features at Pelican's Cove Marina, refer to the Plate Map OL21MP-OR-06 in Appendix E of the revised Master Plan.

Pine Springs Park — Plate OL21MP-OR-07
Management Agency: USACE

Land Classification: High Density Recreation

Location: Pine Springs Park is on the east side of the lake, just north of the dam site. Access is via Pine Springs Road.

Description: The linear 55-acre (of which, 10 acres are developed) Pine Springs Park follows the shoreline. Prominent ridges rise from pool elevation 344 ft NGVD to elevation 430 ft NGVD. The rolling-to-hilly terrain is partly wooded. Amenities with separate parking areas include a swimming beach and a dual boat ramp with a courtesy dock and a vaulted toiled. Beach facilities include waterborne restrooms, individual

picnic tables with grills, and a playground. While the beach area is operated during the peak recreation season only, the boat ramp area is open year around.

Site-Specific Resource Objectives:

- Enhance ABA access to appropriate locations.
- Maintain boating access to the reservoir while enhancing waterfront access for hiking, fishing, and sightseeing.
- Promote consumptive resource use, such as fishing and hunting.
- Monitor forest conditions to document health and identify pests.
- Control noxious weeds and other pests in a manner that avoids damage to existing facilities.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Construct a courtesy fishing dock with access sidewalk to expand ABA accessibility.
- Stabilize shoreline erosion.
- Replenish sand at the swim beach as needed.

For the location of existing and proposed features at Pine Springs Park, refer to the Plate Map OL21MP-OR-07 in Appendix E of the revised Master Plan.

Tailrace Area—Plate OL21MP-OR-08
Management Agency: USACE

Land Classification: Project Operations

Location: The Tailrace Area is on the toe south of the dam, adjacent to the emergency spillway and. Access is via Okatibbee Dam Road.

Description: The 11.5-acre Tailrace Area encompasses the south side of the dam from elevation 308 ft NGVD to elevation 320 ft NGVD. It provides amenities for group and individual picnicking, including a handicap accessible vaulted toilet, two water spigots, and picnic sites. The Tailrace Area is very popular with fishermen. Geocaching, a more modern activity, is also growing in popularity in this area.

Site-Specific Resource Objectives:

- Provide for day-use opportunities.

- Accommodate and support non-consumptive resource uses, such as hiking, running, biking, bird watching, photography, nature study, and/or wildlife observation.
- Promote consumptive resource use, such as fishing and hunting.
- Enhance ABA access to appropriate locations.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Replace the previous foot bridge to provide a more accessible fishing opportunity.
- Stabilize shoreline erosion.

For the location of existing and proposed features at the Tailrace Area, refer to the Plate Map OL21MP-OR-08 in Appendix E of the revised Master Plan.

Twiltley Branch Campground — Plate OL21MP-OR-09
Management Agency: USACE

Land Classification: High Density Recreation

Location: Twiltley Branch Campground is on the lake's west bank, north of the dam. Access is via Hamrick Road.

Description: The 190-acre (of which, 69 acres are developed) Twiltley Branch Campground is partly wooded with a rolling topography that extends from pool elevation 344 ft NGVD to 415 ft NGVD. It is a Class A Campground open year-round with exception to flooding. Campground amenities include a variety of campsite types, a washhouse, vaulted toilets, a dual boat ramp, courtesy boat docks, and a swimming beach. The Loblolly Loop and Black Gum Loop camping areas provide electricity and a water spigot at each campsite, and each area has its own playground. Black Gum Loop also has two vaulted toilets; one is near the playground and one is near Willow Camp. A third camping area, Cypress Loop, provides a water spigot at each campsite and a vaulted toilet on the western reach. Three group campsites include a picnic shelter: Willow Camp and Persimmon Camp are located in Black Gum Loop, and Cypress Group Camp is located in Cypress Loop. The boat ramp and swimming beach are located in Cypress Loop. All campsites within Twiltley Branch Campground are equipped with a grill, fire ring, and picnic table. A washhouse equipped with showers and a washer and dryer is available at a central location. In addition, a dump station for camper use is located on the main access road.

Site-Specific Resource Objectives:

- Maintain boating access to the reservoir while enhancing waterfront access for hiking, fishing, and sightseeing.
- Provide for camping opportunities.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.
- Promote consumptive resource use, such as fishing and hunting.
- Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude.
- Maintain diverse natural communities to enhance hiking and sightseeing opportunities and to control shoreline and soil erosion.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Reduce the density of vehicles at the camping sites in Loblolly and Black Gum Loops by providing additional parking in Loblolly Loop. This would help alleviate overcrowding. RVs are larger than they were when the campground was first developed.
- Provide electricity to Cypress Loop campsites.
- Provide shoreline stabilization.
- Replenish sand at the swim beach as needed.

For the location of existing and proposed features at Twiltley Branch Campground, refer to the Plate Map OL21MP-OR-09 in Appendix E of the revised Master Plan.

West Bank Park — Plate OL21MP-OR-10
Management Agency: USACE

Land Classification: High Density Recreation

Location: West Bank Park is located on the west abutment of the dam. Access is from Okatibbee Dam Road.

Description: The rolling, mostly open land of the 25-acre (of which, 19 acres are developed) West Bank Park rises from pool elevation 344 ft NGVD to 390 ft NGVD. Amenities include waterborne restrooms, a dual boat ramp, two playgrounds, a group picnic shelter, individual picnic tables, a swimming beach, a physical fitness station, and an athletic field. The dual boat ramp has a handicap-accessible loading ramp.

Site-Specific Resource Objectives:

- Provide for day-use opportunities.
- Enhance ABA access to appropriate locations.
- Maintain boating access to the reservoir while enhancing waterfront access for hiking, fishing, and sightseeing.
- Promote consumptive resource use, such as fishing.
- Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude.
- Respond to the changing recreational demands of the public and the changing conditions of the resource when planning modifications to the overall recreational program.

Development Needs:

- Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.
- Construct a courtesy fishing dock with access sidewalk to expand ABA accessibility.
- Stabilize shoreline erosion.
- Replenish sand at the swim beach as needed.

For the location of existing and proposed features at West Bank Park, refer to the Plate Map OL21MP-OR-10 in Appendix E of the revised Master Plan.

3.2.2 Element 1 - Land Classifications

The first element of the proposed action, Element 1, consists of classification and/or reclassification of project lands to reflect the most efficient and cost-effective management, development, and use of project lands as currently managed to meet authorized project purposes, natural resource management objectives, and recreation management objectives (EP 1105-2-550). Components of this element are presented in Tables 3-1 through 3-5 and delineated in the Land Classification plate maps OL21MP-OC-01 through OL21MP-OC-03 provided in Appendix E of the revised Master Plan.

A visual comparison between the 1965 Preliminary Master Plan (Plate 1) and the updated 2021 plate maps for the recreation areas and land classification for the Okatibbee Lake Project was used. Google Earth was used to estimate the acreage of unclassified lands detailed in the 1965 Preliminary Master Plan. Geographic Information System (GIS) shapefiles were used as reference for updated boundaries to estimate acreages of reclassified lands, where applicable. All acreages are estimates only, given the resources available for analysis. The following tables detail the changes from the 1965 Preliminary Master Plan (DM No. 3A) to the revised Master Plan.

Although a lot of the land classification changes are accounted for, there are some instances for which the acreages remain unreconciled. These discrepancies can, in part, be explained via 1) the summer pool elevation change from 343 ft NGVD to 344 ft NGVD in 1997 (lake level increased by 300 acres and more project lands were inundated), 2) the fact that the acres detailed at each park in the revised Master Plan are derived from the REMIS data, which has not been updated to include the lake level change, and 3) GIS shapefiles and Google Earth were used for some calculations.

Table 3-1 details the updated recreation park acreages from the 1965 Preliminary Master Plan (DM No. 3A), Table 3-2 documents justification for the proposed land classification changes (with estimated acreages), Table 3-3 lists the overall land classification changes at the project, and Table 3-4 provides the total acreages for all land classifications (as provided in the revised Master Plan).

The resource objectives for lands classified/reclassified as Project Operations, High Density Recreation, and Multiple-Resource Management Lands (MRML) (which includes Future or Inactive Recreation Areas and Wildlife Management) are described in Chapter 4 of the revised Master Plan and are presented in Table 3-5.

Table 3-1. Comparison of Recreation Park Acreages from the 1965 Preliminary Master Plan (DM No. 3A) to the Revised Master Plan for the Okatibbee Lake Project.

Park Area Name	1965 DM No. 3A[1]	Revised Master Plan [2]	Notes:
Center Hill	202	142	Size of the park area on the 1965 DM No. 3A and the 2021 plate map looks to be the same. However, there is a larger discrepancy in acreage than anticipated.
Collinsville Park	120	89	Some acreage has been removed from the park area and is now a part of Twiltley Branch Campground area. Collinsville Park also now includes previously unclassified lands.
East Bank Park	0	25	Park was not a part of the 1965 DM No. 3A. East Bank Park area now includes previously unclassified lands.
Gin Creek Park	292	21	A large area has been removed from the park area and is managed for wildlife.
Obadiah	28	0	Area was never developed as a park and is now managed for wildlife.
Okatibbee Water Park	449	278	Area used to be Community Park. Some lands have been removed from the park area and are managed for project operations and wildlife. Okatibbee Water Park also now includes previously unclassified lands. There is a larger discrepancy in acreage than anticipated.
Pelican's Cove Marina	0	30	Area has been removed from Twitty Branch and developed as a marina.
Pine Springs Park	202	55	Some acres were removed from the park area and are managed for wildlife.
Tailrace Area	0	11.5	Area around the spillway of the dam has amenities for public use when not needed for project operations.
Twiltley Branch Campground	317	190	Name of the park changed from Twitty Branch to Twiltley Branch Campground. Most lands have been removed from the park area and are managed for wildlife and project operations. Additionally, some land has been removed from the park area and leased out as a marina. Twiltley Branch Campground also now includes previously unclassified lands, as well as some land previously within Collinsville Park area.
West Bank Park	64	25	Name of the park changed from Damsite West Bank to West Bank Park. Some lands have been removed from the park area and are managed for project operations. West Bank Park also includes previously unclassified lands.

[1]Acreages are detailed in Table 2 of the 1965 DM No. 3A.
[2]Acreage in each park is detailed in Chapter 5 of the Master Plan; REMIS data is used for each park.

Table 3-2: Proposed Land Classification Changes at the Okatibbee Lake Project. All acreages are approximations to help document and quantify land classification changes at Okatibbee Lake Project.

Description[1, 2]	Justification
Approximately 25 acres of Damsite West Park classified as Public Use Recreation will be reclassified as High Density Recreation.	Renamed as West Bank Park, the area is approximately 25 acres (revised MP Section 5.10). Classification change will update category naming convention, per current USACE policy.
Approximately 39 acres of Damsite West Park classified as Public Use Recreation will be reclassified as Project Operations.	Area is now solely used for Project Office location and associated operations. Note: some of the Damsite West Bank area in the 1965 DM No. 3A looks to be unclassified; however, for the purposes of this accounting and the size of the area, those lands are considered to be a part of Damsite West Bank.
Approximately 36.7 acres of unclassified land near Damsite West Park will be classified as MRML: Wildlife Management.	Area is currently managed for wildlife.
Approximately 30 acres of Twitty Branch have been removed from the park area and developed as Pelican's Cove Marina lease area. The area classified as Public Use Recreation will be reclassified as High Density Recreation.	Approximately 30 acres that used to be included in Twitty Branch area is currently under lease as Pelican's Cove Marina (revised MP Section 5.6). Classification change will update category naming convention, per current USACE policy.
Approximately 22.5 acres of Twitty Branch have been removed from the park area and will be reclassified as Project Operations.	Area is currently used for project operations.
Approximately 227.5 acres of Twitty Branch classified as Public Use Recreation have been removed from the park area and will be reclassified as MRML: Wildlife Management.	Area is currently managed for wildlife.
Approximately 37 acres of Twitty Branch classified as Public Use Recreation will be reclassified as High Density Recreation.	Renamed as Twiltley Branch Campground; classification change will update category naming convention, per current USACE policy. Note: Twiltley Branch Campground total area is approximately 190 acres (revised MP Section 5.9).

