



CESWL-PPMD

DEPARTMENT OF THE ARMY  
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS  
700 WEST CAPITOL  
LITTLE ROCK, ARKANSAS 72203-0867

FEB 15 2022

MEMORANDUM FOR RECORD

SUBJECT: Approval of the Norfolk Lake Master Plan and Environmental Assessment  
FONSI

1. References:

- a. Norfolk Lake Master Plan 2022.
- b. Norfolk Lake Environmental Assessment 2022.

2. The Norfolk Lake Master Plan and the associated Finding of No Significant Impact statement (FONSI) are approved. Enclosed is the signed FONSI.

3. This letter serves as the approval for the Norfolk Lake Master Plan.

ERIC M. NOE, PMP, COL, EN, U.S.A. Digitally signed by ERIC M.  
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Date: 2022.02.15 16:23:40  
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Encl

ERIC M. NOE, PMP  
Colonel, EN  
Commanding

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***NORTH FORK RIVER WATERSHED  
ARKANSAS AND MISSOURI  
NORTH FORK RIVER  
NORFORK LAKE***

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***MASTER PLAN FOR  
DEVELOPMENT AND  
MANAGEMENT OF  
NORFORK LAKE***

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**Final: February 2022**

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## Commonly Used Acronyms and Abbreviations

404(b)(1) – Water quality permit per CWA  
77

AAR – After Action Review

AF – Acre Feet

AFB – Alternatives Formulation Briefing

AOR – Area of Responsibility

ASA(CW) – Assistant Secretary of the  
Army for Civil Works

ASAP – As Soon as Possible

ATR – Agency Technical Review

BC – Benefit Cost

BCR – Benefit Cost Ratio

BFE – Base Flood Elevation

BLUF – Bottom Line Up Front

BMP – Best Management Practice

BOD – Biological Oxygen Demand

BY – Budget Year

C – Construction

CDR – Commander

CE – Corps of Engineers

CERCLA – Comprehensive Environmental  
Response, Compensation and Liability Act,  
1980 (Superfund)

CERL – Construction Engineering  
Research Laboratory

CEQ – Council on Environmental Quality

CF – Copy Furnished

CFR – Code of Federal Regulations

CFS – Cubic Feet per Second

CG – Construction General/ Commanding  
General

COL – Colonel

CONUS – Continental United States

COP – Community of Practice

CRA – Continuing Resolution Authority

CW – Civil Works

CWA – Clean Water Act, 1977

CX – Center of Expertise

CY – Cubic Yard/ Current Year

DA – Department of Army

DCW – Director of Civil Works

DDC – Deputy District Commander

DDE – Deputy District Engineer

DE – District Engineer/ Division Engineer

DEIS – Draft Environmental Impact  
Statement

DIV – Division

DMP – Decision Management Plan

DOD – Department of Defense

DOE – Department of Energy

DOI – Department of Interior

DOJ – Department of Justice

DOT – Department of Transportation

DQC – District Quality Control

DP – Decision Point

DPM – Deputy for Project Management

DPR – Detailed Project Report

DSAP – Dam Safety Assurance Program

DX – Directory of Expertise

E&D – Engineering and Design

EA – Environmental Assessment

EC – Engineering Circular

EIS – Environmental Impact Statement

EM – Engineering Memorandum

EO – Executive Order

EOY – End of Year

EP – Engineering Pamphlet

ER – Engineering Regulation

ERDC – Engineering Research & Design  
Center

EPA – Environmental Protection Agency

ESA – Environmentally Sensitive Area

EQ – Environmental Quality

FWL – Fish and Wildlife

FWS – Fish and Wildlife Service

FCA – Flood Control Act

FCSA – Feasibility Cost Sharing  
Agreement

FEIS – Final Environmental Impact  
Statement

FEMA – Federal Emergency Management  
Agency

FERC – Federal Energy Regulatory  
Commission

FOIA – Freedom of Information Act

FONSI – Finding of No Significant Impact

FPMS – Floodplain Management Services  
 FR – Federal Register  
 FRM – Flood Risk Management  
 FS – Feasibility Study  
 FSM – Feasibility Scoping Meeting  
 FUDS – Formerly Used Defense Site  
 FUSRAP – Formerly Utilized Sites Remedial Action Program  
 FY – Fiscal Year  
 FYI – For Your Information  
 FYSA – For Your Situational Awareness  
 GI – General Investigations  
 GIS – Geographic Information Systems  
 GNF – General Navigation Features  
 GRR – General Reevaluation Report  
 GS – General Schedule  
 H&H – Hydrology and Hydraulics  
 HAC – Hydropower Analysis Center  
 HAZMAT – Hazardous Materials  
 HEC – Hydrologic Engineering Center  
 HEP – Habitat Evaluation Procedures  
 HES – Habitat Evaluation System  
 HHS – Health and Human Services  
 HQ – Headquarters  
 HQUSACE – Headquarters, U. S. Army Corps of Engineers  
 HTRW – Hazardous, Toxic, and Radioactive Wastes  
 HU – Habitat Unit  
 I – Investigations  
 IDIQ – Indefinite Delivery, Indefinite Quantity  
 IEPR – Independent External Peer Review  
 IG – Inspector General  
 IN – Inland Navigation  
 IPR – In-Progress Review  
 IRC – Issue Resolution Conference  
 ITR – Independent Technical Review (now ATR)  
 IWR – Institute for Water Resources  
 IWW – Inland Waterways  
 IWTF – Inland Waterway Trust Fund  
 L&D – Lock and Dam  
 LDA – Limited Development Area  
 LER – Lands, Easements, and Rights-of-Way

LERR – Lands, Easements, Rights-of-Way, and Relocations  
 LERRD – Lands, Easements, Rights-of-Way, Relocations, and Disposal  
 LOI – Letter of Intent  
 LPP – Locally Preferred Plan/ Local Protection Project  
 LRR – Limited Reevaluation Report  
 LTC – Lieutenant Colonel  
 M&I – Municipal and Industrial  
 MCX – Mandatory Center of Expertise  
 MFR – Memorandum for Record  
 MG – Major General  
 MHW – Mean High Water  
 MIPR – Military Interdepartmental Purchase Request  
 MLW – Mean Low Water  
 MOA – Memorandum of Agreement  
 MOU – Memorandum of Understanding  
 MR&T – Mississippi River and Tributaries  
 MRC – Mississippi River Commission  
 MSC – Major Subordinate Command  
 MSL – Mean Sea Level  
 NAS – National Academy of Sciences  
 NAV – Navigation  
 NDC – Navigation Data Center  
 NED – National Economic Development  
 NER – National Ecosystem Restoration  
 NEPA – National Environmental Policy Act  
 NFIP – National Flood Insurance Program  
 NGO – Nongovernmental Organization  
 NGVD – National Geodetic Vertical Datum  
 NHPA – National Historic Preservation Act  
 NLT – No Later Than  
 NOAA – National Oceanographic and Atmospheric Administration  
 NPS – National Park Service  
 NRHP – National Register of Historic Places  
 NTE – Not to Exceed  
 NTP – Notice to Proceed  
 O&M – Operations and Maintenance  
 OBE – Overcome by Events  
 OC – Office of Counsel

OMB – Office of Management and Budget  
 OMRR&R – Operations, Maintenance, Repair, Replacement and Rehabilitation  
 OWPR – Office of Water Project Review  
 P&D – Planning and Design  
 P&G – Principles and Guidelines  
 P&S – Principles and Standards/ Plans and Specifications  
 PA – Planning Associate/ Per Annum  
 PAB – Planning Advisory Board  
 PAC – Post-authorization Change  
 PACR – Post-authorization Change Report  
 PAS – Planning Assistance to States  
 PCoP – Planning Community of Practice  
 PCX – Planning Center of Expertise  
 PDT – Project Delivery Team  
 PE – Professional Engineer  
 PED – Pre-construction Engineering and Design  
 PGM – Project Guidance Memorandum  
 PGN – Planning Guidance Notebook  
 PL – Public Law  
 PM – Project Manager/Management  
 PMBP – Project Management Business Process  
 PMP – Project Management Plan  
 PMF – Probable Maximum Flood  
 POC – Point of Contact  
 POTUS – President of the United States  
 PPA – Project Partnership Agreement  
 PRB – Project Review Board  
 PTL – Planning Technical Lead  
 Q’s & A’s – Questions and Answers  
 QA/QC – Quality Assurance / Quality Control  
 R&D – Research and Development  
 R&H – River and Harbor  
 R&U – Risk and Uncertainty  
 RBRCR – Remaining Benefits, Remaining Costs Ratio  
 REC - Recreation  
 RED – Regional Economic Development  
 REP – Real Estate Plan  
 RIT – Regional Integration Team  
 RFP – Request for Proposal  
 RP – Review Plan/ Resource Provider

RMB – Regional Management Board  
 RMC – Risk Management Center  
 RMO – Review Management Organization/Resource Management Office  
 RMP – Risk Management Plan  
 ROD – Record of Decision  
 ROW – Right of Way  
 RR – Risk Register  
 RTS – Regional Technical Specialist  
 S&A – State and Agency/Supervision and Administration  
 S&I – Supervision and Inspection  
 SAR – Safety Assurance Review  
 SCORP – State Comprehensive Outdoor Recreation Plan  
 SCOTUS – Supreme Court of the United States  
 SCS – Soil Conservation Service  
 SEPWC – Senate Environment and Public Works Committee  
 SES – Senior Executive Service  
 SFO – Support for Others  
 SHPO – State Historic Preservation Office  
 SITREP – Situation Report  
 SMART – Specific Measurable Attainable Risk-Informed Timely  
 SME – Subject Matter Expert  
 SOP – Standard Operating Procedure  
 SOS – Scope of Services/Scope of Studies  
 SOW – Scope of Work  
 T&ES – Threatened and Endangered Species  
 T&I – Transportation and Infrastructure (House)  
 TBA – To be Announced  
 TBD – To be Determined  
 THPO – Tribal Historic Preservation Office  
 TMDL – Total Maximum Daily Load  
 TRC – Technical Review Conference  
 UDV – Unit Day Value  
 USACE – U. S. Army Corps of Engineers  
 USC – United States Code  
 USCG – United States Coast Guard  
 USEPA – United States Environmental Protection Agency

USFWS – United States Fish and Wildlife  
Service  
USGS – United States Geological Survey  
VE – Value Engineering  
VT – Vertical Team  
VTC – Video Teleconference  
WMP – Watershed Management Plan  
WQ – Water Quality  
WRC – Water Resources Council  
WRDA – Water Resources Development  
Act  
WS – Water Supply

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## Executive Summary

The Master Plan for Norfolk Lake was first approved January 1946 (then titled, “The Norfolk Plan – Recreational Facilities at Norfolk Lake, Missouri and Arkansas” Design Memorandum 1-A. Subsequent revisions were prepared with the latest revision approved in November 1987 and revised June 1988. The Master Plan is intended to serve as a guide for the orderly and coordinated development, management, and stewardship of all lands and water resources of the project. It presents data on existing conditions, anticipated recreational use and the type of facilities needed to service anticipated use, sensitive resources requiring protection, and an estimate of future requirements. Since the 1988 master plan revision, public use and development in the Norfolk Lake region has not occurred as planned on the public lands and resources of the project. Based on elapsed time and the need to recognize current management practices at the project, as well as new guidance and directives within U. S. Army Corps of Engineers (USACE), these actions have dictated the preparation of this Master Plan revision.

This revised Master Plan presents an inventory of land resources and how they are classified, existing park facilities, an analysis of resource use, anticipated influences on project operation and management, and an evaluation of future and reasonably foreseeable needs as required to provide a balanced management plan for cultivating the value of the land and water resources. Included in the revised Master Plan is an evaluation of expressed public opinion, new resource use objectives, and a new land classification system. The format utilized for this plan is outlined in Engineer Regulation/Engineer Pamphlet 1130-2-550 (change 5, dated 30 January 2013), which sets forth policy and procedure to be followed in preparation and revision of project Master Plans. This guidance is different from the original Master Plan format, which was a design memorandum. Norfolk Lake original Master Plan can be found in Design Memorandum 1-A; and all subsequent Master Plan revisions and prior supplements can be found in Appendix B.

An Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) were completed as part of the environmental documentation portion of the process. Both documents are included as Appendix A. Upon completion of the Master Plan revision process, if no significant impacts due to Federal action are determined, the FONSI will be signed signifying the end of the revision process.

# Chapter 1 Introduction

## 1.1 Project Authorization

Authorization is defined as permission to undertake a specific activity. In the context of this Master Plan revision, project authorization refers to congressional legislation which granted authority to the USACE to study, construct, and eventually operate the White River Basin reservoirs, specifically Norfolk Lake. Initial authorizations for the project included the primary project purposes of flood control and generation of hydroelectric power, followed by subsequent authorizations for recreation, fish and wildlife, and water supply.

Norfolk Lake was authorized by the Flood Control Act approved 28 June 1938 (Public Law 761, 75<sup>th</sup> Congress, 3d session), as modified by the Flood Control Act approved 18 August 1941 (Public Law 228, 77<sup>th</sup> congress, 1<sup>st</sup> session), for flood control and generation of hydroelectric power. The inclusion of storage for municipal and industrial water supply was authorized by the Water Supply Act of 1958.

Section 4 of the Flood Control Act approved 22 December 1944, as amended by Section 4 of the Flood Control Act approved 24 July 1946 and as further amended by Section 209 of the Flood Control Act approved 3 September 1954 (Public Law 780, 83d Congress), authorized the Department of the Army to provide for recreational use of lakes under its control. Water supply storage of 3,451.975-acre feet, under the provisions of the Water Supply Act of 1958 as amended, has been purchased by Water and Sewer Improvement District No. 3 of Mountain Home, Arkansas.

Norfolk Lake project authorizations include the following:

- The Flood Control Act approved 28 June 1938 (Public Law No. 761, 75th Congress, 3rd Session) as modified by the Flood Control Act approved 18 August 1941 (Public Law No. 228, 77th Congress, 1st Session) to include the authorization of the project for flood control and generation of hydroelectric power.
- Section 4 of the Flood Control Act approved 22 December 1944 (58 stat 889), as amended by Section 4 of the Flood Control Act approved 24 July 1946 (60 stat 642), as amended by Section 209 of the Flood Control Act approved 3 September 1954, as further amended by Section 207 of the Flood Control Act of 1962, as further amended by Section 2 of the Land and Water Conservation Fund Act of 1965.
- Section 209 of the Flood Control Act approved 3 September 1954 (Public Law 780, 83d Congress), authorized the Department of the Army to provide for recreational use of lakes under its control.
- Section 6, Public Law 78-534. Under Section 6 of Public Law 78-534 (the 1944 Flood Control Act), the Secretary of the Army is authorized to enter into agreements for surplus water with states, municipalities, private concerns, or individuals at any reservoir under the control of the Department of the Army. The price and terms of the agreements may be as the Secretary deems reasonable. These agreements may be for domestic, municipal, and industrial uses, but not for crop irrigation.

- Title III of Public Law 85-500 (the 1958 River and Harbor Act) is entitled the "Water Supply Act of 1958." Section 301 (a) established a policy of cooperation in development of water supplies for domestic, municipal, industrial, and other purposes. Section 301(b) is the authority for the Corps to include municipal and industrial (M&I) water storage in reservoir projects and to reallocate storage in existing projects to M&I water supply. However, as specified in Section 301(d), modifications to a planned or existing reservoir project to add water supply would seriously affect the project, its other purposes, or its operation requires congressional authorization. This act was amended by Section 10 of Public Law 87-88 and by Section 932 of Public Law 99-662.
- Section 10 of Public Law 87-88 (the Federal Water Pollution Control Act Amendments of 1961) modified the 1958 Water Supply Act. This modification permitted the acceptance of assurances for future water supply to accommodate the construction cost payments for future water supply.
- Section 932 of Public Law 99-662 (the Water Resources Development Act 1986) amended the Water Supply Act of 1958. This amendment applies to Corps projects but not to Bureau of Reclamation projects. The amendment eliminated the 10-year interest free period for future water supply, modified the interest rate formula, limited repayment to 30 years, and required annual operation, maintenance, and replacement costs to be reimbursed annually. This latter requirement had always been a part of Corps policy and repayment procedures.
- Public Law 88-140, approved 16 October 1963, extended to the non-Federal sponsor of water supply storage the right to use the storage for the physical life of the project subject to repayment of costs. This removed an uncertainty as to the continued availability of the storage space after the 50-year maximum period previously allowed in contracts.
- Public Law 104-303 (the Water Resources Development Act of 1996), Section 304, authorized recreation and fish and wildlife mitigation as purposes of the project to the extent that the additional purposes do not adversely affect flood control, power generation, or other authorized purposes of the project.
- Public Law 109-103 White River Minimum Flows Section 132(a) of the FY 2006 Energy and Water Development Appropriations Act (EWDAA) authorized and directed implementation of two of the Reallocation plans described in the July 2004 White River Minimum Flows Reallocation Report: BS-3 at Bull Shoals Lake and NF-7 at Norfolk Lake.

## 1.2 Project Purpose

Norfolk Lake is a multiple purpose project created for purposes of flood risk management. Norfolk Lake was authorized by the Flood Control Act of 1938 as one of the original six lakes developed for flood control and other purposes in the White River Basin. The Project is operated for primary purposes of flood risk management, hydropower, with secondary consideration of water supply, recreation, and fish and wildlife to the extent that those additional purposes do not adversely affect flood control, power generation, or potential future authorized purposes of the project.

### **1.3 Purpose and Scope of Master Plan**

This revised Master Plan replaces Design Memorandum No. 1-E, “Master Plan for Norfolk Lake” approved November 1987 and Revised June 1988. Regulation and guidance for master plan revisions are provided by Engineer Regulation (ER) and Engineer Pamphlet (EP) 1130-2-550; and Engineer Manual (EM) 1110-1-400.

The Master Plan is the strategic land use management document that guides the comprehensive management and development of all project recreational, natural, and cultural resources throughout the life of the water resource project. The Master Plan guides the efficient and cost-effective management, development, and use of project lands. It is a vital tool for the responsible stewardship and sustainability of project resources for the benefit of present and future generations.

The Master Plan guides and articulates Corps responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop the project lands, waters, and associated resources. The Master Plan is a dynamic operational document projecting what could and should happen over the life of the project and is flexible based upon changing conditions. The Master Plan deals in concepts, not in details, of design and administration. Detailed management and administration functions are addressed in the Operational Management Plan (OMP), which implements the concepts of the Master Plan into operational actions.

The Master Plan will be developed and kept current for Civil Works projects operated and maintained by the Corps and will include all land (fee, easements, or other interests) originally acquired for the projects and any subsequent land (fee, easements, or other interests) acquired to support the operations and authorized missions of the project.

The 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 management plan. However, specific issues identified through the Master Plan revision process can still be communicated and coordinated with the appropriate internal Corps resource (i.e., Operations for shoreline management) or external resource agency (i.e., Missouri Department of Natural Resources and Arkansas Department of Energy and Environment for water quality) responsible for that specific area.

### **1.4 Brief Watershed and Project Description**

Norfolk Dam is located in Baxter County, Arkansas, on the North Fork River, about 4.8 miles upstream from its confluence with the White River. The dam is approximately 12 miles southeast of Mountain Home, Arkansas. The lake extends eastward into Fulton county, Arkansas, and northward into Ozark County, Missouri.

Norfolk Lake is located in the upper White River Basin. The White River Basin begins in northwest Arkansas and winds its way along northern Arkansas, then south to the confluence of the Arkansas and Mississippi River. The basin area is relatively undeveloped. A mild climate, an abundance of natural resources, and good quality of water for water sports, makes the White

River Basin a very desirable vacation destination. Five lakes have been constructed in the upper White River Basin, including Norfolk, Beaver, Table Rock, Lake Taneycomo (constructed by the Empire District Electric Company), and Bull Shoals. These lakes extend approximately 130 miles through northwest Arkansas and southwest Missouri and north-central Arkansas.

The total area contained in the Norfolk project, including both land and water surface, consists of 54,410 acres. Of this total, 253 acres are in flowage easement (Note: a small difference in acreage figures exist throughout this document due to using GIS/survey plats data which is more accurate and based on new technology versus the deed language which was derived many years ago without the aid of technology). The region is characterized by narrow ridges between deeply cut valleys that are forested with deciduous trees, scattered pine, and eastern red cedar. When the lake is at the top of the conservation pool (553.75 mean sea level), the water area comprises 21,662 surface acres and 372 miles of shoreline. The shoreline is irregular with topography ranging from steep bluffs to gentle slopes. Additional information on headwaters/tailwaters, major streams associated with the lake, etc. can be found in Chapter 2, under Section b. Hydrology and Groundwater.

Construction on the project began in March of 1941 and filling of the power reservoir started in June 1943. Construction of the dam was completed in 1944. Commercial operation of the power plant with one unit began in June 1944. A second unit was placed in operation in February 1950. The conservation pool elevation has since been raised to elevation 553.75 feet from 552.0 NGVD for the implementation of minimum flows on 12 September 2013.

At the drafting of this final Master Plan, no significant park operational changes are anticipated. Since 1988, parks have been evaluated using an efficiency review process. There are 30 public use areas around Norfolk Lake. A more detailed description of the Corps parks follows in Chapter 2.

## **1.5 Listing of Prior Design Memorandum**

A listing of prior design memorandums and accompanying supplements are provided in a table listing in Appendix B. The supplements are also provided in Appendix B and with the release of this Master Plan, are considered incorporated into this document.

## **1.6 Pertinent Project Information**

Although this revised Master Plan is focused on management of land and water surface related to project purposes of outdoor recreation, and fish and wildlife the following information about primary project facilities is provided to aid in understanding how all project purposes are interrelated.

Norfolk Lake dam is a concrete gravity structure with a crest length of 2,624 feet and a maximum height of 216 feet above the stream bed. Two power units with a total generating capacity of 80.5 megawatts have been installed, each having a discharge capacity of approximately 2,700 cfs (when generating at rated capacity with the reservoir at top of conservation pool). Table 1-1 summarizes the pertinent engineering data on the project.

Operation of the project related to the storage in the pools is twofold. Conservation pool storage is designed for holding water to be used for authorized purposes, both during normal conditions or during an extended period of below normal rainfall. The flood pool zone is for the temporary impoundment of water to be released after downstream high water has receded. The hydroelectric power plant produces electricity, which is marketed by the Southwestern Power Administration, U.S. Department of the Energy. The dam was designed with spillway capacity to pass inflow with a maximum pool elevation of 580 feet msl. Withdrawals of storage for authorized conservation uses, can cause the lake elevation to fluctuate between 553.75 feet msl, which is the top of the conservation pool, and 510 msl, the bottom of the conservation pool. During flood conditions, the lake level may exceed the top of the flood control pool in rare events with large runoff quantities. This event is known as a surcharge.

In 2005, the USACE started Screening for Portfolio Risk Analysis (SPRA). This analysis screened each dam in the USACE inventory based on available information, to expeditiously identify and classify every dam according to perceived risk. The screening has yielded a basic understanding of the greatest risks and priorities for dams throughout USACE. The Dam Safety Action Classification System (DSAC) is intended to provide consistent and systematic guidelines for appropriate actions to address the dam safety issues and deficiencies of USACE dams. USACE dams are placed into a DSAC class based on their individual dam safety risk considered as a combination of probability of failure and potential life safety concerns. Other considerations such as economic and environmental issues, while important, are secondary compared to life safety issues. The DSAC table presents different levels and urgencies of actions that are commensurate with the different classes of the safety status of USACE dams. These actions range from recognition of an urgent situation requiring immediate action through normal operations and dam safety activities for dams without known issues.

***DSAC I (Very High Urgency of Action)*** – Dams where progression toward failure is confirmed to be taking place under normal operations and the dam is almost certain to fail under normal operations within a time frame from immediately to within a few years without intervention, or the combination of life and/or economic consequences make probability of failure extremely high.

***DSAC II (High Urgency of Action)*** – Dams where failure could begin during normal operations or be initiated as the consequence of an event. The likelihood of failure from one of these occurrences, prior to remediation, is too high to assure public safety, or the combination of life and/or economic consequences make probability of failure very high.

***DSAC III (Moderate Urgency of Action)*** – Dams that have issues where the dam is significantly inadequate, or the combination of life, economic, and/or environmental consequences make the risks moderate to high.

***DSAC IV (Low Urgency of Action)*** – Dams are inadequate but with low risk such that the combination of life, economic, and/or environmental consequences make a probability of failure low, although the dam may not meet all essential USACE engineering guidelines.

***DSAC V (Normal)*** – Dams considered adequately safe, meeting all essential agency guidelines and the residual risk is considered tolerable.



Initially, Norfolk Dam was classified as a DSAC IV (low urgency) in 2008. The dam underwent a detailed Periodic Assessment (PA) in 2014. The PA team recommended the dam be reclassified to a DSAC III (moderate urgency) due to risk associated with overtopping and potential instability of the dam during very rare flood events and seismic events. Approval of the DSAC change was finalized on June 3, 2015 from the Dam Safety Oversight Group and USACE Headquarters. An Interim Risk Reduction Management Plan (IRRMP) has been implemented.

Table 1-1 General Dam Information

PERTINENT DATA OF THE DAM AND LAKE	
General Information	
Authorized Purpose, Stream, State	Flood Risk Management, Hydropower, Water Supply, Recreation, Fish and Wildlife, and White River Minimum Flows. North Fork River, Arkansas
Drainage area, square miles	1,806
Average annual rainfall over the drainage area, inches (1978-2020)	42.7
Dam	
Length in feet	2,624
Top of dam elevation, feet above mean sea level	590.0
Generators	
Main units, number	2
Rated capacity of each unit, megawatts	40.25
Station service units, number	1
Rated capacity of station service unit, kilowatts	895
Lake	
Nominal bottom of power drawdown Elevation, feet above mean sea level	510.0
Area, acres	12,320
Nominal top of conservation pool Elevation, feet above mean sea level	553.75
Area of water surface at conservation (normal) pool in acres	21,662.5
Length of shoreline, miles	372
Nominal top of flood-control pool Elevation, feet above mean sea level	580.0
Area of water surface of flood control pool in acres	29,512.7
Length of shoreline, miles	511
Five-Year frequency pool	
Elevation, feet above mean sea level (flood pool) (simulated 1940-2011)	571.2
Elevation, feet above mean sea level (drawdown) (simulated 1940-2011)	537.8

## **Chapter 2 Project Setting and Factors Influencing Management and Development (Existing Conditions)**

### **2.1 Description of Reservoir**

Norfork Lake is located in the Ozark Mountain region of north central Arkansas and south central Missouri. Having 372 miles of shoreline and over 21,662 water surface acres, Norfork Lake is a large reservoir and is the oldest of the Corps of Engineers White River lakes. With a relatively undeveloped shoreline and exceptional water quality, the Lake has remained a destination for much of Arkansas and Missouri, providing great environmental and economic benefits to the Ozark region since impoundment.

Norfork Lake, along with nearby Bull Shoals Lake, provide an alternate experience to the upper White River Lakes with natural undeveloped shoreline, vistas of mature forests and limestone bluffs. Many arms and coves of the lake offer secluded areas for traditional activities such as fishing, swimming, and scuba diving. Norfork Lake was acquired with a large land base of more than 32,750 acres of public land above the conservation pool which provides opportunities for hunting, hiking, and terrestrial based recreation. Recreation areas offering developed facilities to support camping, boating, and swimming are located throughout the project. Commercial concessions, such as marinas and resorts, provide services ranging from fuel and supplies to overnight lodging. Large wildlife management areas abound on Norfork Lake due to its size and quality wildlife habitat. A large portion of Federal land in both Missouri and Arkansas have been licensed to each state's fish and wildlife management agency.

The lake is very irregular in shape, due to the mountainous terrain. Many large arms and bays extend up the valleys of tributaries, and the topography creates numerous small coves. The forested shoreline varies from steep bluffs to gently sloping points and is indented with many coves. Many of the hills and flat-topped ridges in the vicinity rise to an elevation of 825 feet above mean sea level, and some of the higher peaks in the region reach an elevation of more than 1,100 feet msl. Mile-long limestone bluffs, striking vistas, and heavily wooded shorelines combine to offer a unique natural environment.

### **2.2 Hydrology and Groundwater**

#### **2.2.1 Surface Water**

Norfork Lake is located on the North Fork River and was formed by the construction of the Norfork Hydroelectric Dam in Baxter County, Arkansas, which spanned the years 1940-1943. The elevation of the top of the conservation pool is approximately 553.75 feet above msl with the flood pool being at 580 feet above msl. At conservation pool, the lake area is approximately 21,662 acres, and at flood pool, the lake area is approximately 29,513 acres. The shoreline length at conservation pool is approximately 372 miles and at flood pool is approximately 511 miles. Norfork Lake's watershed drains approximately 1,806 square miles in northern Arkansas and southern Missouri (Figure 2-1). The lake has an average depth of 56 feet, and the total flood

control storage capacity of Norfolk Lake is 1.983 million acre-feet with 1.290 million acre-feet of conservation storage.

Norfolk Lake and its watershed are located in the Springfield-Salem Plateaus section of the Ozark Plateaus physiographic province. The landscape is described as rugged uplands with exposed rock and varying soil depths and includes extensive areas of karst terrain (sink holes, caves, and springs) (Ethridge, 2009). Spring-fed streams are common and typically are perennial with gravelly substrates. Topographic relief in the area is a result of erosional dissection of the plateaus and generally is controlled by lithology, as well as structural features such as faults and fractures. Norfolk Lake's watershed ranges in elevation from 531.5 feet above msl to 1,745.4 feet above msl, with an average elevation of 974 feet above msl (Figure 2-1). The North Fork River drops, on average, approximately 13.7 feet per mile from the headwaters (elevation 1,453.4 feet above msl) to the lake inlet (elevation 554.5 feet above msl) Figure 2-1. One large tributary joins the North Fork River from the west, Bryant Creek, and drains a similar area as that of the North Fork River (Figure 2-1).