Approximately 102 acres of unclassified land (between Twitty Branch and Collinsville) are included in Twiltley Branch Campground area and will be classified as High Density Recreation.	Area in 1695 DM No. 3A not classified is currently a part of the Twiltley Branch Campground area. Note: Twiltley Branch total area is approximately 190 acres (revised MP Section 5.9).
Approximately 51 acres of Collinsville area classified as Public Use Recreation have been removed from the park area and are included in Twiltley Branch area. The area will be reclassified as High Density Recreation.	Approximately 51 acres of Collinsville area in 1965 DM No. 3A is currently a part of the Twiltley Branch Campground area. Note: Twiltley Branch Campground total area is approximately 190 acres (revised MP Section 5.9). Classification change will update category naming convention, per current USACE policy.
Approximately 69 acres of the Collinsville area classified as Public Use Recreation will be reclassified as High Density Recreation.	Classification change will update category naming convention, per USACE policy. Note: Collinsville Park total area is approximately 89 acres (revised MP Section 5.2).
Approximately 20 acres of unclassified land (between Collinsville and Gin Creek) are included in the Collinsville Park area. The area will be classified as High Density Recreation.	Area in 1695 DM No. 3A is currently a part of the Collinsville Park area. Note: Collinsville Park total area is approximately 89 acres (revised MP Section 5.2).
Approximately 21 acres of land in Gin Creek classified as Public Use Recreation will be reclassified as High Density Recreation.	Gin Creek public use area was relocated closer to Hwy 2. Classification change will update category naming convention, per current USACE policy. Note: Gin Creek total area is approximately 21 acres (revised MP Section 5.4).
Approximately 271 acres classified as Public Use Recreation in Gin Creek have been removed from the park area and will be reclassified as MRML: Wildlife Management.	Area is currently managed for wildlife.
Approximately 142 acres at Center Hill classified as Public Use Recreation will be reclassified as MRML: Future or Inactive Recreation Area.	Center Hill area is currently inactive; area could be leased as a recreation park in the future. Note: Center Hill total area is approximately 142 acres (revised MP Section 5.1); the remaining 61 acres at Center Hill, as described in the 1965 DM No. 3A, are unaccounted for due to updated mapping technology and acreage calculations.
Approximately 240 acres of Community Park have been removed and developed as Okatibbee Water Park lease area. The land classified as Public Use Recreation will be reclassified as High Density Recreation.	Community area removed and now is a part of the Okatibbee Water Park lease area. Note the Okatibbee Water Park total area is approximately 278 acres (revised MP Section 5.5). Classification change will update

	category naming convention, per current USACE policy.
Approximately 38 acres of unclassified land (between Center Hill and Community) are included in the Okatibbee Water Park area and will be classified as High Density Recreation.	Area is currently a part of the Okatibbee Water Park area. Note: Okatibbee Water Park total area is approximately 278 acres (revised MP Section 5.5).
Approximately 85 acres at Community (south peninsula) classified as Public Use Recreation have been removed and will be reclassified as Project Operations.	Area is managed for project operations.
Approximately 53 acres at Community classified as Public Use Recreation have been removed from the park area and will be reclassified as MRML: Wildlife Management.	Approximately 53 acres that used to be included in Community are currently managed for wildlife habitat. the remaining 71 acres at Community, as described in the 1965 DM No. 3A, are unaccounted for due to updated mapping technology in mapping and acreage calculations.
Approximately 28 acres at Obadiah classified as Public Use Recreation have been removed from the park area and will be reclassified as MRML: Wildlife Management.	Obadiah park area was never developed; the area is currently managed for wildlife.
Approximately 10 acres of unclassified lands (between Obadiah and Pine Springs) will be classified as MRML: Wildlife Management.	Area is currently managed for wildlife.
Approximately 147 acres at Pine Springs classified as Public Use Recreation have been removed from the park area and will be reclassified as MRML: Wildlife Management.	Area is currently managed for wildlife. Note: Pine Springs total area is approximately 55 acres (revised MP Section 5.7).
Approximately 55 acres of land in Pine Springs classified as Public Use Recreation will be reclassified as High Density Recreation.	Classification changed to update category naming convention, per current USACE policy. Note: Pine Springs total area is approximately 55 acres (revised MP Section 5.7).
Approximately 25 acres of unclassified lands (next to the dam on east side) have been developed as East Bank Park and will be classified as High Density Recreation.	East Bank Park has been developed for public use. Note: East Bank Park total area is approximately 25 acres (revised MP Section 5.3).

Approximately 11.5 acres of unclassified lands (around the tailrace of the dam) are a part of the Tailrace Area and will be classified as Project Operations.	Area has been set aside as Tailrace Area; the area has amenities for public use when not in use for project operations. Note: Tailrace Park total area is approximately 11.5 acres (revised MP Section 5.8).
Approximately 125.4 acres of unclassified lands classified around and below the dam will be classified as Project Operations.	Area is managed for project operations.
Approximately 445 acres of unclassified lands below the dam will be classified as MRML: Wildlife Management.	Areas south of dam and east of dam are currently managed for wildlife.
All areas designated for Public Wildlife Recreation (area at the north end of lake, area west of Gin Creek Park, and area East of Center Hill) in DM No. 3A will be reclassified as MRML: Wildlife Management.	Classification changed to update category naming convention, per current USACE policy.

[1]Descriptions are comparing the areas of the project lands as detailed on Plate 1 of the 1965 Preliminary Master Plan (DM No.3A) to the 2021 Land Classification Plate Map and Recreation Plate Maps in Appendix E of the revised MP, and Section 5 of the revised MP. All acreages are estimations.
[2]Unclassified lands are determined to be those areas on the plate map that do not indicate project operations, public use and/or wildlife management in the 1965 DM No. 3A. All acreages are estimations.

Table 3-3. Overall Land Classification Changes Proposed at the Okatibbee Lake Project. This table will be used for impacts analysis. Acres are determined by the estimates provided in Table 3-2.

1965 DM No. 3A Classification[1]	Proposed Classification / Reclassification	Estimated Acres[2]
Unclassified	Project Operations	136.9
Unclassified	High Density Recreation	185
Unclassified	Multiple Resource Management Lands: Wildlife Management	491.7
Public Use Recreation	Project Operations	146.5
Public Use Recreation	High Density Recreation	528
Public Use Recreation	Multiple Resource Management Lands: Future or Inactive Recreation Areas	142
Public Use Recreation	Multiple Resource Management Lands: Wildlife Management	726.5
Public Wildlife Recreation	Multiple Resource Management Lands: Wildlife Management	4822

[1] Unclassified land is noted to be those areas in the 1965 Preliminary Master Plan Plate Map that are not classified at Recreation, Operations, or Wildlife Management
[2]All acreages are approximations to help document and quantify land classification changes at Okatibbee Lake Project. Any acreage discrepancies result from updated mapping technology and computer software since 1965 and an update to the summer pool elevation in 1997.

Table 3-4. Existing and Proposed Land Classifications and Acreage at the Okatibbee Lake Project. Proposed land classification totals are from Chapter 4 of the revised Master Plan.

Existing Land Classification[1]	Existing Acres[1]	Proposed Land Classification	Proposed Acres[2]
Project Operations	20	Project Operations	289
Public Use Recreation	1,675	High Density Recreation	717.1
Public Wildlife Recreation	4,822 (land and water)	Multiple Resource Management Lands: Wildlife Management	8,235 (5,858 land; 2,377 water)
		Multiple Resource Management Lands: Future or Inactive Recreation Areas	142
Total[3,4]	6,517	Total[3, 5]	9,383.1

[1]Source: 1965 Design Memorandum No 3A, Preliminary Master Plan for Okatibbee Reservoir Okatibbee Creek, Mississippi (Table 2).
[2]Source: USACE Mobile District Operation Division Spatial Data Branch ArcMap 10.7 used for creating plate maps for the Master Plan, detailed in Chapter 4.2 of the revised Master Plan
[3]Inconsistencies between total acreages are based on the technology used for each master plan. Proposed acreages are based on measurements using ArcMap version 10.7 for planning purposes only and not intended for real estate or survey use.
[4]Does not include unclassified lands around the lake in the 1965 DM No. 3A.
[5]Includes land and water-based acreage of Multiple Resource Management Lands - Wildlife Management

Table 3-5. Resource Objectives for Land Classifications at the Okatibbee Lake Project. Reference Chapter 4 of the revised Master Plan.

Land Classification	Resource Objectives
Project Operations	• Operate and maintain project structures in a manner that allows them to effectively fulfill project purposes, • Enhance ABA access to appropriate locations. • Reserve adequate areas for operations activities that are required to meet overall project purposes. • Maintain public use areas within USACE safety guidelines and security levels, where such use is feasible and does not interfere with other project purposes. • Control noxious weeds and other pests in a manner that avoids damage to existing desirable vegetation and sensitive areas (wetlands and streams).
High Density Recreation	• Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude. • Promote consumptive resource use, such as fishing and hunting. • Provide for camping and day-use opportunities. • Maintain boating access to the reservoir while enhancing waterfront access for hiking, fishing, and sightseeing. • Enhance ABA access to appropriate locations. • Maintain diverse natural communities to enhance hiking and sightseeing opportunities and to control shoreline and soil erosion. • Manage forest resources and other vegetation for balanced uses of recreation, wildlife, and fisheries. • Monitor forest conditions to document health and to identify pests. • Control noxious weeds and other pests in a manner that avoids damage to existing desirable vegetation and sensitive areas (wetlands and streams). • Preserve and protect existing wetlands and other sensitive or unique habitats that support threatened and endangered species along with other wildlife. • Interpret cultural resources to benefit visitors' understanding while preserving and monitoring the integrity of those resources.
Multiple Resource Management Lands	• Accommodate and support non-consumptive resource uses, such as hiking, biking, bird watching, photography, nature study, wildlife observation, and/or the pursuit of peace and solitude. • Promote consumptive resource use, such as fishing and hunting. • Employ good stewardship practices, such as the use of soil conservation measures. • Enhance natural propagation of diverse game and non-game fish and wildlife species. • Manage forest resources and other vegetation for appropriate uses of recreation, wildlife, and fisheries.

- Monitor forest conditions to document health and to identify and respond to pests.
- Control noxious weeds and other pests in a manner that avoids damage to existing desirable vegetation and sensitive areas (wetlands and streams).
- Preserve and protect existing wetlands and other sensitive or unique habitats that support threatened and endangered species along with other wildlife.
- Interpret cultural resources to benefit visitors' understanding while preserving and monitoring the integrity of those resources.
- Continue partnership with the MDWFP to facilitate an increased level of wildlife management which seeks to maximize the production of wildlife resources and wildlife uses on lands designated by WRDA 1986 as mitigation lands.

3.2.3 Element 2 - Future Development under the Master Plan Revision

The second element of the proposed action, Element 2, consists of implementing and constructing the proposed development features detailed for each public use area (see Section 3.2.1). The general description of each development feature/improvement to be implemented is provided in the following sections.

Many of these improvements are general in nature and will require development of site-specific plans prior to implementation. For most of the actions described in this programmatic EA, a categorical exclusion would be appropriate, and a Record of Environmental Considerations would be developed to demonstrate compliance with applicable environmental laws and regulations. For the larger scale actions with the potential for greater impacts, a subsequent EA may be required to evaluate the impacts. The potential impacts of the improvements are discussed in Section 4.0.

3.2.3.1 Upgrade aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility.

This development feature would improve operational efficiencies and meet future needs, including ABA accessibility. Features of this action include actions such as repairing existing facilities, adding security cameras, converting steps into ramps, and/or building ramps to existing structural facilities. No new ground disturbance would occur from implementing features such as repairs and adding security cameras to existing facilities. Building ramps to existing structures may require some ground disturbance; however, the impact would be minor, and the ramps would be built on existing disturbed areas.

3.2.3.2 Construct courtesy fishing docks with access sidewalk to expand ABA accessibility.

Courtesy fishing docks with access sidewalks to expand ABA accessibility are planned to be constructed at Collinsville Park (two docks and associated sidewalks), Pine

Springs Park (one dock and associate sidewalk), and West Bank Park (one dock and associated sidewalk). The courtesy fishing docks and sidewalks would be built to the specification of ABA accessibility standards for fishing piers and platforms. The fishing docks that extend into the water would be supported either by floats or pilings; however, it is likely that the proposed docks would be built on pilings approved for water/soil contact that are driven into the lakebed. The dimensions of the proposed fishing docks and number of pilings are not known at this time; site-specific development plans will be needed prior to construction. However, the estimated dimensions of a typical fishing dock is 12 ft wide by 20 ft long (240 sq ft or 0.006 acres).

The estimated dimensions of the associated sidewalks with ABA accessibility at each park are:

- Collinsville Park: 5.0 ft wide by 140.78 ft long (703.90 sq ft or 0.016 acres) for one dock and 5.0 ft wide by 123.86 ft long (619.30 sq ft or 0.014 acres) at the other dock
- Pine Springs Park: 5.0 ft wide by 135.08 ft long (675.40 sq ft or 0.015 acres)
- West Bank Park: 5.0 ft wide by 204.28 ft long (1,021.4 sq ft or 0.023 acres)

How the fishing piers and sidewalks will be constructed is to be determined; the fluctuation of the water creates a unique situation in deciding an effective strategy to construct these features.