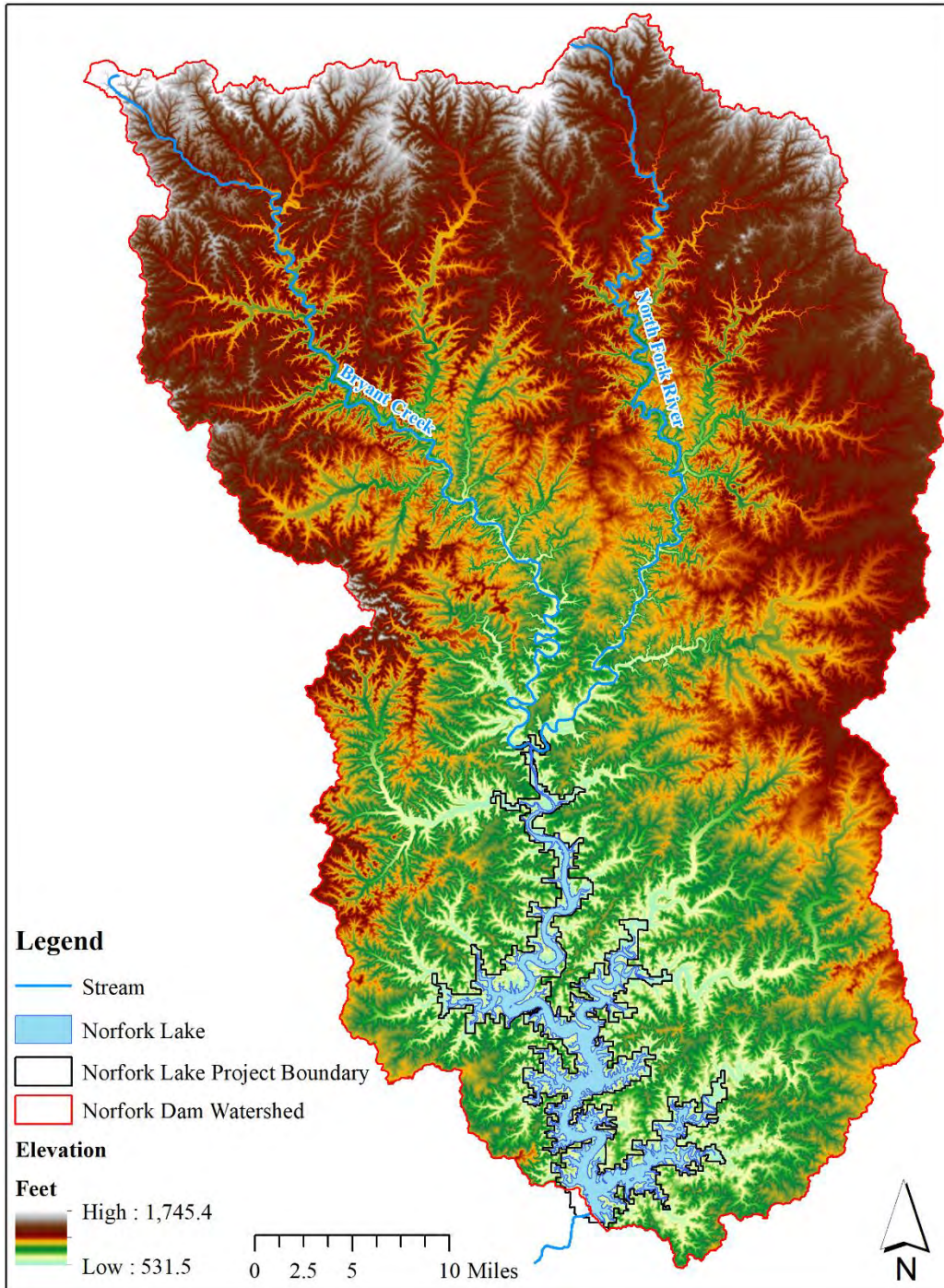


Figure 2-1 Norfolk Lake Dam Watershed and Surrounding Topography (source: USACE)

Erosion of the residual soils containing cherts and clay accounts for the tumbled gravels found in streambeds of the watershed. The headwater area of the North Fork River is on sedimentary rock with embedded limestone formations that contain numerous springs. The soil, a residuary of weathering, is relatively thin on the hills. In some places it is exceedingly stony, due to the disintegration of the cherty limestone; in others it is very sandy with sandstone fragments and

boulders; and in other localities, it is composed of red clay, formed by the decomposition of limestone, intermingled with sand and chert fragments. The rivers flow on bedrock and have cut a meandering course through the well-developed narrow floodplains. The alluvial material in these floodplains is composed principally of silt and sand and seldom exceeds 30 feet in thickness.

Other major rivers in the Norfolk Lake area include the Buffalo River, the Current River and the Black River. The Buffalo River empties into the White River in Marion County, Arkansas, south of Norfolk Lake, the Current River empties into the Black River in Randolph County, Arkansas, east of Norfolk Lake, and the Black River joins the White River in Independence County, Arkansas, southeast of Norfolk Lake.

### **2.2.2 Groundwater**

Norfolk lake lies in the vicinity of the Ozark aquifer. Groundwater flow and quality within the Ozark Plateaus are controlled by the lithologies of the rocks exposed at the surface that convey groundwater flow; stratigraphic relations of these different lithologies; and geologic structure, including the physical modifications to the rocks that have occurred over time (Kresse et al., 2014). Aquifer yields in the Ozark aquifer are lower than other aquifers in the state and groundwater is primarily used for domestic supply. The Ozark aquifer is exposed and generally unconfined and comprises a sequence of formations predominated by dolostones along with minor limestone, sandstone, and shale intervals of Ordovician age (Kresse et al., 2014). Wells within the upper Ozark aquifer are generally less than 300 feet in depth and have yields of approximately 5–10 gallons per minute (Kresse et al., 2014). Recharge to the Ozark aquifer primarily occurs where the aquifer is unconfined and exposed, can be rapid and result in highly variable water levels, substantial seasonal changes, and groundwater-gradient reversals (Kresse et al., 2014).

### **2.3 Sedimentation and Shoreline Erosion**

Sediment is a large contributor to nutrient input into any water body. According to the White River Basin 2014 Water Control Master Manual, the inflow to the White River reservoirs have not historically had a major sediment load; therefore, initial sediment ranges for the lake were established as index ranges to be surveyed only on a spot basis unless a sedimentation problem was identified. There are 72 sediment range monuments at Norfolk Lake. Of these, 34 ranges are on the mainstem and 38 are located on tributaries. The sediment range monuments were established in each of the White River reservoirs at the time of construction. The inflow to the White River reservoirs has not historically had a major sediment load; therefore, initial sediment ranges for the lakes were established as index ranges to be surveyed only on a spot basis every 10 years unless a sedimentation problem was identified. Thus far, no major sediment deposits have been identified with the sedimentation surveys. Therefore, many of the ranges have never been resurveyed.

In 2015, a bathymetric survey of Norfolk Lake was conducted by the U.S. Geological Survey (USGS) using multi-beam sonar methods (Wagner and Lee, 2017). This data was merged with aerial LiDAR data to compute new storage-elevation data.

Since 2008 the region has experienced several wet weather events. Specifically, from 2008 - 2020, 12 of the 13 years produced above average basin wide rainfall and four major flood events. The flood events have caused increased erosion within the basin due to record high flows in the tributaries. Additionally, the increased rainfall has resulted in prolonged high water that is said to have caused a loss of vegetation around the lake and increased shoreline erosion.

## 2.4 Water Quality

Overall surface water quality in the Norfork Lake area is good, and the lake has water quality which is suitable for primary and secondary contact, fisheries, domestic, industrial, and agricultural water supply, as designated by the Arkansas Department of Energy and Environment (ADEE), formerly known as the Arkansas Department of Environmental Quality (ADEQ). Norfork Lake is classified by ADEE as a Type A water body, which includes most larger lakes of several thousand acres in size, in upland forest dominated watersheds, having an average depth of 30 to 60 feet, and having low primary production (i.e., having a low trophic status if in natural [unpolluted] condition). This is mainly due to temperature stratification, which is natural and occurs in many deep reservoirs such as Norfork Lake. During the warmer months, lake waters of the upper layer (the epilimnion) are warmer and contain more dissolved oxygen, while the denser, lower layer waters (the hypolimnion) are colder and contain very little or no dissolved oxygen. As the stratified epilimnion cools in the late fall and winter, the layers begin to mix (de-stratify) and dissolved oxygen (DO) is more evenly distributed. This condition is more favorable to the fishery of the lake and overall water quality.

In 2004, ADEQ placed the 4.8 miles of the Norfork tail water on the Water Quality Limited Waterbodies list (303(d) list) due to violation of the 6 mg/L dissolved oxygen (DO) standard. The listed source of the DO violation is hydropower (HP). Section 303(d) of the Clean Water Act requires states to list waters that do not meet Federal water quality standards or have a significant potential not to meet standards as a result of point source dischargers or non-point source run-off. Subsequent to listing on the 303(d) list, the statute requires that the states develop and set the Total Maximum Daily Load (TMDL) for water bodies on the list within 13 years. A TMDL establishes the maximum amount of a pollutant that can enter a specific water body without violating the water quality standards. Values are normally calculated amounts based on dilution and the assimilative capacity of the water body. TMDLs have been established by ADEQ for the 4.8 miles of the North Fork River below Norfork Dam. With an active TMDL in place the 4.8 miles below the Norfork dam is no longer listed on the 303 (d) as an impaired water body. In January 2009, USACE completed the White River Minimum Flow (WRMF) Study, which would increase the minimum flow below the dam to 300 cfs to benefit the aquatic habitat and may result in water quality improvements in the tail water.

For the Missouri portion of Norfork Lake, the Missouri Department of Natural Resources (MDNR) and the Clean Water Commission are responsible for setting and enforcing water quality standards within the State of Missouri. Classified waters in the state are categorized according to their beneficial water usage. Major reservoirs like Norfork Lake are usually several thousand acres in size and are classified by the state as L2 (comparable to Type A in Arkansas). Norfork Lake, in addition to maintaining L2 water quality standards, is also subject to four other water quality standards: (1) livestock and wildlife watering; (2) protection of warm water aquatic

life and human health/fish consumption; (3) whole body contact recreation; and (4) boating and canoeing water quality standards (MDNR, 1996b).

## **2.5 Project Access**

The lake is surrounded by US, State, and county roads, making access possible at many points in any given area of the lake. Further highway and airport access can be referenced in Figure 2-2 Norfolk Lake Project Access.



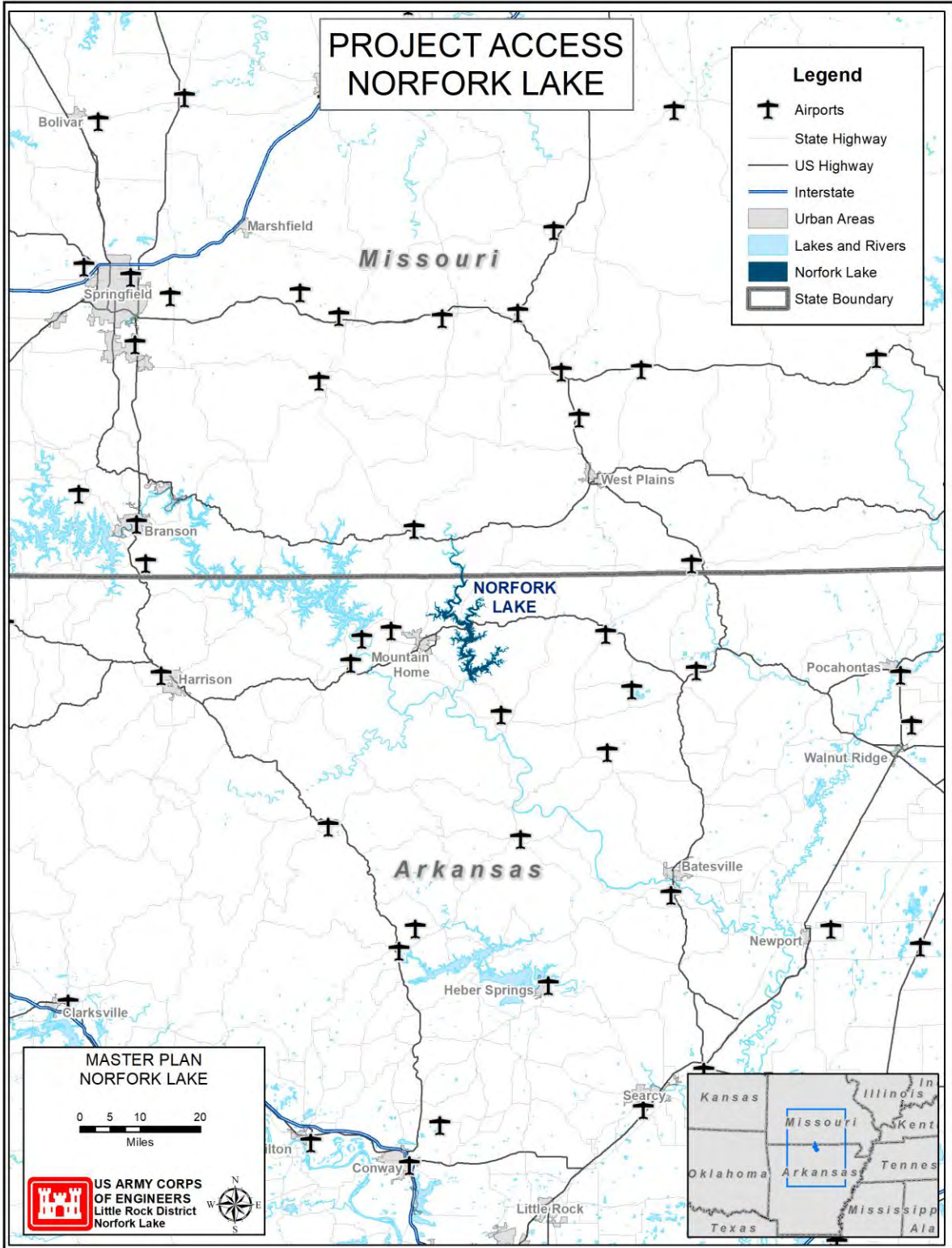


Figure 2-2 Norfolk Lake Project Access

## 2.6 Climate

Climate within the Norfolk Lake watershed is temperate, with summer extremes lasting for longer periods throughout northern Arkansas, and winter temperatures being more influential in the zone's northern reaches in Missouri. Extremes may vary from lows around 0°F in the winter months to highs above 100°F occurring from southern Arkansas to central Missouri during the summer months. Extreme temperatures may occur for short periods of time at any location within the watershed. Monthly rainfall varies from 2.5 inches in the winter months to about 5 inches in the spring. Average annual rainfall over the watershed varies from 48 to 50 inches. Recent years have produced record rainfall amounts resulting in the top six annual rainfall amounts on record. Snowfall each year averages from 8 to 16 inches from south to north across the watershed. Snowpacks are usually short lived and are not commonly a concern for flooding.

Norfolk Lake is located in the Ozark Mountains, remote from heavy smoke-producing industry or large mining operations. The air is very clean, and smog is virtually unknown in this region.

Climate change became an area of concern due to the potential for effects on numerous aspects of the environment, especially those related to water resources. The U.S. Global Change Research Program (USGCRP) summarized information regarding climate change and its potential effects in regional assessments. In the Midwest, which extends from Minnesota to Missouri, extreme events such as heat waves, droughts and heavy rainfall events were projected to occur more frequently. Should these events become significant to impact the operation of Norfolk Lake, the Master Plan, and associated documents (i.e., Operations Management Plan and Shoreline Management Plan) will be reviewed and revised, if necessary.

The State of Missouri passed the Water Resources Law in 1989 and was directed to “develop, maintain and periodically update a state water plan for a long-range, comprehensive statewide program for the use of surface water and groundwater resources of the state, including existing and future needs for drinking water supplies, agriculture, industry, recreation, environmental protection and related needs.” The state water plan was done in 2 phases: Phase 1 completed a series of 7 technical assessment documents to provide basic information about Missouri’s streams and rivers, groundwater, water use, water quality, interstate water issues, hydrologic extremes, and water law; Phase 2 is the identification of regional problems and opportunities related to water use.

The Arkansas Water Plan (AWP) is the state’s policy for long term water management. The State of Arkansas last updated their water plan in 2014. The AWP brings data, science, and public input together to define water demands, water supplies, issues, and potential solutions to meet the state’s needs for the next 40 years.

## 2.7 Topography, Geology, and Soils

### 2.7.1 General Geology and Topography

The Norfolk Lake area is part of the Ozark uplift. This region is characterized by flat-lying, sedimentary rocks composed predominantly of limestone and dolomitic limestone. The upland area surrounding the lake is part of the Salem Plateau, the surface of which is developed of limestone and dolomites of the Ordovician age. Remnants of the plateau are represented by the summits of the higher hills in the area. The rock strata underlying the lake and forming its rim are the Everton, Powell, Cotter-Jefferson City, and Roubidoux formations of Ordovician age.

### 2.7.2 Soils

The soil mantle is a residual product of weathering. It is relatively thin on the hills. In some places, it is rocky because of disintegration of the cherty limestone; in others, it is very sandy with sandstone fragments and boulders; and in still other localities, it is composed of red clay, formed by the decomposition of limestone, intermingled with sand and chert fragments. The river has cut a meandering course deep into the bedrock, forming a well-developed narrow floodplain. The alluvial material in the floodplain is composed principally of silt and sand that seldom exceeds 30 feet in thickness. Chert, gravel and sand occur in typically long, narrow and thin bars located on the inside bends of the old riverbed.

Soil surveys as published by the Natural Resources Conservation Service (NRCS) are available for Baxter, Fulton counties in Arkansas and Ozark County in Missouri. These will be referred to for developing specific resource management plans for the Operational Management Plan. Soil Surveys for these counties (USDA Soil Conservation Service) indicate that majority of the soils around Norfolk Lake fall under two “general” soil map units, including the Arkana-Moko unit and the Doniphan-Gassville unit.

The Arkana-Moko unit consists of soils that formed in the residuum of dolomite and limestone. These soils are scattered throughout the part of Baxter County north of the White River. They are generally located on side slopes and ridgetops throughout the Norfolk Lake project area. Arkana and Moko soils are both well drained. Arkana soils are moderately deep, and Moko soils are shallow. The soils in this unit are used mainly as woodland supporting eastern red cedar and a variety of low to moderate grade hardwoods. In some gently sloping areas, the soils are used for pasture, but they are generally not suitable for cultivated crops. Depth to bedrock, shrink-swell potential, surface stones, erosion hazard and steep slopes represent the main limitations to the use of these soils for farming and most other intensive uses.

The Doniphan-Gassville soils are also scattered throughout the project area. Doniphan soils are deep and well drained on moderately sloping uplands. Gassville soils are moderately deep and well drained, and generally occur on steep side slopes. These soils are not suited for cultivated crops. Primary limitations for intensive use of these soils include slope, erosion hazard, surface chert, depth to bedrock, low strength, and slow permeability. Figure 2-3 depicts the geology of the adjacent watershed of Norfolk Lake.

Soil conservation and management will be a major consideration when planning natural resource and recreation management practices. While soil movement is influenced by climate, soil type, and topography, which are uncontrollable, it can also be negatively affected by compaction, modification of vegetative cover, and very high lake pool elevations which increase wave action and inundation of unprotected shoreline.

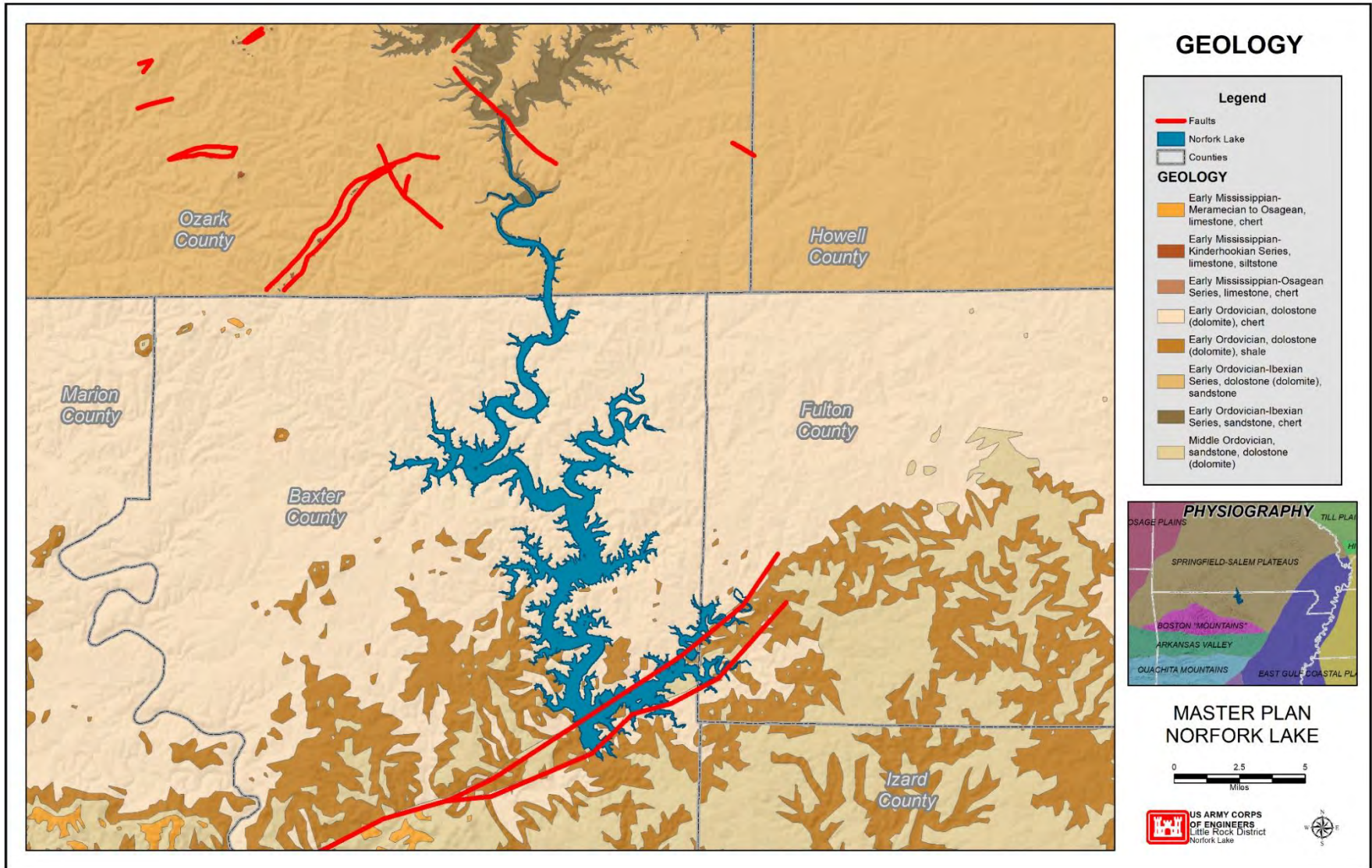


Figure 2-3 Geology and Fault Lines of Norfolk Lake and Surrounding Area

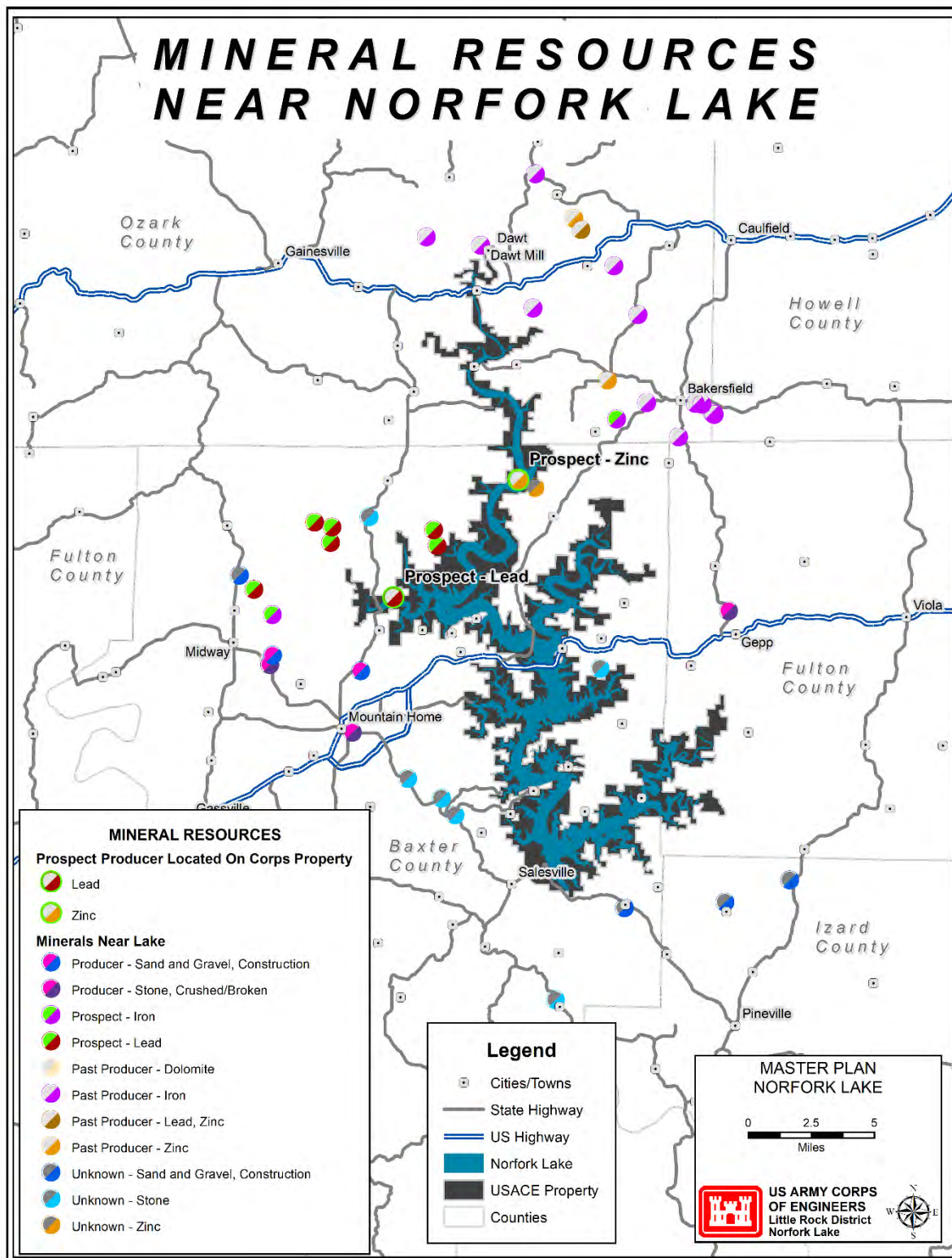


Figure 2-4 Minerals at Norfolk Lake

## 2.8 Resource Analysis (Level One Inventory Data)

Operational civil works projects administered by USACE are required, with few exceptions, to prepare an inventory of natural resources. The basic inventory required is referred to within USACE regulations (ER and EP 1130-2-540) as a Level One Inventory. This inventory includes the following: vegetation in accordance with the National Vegetation Classification System through the sub-class level; assessment of the potential presence of special status species including but not limited to Federal and State listed endangered and threatened species, migratory species, and birds of conservation concern listed by the U.S. Fish and Wildlife Service (USFWS); land (soils) capability classes in accordance with the Natural Resources Conservation Service (NRCS) criteria; and wetlands in accordance with the USFWS' Classification of Wetlands and Deepwater Habitats of the United States. This basic inventory information is used in preparing project master plans and Operation Management Plans (OMP). The OMP is a five-year management plan setting forth detailed information required to implement the concepts set forth in the master plan. An overview of the natural resources and related management actions at the project is provided in the following sections and paragraphs.

### 2.8.1 Fish and Wildlife Resources

The impoundment of the North Fork of the White River and other tributary streams and rivers which form Norfork Lake resulted in changes in the composition of the fish populations. Smallmouth bass was the principal game fish found in the North Fork of the White River prior to impoundment. Arkansas Game and Fish Commission (AGFC) and Missouri Department of Conservation (MDC) are the agencies primarily responsible for managing the fishery and through their efforts, a variety of fish species are well-established in the lake. Sport fish species currently found include: largemouth bass, spotted bass, smallmouth bass, white bass, striped bass, hybrid white-striped bass, walleye, flathead catfish, channel catfish, white crappie, black crappie, and various species of sunfish. Due to the quality and diversity of the fishery, Norfork Lake serves as a national fishing destination, hosting hundreds of bass tournaments annually.

Norfork Lake was impounded in 1944 and much of the standing timber was cut prior to the impoundment. Since impoundment, the few remaining native forests that were submerged provided little structure and forage habitat for fish. This limited habitat has degraded over time so in 1986, USACE, MDC, and AGFC began a large-scale artificial habitat improvement project with the primary objective to improve fish habitat within Norfork Lake. Since 1988, numerous fish habitat structures known as "fish attractors" have been placed in Norfork Lake by AGFC and several attractors by MDC. Approximately 30,000 trees comprise the attractors which cover over 45 acres of lake bottom, totaling 14 miles in length. AGFC and MDC fund the maintenance of the attractors each year, adding fresh cover to keep the attractors productive and increasing the habitat.

The impoundment of Norfork Lake resulted in environmental changes in the tailwater portion of the North Fork River from the dam to 4.8 miles downstream to where it empties into the White River. AGFC realized that the cold-water discharges from Norfork Lake would necessitate a change in their fisheries management program for the North Fork River as it transformed from a

warm water fishery to a cold-water fishery. Rainbow trout, cutthroat trout, brook trout, and brown trout were stocked in the North Fork River to replace the warm-water fishery. These efforts have allowed the production of a viable cold-water fishery. However, because of various unfavorable environmental factors such as lack of suitable substrate and the fluctuation of water temperatures, dissolved oxygen levels, water levels, trout reproduction is very limited.

In 1955, the Norfolk National Fish Hatchery was built by the U.S. Fish and Wildlife Service (USFWS) at Norfolk Lake on Dry Run Creek below Norfolk Dam to mitigate the loss of the warm water fishery and provide trout for the cold-water fishery below Norfolk Dam and nearby Bull Shoals Dam. Each year, an average of approximately 1,184,000 rainbow, 105,000 brown trout, 150,000 cutthroat trout, and 34,500 brook trout from the Norfolk Hatchery and from the USFWS Fish Hatcheries at Greers Ferry Lake and Mammoth Springs, AR and the Arkansas State Fish Hatchery at Mammoth Springs, AR are stocked in the North Fork and White Rivers. Since the trout program began, the fishery has flourished and is now known as a world class trout fishery and has become a popular international trout fishing destination.

Previously, during periods when there was little or no power generation, the water flow in the tailwater area was reduced, resulting in shallow depths and exposed river bottom perimeters. Concerns about the degradation of aquatic habitats for the cold-water fishery in the North Fork River and in the White River below Bull Shoals Dam due to these exposed areas led to the implementation of “White River Minimum Flows”. Section 132(a) of the FY06 Energy and Water Development Appropriations Act (EWDAA) authorizes and directs the implementation of plan NF-7 at Norfolk Lake for minimum flows. Plan NF-7 reallocates 3.5 feet of storage at Norfolk Lake to be evenly divided (50:50) between the conservation and flood control pools to provide for the minimum flows release of 300 cfs. This target flow of 300 cfs will consist of 185 cfs of minimum flow releases through a siphon system, as well as 20 cfs of existing releases through the hydropower Station Service Unit, 40 cfs of existing releases for the downstream trout hatchery, and existing flows of 55 cfs from normal leakage through the closed wicket gates. The top of the conservation pool elevation was raised by 1.75 feet, from 552.0 to 553.75. The construction of an associated bulkhead and siphon was completed in 2012, with the new conservation pool elevation being reached in 2013. Deviations from normal conservation pool exist for cold-water fisheries management and may be found in the White River Basin Water Control Plan for Norfolk Lake.

In 1963, a five-acre fish nursery pond was constructed by AGFC on the west shore of the North Fork River arm of Norfolk Lake on Chapin Point for the purpose of rearing game fish for stocking purposes. This fish nursery pond has been used in the past to introduce walleye, northern pike, striped bass, muskellunge, and blue catfish into the lake fishery. These fish have utilized habitats in the lake which the original stream-type fish avoided. The hatchery pond is typically used to rear walleye (63,000 annually), threadfin shad and bluegill (400,000 in 2017) for stocking directly into the lake.

White-tailed deer and eastern wild turkey are common game animals found and hunted in the Norfolk Lake area. Black bear have become common in the area and are hunted on the areas of Norfolk Lake located in Arkansas. The principal small game species found in the open upland areas include bobwhite quail, cottontail rabbit, and mourning dove. Gray and fox squirrels are



common in upland wooded areas and are also popular for sportsmen. Furbearing animals found in the Norfolk Lake area include coyote, red fox, gray fox, otter, mink, muskrat, beaver, bobcat, and raccoon. Habitat management that includes wildlife food plot plantings, mowing, soil disturbance, removal of exotic and invasive species and application of prescribed fire do much to benefit these populations.