The selected areas in which the proposed fishing docks and sidewalks will be constructed would accommodate the features without removal of deep-rooted vegetation. However, to implement this project, ground disturbance which may include clearing ground cover vegetation would occur. Ground disturbance from the construction the sidewalks is estimated to be 0.07 acres total; this amount includes adding a buffer (4 ft by 4 ft) of disturbance during construction activities. The amount of ground disturbance from the fishing docks is to be determined when site-specific plans are developed; however, the amount is expected to be negligible to minor since the fishing docks extend mostly into the water. The only area of disturbance would be at or near the shoreline where the end of the dock connects to the sidewalk.

For purposes of general ground disturbing impacts analysis, a total of 0.10 acres will be used for the four courtesy fishing docks and associated sidewalks. After construction, the disturbed areas outside of the permanent features would be seeded with native vegetation.

Refer to Plate Maps OL21MP-OR-02, OL21MP-OR-07, and OL21MP-OR-10 in Appendix E of the revised Master Plan for the approximate locations of the proposed courtesy fishing dock and associated sidewalk (green fishing site icons) at Collinsville Park, Pine Springs Park, and West Bank Park, respectively.

3.2.3.3 Replace a foot bridge.

Construction of the new bridge within the Tailrace Area would utilize existing footers from the previous bridge. To implement this project, no heavy equipment would be

needed, and no additional vegetation would be impacted by construction. Work to replace the foot bridge consists of adding/replacing wood planks to existing footers.

Refer to Plate Map OL21MP-OR-08 in Appendix E of the revised Master Plan for the location of the foot bridge (blue trail bridge icon) at the Tailrace Area.

3.2.3.4 Improve stormwater drainage.

Between the boat ramp and boat dock at Gin Creek, there is an earthen blow-out that is in a high impact recreation area, which is creating hazardous conditions for pedestrians. This blow-out area needs to be repaired to prevent further erosion which could potentially damage the boat dock and/or ramp. Construction of a storm drain to divert stormwater run-off will be necessary; an estimated area of about 0.01 acres could be disturbed during implementation of this project. This feature would be added to a heavily damaged and impacted area. After construction, any disturbed areas outside of the permanent feature would be seeded with native vegetation. If no action is taken in this area it will continue to be a safety issue to the public and could cause extensive damage to existing structures.

Refer to Plate Map OL21MP-OR-04 in Appendix E of the revised Master Plan for the location of boat ramp and boat dock where the stormwater drainage improvement is proposed at Gin Creek.

3.2.3.5 Replenish sand at swim beaches.

The sand on the swim beaches at Collinsville Park, Pine Springs Park, Twiltley Branch Campground, and West Bank Park needs to be replenished. To implement this feature, sand would be shipped in and placed on existing swim beach areas with a small backhoe or truck. In general, the swim beaches are about 6.0 ft deep at the end of the swim area; the beach sand would be about 6 inches deep and extended in the water about 2.0 ft. To reach these dimensions, the approximate amount of sand needed at swim beach is:

- Collinsville Park: 722.74 cubic yards (cy) over 0.90 acres
- Pine Springs Park: 447.31 cy over 0.55 acres
- Twiltley Branch Campground: 294.72 cy over 0.37 acres
- West Bank: 280.43 cy over 0.35 acres

Placement of sand will be graded into the lake using heavy equipment; therefore, some sand will be placed below the summer conservation pool. The sand would only be placed during the winter drawdown of the lake, when the lake level is about 339 ft NGVD to reduce water quality (turbidity) impacts. The amount of sand to be placed below the summer conservation pool is to be determined; site-specific plans for each project will be developed prior to implementation of each proposed swim beach renourishment project. Replenishment of the sand on the swim beaches is anticipated to be needed every year and/or every other year.

Refer to Plate Maps OL21MP-OR-02, OL21MP-OR-07, OL21MP-OR-09, and OL21MP-OR-10 in Appendix E of the revised Master Plan for the locations of the swim beaches

(blue swim area icons) at Collinsville Park, Pine Springs Park, Twiltley Branch Campground, and West Bank Park, respectively.

3.2.3.6 Provide additional parking.

To alleviate overcrowding at Loblolly and Black Gum Loops in Twiltley Branch Campground area, additional parking is proposed at Loblolly Loop. Currently, people are parking on top of tree roots. An area of approximately 3,600 sq ft (0.083 acres) in one general location at Loblolly Loop, accommodating an additional 20 spaces to reduce the density of vehicles at the camping sites, is proposed.

The selected area in which the proposed parking area is located has mature trees. To implement this project, approximately 0.09 acres (which includes a buffer during construction) of ground disturbance, which would include clearing vegetation and some tree removal, would occur. After construction, the disturbed area outside of the permanent feature would be seeded with native vegetation.

Refer to Plate Map OL21MP-OR-09 in Appendix E of the revised Master Plan for the location of the proposed parking area (green parking site icon) at Twiltley Branch Campground.

3.2.3.7 Provide electricity to campsites.

Adding electricity service to Cypress Loop campsites is proposed in the Twiltley Branch Campground area. To implement this project, the added electricity service would tie into existing utility services and a transformer will need to be added. An estimated 650 ft of electrical line would be buried, and nine electrical pedestals would be installed in compliance with the national electric code. A mini excavator and/or a trenching machine such as a ditch witch would be used to bury the cable and install the pedestals. Trench width to bury the cables is anticipated to be 12 inches. The electrical pedestals that would be used are estimated to be 12 inches long by about 10 inches wide by 60-65 inches high; they are 100 amp service that will offer 50-30-20 amp plugs. The pedestals would be buried up to 2.0 ft in soil; each one will be adjacent to the existing camp pads. Ground disturbance, which may include clearing vegetation would occur, is estimated to be 0.02 acres. It is unlikely that trees would need to be removed; however, if the health of a tree would become compromised (e.g., root damaged during placement of the lines), a tree may be removed. Mature loblolly pines are within the project area. After construction, the disturbed area (excluding permanent pedestals) would be seeded with native vegetation.

Cypress Loop is the southern-most camping area of Twiltley Branch Campground (Plate Map OL21MP-OR-09 in Appendix E of the revised Master Plan).

3.2.3.8 Okatibbee Water Park updates.

The Pat Harrison Waterway District (PHWD - lessee and operator of the Okatibbee Water Park) plans to implement the following new construction amenities/projects, as detailed in their Five-Year Development Plan for Structures & Facilities, Fiscal Years 2020-2025. Since the completion of the 2020-2025 Five-Year Development Plan

submitted, the PHWD as added a proposed lodge hall to be constructed at the park, as detailed below. Specifications of each project are to be determined; implementation of each project is subject to PHWD's funding availability.

Add two (2) cabins at the motel site after restoration. PWHD plans to add two cabins/bungalows in the vicinity of 32°30'16" N 88°47'09" W (World Geodetic System 1984 (WGS84) datum). This section of the park is part of the campground itself and would not require any major earth or tree removal. All utilities are run underground; road and campsites are asphalt, so there should be a low impact to the area.

Refer to Plate Map OL21MP-OR-05 in Appendix E of the revised Master Plan for the location of the proposed cabins (green cabin icons in northern area of park) at Okatibbee Water Park.

Build a new floating pier for guests. PHWD is in desperate need of a floating pier for guests to tie their boats to; the floating pier would be to protect the boats from being damaged by hitting riprap along the shoreline. The proposed location (32°29'31" N 88°47'03" (WGS84 datum)) is adjacent to the park's double boat ramp. Adding the pier would eliminate the threat of personal injury to park visitors and to their personal watercraft due to the amount of debris and the slippery conditions that are in and around the area. There would be a minimal amount of disturbance that would take place installing the pier and fastening it to the bank. However, there are a couple of pine trees that do need to be removed for the safety of PHWD visitors and for the safety of the people on the lake.

Refer to Plate Map OL21MP-OR-05 in Appendix E of the revised Master Plan for the location of the proposed floating pier (green dock icon) at Okatibbee Water Park.

Add additional multi-use trail. The biggest asset PHWD has is nature in its raw and original form. To highlight this, PHWD plans to install a trail. The design of the trial would have a very low impact to nature, a small footprint and follow areas where PHWD has existing water lines through the woods. There would be some areas that would need grubbing, but it would only consist of saplings and brush. The proposed trail would be within the vicinity of 88°29'51" N 88°46'54" W (WGS84 datum). The length and width of the trail are to be determined.

Refer to Plate Map OL21MP-OR-05 in Appendix E of the revised Master Plan for the location of the proposed multi-use trail (green trail head icon) at Okatibbee Water Park.

Add playground equipment and other kid-friendly attractions. PHWD needs an area where children can safely play during all seasons. The proposed location is at 32°30'09" N 88°47'10" W (WGS84 datum); this is a neutral area that sits in the middle of the park and is easily accessible. The location is an old site where there was access to a beach and a bathhouse that has since been torn down and removed. The area consists of an asphalt road that leads to the proposed site with utilities that run underground and there would be minimal impact to the location.

Refer to Plate Map OL21MP-OR-05 in Appendix E of the revised Master Plan for the location of the proposed playground (green playground icon) at Okatibbee Water Park.

PHWD also plans to install a splash pad and/or bounce pad that would be located at 32°29'46" N 88°46'51" W (WGS datum). To implement this proposed project, excavation would be required; approximately 4.0 ft of fill from original grade would be needed. No trees would need to be removed. The area has underground utilities adjacent to the site. This site is proposed to be located near the proposed lodge location (described in the following paragraph).

Add a lodge hall. PHWD plans to build a lodge hall at the "old motel" site (32°29'48" N 88°46'50" W (WGS84 datum)) which has been demolished and removed. This site is an area that has approximately 5 ft of fill dirt on top of the natural grade and consists of asphalt, concrete and utilities that run under ground and overhead.

Refer to Plate Map OL21MP-OR-05 in Appendix E of the revised Master Plan for the location of the proposed lodge hall (noted by a green cabin icon).

3.2.3.9 Shoreline Erosion Protection Projects.

The shoreline at Okatibbee Lake has experienced significant erosion due to wave action from recreational boating and lake level changes. Approximately 18,180 feet of shoreline have been eroded within various public recreation areas for which bank stabilization is proposed.

As funding and opportunity allow, the shoreline protection measures (also referred to as bank stabilization projects) would utilize approved methods and slope requirements for erosion protection and bank stabilization. Where the bank is eroding at the public use areas, sloping may be necessary; grading work would be accomplished using an excavator. All materials needed for the stabilization projects would be delivered to the area via tractor trailer; materials would be stored at sites of existing disturbed areas (like parking lots or cleared areas).

The following provides additional information on the location and amount of shoreline erosion at each public use area. The erosion plate maps for the public use areas are provided in Appendix E of the revised Master Plan. Site-specific plans will need to be developed prior to implementation.

Collinsville Park

There are four areas within Collinsville Park that need bank stabilization. Two areas are located on the northern part of the park, and the other two areas are on the southern part of the park. A total of approximately 3,100 linear feet of new riprap is needed to stabilize the shoreline of those areas. While most of the erosion at the park is occurring along previously disturbed areas (near paved parking areas, etc.), the northwestern most area and part of the southwestern most area of shoreline erosion are along undeveloped areas of the park.

East Bank Park

There is one area on the west side of East Bank Park that needs bank stabilization. A total of approximately 230 linear feet of new riprap is needed to stabilize the shoreline of the area. The erosion at the park is occurring along an undeveloped area, between two areas where the shoreline has been previously stabilized with riprap.

Gin Creek Park

There is one area on the southern end of Gin Creek Park area that needs bank stabilization. A total of approximately 1,100 linear feet of new riprap is needed. Most of the erosion at the park is occurring along an undeveloped area of the park.

Okatibbee Water Park

There is one area of the Okatibbee Water Park that needs bank stabilization. A total of approximately 5,300 linear feet of new riprap is needed. The erosion at the park area is occurring along mostly undeveloped areas where there are mature trees near the shoreline.

Pelican's Cove Marina

There is one area on the natural breakwater near the marina that needs bank stabilization. A total of approximately 450 linear feet of new riprap is needed. The area is on the cove side of the breakwater and is along previously disturbed shoreline that is sparsely vegetated.

Pine Springs Park

There are four areas that need bank stabilization within Pine Springs Park. Two areas are on the northern end of the park; the other two areas are on the southern end of the park. A total of approximately 1,500 linear feet of new riprap is needed. Most of the areas of erosion at the park occur along an undeveloped area where mature trees are near the shoreline.

Tailrace Area

There is an area within the Tailrace Area that needs bank stabilization. A total of approximately 250 linear feet of new riprap is needed. The area of the tailrace was previously disturbed during the construction of the project.

Twiltley Branch Campground

There are seven areas within Twiltley Branch Campground that need bank stabilization. A total of approximately 5,300 linear feet of new riprap is needed. A couple of areas of erosion consist of undisturbed areas with mature trees near the shoreline; the remaining areas of shoreline erosion are along more previously disturbed areas of the park and/or where large mature trees are not near the shoreline.

West Bank Park

There are two areas within West Bank Park that need bank stabilization. One area is located on the north side, facing the Pelican Cove's Marina, and the other area is

located on the eastern side, near the existing courtesy dock. A total of approximately 950 linear feet of new riprap is needed. A portion of erosion on the northern side is along an undisturbed area of the park; the other areas of erosion are along more previously disturbed areas of the park

4.0 POTENTIAL ENVIRONMENT IMPACTS

As stated in Section 3.2, the proposed action consists of two elements, they are: 1) documenting changes to land classifications to meet authorized project purposes, natural resource management objectives, and recreation management objectives (per ER 1130-2-550), and 2) incorporating projects identified as development need for the public use areas. And as such, the impact analysis for each element within the proposed action will be referred to as Element 1 and Element 2, respectively, and/or as "the proposed action," collectively.

The proposed development features are general in nature at this time and will require development of site-specific plans prior to implementation. Since specific details of each project have not been planned to date, when the details of each project become available, the NEPA compliance will be updated, as applicable, and the action will be coordinated with appropriate resource agencies prior to implementation

During construction, existing disturbed areas, such as existing parking lots, would be used for staging areas; therefore, there would be no impact to the environmental resources from this part of construction. Should new staging areas be required, it is anticipated the areas would be minimal in size and have insignificant impacts on environmental resources; however, locations would be reviewed for potential need for resource agency coordination prior to the beginning of construction.

The potential environmental impacts for both alternatives (the NAA and the Proposed Action) are described in the following subsections. Given the specific details of each development project are unknown, general environmental impacts are provided.

4.1 Topography

4.1.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to topography at the Okatibbee Lake Project. While there would be no project-related construction activities associated with Element 2 that would affect the topography at public use areas (identified in Section 3.2.3), there could be consequences to the topography if some of the development features designed to prevent further degradation of the land are not implemented. In the absence of implementing swim beach renourishment, stormwater drainage repair, and shoreline protection measures associated with Element 2 of the proposed action, the erosional processes along the shoreline at the respective public recreation areas would be expected to continue at the

current rate of erosion, which could have minor impacts the topography at those recreation parks over time.

4.1.2 Proposed Action

Implementing the proposed land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 through 3-5). Therefore, potentially less impact to the topography on Project lands would occur under Element 1 of the proposed action compared to the NAA, due to more land being reclassified to a more restrictive use classification.

The construction actions associated with the proposed development features in Element 2 that may require excavation, grading, and/or placement of sand or riprap (e.g., courtesy fishing dock and associated sidewalks, parking lot, bank stabilization projects, beach sand replenishment, stormwater drainage repair, and Okatibbee Water Park update projects) would have minor impacts to the topography of the proposed project areas. Given the scale of the proposed development features and amount of grading or excavating anticipated (Section 3.2.3), implementing the features is not anticipated to significantly alter the topography within the project areas. Additionally, during and after construction of the proposed development features, best management practices (BMPs) such as the use of silt fences and revegetating disturbed soils, would be used to minimize erosion, where appropriate. Furthermore, implementing the swim beach renourishment, stormwater drainage repair, and bank stabilization projects would serve to protect the shoreline from future erosion, thereby working to ensure no further degradation of the topography along the shoreline at the respective recreation park areas would occur.

Implementing the other actions associated with Element 2 that do not include excavation, grading, or permanent alteration of the topography (e.g., facility upgrade projects, replacing the foot bridge, and providing electricity to campsites) would not impact the topography of the land within the project areas.

For these reasons, it is determined that implementing the proposed action would not have a significant adverse impact on the topography of Okatibbee Lake Project lands.

4.2 Geology and Soils

4.2.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to the geology and/or soils at Okatibbee Lake Project. While there would be no project-related construction activities associated with Element 2 that would affect the geology and soils at public use areas (identified in Section 3.2.3), there could be consequences to the soils if some of the development features designed to prevent further degradation of the land are not implemented. In the absence of implementing the stormwater drainage repair and shoreline protection measures associated with Element 2 of the proposed

action, the erosional processes along the shoreline at the respective public recreation areas would be expected to continue at the current rate of erosion, which could impact the soils (e.g., layer configuration) at those recreation parks over time.

4.2.2 Proposed Action

Implementing the proposed land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 through 3-5). Therefore, potentially less impact to the soils on Project lands would occur under Element 1 of the proposed action compared to the NAA, due to more land being reclassified to a more restrictive use classification.

The construction activities associated with the proposed development features of Element 2 that require soil disruption (e.g., courtesy fishing dock and associated sidewalks, parking lot, shoreline stabilization projects, beach sand replenishment, stormwater drainage repair, providing electricity to campsites, and Okatibbee Water Park update projects) would have minor local impacts to soils. Heavy equipment would be used to move soil, excavate, and grade the area at the work sites, as needed. Burying the electric cables would be conducted by digging trenches with a trench digger. There would be potential for both soil compaction and erosion of topsoil during the construction of these proposed development features. However, the proposed development features would be implemented with all appropriate BMPs and soil and erosion controls in place. Additionally, the sand used for renourishing the swim beach areas would be selected for compatibility of existing sand beach areas. Such controls would result in minor adverse impacts to the soils within the project areas.

Implementing those proposed development projects that do not involve heavy construction equipment or ground disturbance (e.g., replacing the foot bridge, and facility upgrade projects) would not affect the geology and/or soils of the area.

For these reasons, it is determined that implementing the proposed action would not have a significant adverse impact on the geology and soils of Okatibbee Lake Project lands.

4.3 Climate

4.3.1 No Acton

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to the climate of the Okatibbee Lake Project area.

4.3.2 Proposed Action

Implementing the proposed land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 through 3-5). No significant

impacts to the climate via gas emissions at Okatibbee Lake Project area would occur under Element 1 of the proposed action, as neither construction activities associated with development nor recreational traffic are anticipated to increase dramatically. Additionally, with less area being approved for development on Project lands under the Element 1 of the proposed action compared to the NAA, the less vegetation/tree removal would occur that could have an impact on local carbon sequestration over time.

The length and duration of operating heavy construction equipment associated with the construction activities for the proposed development features of Element 2 (except the foot bridge replacement and some facility upgrades) would increase local gas emissions; however, the emissions of gases during construction are anticipated to be insignificant, temporary, and minor. Additionally, the minor permanent vegetation clearing and/or tree removal for some of the proposed development features (such as the parking lot, trail, pier, courtesy fishing docks and sidewalks, etc.) are also anticipated to have insignificant impact on the carbon sequestration of the area. No proposed development feature would be a continuous, permanent source of greenhouse gas emissions that could affect climate over time.

Implementing those proposed development projects that do not involve heavy construction equipment or vegetation removal (such as replacing the foot bridge, some facility upgrade projects) would not affect the climate of the area.

For these reasons, it is determined that implementing the proposed action would not have a significant adverse impact on the climate of Okatibbee Lake Project area.

4.4 Air Quality

4.4.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to the air quality of the Okatibbee Lake Project area.

4.4.2 Proposed Action

Implementing the proposed land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 through 3-5). No significant impacts to the air quality at Okatibbee Lake Project area would occur under Element 1 of the proposed action compared to the NAA, as neither construction activities associated with development nor recreational traffic that could impact air quality are anticipated to increase dramatically.

The construction activities associated with the proposed development features of Element 2 (except the foot bridge replacement and some facility upgrades) that require use of heavy construction equipment would have short-term and minimal impacts to air quality in the immediate vicinity of the project areas. Construction of the those proposed development projects would generate gas emissions (byproducts of diesel

and gasoline combustion) from heavy equipment working on site. In addition, fugitive dust emissions from ground-disturbing activities would occur (e.g., excavation and grading, and possible utility trenching). Uncontrolled fugitive dust emissions, including particulate matter less than 10 microns in diameter, would be temporary and localized. Impacts of emissions and fugitive dust on air quality and the human environment would be short-term and minor; the temporary increases in particulates and emissions from the construction equipment would subside upon completion of the work. Equipment operators and/or contractors working on the project would be required to comply with all Federal, State, and local regulations regarding air quality including emissions and dust control and implement any required controls.

Okatibbee Lake Project area is within attainment area, indicating the air quality of the geographic area meets or is cleaner than the national standard (USEPA 2020a). The short-term and localized impacts to air quality from implementing the proposed development features would not change the area's attainment status. Because of the short-term nature of the proposed project and generally small amount of emissions expected from on-site equipment, emissions would qualify as *de minimis* and therefore are exempt from the need to complete a General Conformity Determination. This is consistent with current the U.S. Environmental Protection Agency regulations (USEPA 2021b). No proposed development feature would be a continuous, permanent source of air pollution that could affect the air quality at the Okatibbee Lake Project.

Implementing those proposed development projects that do not involve heavy construction equipment and are done manually (such as replacing the foot bridge and some facility upgrade projects) would not affect the air quality of the area.

For these reasons, implementation of the proposed action at Okatibbee Lake Project would not have significant adverse impacts to the air quality of the area.

4.5 Fishery Resources

4.5.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to the fishery resources at the Okatibbee Lake Project.

4.5.2 Proposed Action

Implementing the proposed land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 through 3-5). Therefore, potentially less indirect impact (i.e., turbidity increase from stormwater runoff associated with construction activities) to the fishery resources at the Project would occur under Element 1 of the proposed action compared to the NAA, due to more land being reclassified to a more restrictive use classification.

The construction activities associated with some of the proposed development features of Element 2 that require ground disturbance and/or the use of heavy construction equipment (e.g., courtesy fishing dock and associated sidewalks, parking lot, shoreline stabilization projects, beach sand replenishment, stormwater drainage repair, adding electricity, and Okatibbee Water Park update projects) would have short-term and minimal impacts to fishery resources in the immediate vicinity of the project areas. During construction activity of these proposed development features, localized and temporary increases in turbidity from stormwater runoff would impact fish and fish foraging. However, inclusion of BMPs to reduce impacts to the surface waters from construction activities would be implemented. And while there may be slight changes in the shoreline habitat and temporary increase in turbidity where the bank stabilization projects are implemented at the respective public use areas, the habitat structure and aquatic species composition are not expected to change significantly at the lake project.

Recreational fishing would potentially increase slightly due to the increased number of courtesy fishing docks installed under Element 2 of the proposed action. Increasing the number of courtesy fishing docking facilities for anglers could place additional pressure on sport fish populations within the reservoir via a potential increase in fish harvesting. However, none of the fishery resources are currently overharvested and it is considered highly unlikely to occur in the near future under any scenario. Any additional harvest of fish by implementation of the proposed action is considered to be a minor adverse impact.

Implementing those proposed development projects that do not involve ground disturbing activities (such as replacing the foot bridge and some facility upgrade projects) would not affect the fishery resources of the lake. The minor ground disturbance that would be associated with some of the facility upgrades (building a ramp to an existing building or converting stairs to a ramp) would be expected to have little to no stormwater runoff that would affect the fishery resources of the lake.

For these reasons, implementation of the proposed action would not have significant adverse impacts to the fishery resources at Okatibbee Lake.

4.6 Wildlife Resources

4.6.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented. In the absence of implementing land classification changes associated with Element 1, development could be approved on the unclassified lands and on lands classified as Public Use Recreation (Table 3-3). The potential for increased development in these areas could have localized impacts on the wildlife resources of the area over time by reducing the amount of available natural habitat and/or creating habitat fragmentation in undisturbed natural environments on those lands.

Under the NAA, there would be no project-related construction activities associated with Element 2 that would affect the wildlife resources at public use areas.

4.6.2 Proposed Action

Implementing the land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 and 3-5). The proposed land classification to MRML – Wildlife Management would continue to support the WRDA 1986, which authorized the initial development and management of existing project lands in Mississippi and Alabama to compensate for wildlife losses associated with construction and operation of the Tennessee-Tombigbee Waterway. Element 1 of the proposed action would have beneficial impact to the wildlife resources at the Okatibbee Lake Project.

The species currently inhabiting the areas at the existing public use recreation areas for food, water, shelter and breeding are mostly tolerant of human activities. In the immediate vicinity of the work areas associated with all of the proposed development features in Element 2 of the proposed action, wildlife would be temporarily displaced during the construction period due to an increase in noise; however, during construction, wildlife would be expected to migrate to nearby habitat and upon project completion could return to the area.