The bat species diversity at Norfolk Lake is high. Surveys have identified the following bat species around Norfolk Lake, which include the Big Brown (*Eptesicus fuscus*), Eastern Red (*Lasiurus borealis*), Hoary (*Lasiurus cinereus*), Tri-Colored (*Perimyotis subflavus*), Little Brown (*Myotis lucifugus*), and Evening (*Nycticeius humeralis*) bats.

The common migratory waterfowl species visiting Norfolk Lake include mallards, gadwall, wood ducks, goldeneye, hooded merganser, bufflehead, and other duck species. However, some of these species are only transient visitors as their characteristic foraging habits involve more shallow waters, rather than the deep, clear waters of Norfolk Lake. Migratory geese common to the area are Canada geese of the Eastern Prairie Population. Giant and Greater Canada geese were introduced to the area by the MDC in 1971 and 1972 and have become established as a resident population. Resident Canada geese are in fact so numerous in many coves and recreation areas that their presence has become a nuisance.

Ring-billed gulls are seen frequently around the Norfolk Lake area. Greater and lesser yellow legs and large flocks of horned grebes are also seen during their peak migration in the spring and fall. Norfolk Lake is also one of the few places where visitors can see both the turkey vulture and the black vulture at the same time in the winter. In fact, wintering black vulture numbers have become so large, that they have become a nuisance to the public. Norfolk Lake has also become a popular place that visitors come to observe bald eagles, commonly wintering 20 or more birds, and hosting 4-6 breeding pairs during the nesting period of March to June.

### 2.8.2 Vegetative Resources

The area surrounding Norfolk Lake is mostly forested. Figure 2-5 depicts the basic land cover classification for Norfolk Lake. Trees and shrubs around the lakeshore include upland oak and hickory species, persimmon, honey locust, hawthorn, flowering dogwood, redbud, coralberry, smooth and winged sumac, and buttonbush. Frequent periods of inundation keep the strip of government owned lands around the lake in early stages of succession. Eastern red cedar and short-leaved pine, the principal evergreens, are dispersed throughout the region and are found in many large, scattered groups. Predominant ground covers consist of greenbrier, sedge, and native grasses.

Plant communities also include post oak savannas and glades. The post oak savanna ecosystem exhibits an open canopy of low-density trees allowing considerable light penetration to the understory. This permits a wide variety of shrubs and/or native grass to perpetuate under natural disturbances such as fire. Dolomite/limestone glades, which are characterized by barrens-like communities of prairie type native forbs and grasses, occur on the shallow soil over outcroppings of bedrock. USACE personnel provide a regular prescribed fire regimen to help to maintain these specialized vegetative ecosystems in the Norfolk Lake project area.

## 2.8.2.1 Norfolk Lake Special Terrestrial Ecological Systems

### 2.8.2.1.1 Ozark Fen

This fen system is found in the Ozarks region of the United States. Stands occur on the side slopes of hills in narrow valleys, bases of bluffs, rock ledges, and terraces of streams and rivers, where the soil or substrate is saturated by calcareous groundwater seepage. Soils are moist to wet, mucky peat or mineral, with pH above 6.5, and vary from shallow (0-40 cm) to moderately deep (40-100 cm), depending on natural disturbance and slope. The parent material is a mixture of gravel and dolomite with fragments of deeply weathered bedrock present, or colluvium over bedrock. The bedrock strata are exposed, especially in hanging fens where the slope is greater than 35°. Hydrophytic plants dominate the fen, such as mixed grasses, spike rushes (*Eleocharis sp.*) and sedges (*Carex sp.*).

### 2.8.2.1.2 Central Interior Highlands Calcareous Glade and Barrens

This ecosystem occurs along moderate to steep slopes and steep valleys on primarily southerly to westerly facing slopes. Limestone and/or dolomite bedrock typify this system with shallow, moderately to well-drained soils interspersed with rocks. These soils often dry out during the summer and autumn, and then become saturated during the winter and spring. Little bluestem (*Schizachyrium scoparium*) dominates this system and is commonly associated with big bluestem (*Andropogon gerardii*), sideoats grama (*Bouteloua curtipendula*), and other calcium-loving plant species. Stunted woodlands primarily dominated by chinkapin oak (*Quercus muehlenbergii*) interspersed with eastern red cedar (*Juniperus virginiana*) occur on variable-depth-to-bedrock soils. Fire is the primary natural dynamic, and prescribed fires help manage this system by restricting woody growth and maintaining the more open glade structure.

### 2.8.2.1.3 Central Interior Highlands and Appalachian Sinkhole and Depression Pond

This system of ponds and wetlands is found in the Interior Highlands of the Ozark region. Stands occur in basins of sinkholes or other isolated depressions on uplands. Soils are very poorly drained, and surface water may be present for extended periods of time, rarely becoming dry. Water depth may vary greatly on a seasonal basis and may be a meter deep or more in the winter. Some examples become dry in the summer. Soils may be deep (100 cm or more), consisting of peat or muck, with parent material of peat, muck or alluvium. Ponds vary from open water to herb-, shrub-, or tree-dominated. Tree-dominated examples typically contain oak species (*Quercus sp.*), American sycamore (*Platanus occidentalis*), green ash (*Fraxinus pennsylvanica*), silver maple (*Acer saccharinum*), or tupelo species (*Nyssa sp.*), or a combination of these. In addition, sweet gum (*Liquidambar styraciflua*) may be present in southern examples. Common buttonbush (*Cephalanthus occidentalis*) is a typical shrub component. The herbaceous layer is widely variable depending on geography.

### 2.8.2.1.4 Old Growth Forest

Forest stands with large, mature or over-mature trees (both healthy and decadent), usually having a multi-layered canopy in trees of various age classes. Stands include dead trees and relatively large amounts of decaying material on the forest floor. Stands also contain trees older than typical forest management rotation age for a given timber type and contain numerous trees older

than 150 years old. Ozark Highlands old growth forests are typically dominated by oak species (*Quercus sp.*), and mockernut hickory (*Carya tomentosa*).

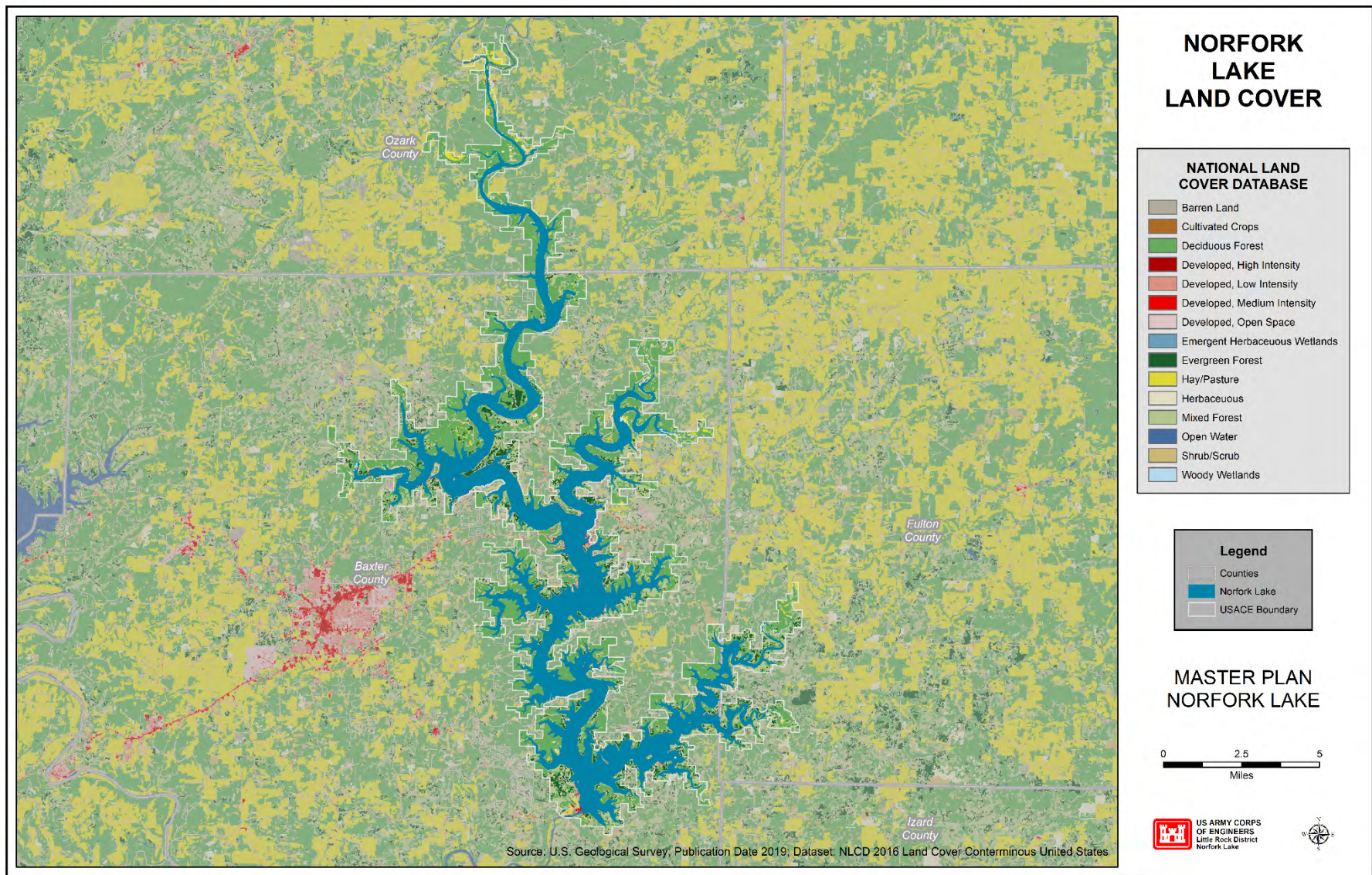


Figure 2-5 Land Cover at Norfolk Lake Study Area

### 2.8.3 Threatened & Endangered Species

There are many species in the Ozarks that are listed as threatened or endangered. Species become imperiled for a variety of reasons including over-hunting, over-fishing, and habitat loss as a result of human development and pollution; of these, habitat loss is the main contributor that imperils most species. A threatened species is one that is likely to become endangered within the foreseeable future. An endangered species is one in danger of extinction throughout all or a significant portion of its range.

The bald eagle (*Haliaeetus leucocephalus*) is common during the winter months around Norfolk Lake. In addition, several bald eagle nests are located around the lake. Although the bald eagle was delisted by USFWS in 2007 due to recovery of the species, both the bald and golden eagles are still protected in accordance with the Bald and Golden Eagle Protection Act. Transient populations of gray (*Myotis grisescens*) and Indiana bats (*Myotis sodalis*), Federally endangered species are documented in caves located near the area, however, no known caves are present on USACE owned property on Norfolk Lake.

The Ozark Hellbender (*Cryptobranchus alleganiensis bishopi*) is a species of strictly aquatic salamander found only in Ozark streams of southern Missouri and northern Arkansas. Critical habitat is located in the riverine portions of the North Fork River near Dawt, MO and the Bryant Creek area arm of Norfolk Lake area in Ozark County, Missouri. USACE works closely with the U.S. Fish and Wildlife Service to protect the USACE owned riparian areas surrounding the critical habitat and manage the project lands and waters of Norfolk Lake to protect the water and habitat quality of these streams and aid in its recovery.

The following species listed in Table 2-1 are from the U.S. Fish and Wildlife Service’s Federally classified status list of species and the Arkansas and Missouri Natural Heritage data sets which have been reported on project lands. There are other threatened and endangered species that are known to be in the general area.

Table 2-1 Threatened, Endangered, and Species of Concern

Common Name	Scientific Name	Federal/State Status	State/Global Rank
Bald Eagle	<i>Haliaeetus leucocephalus</i>	*Protected under Bald and Golden Eagle Protection Act	S3/G5
Gray Bat	<i>Myotis grisescens</i>	E/E	S3/G3
Indiana Bat	<i>Myotis sodalis</i>	E/E	S3/G3

Ozark Hellbender	<i>Cryptobranchus alleganiensis bishopi</i>	E/E	S1/G3 G4 T2Q
Alligator Snapping Turtle	<i>Macrochelys temminckii</i>	Species of Concern (SOC)	S2/G3 G4
Hammack Sedge	<i>Carex fissa var. fissa</i>	SOC	S1/G4 T3 T4
A Moss	<i>Ptychomitrium sinense</i>	SOC	S1/G4 G5
Arkansas Sedge	<i>Carex arkansana</i>	SOC	S3/G4
Umbrella Plant	<i>Eriogonum longifolium var. longifolium</i>	SOC	S2/G4 T4
Checkered Madtom	<i>Noturus flavater</i>	SOC	S3 S4/G3 G4
Red River Mudpuppy	<i>Necturus maculosus louisianensis</i>	SOC	SU/G5 T4
Juniper-leaf	<i>Polypremum procumbens</i>	SOC	S2/G5
Showy Beardtongue	<i>Penstemon cobaea</i>	SOC	S3/G4
Davis' Sedge	<i>Carex davisii</i>	SOC	S3/G4
Trelease's Larkspur	<i>Delphinium treleasei</i>	SOC	S3/G3
Horned-Pondweed	<i>Zannichellia palustris</i>	SOC	S2 S3/G5
Gap Ringed Crayfish	<i>Orconectes neglectus chaenodactylus</i>	SOC	S3/G5 T3
Autumn Darter	<i>Etheostoma autumnale</i>	SOC	S3/G4
Giant Prairie Robber Fly	<i>Microstylum morosum</i>	SOC	S1/G3 G4
Eastern Collared Lizard	<i>Crotophytus collaris</i>	SOC	S2/G5
Large Indian-Breadroot	<i>Pediomelum esculentum</i>	SOC	S2/G5
Heart-leaf Plantain	<i>Plantago cordata</i>	SOC	S2/G4
Prairie Rattlesnake-root	<i>Prenanthes aspera</i>	SOC	S2 S3/G4
Bush's Skullcap	<i>Scutellaria bushii</i>	SOC	S2/G3

**E** = Endangered; **S2**: Imperiled: Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the nation or state (1,000 to 3,000). Typically, 6 to 20 occurrences or few remaining individuals (1,000 to 3,000). **S3**: Vulnerable: Vulnerable in the state either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically, 21 to 100 occurrences or between 3,000 and 10,000 individuals; **G3**: Vulnerable: Vulnerable globally either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction or elimination. Typically, 21 to 100 occurrences or between 3,000 and 10,000 individuals; **G5**: Secure: Common; widespread and abundant (although it may be rare in parts of its range, particularly on the periphery). Not vulnerable in most of its range. Typically, with considerably more than 100 occurrences and more than 10,000 individuals.

Other possible endangered or threatened species include the threatened northern long-eared bat (*Myotis septentrionalis*) and the endangered Ozark big-eared bat (*Plecotus townsendii ingens*). No known populations or hibernacula of these bats are known to occur on Norfolk Lake at this time. However, until the presence of these bats is determined, tree cutting as a forestry practice will only occur during the winter months.

#### 2.8.4 Invasive species

In accordance with Executive Order (EO) 13112, an invasive species is defined as an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Invasive species can be microbes, plants, or animals that are non-native to an ecosystem. In contrast, exotic species, as defined by EO 11987, include all plants and animals not naturally occurring, either presently or historically, in any ecosystem of the United States. Invasive species can take over and out-compete native species by consuming their food, taking over their territory, and altering the ecosystem in ways that harm native species. Invasive species can be accidentally transported, or they can be deliberately introduced because they are thought to be helpful in some way. Invasive species cost Federal, State, and local agencies billions of dollars every year.