Implementation of some the development features in Element 2 (e.g., parking lot, pier, multi-purpose trail, courtesy fishing dock and associated sidewalks, cabins, and potentially installing the electricity line, playground equipment, and the other kid-friendly attraction projects) would result in permanent removal of some wildlife habitat (ground cover vegetation and/or trees). A few individuals that are incapable of escaping, such as common nesting birds or slow-moving amphibians, could be destroyed during construction activities. However, due to the scope of the proposed development features (minimal tree removal and permanent land conversion projects) and previously disturbed habitat of the public use recreation areas, this mortality would be a minor impact, and any lost individuals would be replaced through natural increase following project completion. The shoreline stabilization projects may require permanent vegetation removal and would cause a minor impact to wildlife resources; however, if the stabilization measures are not implemented, further erosion could cause irreparable harm to the shoreline/riparian areas.

Implementing those proposed development projects that do not involve permanent removal of wildlife habitat (such as replacing the foot bridge, repairing the stormwater drainage, adding sand to swim beaches, constructing a lodge on an old motel site, upgrading aging facilities, and potentially adding electricity, playground equipment and the other kid-friendly attraction) may deter wildlife within the vicinity of the work temporarily due to noise; however, wildlife could return to the vicinity upon project completion.

For all proposed development projects, in areas that were disturbed by construction, but not permanently replaced with a feature, impacts to the vegetation would be temporary due to reseeding and replanting of native vegetation upon project completion.

For these reasons, implementation of the proposed action would not have significant adverse impacts to the wildlife resources at Okatibbee Lake.

4.7 Vegetation

4.7.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to the vegetation at the Okatibbee Lake Project.

4.7.2 Proposed Action

Implementation of the land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 and 3-5). Element 1 of the proposed action would have beneficial impact to the vegetation at the Okatibbee Lake Project.

The construction activities associated with the proposed development features of Element 2 that require permanent loss of vegetation (e.g., parking lot, courtesy fishing docks and sidewalks, pier, shoreline stabilization projects, multi-purpose trail, and potentially the electric line) would have minor local impacts to vegetation at the public use recreation areas due to the history of environmental disturbance shown at each of the sites. The cabins and playground (and the other kid-friendly attraction) are proposed to be constructed within an existing campground and park area, respectively, and therefore, would not significantly adversely affect the vegetation within those areas of the Okatibbee Water Park. The shoreline stabilization projects would negatively impact any vegetation within the riparian areas; however, the areas of erosion would increase and/or be irreparably damaged if no action is taken.

Adding electricity to the campsites in Cypress Loop at Twiltley Branch Campground would impact the vegetation in those areas due to the cable lines being buried. However, after project completion, the area would be seeded with native vegetation, as appropriate. The loblolly pines in the area are not anticipated to be impacted by this proposed project; however, during construction activities, if the health of a tree would become compromised (e.g., root damaged during placement of the lines), a tree may be removed.

Implementing those proposed development projects that do not involve ground disturbing activities (such as replacing the foot bridge, adding sand to swim beaches, and upgrading aging facilities) would not affect the vegetation within the project areas. Implementing the stormwater repair project would be added to a heavily damaged and impacted area; therefore, would not affect the vegetation in the area. Likewise,

constructing the lodge would be at an existing disturbed area where a motel used to be; therefore, there would be no impact to vegetation from implementing this project.

In all areas disturbed by construction, but not permanently replaced with a feature (i.e., areas outside of the structure footprint), impacts to the vegetation would be temporary due to reseeding and replanting of native vegetation upon construction finalization.

For these reasons, implementation of the proposed action would not have significant adverse impacts to the vegetation on Okatibbee Lake Project lands.

4.8 Invasive Species

4.8.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to invasive species at the Okatibbee Lake Project.

4.8.2 Proposed Action

Implementation of the land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 and 3-5). Implementing Element 1 of the proposed action is compatible with USACE's existing invasive species management practices (USACE 2009); therefore, existing invasive species would continue to be managed to help control and prevent the spreading of invasive species at the Okatibbee Lake Project.

Prevention of introduction and/or establishment of an invasive species to the Okatibbee Lake project land and waters remains a priority, utilizing strategies coordinated with other federal, state, and local agencies, as appropriate. It is USACE's policy to incorporate measures to either prevent or reduce establishment of invasive and non-native species as a component of all operation and maintenance at project sites (USACE 2009). As discussed in Section 4.7.2, the construction activities associated with Element 2 of the proposed action would have minor local impacts to native vegetation at the public use recreation areas where development project are proposed. In most areas, impacts to vegetation would be temporary due to reseeding and replanting of native vegetation upon construction finalization. This BMP would help reduce the chance of invasive species establishment to the disturbed areas.

Additionally, BMPs such as clearing any visible vegetation and mud clumps in the tires/wheels of vehicles and heavy construction equipment would be used when implementing all proposed development features to minimize the spread of invasive species to and from the Okatibbee Lake Project, per USACE policy (USACE 2009).

For these reasons, implementation of the proposed action would not have significant adverse impacts to the invasive species on Okatibbee Lake Project lands.

4.9 Protected Species

4.9.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to protected species at the Okatibbee Lake Project.

4.9.2 Proposed Action

Implementing the land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 and 3-5). With implementing Element 1 of the proposed action, Okatibbee Lake Project would continue to be managed in compliance with the ESA, BGEPA, and MBTA.

Implementing the proposed development features associated with Element 2 of the revised MP would not have an adverse impact on protected species at the Okatibbee Lake Project. For the projects where there is no tree removal planned (e.g., courtesy fishing docks, foot bridge replacement, stormwater drainage repair, swim beach renourishment, constructing cabins and a lodge, adding playground equipment and the other kid-friendly attraction, and potentially adding the electric line), there would be no effect to the northern long-eared bat. However, any construction associated with the development features proposed in the revised MP that requires removal of trees would be subject to the 4(d) rule of the ESA, which allows the USFWS to promulgate special rules for species listed as threatened that provide flexibility in implementing the ESA (USFWS 2019d). For those development projects where tree removal is proposed, such as the parking lot at Twiltley Branch Campground (loblolly and/or short-leaf pine trees), the pier at Okatibbee Water Park (pine trees), and potentially electric line at Twiltley Branch Campground, it is determined that the proposed action may affect, but will not likely adversely affect the northern long-eared bat.

The wood stork is known to occur at Okatibbee Lake; however, it is not known to nest on project lands. Given that the wood stork uses calm open waters, between 2 – 15 inches deep, and wetland areas for foraging, the stork could occur near the shorelines and in shallow cove areas of the lake. No proposed development feature would permanently impact greater than or equal to 5 acres of suitable wood stork habitat, and any adult individual in the vicinity of the development project is expected to leave the area during construction and could return when it is completed. Therefore, it is determined that the proposed action may affect, but will not likely adversely affect the wood stork.

Upgrading the aging facilities and infrastructure to improve operational efficiencies, enhance security, and meet future needs, including ABA accessibility, would not affect federally protected species.

The effect determinations for the northern long-eared bat and wood stork will be coordinated with the USFWS, pursuant to Section 7 of the ESA, during the public review

and comment period of the revised Master Plan and this draft programmatic EA. All correspondence related to Section 7 coordination will be provided in Attachment A (Agency Coordination) of this programmatic EA. Given that implementing the development projects are expected to occur over time, prior to implementing each development project, the USFWS Mississippi ESFO will be consulted if the scopes of the development projects change significantly and/or for an updated species list to review for any newly listed species that would require compliance with the ESA.

Additionally, prior to implementing a development project, the USFWS Mississippi ESFO will be consulted to determine impacts to the bald eagle and other migratory birds that may occur in the area to ensure compliance with the BGEPA and MBTA.

For these reasons, implementation of the proposed action would not have significant adverse impacts to the protected species within the Okatibbee Lake Project.

4.10 Cultural Resources and Historic Properties

4.10.1 No Action

Under the NAA, the MP revision would not be adopted and none of the elements of the proposed action would be implemented. There would be no construction activities associated with Element 2; therefore, there would be no impacts to cultural resources and potential historic properties. However, the lack of shoreline erosion protection projects within Element 2 could adversely impact the nine cultural resources with unknown NRHP eligibility that are located along the shoreline.

4.10.2 Proposed Action

The 1965 Preliminary Master Plan (DM No. 3A) was developed before the NHPA of 1966 was enacted, a law by which all federal agencies must comply, along with other cultural resources laws, and before cultural resources were recorded on fee-owned lands at Okatibbee Lake. The proposed action to replace the 1965 Master Plan would address important cultural resources regulations and laws enacted since then, including compliance with Sections 106 and 110 of the NHPA, and enable the District to maintain its responsibilities for the inventory and management of cultural resources and potential historic properties with no adverse effects to them by the activities within Elements 1 and 2 of the proposed MP.

Each proposed implementation plan will be reviewed by the Mobile District Archaeologist prior to construction to ensure Section 106 compliance and to avoid adverse impacts to potential historic properties and will also be coordinated with MDAH (the SHPO) and the appropriate federally recognized tribes and other relevant stakeholders.

4.11 Water Quality

4.11.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to

water quality of Okatibbee Lake. While there would be no project-related construction activities associated with Element 2 that would affect the water quality near the public use areas (identified in Section 3.2.3), there could be consequences to the resource if some of the development features designed to prevent further degradation of the land are not implemented. In the absence of implementing the stormwater drainage repair and shoreline protection measures associated with Element 2 of the proposed action, the erosional processes along the shoreline at the respective public recreation areas would be expected to continue at the current rate of erosion, which could begin to affect the sediment load and turbidity of the lake in the vicinity of the public use areas over time.

4.11.2 Proposed Action

Implementing the land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation (Tables 3-3 and 3-5). With less potential for development, coupled with a focus on conserving and preserving natural habitat on Okatibbee Lake Project lands, less impacts to water quality would be anticipated to occur under the proposed action compared to the NAA.

Of all the development features associated with Element 2, the shoreline protection, courtesy fishing docks and associated sidewalks, swim beach renourishment, pier, and stormwater drainage improvement projects are located near or along the shoreline of the lake and have most potential to directly impact water quality. During construction of the shoreline protection projects, the shoreline would be exposed to erosion as the substrate is excavated and graded as needed to place the bedding and riprap. This would cause temporary and minor increases in suspended solids in the vicinity of the work. To the extent practicable and to facilitate construction, the work would be completed when the lake level is below the summer pool (elevation 344 ft NGVD), minimizing the effects of equipment working within the littoral zone. After construction, erosion in the respective areas would be reduced, resulting in an overall reduction in turbidity. During construction of the courtesy fishing docks and pier, both the shoreline and lake bottom may be disturbed during placement of pilings and anchors, where applicable, which would cause temporary and minor increase in suspended solids in the vicinity of the work. The swim beach renourishment projects would occur at existing swim beaches when the lake level is around 339 ft NGVD (during the winter months) to reduce water quality impacts; however, fugitive sand may enter the water column during construction. This potential impact is expected to be temporary and minor within the vicinity of the work. Construction activity to implement the storm drain improvement at Gin Creek would cause temporary and minor increases in turbidity in the area. This project can be implemented in conjunction with the shoreline erosion project at the park area to help minimize the impacts.

Temporary increases in turbidity can result from stormwater runoff from upland construction sites (e.g., parking lot, electric line, cabins, lodge, multi-purpose trail, and playground and the other kid-friendly attraction). The temporary effects to the turbidity

would cease upon project completion. In addition, BMPs would be implemented at each construction area of each development feature that would result in minor amounts of increased turbidity. Re-vegetation would be performed in areas not permanently replaced with a structure/feature immediately following construction to reduce potential erosion from each activity site. Therefore, any adverse impacts to water quality would be expected to be minor and temporary.

No impacts to water quality are anticipated from replacing the foot bridge and upgrading the aging facilities.

For these reasons, implementation of the proposed action would not have significant adverse impacts to water quality at Okatibbee Lake.

Implementing the proposed development features of Element 2 that include ground disturbing activities and/or discharges into waters of the U.S would need to be reviewed for compliance with Sections 401, 402, and 404 of the CWA and permits obtained, as appropriate, when site-specific details of each project are developed. The following provides additional details regarding Section 401, 402, and 404 compliance.

Section 401 of the CWA. Section 401 of the CWA protects waters from any discharge into waters resulting from an activity permitted or licensed by a federal agency, and as such, water quality certification will be obtained by the park's managing agency prior to implementing the development features within the park. The USACE does not issue permits to itself under Section 404 of the CWA; however, USACE does comply with the regulation via a Section 404(b)(1) Evaluation and in obtaining water quality certifications, when applicable.

Each development project discussed in the following text as requiring a Section 402 NPDES permit and/or a Section 404 permit (to include those discussed in Section 4.12.2 for impacts to wetlands under the proposed action) would be required to obtain a Section 401 water quality certification from MDEQ.

Section 402 of the CWA. For land disturbing activities of 1.0 acre to less than 5.0 acres (or less than 1.0 acre if part of a larger common plan of development), compliance with MDEQ's Small Construction Stormwater General Permit is required under the NPDES program (Section 402 of the CWA) (MDEQ 2019b). The specifics of the proposed development features are not known at this time; however, estimated ground disturbance from construction activities for development features proposed by USACE are estimated to be over 1.0 acre. Refer to Sections 3.2.3.2, 3.2.3.4, 3.2.3.6, and 3.2.3.7 for estimated ground disturbance for the proposed courtesy fishing docks and associated sidewalks, storm drainage repair, additional parking, and electricity to campsites projects, respectively; the total of disturbance area anticipated for these projects is expected to be less than 1.0 acre. The grading of the shoreline for implementing the bank stabilization projects at USACE-managed parks and at Okatibbee Water Park (managed by Pat Harrison Waterway District) is unknown at this

time; however, it is estimated about 0.75 acres to 1.5 acres of grading could occur from stabilizing approximately 18,180 linear feet shoreline erosion (Section 3.2.3.9).

No ground disturbing activities would occur from implementing the foot bridge replacement project at the Tailrace Area, replenishing sand at the swim beaches, or from implementing most of the features associated with upgrading the aging facilities (e.g., repairing existing facilities and adding security cameras) (Sections 3.2.3.3. 3.2.3.5, and 3.2.3.1, respectively). However, little to no ground disturbing activities are anticipated from converting stairs to ramps and/or building ramps to existing buildings (Section 3.2.3.1). Therefore, a Section 402 NPDES permit is not anticipated to be needed for these proposed projects.

The site-specific details of the proposed development features at Okatibbee Water Park (cabins, pier, multi-purpose trail, playground equipment and other kid-friendly attraction, and lodge) have not been developed yet (Section 3.2.3.8).

Prior to implementation of the proposed development features, the managing agency of the park (USACE or Pat Harrison Waterway District, as appropriate) will coordinate with MDEQ for compliance with the Small Construction Stormwater General Permit to ensure compliance with Section 402 of the CWA and reduce the amount of runoff from construction activities that would affect the water quality of the lake. If upon calculation, ground disturbing activities result in greater than 5.0 acres, compliance with the Large Construction General Permit would be required (MDEQ 2021). A Notice of Intent for a NPDES Stormwater Construction Permit (for small construction activities and/or large construction activities) would need to be filed with the MDEQ for the proposed development features, in accordance with the permit.

Section 404 of the CWA. Activities that affect waters of the U.S. (including wetlands, as discussed in Sections 2.12 and 4.12) require compliance with Section 404 of the CWA. And as such, the shoreline erosion protection projects at Okatibbee Lake Project are under the purview of USACE, Mobile District Regulatory Division. Prior to implementation of these projects, when exact dimensions and cubic yards of fill material are known, the park's managing agency will coordinate compliance with Section 404 of the CWA. And Section 404(b)(1) evaluations will be completed prior to project implementation, when appropriate.

Replenishing the sand at the swim beaches would also be under the purview of USACE, Mobile District Regulatory Division under Section 404 of the CWA. Prior to implementing the swim beach renourishing projects, the site-specific details would need to include how much discharge is anticipated to be below the ordinary high water mark of the lake.

When compliance with Section 404 of the CWA is completed and BMPs implemented, where applicable, implementing the revised MP would have no significant adverse impacts to water quality at the Okatibbee Lake Project.

4.12 Wetlands

4.12.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to wetlands at the Okatibbee Lake Project.

4.12.2 Proposed Action

Implementation of the land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation (Tables 3-3 and 3-5). Therefore, potentially less impact to wetlands at the Project would occur under Element 1 of the proposed action compared to the NAA, due to more land being reclassified to a more restrictive use classification.

The proposed parking lot and electric line projects at Twiltley Branch Campground and the proposed multi-purpose trail at Okatibbee Water Park have potential to impact vegetated wetlands that may be located within or near the proposed location of the project (Appendix E of the revised MP; USFWS 2019b). The estimated impact for the proposed parking lot is 0.08 acres and 0.02 acres for the electric line. The impacts from the multi-purpose trail are to be determined; however, the trail would follow existing water lines in the area and only some areas would need grubbing, but it would only consist of saplings and brush. Additionally, some vegetated wetlands are potentially located along the shoreline of some of the bank stabilization projects at Collinsville Park, Gin Creek Park, Okatibbee Water Park, and Twiltley Branch Campground (Appendix E of the revised MP; USFWS 2019b). And at Collinsville Park, a small area of the swim beach is potentially located within and/or near a vegetated wetland (Appendix E of the revised MP; USFWS 2019b). Since the specifics of these projects are not known at this time, prior to implementation, the USACE, Mobile District Regulatory Division will be contacted for compliance with Section 404 of the CWA, which includes verification of wetlands within the proposed project area, and impacts to wetlands would be avoided, minimized, and/or mitigated, where applicable, to protect the resource. For example, where wetlands are near the shoreline at proposed bank stabilization projects, an alternative to riprap placement, such as a living shoreline, could be used. If a living shoreline is used for bank stabilization, only native wetland plant species would be used. Additionally, Section 404(b)(1) Evaluations will be developed prior to project implementation, as needed. Section 401 water quality certifications would be required for all development projects that require a Section 404 permit (as discussed in Section 4.11.2)

The courtesy fishing docks and sidewalks, stormwater drainage repair, cabins, lodge, playground and kid-friendly attraction, pier, swim beach renourishment (except at Collinsville Park), and facility upgrade projects are not anticipated to impact vegetated wetlands, as preliminary review indicates the resource is not within the proposed locations of these development features (Appendix E of the revised MP; USFWS 2019b). However, prior to implementation, the USACE, Mobile District Regulatory Division will be contacted to ensure compliance with Section 404 of the CWA with

regard to wetlands. The foot bridge repair project is within a vegetated wetland area (USFWS 2019b); however, the construction of the foot bridge (i.e., adding wooden planks to existing footers and no heavy construction equipment needed) would have no impact to the wetlands in the area.

While the lake is presented as a wetland area (Lacustrine) on the wetland maps obtained from the National Wetland Inventory (USFWS 2019b), the impacts to the lake under Section 404 of the CWA are addressed in the previous water quality impact section (Section 4.11.2).

When compliance with Section 404 of the CWA is completed and BMPs implemented, where applicable, implementing the proposed action would have no significant impacts to wetlands at the Okatibbee Lake Project. However, upon coordination with USACE, Mobile District Regulatory Division, should impacts to wetlands be determined to be greater than anticipated, a subsequent NEPA compliance document may be required.

4.13 Floodplain

4.13.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to the floodplain at the Okatibbee Lake Project.

4.13.2 Proposed Action

Implementation of the land classification changes (Element 1) would not impact the floodplain or USACE's implementation of EO 11988 at the Okatibbee Lake Project.

Implementing the proposed development features of Element 2 that are partially constructed in water and/or within the 100-year floodplain at Okatibbee Lake (e.g., courtesy fishing docks and associated sidewalks, pier, foot bridge replacement, stormwater drainage repair, swim beach renourishment, and shoreline bank stabilization projects) would not adversely affect the flood holding capacity or flood surface profiles of Okatibbee Creek or Okatibbee Lake. The proposed improvements would not alter flow regime in the area, nor would they increase the lake elevation. Furthermore, these features would be designed and constructed in a manner to minimize potential harm to or within the floodplain, consistent with EO 11988 and ER 1165-2-26. The public review period of the draft revised Master Plan and this draft programmatic EA serves as the public notice required by EO 11988 and ER 1165-2-26 8.c.

Some of the proposed development features (e.g., adding electricity, parking lot, cabins, lodge, trail, playground, and the other kid-friendly attraction) would not occur within the 100-year floodplain (Zone A) (FEMA n.d.) and therefore would not impact the floodplain. Upgrading the aging facilities would require work on existing structures and therefore would not impact the 100-year floodplain.

For these reasons, implementation of the proposed action would have no significant adverse impacts to floodplain at the Okatibbee Lake Project, as the proposed

improvements would not alter flow regime in the area, nor would they increase the lake elevation.

4.14 Navigation

4.14.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to the recreational boating at Okatibbee Lake. There is no commercial navigation at Okatibbee Lake that would be impacted.

4.14.2 Proposed Action

Implementing the elements of the proposed MP revision does not include development within commercial navigable channels; therefore, there would be no impact to commercial navigation under the proposed action.

Implementation of the proposed development features associated with Element 2 could cause temporary closure of parking areas at public use recreation parks during construction activities. Closures could impact access to the local boat ramps and affect recreational boating at the lake temporarily; however, boaters could use other boat ramps around the lake and normal recreational boating would occur after each development project is completed. Likewise, any parking areas used as staging areas during construction activities that are used for boat ramp access would be closed during construction activities. However, boaters could use other boat ramps around the lake until project completion.

For these reasons, implementation of the proposed action would not have significant adverse impacts to recreational boating at the Okatibbee Lake Project and there would be no impact to commercial navigation.

4.15 Land Use

4.15.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented. Under the NAA, there would be no change to land classification and associated land use of Project lands. In the absence of implementing land classification changes associated with Element 1, development could be approved on the unclassified lands and on lands classified for Public Use Recreation (Table 3-3).

Under the NAA, there would be no project-related construction activities associated with Element 2 that would affect the land use at the Okatibbee Lake Project. However, in the absence of implementing swim beach renourishment, stormwater drainage repair, and shoreline protection measures associated with Element 2, the erosional processes along the shoreline at the public use recreation areas would be expected to continue, which could begin to affect the use of the public recreation parks where the features are

proposed. Additionally, unstable shorelines at the public use areas may pose a safety risk, and as such, portions of the parks would need to be closed off from public use.

Under the NAA, no impact would occur to the land use of adjacent lands to the Okatibbee Lake Project.

4.15.2 Proposed Action

Implementation of the land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 and 3-5). Although implementing Element 1 of the revised MP would result in reclassification of lands, the reclassifications were developed to help fulfill regional goals associated with good stewardship of land resources that would allow for continual use. The proposed land classification to MRML: Wildlife Management would continue to support the WRDA 1986, which authorized the initial development and management of existing project lands in Mississippi and Alabama to compensate for wildlife losses associated with construction and operation of the Tennessee-Tombigbee Waterway.

During construction activities associated with implementing the proposed development features of Element 2, the areas of the respective public use recreation parks would be closed temporarily, which would have a temporary, minor impact on public use at the lake. However, after construction is complete and the development features are fully implemented, recreational experiences at Okatibbee Lake would be enhanced. Furthermore, implementing the swim beach renourishment, stormwater drainage repair, and shoreline stabilization projects would serve to protect the shoreline from future erosion, thereby working to ensure full use of the recreation parks is available for the public.

Implementing the Elements 1 or 2 would have no impact to the land use of adjacent lands to the Okatibbee Lake Project.

For these reasons, implementation of the proposed action would not have significant adverse impacts to the land use at the Okatibbee Lake Project or to adjacent land.

4.16 Recreation

4.16.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented. Under the NAA, there would be no change to land classification and associated land use of Project lands. In the absence of implementing land classification changes associated with Element 1, development could be approved on the unclassified lands and on lands classified for Public Use Recreation (Table 3-3).

Under the NAA, there would be no project-related construction activities associated with Element 2 that would affect recreation at Okatibbee Lake. However, in the absence of

implementing the development features at the public use recreation parks associated with Element 2, the recreation parks would not be updated to address the recreation needs of the area, which includes improving ABA accessibility. Additionally, in the absence of implementing swim beach renourishment, stormwater repair, and shoreline protection measures, the erosional processes along the shoreline at the public use recreation areas would be expected to continue, which could begin to affect the use of the public recreation parks where the features are proposed. The hazardous conditions near the Gin Creek Park boat ramp and the unstable shorelines at the respective public use areas may pose a continued safety risk, and as such, portions of the parks would need to be closed off from public use.

4.16.2 Proposed Action

Implementation of the land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 and 3-5). Although implementing Element 1 of the revised MP would result in reclassification of lands, the reclassifications were developed to help fulfill regional goals associated with good stewardship of land resources that would allow for continual use. Additionally, the projected overall visitation at the lake through 2045 is anticipated to decrease (from 358,512 in 2019 to 330,634 in 2045), per the recent Capacity Study for Okatibbee Lake (Appendix C of the revised Master Plan). Updating the MP to reflect proposed land usage reflects that the public use recreation areas are sufficient for the projected recreation at the lake.