The Norfolk Project is not protected from the spread of invasive species. Locally, the project office staff work with its partners, AGFC, MDC, University of Arkansas Extension Services and United States Department of Agriculture, to help stop the spread of some of the Ozarks most unwanted species. These would include feral hogs (*Sus scrofa*), sericea lespedeza (*Lespedeza cuneata*), gypsy moth (*Lymantria dispar*) and the emerald ash borer (*Agrilus planipennis*). Project Office staff post signage in all the recreation areas to communicate the dangers of spreading invasive species on project lands and waters. Project Office staff also place gypsy moth traps on project lands to monitor any infestations of this species in cooperation with the Arkansas State Plant Board. In 2019, an agreement with the U.S. Dept. of Agriculture was signed to allow the trapping of feral hogs on USACE land on Norfolk Lake using USDA crews from the Animal and Plant Health Inspection Service (APHIS) to help control populations.

“Didymo” (*Didymosphenia geminata*), a species of algae, forms dense mats at times in the tailwaters of Norfolk Lake and the White River and has been observed in several tributaries the

Norfolk Lake. This invasive species attaches to rocks and plants in streambeds and may impact freshwater fish, aquatic plants, and important aquatic insects. Didymo can completely cover rocks and plants and reduce the area of clean substrate on which fish need to spawn and feed. It also tends to out-compete native algal species, many of which are food for aquatic insects, the main diet source of native stream fishes. Didymo mats have become so thick in some areas it makes it impossible for anglers to fish those stream stretches. AGFC and MDC continue to educate anglers about taking precautions to avoid spreading Didymo to other waters by the contamination of recreational equipment, such as boats, life jackets and fishing gear, particularly felt soled waders, being the most common ways for didymo to spread.

### 2.8.5 Ecological Setting

The Natural Resource Management Mission of the U.S. Army Corps of Engineers (ER 1130-2-550, Chapter 2, Paragraph 2-2. a. (1), dated 15 November 1996) states the following:

*The Army Corps of Engineers is the steward of the lands and waters at Corps water resources projects. Its Natural Resource Management Mission is to manage and conserve those natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences to serve the needs of present and future generations.*

*In all aspects of natural and cultural resources management, the Corps promotes awareness of environmental values and adheres to sound environmental stewardship, protection, compliance and restoration practices.*

*The Corps manages for long-term public access to, and use of, the natural resources in cooperation with other Federal, State, and local agencies as well as the private sector.*

*The Corps integrates the management of diverse natural resource components such as fish, wildlife, forests, wetlands, grasslands, soil, air, and water with the provision of public recreation opportunities. The Corps conserves natural resources and provides public recreation opportunities that contribute to the quality of American life. (ER 1130-2-550, 1996)*

In support of this mission statement, the following paragraphs describe the ecoregion where Norfolk Lake is located, and the natural resources components found within the project area.

Ecoregions are areas with generally similar ecosystems and with similar types, qualities, and quantities of environmental resources. Ecoregion boundaries are determined by examining patterns of vegetation, animal life, geology, soils, water quality, climate, and human land use, as well as other living and non-living ecosystem components. The Environmental Protection Agency (EPA) has defined ecoregions across the United States and has divided the ecoregions into Level III and Level IV ecoregions, with Level III being larger and containing one or more Level IV ecoregions. The Level IV ecoregions surrounding Norfolk Lake include the Central Plateau, Dissected Springfield Plateau – Elk River Hills, and the White River Hills.

A large area that includes generally similar ecosystems and that has similar types, qualities, and quantities of environmental resources is known as an ecoregion. The purpose of ecological land



classification is to provide information for research, assessment, monitoring, and management of ecosystems and ecosystem components. Federal agencies, State agencies, and nongovernmental organizations responsible for different types of resources within the same area use this information to estimate ecosystem productivity, to determine probable responses to land management practices and other ecosystem disturbances, and to address environmental issues over large areas, such as air pollution, forest disease, or threats to biodiversity.

Norfolk Lake and surrounding areas are within the Ozark Highlands ecoregion as depicted in Figure 2-6. This ecoregion is defined as follows:

*Location:* This region covers a large portion of southern Missouri and northern Arkansas, and small portions of northeastern Oklahoma and southeastern Kansas.

*Climate:* The ecoregion is on the boundary between mild and severe mid-latitude climates, between humid continental and humid subtropical. It has hot summers and mild to severe winters with no pronounced dry season. The mean annual temperature ranges from approximately 12 degrees Celsius to 15 degrees Celsius and the frost-free period ranges from 140 to 230 days. The mean annual precipitation is 1,101 mm (43.4 inches), ranging from 965 to 1,244 mm (38-49 inches). Some snowfall occurs in winter but lasts only a few days.

*Vegetation:* Oak-hickory and oak-hickory-pine forest stands are typical. Some savannas and tallgrass prairies were once common in the vegetation mosaic. Post oak, blackjack oak, black oak, white oak, hickories, shortleaf pine, little bluestem, Indiangrass, big bluestem, eastern red cedar glades are common in the area.

*Hydrology:* Numerous perennial and intermittent streams flow in the region, of low to moderate gradient, and mostly in a dendritic drainage pattern. There are numerous springs, few lakes, but some sinkhole ponds and several large reservoirs.

*Terrain:* The terrain here is more irregular in physiography than the adjacent regions, with the exception of the Boston Mountains (8.4.6) to the south. Mostly a dissected limestone plateau, the region has karst features, including caves, springs, and spring-fed streams. There are some steep, rocky hills, with elevations ranging from 80 to 560 meters above msl, and some gently rolling plains. Limestone, chert, sandstone, and shale are common, with some small areas of igneous rocks in the east. Ultisols and Alfisols are typical with mesic and some thermic soil temperature regimes and udic soil moisture regimes.

*Wildlife:* White-tailed deer, coyote, bobcat, beaver, gray bat, wild turkey, eastern bluebird, bobwhite, warblers, collared lizard, many salamanders, and Ozark cavefish occur in the region.

*Land Use/Human Activities:* Less than one-fourth of the core of this region has been cleared for pasture and cropland, but half or more of the periphery, while not as agricultural as bordering ecoregions, is in cropland and pasture. Livestock farming of cattle and hogs, poultry production, pasture and hay are common. Lead and zinc mining occurs. Forestry, recreation, rural residential, urban uses also occur. There is some public national forest land. Larger towns and cities include Joplin, Springfield, Rolla, Farmington, Fayetteville, Eminence, Poplar Bluff, West

Plains, Tahlequah, Bentonville, Rogers, Springdale, Berryville, Harrison, Mountain Home, and Batesville.

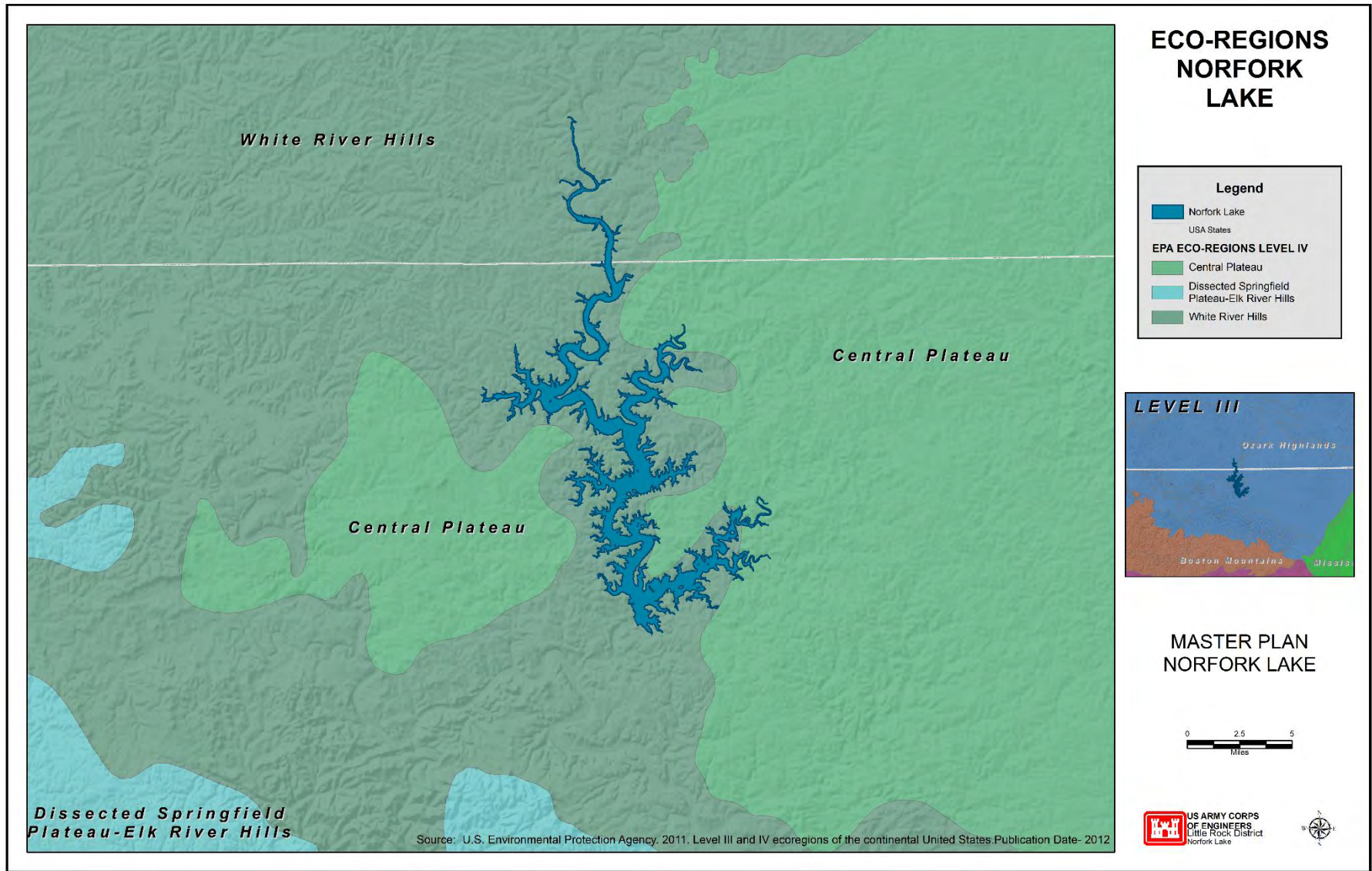


Figure 2-6 Eco-Regions at Norfolk Lake Study Area

## 2.8.6 Wetlands

The many rivers and streams flowing through the Norfolk Lake region have created a landscape of level highlands dissected by rugged valleys rich in karst features such as caves and sinkholes. Associated with these streams and landscape features are a variety of wetland habitats representative of three major wetland systems: riverine, lacustrine, and palustrine. In accordance with national USACE policy, wetlands at operational projects are inventoried using the protocol established by the USFWS in their Classification of Wetlands and Deepwater Habitats of the United States. Most wetlands at the project site are in the palustrine system; however, wetlands classified in the lacustrine and riverine systems are also present (USFWS, 2004).

The riverine system is the compilation of rivers and tributaries that flow either permanently or intermittently that contribute to 21,662-acre Norfolk Lake, whereas the lacustrine system is the open water of Norfolk Lake a permanently flooded reservoir. These rivers and tributaries range from low gradient, slow moving, in well-developed floodplains with low oxygen levels, to mostly high gradient, fast moving, poorly developed floodplain, stone and rock substrate, with high oxygen levels and in between are those rivers with intermittent flows with isolated pools or surface water may be absent.

More detailed descriptions of these wetland classes, subclasses, and community types can be found at the National Wetlands Inventory website provided by the US Fish and Wildlife Service.

## 2.9 Utilities

Utilities passing through and providing service on project lands include telephone lines, communication cables, electrical transmission and distribution lines, electrical switchyard, water intake and distribution lines, sewage treatment facilities and pipelines. Telephone and Communication lines are owned by Century Telephone of Mountain Home, Inc., doing business as (dba) CenturyLink and CenturyTel of Missouri, LLC dba CenturyLink.

Electrical transmission and distribution lines are owned by North Arkansas Electric Cooperative of Salem, AR. White River Valley Electric Cooperative of Branson, MO, Howell-Oregon Electric Cooperative of West Plains, MO and Sho-Me Power Corporation of Marshfield, MO. Transmission lines and switchyard located below Norfolk Dam are owned and operated by the Southwest Power Administration of Tulsa, OK.

The City of Mountain Home, AR operates a water intake within the reservoir which includes associated structures and distribution pipelines near the City of Mountain Home on the Pigeon Creek arm. A USACE owned wastewater treatment plant located off Robinson Point Road near Mountain Home, AR on the Panther Creek arm of the reservoir ceased operation in 2008 and was dismantled and filled in according to Arkansas Department of Environmental Quality (ADEQ) regulations in 2014.

Most of the public recreation areas and marinas use electrical services, and electrical services are available at most recreation areas for individual campsites including Bidwell Point, Cranfield,

Gamaliel, Henderson, Quarry, Robinson Point, and Panther Bay. Jordan and Howard Cove's electricity is provided by the concessionaire.

Municipal water lines are available and used at Quarry Park and Cranfield Park. Most of the other recreation areas are served by pressurized, chlorinated well water systems. Sewage and wastewater from toilets and shower facilities at developed recreation areas use septic tank/leach field systems. A few vault toilets remain where sewage is collected in vaults which require periodic pumping.

## **2.10 Timber Resources**

Timber harvesting and management for the purpose of timber stand improvement, glade restoration, and wildlife enhancement is practiced on Norfolk Lake Project lands and is managed by project office staff. Timber management on these lands includes prescribed burning, selective thinning, and timber harvesting to enhance wildlife habitat, control eastern red cedar encroachment, restore dolomite glades, manage pine plantations, and promote forest health. These activities generate some revenues which are reinvested in the natural resource management operations at Norfolk Lake.

## **2.11 Paleontology**

North central Arkansas and south-central Missouri are located on the Salem Plateau. Geologically the plateau is made up of relatively flat-lying Paleozoic age strata consisting of dolostones, sandstones, and limestones. The Ordovician aged Cotter and Jefferson City Dolomite is the primary outcropping formation in the area. Few fossils are known to exist in the Jefferson City Dolomite. Fossils from the Cotter Dolomite are rare but include gastropods, cephalopods, and reef-building algae. The Ordovician aged Powell Dolomite and Everton Formation also outcrop in the general area although to a lesser extent. The Powell Dolomite is not known to contain many fossils, although gastropods, cephalopods and trilobites have been reported. The Everton Formation is also not known to contain many fossils although ostracods, cephalopods, gastropods, bivalves, trilobites, and bryozoans are noted.

## **2.12 Cultural Resources**

Stewardship of cultural resources on USACE Civil Works water resources projects is an important part of the overall Federal responsibility. Numerous laws pertaining to identification, evaluation, and protection of cultural resources, Native American Indian rights, curation and collections management, and the protection of resources from looting and vandalism establish the importance of cultural resources to our Nation's heritage. Guidance is derived from a number of cultural resources laws and regulations, including Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966; Archaeological Resources Protection Act (ARPA) of 1979; Native American Graves Protection and Repatriation Act (NAGPRA); and 36 CFR Part 79, Curation of Federally Owned and Administered Archeological Collections. Implementing regulations for Section 106 of the NHPA and NAGPRA are 36 CFR Part 800 and 43 CFR Part

10, respectively. All cultural resources laws and regulations should be addressed under the requirements of the National Environmental Policy Act (NEPA) of 1969, as applicable.