Implementing the proposed development features associated with Element 2 of the revised MP would have minor impacts on recreation due to temporary closure of the park area during construction activities. There would be long-term benefits to recreation at the Okatibbee Lake Project from implementing new recreation features (e.g., courtesy fishing docks with ABA accessible sidewalks, additional parking, electricity to campsites, and Okatibbee Water Park update projects) due to increased availability of features for public use. Furthermore, renourishing the sand at the swim beaches and replacing the foot bridge would enhance the recreational enjoyment of these features. The recreating public would also benefit from the proposed upgrades to the aging facilities and enhanced ABA accessibility. Implementing the proposed shoreline stabilization and stormwater drainage repair projects would have an indirect beneficial impact on recreation by preventing further erosion at the recreation parks and enhancing public safety in those areas.

For these reasons, implementation of the proposed action would not have significant adverse impacts to recreation at the Okatibbee Lake Project.

4.17 Noise

4.17.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to the noise at the Okatibbee Lake Project.

4.17.2 Proposed Action

Implementation of the land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 and 3-5). Given that the types of noise and maximum permissible noise levels are linked to the various land uses, the general range of ambient noise levels at the Okatibbee Lake Project is not expected to measurably increase from implementing Element 1 of the proposed action.

Within areas where development features are proposed under Element 2 of the proposed action, typical construction noise would occur above ambient noise levels for urban residential areas. It is anticipated that such noise levels from the proposed development features would be comparable to noise originating from a residential or commercial building construction project. The noise would be that of machinery associated with clearing, excavating, trenching, grubbing and grading of material, cutting of timber, hammering, etc. All of these impacts are anticipated to be temporary and minor, within low to no populated areas, and would cease upon completion of the action. This may constitute a minor nuisance to the nearby users of the development sites; however, work would occur only during daylight hours, assuring no sleep disturbance for most people that may live within surrounding areas or who may be camping overnight at the lake. Noise levels would return to levels commensurate with pre-construction levels and within typical ambient noise levels associated with operations and recreation at a lake project.

For these reasons, implementation of the proposed action would not have significant adverse impacts to the noise levels at the Okatibbee Lake Project.

4.18 Aesthetics

4.18.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to the aesthetics at the Okatibbee Lake Project.

4.18.2 Proposed Action

Implementation of the land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 and 3-5). The resource objectives

associated with the updated land classifications focus on preserving more of the natural aesthetics of Okatibbee Lake, compared to the NAA (Tables 3-5 through 3-5).

Implementing the proposed development features of Element 2 that require permanent structures to be constructed (e.g., courtesy fishing docks and sidewalks, foot bridge replacement, pier, cabins, lodge, parking lot, playground equipment and the other kid-friendly attraction, riprap placement) would change the aesthetics of the immediate recreation public use area from current conditions. However, recreational facilities are anticipated within these areas and are commensurate with each park's design. The bank stabilization projects include adding riprap to the shorelines at the public use areas, which impacts the natural aesthetics of the area; however, without the proposed projects, the public use areas would continue to erode and/or cause irreparable damage if no action is taken. During construction of these types of development features, short-term construction related impacts would also cause temporary minor impacts to aesthetics. However, after construction, the visual nature of the area would return to its current state as a recreation area. Additionally, completion of features such as the courtesy fishing docks with ABA accessible sidewalks and pier would allow for increased opportunity for aesthetic enjoyment of the lake.

Implementing the proposed upgrades of aging facilities, swim beach renourishment, stormwater drainage repair, multi-purpose trail, and additional electricity would not have permanent impacts to aesthetics of the project area; however, temporary minor impacts would occur during construction of these features. Upon completion of these features, the aesthetics of the area would return to pre-construction conditions; however, the swim beach renourishment and multi-purpose trail would allow for increased aesthetic enjoyment of the lake as well.

For these reasons, implementation of the proposed action would not have significant adverse impacts to the aesthetics at the Okatibbee Lake Project.

4.19 Hazardous, Toxic and Radiological Waste

4.19.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to Okatibbee Lake Project resulting from HTRW.

4.19.2 Proposed Action

Implementation of the proposed land classification changes (Element 1) would not result in changes in management of the recreation or operation facilities and therefore would not impact current HTRW or solid waste management practices at the lake.

Implementation of the proposed development features of Element 2 of the proposed action is not expected to generate HTRW sites to a significant extent, as there are existing regulations designed to prevent future contaminant releases. While the potential to create HTRW materials as result of construction equipment malfunction or failure during the construction process exists (such as fluid leaks), BMPs and regular

equipment maintenance would reduce the risk. Additionally, the storage, fueling, and lubrication of the construction equipment used on site would continue to be conducted in a manner to protect against accidents and spills and in accordance with label recommendations, USACE regulations (e.g., ER 200-2-3 *Environmental Compliance Polices*), and local, state, and federal regulatory guidelines. As such, the number, extent, and influence of HTRW sites at the Okatibbee Lake Project are not expected to significantly differ from existing conditions.

For these reasons, implementation of the proposed action would not have significant adverse impacts to HTRW at the Okatibbee Lake Project.

4.20 Socioeconomics

4.20.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to the socioeconomics at the Okatibbee Lake Project or within its zone of influence.

4.20.2 Proposed Action

Implementation of the land classification changes (Element 1) would not result in changes to the population, demographics, or socioeconomics within the zone of influence for Okatibbee Lake and therefore would not impact current socioeconomics within the Okatibbee Lake Project area.

Element 2 of the MP revision includes implementing development features at the public use recreation areas. There could be temporary, localized beneficial impacts on the socioeconomics of the area via construction-related jobs in the area. This impact is considered temporary and minor due to the scope of the projects and whether such employment would be represented by those already employed or whether new jobs would result from the development projects. A short-term increase in the sale of construction related materials and fuel in the local area may occur; however, there would be no long-term impacts to the local economy.

Implementation of the proposed development features are not anticipated to affect the population or demographics within the zone of influence. There would be no relocations required as a result of the proposed action. Additionally, there would be no changes in expected population growth patterns or local residential or commercial development.

For these reasons, the proposed action would have no significant impacts to the socioeconomics of the Okatibbee Lake Project or within its zone of influence.

4.21 Public Safety

4.21.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented. Not implementing land classification

changes would have no impact on the public safety awareness and education program at Okatibbee Lake.

Under the NAA, there would be no project-related construction activities associated with Element 2 that would affect the public safety at the Okatibbee Lake Project. However, in the absence of implementing the shoreline protection projects, pier, and stormwater drainage repair, the public safety concerns in those areas would persist and potentially increase.

4.21.2 Proposed Action

Implementation of the land classification changes (Element 1) would not impact the public safety hazards or safety awareness and education program at the Okatibbee Lake Project.

The construction activities associated with some of the proposed development features of Element 2 that require use of heavy construction equipment (e.g., courtesy fishing dock and associated sidewalks, parking lot, electric line, shoreline stabilization projects, swim beach sand replenishment, stormwater drainage repair, and Okatibbee Water Park update projects) would have short-term and minimal impacts to public safety in the immediate vicinity of the project areas. However, standard safety measures would be implemented during construction activities to ensure unauthorized persons do not have access to the project site. These standard safety measures would include fencing, signage, etc. The USACE established safety program would help reduce accidents to the greatest extent possible for both the public and those working the construction site.

Implementing some proposed development features such as constructing ABA accessible sidewalks, repairing the foot bridge, replenishing sand on the swim beaches, repairing the stormwater drainage, upgrading aging facilities with security cameras and enhanced ABA accessibility, and stabilizing shoreline bank erosion would help improve the safety of the public at the respective public use recreation parks.

For these reasons, the proposed action would have no significant adverse impacts to public safety at the Okatibbee Lake Project.

4.22 Prime and Unique Farmland

4.22.1 No Action

Under the NAA, the MP revision would not be adopted and Elements 1 and 2 of the proposed action would not be implemented; therefore, there would be no impact to prime and unique farmland at the Okatibbee Lake Project.

4.22.2 Proposed Action

There are several soil types on Okatibbee Lake Project lands that are associated with prime farmland or farmlands of state importance (Table 2-5, Section 2.21). However, the land represented by these soil types have not been used for farming since the land was acquired for the construction of the Okatibbee Lake Project, which was authorized in the Flood Control Act of 1962 (USACE 1974).

Implementation of the land classification changes (Element 1) would result in an overall reduction in the amount of land at the Okatibbee Lake Project that would be developed for intense recreation and increase the amount of land managed for wildlife habitat and conservation and project operations (Tables 3-3 and 3-5). Therefore, less land at the Okatibbee Lake Project would be developed for intense recreation use under Element 1 of the prosed action, compared to the NAA. Furthermore, the development features in Element 2 of the proposed action would occur within public use recreation parks, of which several areas are proposed to decrease in size (Table 3-1). Limiting the size of the respective recreation parks that could be developed for intense recreation use would help protect any undisturbed prime and unique farmlands that may occur in those areas.

For these reasons, the proposed action would have no significant adverse impacts to the prime and unique farmlands at the Okatibbee Lake Project.

5.0 CUMULATIVE EFFECTS

The 1978 CEQ regulations define cumulative impacts, in part, as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." (40 C.F.R. § 1508.7 of the 1978 CEQ Regulations). Actions considered in the cumulative impacts analysis include implementation of the proposed action and NAA and other Federal, State, Tribal, local agencies, or government or private actions that impact the resources affected by the proposed action.

The most significant past action was the construction and development of the Okatibbee Lake Project itself. The natural flow regime of Okatibbee Creek was disrupted by the construction of Okatibbee Dam and the impoundment of the reservoir over 50 years ago. The natural environment within Okatibbee Lake Project area has been impacted by a variety of human actions to enhance recreational opportunities at the Project, as well as by operation of the Project for primary authorized purposed (flood risk management, water quality control, water supply, and recreation). The sum of these human-induced activities has resulted in stormwater runoff from construction activities, increased soil erosion along the shoreline, removal of vegetation and wildlife habitat, as well as the displacement of isolated animal populations.

The existing and future actions at the Okatibbee Lake Project include the continued operation of existing project facilities and the proposed development features of the recreation parks included in the proposed action. Continued operation would result in the sustained maintenance and development of the recreational and operational facilities. The proposed development would enhance the recreational opportunities made by the USACE, Mobile District and other park management partners. Any adverse impacts resulting from implementing the proposed action would be reduced

through resource stewardship efforts and resource agency coordination, in compliance with applicable state and federal regulations. With more lands set aside to be managed for wildlife habitat and conservation (per WRDA 1986) under the proposed action, some benefits to the biological resources (wildlife resources, vegetation, etc.) are anticipated at the Okatibbee Lake Project. Additionally, the recreational opportunities will be further enhanced by implementing the proposed action, as in addition to implementing new features for recreational enjoyment, some features include ABA accessibility, which further improves the recreation at the Okatibbee Lake Project.

The proposed action, as well as the No Action Alternative, are expected to have no more than minor direct, indirect or cumulative adverse impacts on the environment, as described in Sections 4.1 through 4.22.

6.0 PROTECTION OF CHILDREN

Executive Order 13045 *Protection of Children from Environmental Health Risks and Safety Risks* recognizes a growing body of scientific knowledge that demonstrates that children may suffer disproportionately from environmental health risks and safety risks. As defined by EO 13045, environmental health risks or safety risks refer to the "risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest." These risks arise because children's bodily systems are not fully developed; because children eat, drink, and breathe more in proportion to their body weight; and/or because their behavior patterns may make them more susceptible to accidents. Based on these factors, the President directed each Federal agency to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children. The President also directed each Federal agency to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

Implementing the elements of the proposed action would not pose any significant disproportionate environmental health or safety risk to children.

7.0 ENVIRONMENTAL JUSTICE

Executive Order 12898 *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations* requires that Federal agencies "conduct their programs, policies, and activities that substantially affect human health or the environment in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities because of their race, color, or national origin."

Under NEPA, the identification of a disproportionately high and adverse human health or environmental effect on a low-income population, minority population, and Indian tribes serves to heighten agency attention to alternatives (including alternative sites), mitigation strategies, monitoring needs, and preferences expressed by the affected community or population (CEQ 1997).

Per CEQ guidance (1997), low-income populations in an affected area are identified with the annual statistical poverty thresholds from the U.S Census Bureau. Minorities are comprised of individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Minority populations are identified where either: (a) the minority populations of the affected area exceed 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. In identifying minority communities, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native American), where either type of group experiences common conditions of environmental exposure or effect. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority percentage, as calculated by aggregating all minority persons, meets one of the aforementioned thresholds.

Disproportionately high and adverse human health effects: Per CEQ (1997) guidance, when determining whether human health effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practicable:

a) Whether the health effects, which may be measured in risks and rates, are significant or above generally accepted norms. Adverse health effects may include bodily impairment, infirmity, illness, or death;
b) Whether the risk or rate of hazard exposure by a minority population, low-income population, or Indian tribe to an environmental hazard is significant and appreciably exceeds or is likely to appreciably exceed the risk or rate to the general population or other appropriate comparison group; and
c) Whether health effects occur in a minority population, low-income population, or Indian tribe affected by cumulative or multiple adverse exposures from environmental hazards.