**Historic Background** The following is a brief history of the human population of Arkansas:

**Paleo-Indian (at least 12,000-8,500 B.C.):** The beginning of the Paleo-Indian period is hotly contested though it is generally accepted that people occupied the Americas by at least 12,000 years ago by coming across the Bering Strait. Newer hypotheses suggest that in addition to the accepted land crossing, an earlier migration or migrations occurred via a maritime/island hopping route from Asia to North America. Regardless of exactly when the peopling of the Americas took place, certain cultural attributes are associated with this culture period. Paleo-Indians were small nomadic bands of hunter-gatherers with a heavy emphasis on hunting now-extinct megafauna such as mastodon with finely crafted fluted stone points. The small bands of individuals, their nomadic lifestyle, the decomposition of all their material culture except for stone tools, and their predilection to live near waterways and coastlines combine to make Paleo-Indians difficult to locate and study (Archaeology Southwest 2018).

In Arkansas, most sites have been located in the eastern portion of the state indicating that Paleo people were migrating down the Mississippi River from the northern plains. Sites tend to occur in regional clusters interpreted as “staging areas” or areas where Paleo people stopped migrating and began to settle and make regional adaptations in response to their environments. Paleo people lived in fairly small groups of one to two dozen members and at the time there may have only been 100-150 people in all of modern Arkansas (Sabo 2008c). There is evidence of Paleo-Indian inhabitants in the Ozark Highlands indicated by the presence of Clovis, Cumberland, and Folsom bifaces in isolated instances in Boone and Newton Counties, Arkansas. No Paleo-Indian sites have been excavated in the Ozarks, only surface sites and multi-component shelter sites are present.

**Archaic (8,500-1000 B.C.):** The Archaic period continues the hunting and gathering sustenance strategy, though with perhaps a greater reliance on gathering of plant resources. Over the seven millennia that this period covers, localized groups became much more efficient in exploiting local resources and became less nomadic occupying seasonal camps. After 7,000 BC, average temperatures rose as much as 7.2° F. Along with the increased temperature there was a decrease in annual rainfall. This resulted in hotter, drier conditions. Decreased water resulted in reduced vegetation and erosion, and diminished the availability of plant and animal resources, making life even more difficult for Archaic peoples. Changing environmental conditions resulted in some areas, especially broad river valleys surrounded by uplands that offered shelter, providing better conditions. Archaic communities began to concentrate in those areas.

With the less transient lifestyle the population increased. Perhaps due to the population increase, the abundance of resources in the area, or the relative stability of the environment following the Holocene, Archaic hunting camps did abound in the White River area.

**Woodland (1000 B.C. – A.D. 1000):** The Woodland period is characterized by an increasingly sedentary lifestyle, though still relying on hunting and gathering. During this

time cultivation of native flora became an important part of the subsistence strategy. As populations were staying in one location longer, permanent occupational markers in the form of burial mounds were constructed. Technologically, the Woodland period saw great advances with the transition from the atlatl as a primary weapon and hunting tool to the development of the bow and arrow. The Woodland period also saw the development and use of coarse ceramics tempered with grog or bone. Pictographs (painted) and petroglyphs (carved) rock art appears to occur at numerous Woodland sites. They contain both real depictions of nature as well as abstract and geometric designs. Effigies in the form of ceramics, sandstone tablets, and carved stone pipes take the form of people and animals. In many of these cases, the effigies have fantastical features suggesting they were conceived as supernatural. This has been interpreted that the Woodland people believed in the concept of the spirit and human worlds; or broadly, a form of religion. Mound building continued later in the period though not necessarily with the purpose of interring the dead. In Arkansas, the Toltec Mounds near modern-day Scott, Arkansas features several pyramidal-shaped mounds with flattened tops that were used to support buildings at their peaks. Many of the mounds and structures correspond to celestial objects or events. They are believed to have been the houses or temples of important people, indicating a social organization with “elites” and “commoners.”

Two of the primary tribes that historically occupied modern day Little Rock District can trace their lineage to the Dhegiha Siouan tribes of the Ohio River Valley. The Dhegiha tribes include the Omaha, Ponca, Kaw, Quapaw, and Osage. During this Middle Woodland period (A.D. 200-A.D. 400), the Dhegiha collectively began migrating down the Ohio River Valley to the confluence with the Mississippi River. During the Late Woodland (A.D. 400-A.D. 500), the Dhegiha began to separate into the modern tribes we see today. The Dhegiha, with the exception of the Quapaw, traveled up the Mississippi River. The Quapaw remained to the south and were known as U-ga'-qpa or Quapaw, meaning “the down-stream people” (Dorsey 1886 and McMillan 2014).

In the Ozarks, few Woodland sites have been identified. The bulk of information from this time period in the region comes from the few preserved artifacts found in bluff shelters (Manifort Jr. 2020).

**Mississippian (A.D. 900 – 1541):** Sometime after the Quapaw broke off from the larger Dhegiha Siouan tribes, the rest of the Dhegiah Sioux established themselves at Cahokia (near modern day St. Louis) and then further separated into four tribes. The Osage were the last to leave Cahokia around A.D.1300 moving to the upper reaches of the Osage and Missouri Rivers. De Soto encountered “Capaha” or Quapaw on the western bank of the Mississippi, though his encounter occurred south of the confluence of the Arkansas River, where they would later occupy (McMillan 2014:15-16). “Osage” is a corruption by later French traders of “Wazha’zhe,” meaning “Children of the Middle Waters” (Hodge 1910:156). By the contact period, the Osage occupied the area south of the Missouri River into the northern half of Arkansas and further west into Kansas and Oklahoma.

The Mississippian period is generally characterized by large scale sedentism and a reliance primarily on agriculture of corns, beans, and squash supplemented by hunting and limited

foraging. Mississippians engaged in increasingly complex trade networks, religious study and iconography, and refinement of crafts such as ceramics, metal work, and development of games and sports. Pottery making developed into a specialized craft and art form during the Mississippian period and numerous forms were constructed and elaborately decorated. Shell became the preferred temper material for ceramics (Sabo 2013). The tool assemblage found at Mississippian sites reflects the reliance on agriculture. Tools to work the field, such as hoe blades made from stone, shells, and bison scapulas are found on Mississippian sites. With the need to clear the woods for agriculture and build the buildings and, later, fortifications required wood working tools. Axes, celts, and adzes are all found in association with Mississippian sites. The refinement of the bow and arrow as a weapon sees the development of very small, true arrowheads. Often called bird points, they were rarely much wider than the arrow shaft. The Late Mississippian period saw population dispersal and severe social stress put on the populace. Many of the large mound centers were abandoned prior to the arrival of Europeans and archaeological evidence has found numerous defensive structures such as palisades suggesting that warfare was far more prevalent. Generally, the large chiefdoms were abandoned in favor of smaller autonomous groups though they still practiced agriculture.

Ozark adaptations were unique during the Mississippian period. Domesticated crops were grown in the river valleys but hunting and gathering likely made up the bulk of the food supply. Small mound sites did exist in the White River area, such as the Loftin Site, inundated by Table Rock Lake. Other Mississippian sites in the area include village sites and rock shelters.

**Early European Contact Historic Period (1541-1682):** The first European explorers in Arkansas came from the Hernando de Soto expedition when they crossed the Mississippi River in 1541. The most likely route for the de Soto expedition is consistent with the locations of sixteenth century Native American sites and was a route that took the Spanish across Arkansas nearly three times (Hudson 1997). De Soto did not enter the Ozarks, but the aftermath of his expedition did enter the area. Diseases such as smallpox and influenza had a devastating effect. The Tribes inhabiting the area had no immunity against these diseases, and up to 90 percent of their populations were decimated. During this time the Ozarks were primarily being used as a hunting ground for the Osage, who were centered in central Missouri.

**Colonial and Early American Historic Period (1682-1828):** The most notable European occupation was founded by French explorer Henri de Tonti at Arkansas Post in 1682 to the southeast of the project area. Established as a fur trading post, some trade goods likely made their way to the project area as the French had established trade with the Osage by this time. The location of the Post along the Arkansas River made trade easier with the Osage to the north and the Quapaw to the south. In 1803 the Louisiana Purchase made the project area officially United States territory. The Osage shortly after relinquished all territory north of the Arkansas River (which includes the project area), with the understanding that they would still use the area for hunting. In 1817, a treaty with the Eastern Cherokee of Georgia and South Carolina established a reservation between the White River and the Arkansas River (Taylor 2016). During the early 1800s, a group of Cherokee voluntarily moved west to this reservation where they came into conflict with the Osage, who saw this move as an incursion into their



hunting grounds and an act of war. This group became known as the United Keetoowah Band of Cherokee (UKB 2021). In response to increased hostilities with the Osage, the UKB invited other displaced Tribes including the Shawnee, Delaware, Miami, and Piankashaw to live in the western portion of their Arkansas reservation along the White River and its tributaries (Lankford 2010 and Sabo III 2017). The groups continued to clash over resources. In an effort to stop the violence, the United States signed treaties in 1818 and 1825 with the Osage establishing their reservation in southern Kansas and forcing Osage removal from their current location in Indian Territory along the Arkansas border. However, the last Osage did not leave the region until 1839, when they became too overwhelmed by additional eastern Tribes forced into Indian Territory by the Indian Removal Act of 1830 (Bailey and Swan 2004).

Euro-American settlement began in the Ozarks in the late 18th century. People generally subsisted on a combination of hunting wild game and herding domesticated animals. With the creation of the Arkansas Territory in 1819, people from the upland South, or Appalachia, began to move into the Ozarks. These people brought with them many aspects of their culture including fundamentalist religion, unique architectural styles, and an aptitude for farming rocky terrain. Although slave holding was not unheard of, it certainly was not the norm.

**Trail of Tears (1828-1858):** Several paths through Arkansas and Missouri were involved in the forced removal of Native Americans in the southeast in what came to be known as the Trail of Tears. In 1838, remaining Cherokees in the southeast, intermarried whites, and their slaves were forced to relocate to a reservation in a part of Indian Territory (modern day Oklahoma). An estimated one fourth of the Tribe perished in this move (Cherokee 2021). The UKB and other Tribes living in the 1817 Arkansas reservation were forced to leave as well. While none of these routes are believed to have gone directly through the project location, a group of Cherokee lead by John Benge traveled a route along the North Fork River in the winter of 1838-1839 south of the project area (Fehr 2021). During the time of the Trail of Tears white settlers were moving into the area surrounding modern-day Norfork Lake. In the 1820's Jacob Wolf became one of the earliest homeowners in the area when he claimed 76 acres near the junction of the White and North Fork rivers. His home became the center of county government and a trading community called Liberty grew around the home. Liberty was a flourishing settlement that served as a jumping off point for travelers headed west. Steamboats disembarked at Liberty, and it remained a prominent settlement late into the 1800s (Teske 2017).

**Civil War and Reconstruction (1861-1874):** Arkansas did not secede from the Union until May 6, 1861 in response to the Union firing on Fort Sumpter. The bulk of military operations in Arkansas early in the war occurred in the northern portion of the state and to the east along the Mississippi River. A few major battles, such as Pea Ridge, were fought in the area. Theoretically, the battle of Pea Ridge solidified Union control over southern Missouri. In reality, the entire Ozark region was hostage to bushwhackers and jayhawkers. Modern day Baxter County was not a hotbed of the Civil War, but there were a number of skirmishes along the White River and guerillas in the area that attacked both military and civilian targets. The Ozarks had a mix of loyalties during the Civil War. Many men from the county sympathetic to the Confederacy joined the Fourteenth Arkansas Infantry (Andrewson 2019). Slavery was not a major component of the local economy of the Ozarks; therefore, it became the epicenter of

Unionist sympathizers in Arkansas. As the war unfolded, much of Arkansas descended into lawlessness and poverty as food and other necessities were in short supply and marauding guerillas became common (DeBlack 2021). Reconstruction in Arkansas was a volatile time as well. As newly freed slaves gained more rights, prewar planter elites attempted to restore their economic and social status.

**Modern County History (1874-Present):** Norfolk Lake occupies parts of Baxter and Fulton Counties, Arkansas and extends to Ozark County, Missouri. Baxter County was formed in 1873 from parts of Marion, Izard, Fulton, and Searcy Counties by Governor Baxter in an election year in order to preserve his legacy (Andrewson 2019). The county seat was established in Mountain Home and the present-day boundaries of the county were fixed in 1881 (Andrewson 2019). Fulton County was formed in 1844 with the county seat designated as Pilot Hill. In 1872 in response to the recent violence of the Civil War and Militia Wars, the town officially changed its name to Salem which means “city of peace” in Hebrew (Simers 2018). Ozark County was formed in 1841 from portions of Taney and Wayne Counties with the county seat designated at Rockbridge (SGL 2021). All three counties were reliant upon steamboats for transportation until railroads came to the area. The area was mostly agrarian, though the timber industry was booming from the turn of the century into the 1920s until most of the timber had been harvested. At that time, a button blank industry grew near Norfolk harvesting freshwater mussels from riverbeds (Teske 2017). The Great Depression affected the area significantly with many losing their farms. New Deal programs such as the Rural Electrification Act forming the North Arkansas Electric Cooperative and the WPA and NYA brought some economic relief to the area (Teske 2017 and Simers 2018). The population of the area gradually declined until the Norfolk Dam was under construction (Andrewson 2019 and Simers 2018). In 1938 the Flood Control Act authorized initial construction of Norfolk Dam as one of six dams originally authorized for the White River and its tributaries for the purposes of flood control and hydroelectricity. Construction of Norfolk Dam began in spring of 1941 and was completed in 1944. Construction of the powerhouse and switchyard was completed in October 1949.

### **Known Cultural Resources at Norfolk Lake**

There are over 145 identified archeological sites present at Norfolk Lake. Few of the known sites within the lake area have been investigated any further than documentation. There are no sites currently listed on the NRHP in the Norfolk Project area. The dam itself is old enough to be considered for NRHP inclusion. The structure has not yet been evaluated for the NRHP. Table 2-2 summarizes the previously recorded resources at Norfolk Lake based on the most up to date survey information according the records of the Arkansas Archeological Survey and the Missouri Department of Natural Resources.

Table 2-2 Previously Recorded Resources at Norfolk Lake

Type of Site	Number of Sites
Historic	25
Prehistoric	94
Multicomponent	14
Unknown	12
<b>Total</b>	145
<b>National Register</b>	
Not Evaluated	132
Not Eligible	12
Eligible	1

Multiple archaeological surveys have been completed at Norfolk Lake since the 1960s in response to ongoing activities such as lake construction, inadvertent discoveries, and NHPA Section 106 compliance. Table 2-3 provides a list of previous surveys performed at Norfolk Lake. The table below represents the most up to date survey information according to the records of the Arkansas Archeological Survey and the Missouri Department of Natural Resources.