Disproportionately high and adverse environmental effects: Per CEQ (1997) guidance, when determining whether environmental effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practicable:

a) Whether there is or will be an impact on the natural or physical environment that significantly and adversely affects a minority population, low-income population, or Indian tribe. Such effects may include ecological, cultural,

human health, economic, or social impacts on minority communities, low-income communities, or Indian tribes when those impacts are interrelated to impacts on the natural or physical environment;

b) Whether environmental effects are significant and are or may be having an adverse impact on minority populations, low-income populations, or Indian tribes that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group; and
c) Whether the environmental effects occur or would occur in a minority population, low-income population, or Indian tribe affected by cumulative or multiple adverse exposure from environmental hazards.

Disproportionately high and adverse human health and environmental effects on minority and low-income populations have been considered in updating the Okatibbee Lake Project Master Plan, which includes documenting improvements implemented since project completion, implementing recommended land classifications and reclassifications, and implementing the development features at the public use recreation sites. The recommended update (revision) of the Master Plan would not create disproportionately high or adverse human health or environmental impacts on any low-income populations, minority population, or Indian tribe of the surrounding area.

8.0 ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Adverse environmental effects which cannot be avoided involve vegetation loss as a result of proposed construction associated with development and shoreline protection projects. It is unavoidable to not affect the area with the proposal of permanent structures (i.e., sidewalks and paved parking area) and riprap. However, these additions and modifications are minor individually and cumulatively. Therefore, adverse environmental effects would be minimal and insignificant.

9.0 THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed projects that require construction activities constitutes a short-term use of man's environment and is not anticipated to negatively affect long-term productivity. The proposed Master Plan revision would provide increased values of existing recreational resources within the recreation sites by improving the facilities. Implementation of the proposed action (i.e., construction activities associated with Element 2) would result in minor environmental impacts (as described in Sections 4.1 through 4.22). However, given the efforts to avoid and/or minimize potential impacts, the proposed action is not expected to substantially narrow the range of beneficial uses of the environment. Overall, the proposed action is designed to meet recreational demand and enhance the recreational opportunities at the Okatibbee Lake Project.

Therefore, the proposed action constitutes a short-term use of man's environment and would enhance long-term productivity.

10.0 ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS WHICH WOULD BE INVOLVED SHOULD THE RECOMMENDED PLAN BE IMPLEMENTED

Irreversible and irretrievable commitments of resources include a description of the extent which the proposed action makes use of non-renewable resources (including labor, materials, and natural and cultural resources) or irreversibly curtails the range of potential uses of the environment.

Construction and operation of the proposed action would utilize non-renewable resources, such as construction labor, materials, fuel for equipment and vehicles, which is considered an irreversible use of the resources. The proposed action would result in minor unavoidable impacts to the environmental resources; however, any modifications proposed within the Master Plan revision could be removed and restored to current conditions, if future conditions are warranted. Facilities and structures could be demolished and/or removed and the area could be made to recreate preexisting habitat conditions. Docks could be uninstalled and the shoreline would revert back to pre-construction conditions. Therefore, any irreversible or irretrievable commitments of resources involved in the proposed action have been considered and are either unanticipated at this time or have been considered and determined to present minor impacts.

11.0 COORDINATION

The USACE, Mobile District will coordinate the proposed action with the various local, state, and Federal agencies. Coordination with the public will be accomplished by making the draft programmatic EA (with the draft revised Master Plan) available through means of a public notice being placed on the USACE, Mobile District website. Comments received from the public and agencies on the proposed action will be incorporated into the programmatic EA, as appropriate.

As discussed in Section 4.9, the effect determination (may affect, not likely to adversely affect) for the northern long-eared bat and wood stork will be coordinated with the USFWS Mississippi ESFO, pursuant to Section 7 of the ESA, during the public review and comment period. All correspondence related to Section 7 coordination will be provided in Attachment A (Agency Coordination) of the final programmatic EA.

11.1 Coordination to be Completed

As discussed in Sections 4.9 through 4.12, prior to implementing each of the proposed development features, each implementation plan will be coordinated with the appropriate resource agency, as needed, to ensure full compliance with the ESA, BGPA, MBTA, NHPA, and CWA.

As discussed in Section 4.19, BMPs and regular equipment maintenance will be implemented to reduce the risk for potential HTRW materials being introduced to the project site during construction activities. The storage, fueling, and lubrication of the construction equipment used on site will be conducted in a manner to protect against accidents and spills. Should accidents or spills occur, the MDEQ will be consulted at that time.

12.0 LIST OF PREPARERS

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13.0 REFERENCES

CEQ (1997). Environmental Justice Guidance under the National Environmental Policy Act. Retrieved from <https://www.epa.gov/sites/default/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf>.

Federal Emergency Management Agency (FEMA). (n.d.) FEMA Flood Map Service Center. Retrieved from <https://msc.fema.gov/portal/search?AddressQuery=okatibbee%20lake%2C%20ms#searchresultsanchor>.

FEMA. (2020). Zone A. Retrieved from <https://www.fema.gov/glossary/zone>.

Mississippi Department of Environmental Quality (MDEQ). (2018a). Mississippi 2018 Section 303(d) List of Impaired Water Bodies. Mississippi Department of Environmental Quality, Surface Water Division of the Office of Pollution Control. Jackson, Mississippi. Retrieved from <https://www.mdeq.ms.gov/wp-content/uploads/2018/04/2018-Draft-Section-303d-List-Report.pdf>.

MDEQ. (2018b). Part 6: Chapter 2: Mississippi Commission on Environmental Quality Regulations for water Quality Criteria for Intrastate, Interstate, and Coastal Waters. Retrieved from < https://www.mdeq.ms.gov/wp-content/uploads/2018/09/11-Miss.-Admin.-Code-Pt.-6-Ch.-2_Final_Approved-by-EPA-January-18-2017.pdf >.

MDEQ. (2019a). Air Quality Data Summary. Retrieved from <https://www.mdeq.ems.gov/wp-content/uploads/2020/03/2019-Air-Quality-Data-Summary.pdf>.

MDEQ. (2019b). Small Construction Storm Water General Permit. Retrieved from <https://www.mdeq.ms.gov/wp-content/uploads/2013/04/Small_cnstr_prmt.pdf>.

MDEQ. (2020a). Air. Retrieved from < https://www.mdeq.ms.gov/air/>.

MDEQ. (2020b). Surface Water. Retrieved from < https://www.mdeq.ms.gov/water/surface-water/>.

MDEQ. (2021). Stormwater General Permit. Retrieved from <https://www.mdeq.ms.gov/permits/environmental-permits-division/applications-forms/stormwater-general-permit/>.

Mississippi Emergency Management Agency (MEMA). (2020). Lauderdale County. Personal communication with Mr. Barrett, December 15, 2020.

National Oceanic Atmospheric Administration (NOAA). (2020a). Climate at a Glance. County Time Series. National Centers for Environmental Information. Retrieved from <https://www.ncdc.noaa.gov/cag/county/time-series/MS-069/tavg/3/2/1895-2019?base_prd=true&begbaseyear=1901&endbaseyear=2000&trend=true&trend_base=10&begtrendyear=1895&endtrendyear=2020>.

NOAA. (2020b). Climate at a Glance. Divisional Time Series for East Central Mississippi. National Centers for Environmental Information. Retrieved from <https://www.ncdc.noaa.gov/cag/divisional/time-series/2206/tmin/3/2/1895-2019?base_prd=true&begbaseyear=1901&endbaseyear=2000&trend=true&trend_base=10&begtrendyear=1895&endtrendyear=2020>.

NOAA. (2020c). Climate at a Glance. Regional Time Series for Southern Plains and Gulf Coast. National Centers for Environmental Information. Retrieved from <https://www.ncdc.noaa.gov/cag/regional/time-series/115/pcp/ann/8/1895-2019?base_prd=true&begbaseyear=1901&endbaseyear=2000&trend=true&trend_base=10&begtrendyear=1895&endtrendyear=2020>.

NOAA. (2020d). Climate at a Glance. Statewide Time Series for Mississippi. National Centers for Environmental Information. Retrieved from <https://www.ncdc.noaa.gov/cag/statewide/time-series/22/tavg/3/2/1895-2019?base_prd=true&begbaseyear=1901&endbaseyear=2000&trend=true&trend_base=10&begtrendyear=1895&endtrendyear=2020>.

Natural Resources Conservation Service (NRCS). (2019a). Soil Data Access Prime and other Important Farmlands. United States Department of Agriculture. Retrieved from <https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1338623.html#:~:text=The%20water%20supply%20is%20dependable,permeable%20to%20water%20and%20air.&text=Unique%20farmland%20is%20land%20other,and%20other%20fruits%20and%20vegetables>.

NRCS. (2019b). Web Soil Survey. United States Department of Agriculture. Retrieved from <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.

U.S. Army Corps of Engineers (USACE). (1974). Draft Environmental Impact Statement Operation and Maintenance of Okatibbee Dam and Lake Mississippi. USACE Mobile District.

USACE. (1992). Authorized and Operating Purposes of Corps of Engineers Reservoirs. Department of the Army, USACE, Washington D.C.

USACE. (1997). Pascagoula River basin Water Control Manual Appendix A Okatibbee Lake, Okatibbee Creek, Mississippi. USACE Mobile District.

USACE. (2009). Memorandum Subject: U.S. Army Corps of Engineers Invasive Species Policy. USACE, Washington, D.C.

U.S. Census Bureau. (2018). 2018 Census Interactive Population Search. Retrieved from <https://www.census.gov/quickfacts/fact/table/clarkecountymississippi,newtoncountymississippi,lauderdalecountymississippi,kempercountymississippi,neshobacountymississippi,ms/PST045218>.

U.S. Environmental Protection Agency (USEPA). (2019). Ecoregion Download Files by State – Region 4. Retrieved from <https://www.epa.gov/eco-research/ecoregion-download-files-state-region-4#pane-22>.

USEPA. (2020a). Green Book. Mississippi Nonattainment/Maintenance Status for Each County by Year for All Pollutants. Retrieved from <https://www3.epa.gov/airquality/greenbook/anayo_ms.html>.

USEPA. (2020b). Outdoor Air Quality Data. Air Data – Daily Air Quality Tracker. Retrieved from < https://www.epa.gov/outdoor-air-quality-data/air-data-daily-air-quality-tracker>.

USEPA. (2020c). Overview of Total Maximum Daily Loads (TMDLs). Retrieved from <https://www.epa.gov/tmdl/overview-total-maximum-daily-loads-tmdls>.

USEPA. (2021a). Climate Change Indicators: Greenhouse Gases. Retrieved from <https://www.epa.gov/climate-indicators/greenhouse-gases>.

USEPA. (2021b). General Conformity De Minimis Emission Levels. Retrieved from <https://www.epa.gov/general-conformity/de-minimis-emission-levels>.

U.S. Fish and Wildlife Service (USFWS). (2017). Federally Endangered, Threatened, and Candidate Species in Mississippi. USFWS Mississippi Field Office. Retrieved from <https://www.fws.gov/mississippies/_pdf/MS_Species_Habitat_Descriptions_2017final.pdf>.

USFWS. (2019a). Classification of Wetlands and Deepwater Habitats of the United States: Hierarchical Structure. Retrieved from <https://www.fws.gov/wetlands/Documents/classwet/hierarch.htm>.

USFWS. (2019b). National Wetlands Inventory Mapper. Retrieved from <https://www.fws.gov/wetlands/data/Mapper.html>.

USFWS. (2019c). NWI Wetland and Deepwater Map Code Diagram. Retrieved from: <https://www.fws.gov/wetlands/documents/NWI_Wetlands_and_Deepwater_Map_Code_Diagram.pdf>.

USFWS. (2019c). Northern Long-eared Bat (*Myotis septentrionalis*). Midwest Region Endangered Species. Retrieved from <https://www.fws.gov/midwest/endangered/mammals/nleb/index.html>.

USFWS. (2020a). Official Species List for Okatibbee Lake Master Plan. Consultation Code 04EM1000-2020-SLI-0183. Event Code 04em1000-2021-e-00448. Information for Planning and Consultation database.

USFWS. (2020b). Species Account/Biologue. Wood Stork. North Florida Ecological Services Office, Southeast Region. Retrieved from <https://www.fws.gov/northflorida/Species-Accounts/Wood-stork-2005.htm>.

U.S. Geological Survey (USGS). (2019). Geologic units in Mississippi. Retrieved from <https://mrdata.usgs.gov/geology/state/fips-unit.php?state=MS>.

USGS. (2020). Geologic Maps of the US States. Retrieved from <https://mrdata.usgs.gov/geology/state/>.

Attachment A: Agency Coordination

Place holder for Agency Coordination when completed