Table 2-3 Previous Archeological Investigations on Norfolk Lake

Author	Title	Year
Howard, Lynn E.	Archaeological Survey in Norfolk region of Arkansas	1963
Spears, Carol, Nancy Myer, Hester Davis	Watershed Summary of Archaeological and Historic Resources in the White River Basins, Arkansas and Missouri	1975
Padgett, Thomas J.	Norfolk Lake: A Cultural Resources Management Study with Implications for Prehistoric Settlement-Subsistence Patterns in the Ozarks	1977
Novick, Lee and Charles Cantlry	Norfolk Lake: An Archaeological Survey of a Portion of Norfolk Lake Shoreline	1979
Lee, Aubra Lane	Cultural Resources Investigations Norfolk Lake, Arkansas	1986
Austin, David	Phase II Archaeological Testing of Site 23OZ113, US Route 160, Ozark County, Missouri	1987
John Riggs	Survey and Testing at 3FU31, Norfolk Lake, Fulton County Arkansas	1992
Bennett Jr., W. J.	The Archaeological Record at Bull Shoals Lake and Norfolk Lake, Arkansas and Missouri	1993
Ray, Jack H.	An Archaeological and Geomorphological Survey of the Upper North Fork River Valley in Southern Missouri: 1993-1994	1995
John Riggs	Fulton County Resource Management Plan (PIF)	2000
Page, Chris	Tecumseh Park Bridge Replacement (COE) Ozark County, Missouri	2010
Horvath, Elizabeth A.	ACOE Managed Lands, Norfolk Lake	2018

Horvath, Elizabeth A.	Cultural Resource Assessment Survey MH-Norfolk, FY17-MH-N-1, Gamaliel MH-Norfolk, FY17-MH-N-2, Niles 1 MH-Norfolk, FY17-MH-N-3, Niles 2 and MH-Bull Shoals, FY17-MH-B-1, Long Bottom Baxter and Marion Counties, Arkansas	2018
Helton, Deseray	Ozark 160, MoDOT Job No J9P3169; Cultural Resources Survey of Route 160 Improvements from 0.9 Miles East of County Road 530 to 0.3 miles west of North Fork River	2019
Studevart, Craig	Cultural Resource Investigations Phase I Survey David's Trail	2019

Under the NHPA, properties of traditional religious and cultural importance to a living community may be determined to be eligible for inclusion on the NRHP. Commonly known as Traditional Cultural Properties (TCP), these properties are associated with cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community. Therefore, TCPs must be taken into account in order to comply with Federal cultural resources regulations. Additionally, Executive Order 13007 states that each Federal agency with responsibility for the management of Federal lands shall accommodate access to and ceremonial use of Native American sacred sites by religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. There have been no TCPs or sacred sites identified at this time at Norfolk Lake. If TCPs or sacred sites are identified at Norfolk Lake in the future, they could be given additional protected status through ESA designation.

### **Long-term Objectives for Cultural Resources**

As funding allows, the Little Rock District will create a Cultural Resources Management Plan (CRMP). The purpose of the CRMP is to provide a comprehensive program to direct the historic preservation activities and objectives at Norfolk Lake. Completion of a full inventory of cultural resources at Norfolk Lake is a long-term objective that is needed for compliance with Section 110 of the NHPA. Identification and evaluation of sites is an ongoing process at Norfolk Lake. As more significant sites are identified, they could be protected as ESAs in the future.

The Archaeological Resources Protection Act (ARPA) secures the protection of archaeological resources and sites on lands owned and administered by the United States. According to ARPA, it is illegal to excavate, remove, damage, or deface archaeological resources on public lands without a permit. It is also illegal to sell or transport archaeological resources removed from public lands. Little Rock District requires permits for archaeological investigations at Norfolk Lake in accordance with ARPA and is increasing surveillance and coordination with law enforcement agencies in the state to enforce ARPA civil and criminal penalties.

According to the Native American Graves Protection and Repatriation Act (NAGPRA), it is the responsibility of a Federal agency to inventory human remains and associated funerary objects and summarize any potential sacred objects that existed within their archaeological collections prior to the passage of the law and to repatriate such objects to affiliated Tribes requesting their return. Additionally, there are responsibilities related to the inadvertent discovery of human remains or funerary objects that occur on Federal land that require consultation and repatriation. Although NAGPRA compliance has been an ongoing focus of the Little Rock District and many consultations and repatriations have occurred in the past, there is still more work to be done.

## 2.13 Interpretation

Interpretive programs at Norfolk Lake are aimed at three areas of emphasis: water safety, natural resource, and recreation programs. Water safety remains the main focus for the majority of the interpretive efforts. Project office staff deliver school programs throughout the spring months, focusing on program delivery to children under 16 years of age. Annually in excess of 3,000 contacts are made through these programs. During recreation season, programs are scheduled inside the campgrounds presenting an educational video and a water safety program to the campers. Many programs are presented by trained volunteers to increase program efficiency and preserve manpower. Other interpretive efforts include information such as brochures, maps, permits, and general lake information. The information desk is manned by an employee and often a volunteer to assist the visiting public.

## 2.14 Zones of Influence

The “zone of influence” (ZOI) for the purposes of this Master Plan is defined as those areas within a 150-mile driving distance from the lake. This ZOI was based primarily on visitation information. The demographic and socioeconomic description for the ZOI in this section of the report is summarized at the county level. The data for the counties has been aggregated into the “zone of influence” totals in the tables and figures. To determine which counties were included in the summary tables and figures, all counties that intersected or fell within the 150-mile driving radius were identified. Those counties that fell entirely within the ZOI boundary plus those counties where at least half of the county (by area) was within the ZOI boundary, are listed in Table 2-4 below. When the ZOI is referenced in this section, it is referring to the aggregate socioeconomic and demographic data for the area. Demographic and socioeconomic data for Arkansas, Missouri, and the United States are provided for comparison purposes.

Table 2-4 Counties within the 150-mile Driving Radius

Arkansas			Missouri	
Baxter	Johnson	Washington	Barry	Maries
Benton	Lawrence	White	Butler	Oregon
Boone	Lonoke	Woodruff	Camden	Ozark
Carroll	Madison	Barry	Carter	Phelps
Clay	Marion		Christian	Polk
Cleburne	Newton		Dade	Pulaski
Conway	Poinsett		Dallas	Reynolds
Craighead	Pope		Dent	Ripley
Cross	Prairie		Douglas	Shannon
Faulkner	Pulaski		Dunklin	Stone
Fulton	Randolph		Greene	Taney
Greene	Searcy		Hickory	Texas
Independence	Sharp		Howell	Webster
Izard	Stone		Laclede	Wright
Jackson	Van Buren		Lawrence	

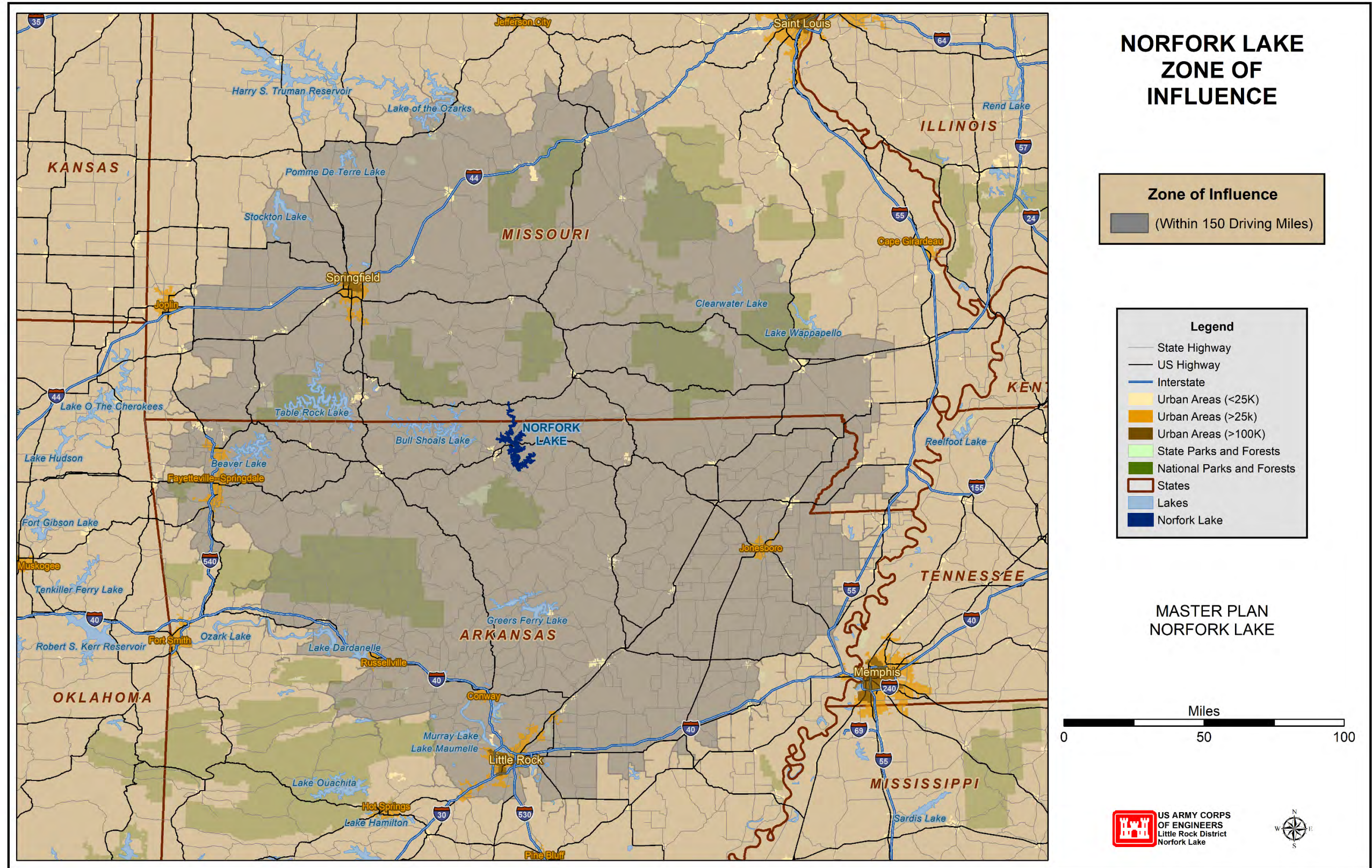


Figure 2-7 Zone of Influence for Norfolk Lake

## 2.15 Demographics and Socioeconomics

This section describes the demographic and socioeconomic characteristics for the geographic areas surrounding Norfolk Lake. The lake is located in north-central Arkansas and south-central Missouri. The closest urban area to the lake is the Mountain Home micropolitan statistical area, which is less than 10 miles west of the lake.

Data from the 2010 Census, the U.S. Bureau of Labor Statistics, and the 2019 American Community Survey were used to summarize socioeconomic conditions in the study area. Table 2-5 shows 2010 and 2019 population estimates as well as the estimated annual growth rate for each county in the area. The annual growth rate in recent years (2010-2019) has been a mix of positive and negative in the individual counties within the ZOI, but overall was positive for the ZOI. The annual growth rate in the ZOI between 2010 and 2019 was 0.5%. During the same timeframe, the annual growth rate was 0.6% in the United States, 0.3% in Arkansas, and 0.2% in Missouri.

Table 2-5 Population Estimates and Trends

<b>Geographical Area</b>	<b>2010 Population Estimate</b>	<b>2019 Population Estimate</b>	<b>Population Percent Change (2010-2019)</b>
United States	308,745,538	324,697,795	0.6%
Arkansas	2,915,918	2,999,370	0.3%
Missouri	5,988,927	6,104,910	0.2%
<b>Zone of Influence</b>	<b>2,775,007</b>	<b>2,906,772</b>	<b>0.5%</b>
Source: U.S. Bureau of the Census, 2010 Census (2010 Estimate); U.S. Bureau of the Census, American Community Survey (2019 Estimate)			



Figure 2-8 displays population by age group for the country, states of Arkansas and Missouri, and the ZOI. In the ZOI, 13% of the population is 0 to 10 years old, another 13% is 10 to 19 years old, 20% is 20 to 34 years old, 12% is 35 to 44 years old, 12% is 45 to 54 years old, 13% is 55 to 64 years old, 10% is 65 to 74 years old, and 7% is 75 years and over. This age distribution is comparable to Arkansas and Missouri.

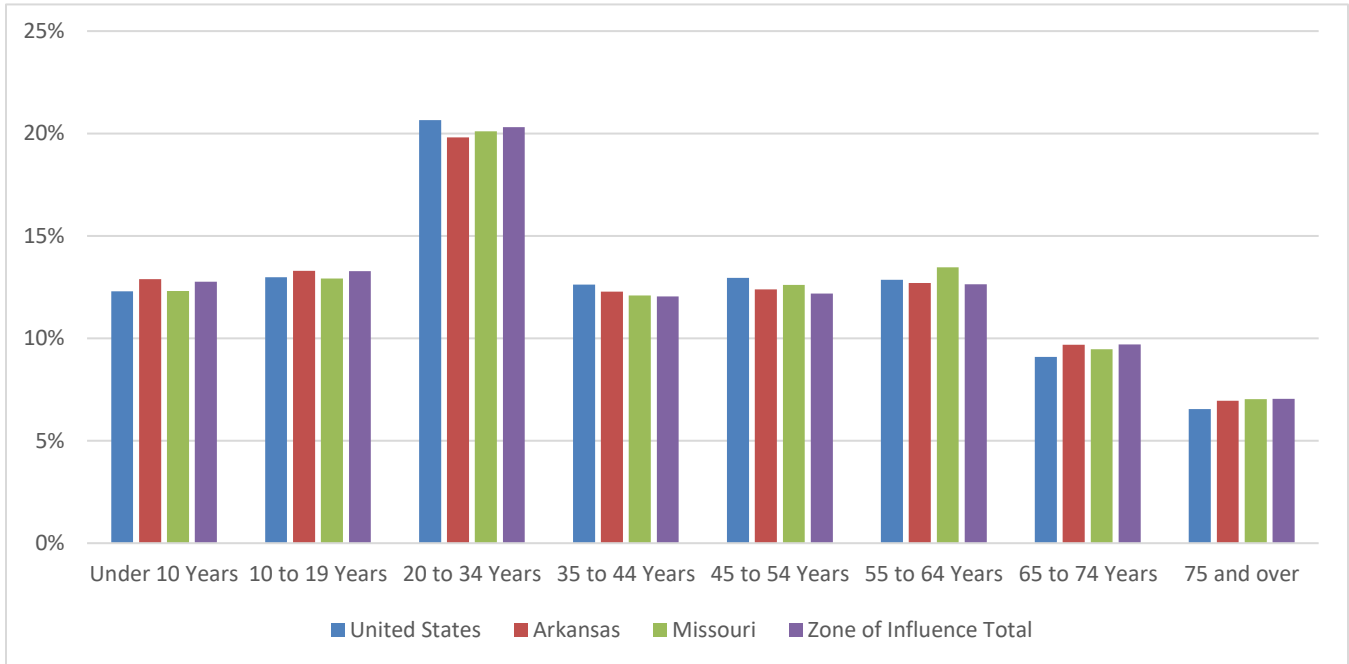


Figure 2-8 Population Distribution by Age Group (2019)

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

Key income indicators (median household income and per capita income) are presented in Table 2-6. Per capita income varies for counties in the study area but was \$26,128 for the overall ZOI in 2019. By comparison, per capita income was \$34,103 in the United States, \$26,577 in Arkansas, and \$30,810 in Missouri. Median household income is not available for the zone of influence but ranges from \$31,947 in Ozark County (Missouri) to \$66,362 in Benton County (Arkansas) for an average of \$42,758. In terms of occupations, the distribution across the zone of influence is similar to that of the Arkansas and Missouri. The largest majority of the ZOI (34%) is employed in the management, business, science, and arts occupations, followed by 22% in sales and office occupations, 17% in service occupations, 16% in production, transportation, and material moving occupations, and 10% in natural resources, construction, and maintenance occupations. Compared to the country, the ZOI has slightly less individuals employed in management, business, science, and arts occupations and slightly more in production, transportation, and material moving occupations.

Table 2-6 Income and Employment

Geographical Area	Median Household Income	Per Capita Income	Civilian employed population 16 years and over	Management, business, and science, and arts	Service occupations	Sales and office occupations	Natural resources, construction, and	Production, transportation, and material moving occupations
United States	\$62,843	\$34,103	154,842,185	59,647,283	27,489,501	33,491,626	13,713,796	20,499,979
Arkansas	\$47,597	\$26,577	1,303,490	438,892	220,282	281,025	133,382	229,909
Missouri	\$55,461	\$30,810	2,916,000	1,077,985	503,637	646,716	256,836	430,826
<b>Zone of Influence</b>	<b>NA</b>	<b>\$26,128</b>	<b>1,284,994</b>	<b>441,854</b>	<b>223,195</b>	<b>283,120</b>	<b>125,866</b>	<b>210,959</b>

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

In counties adjacent to Norfolk Lake, tourism and recreation is also an important part of local economies. Recreation at the lake has substantial impact to local economies based on surveys of visitor spending and attendance at Corps projects. Between 2005 and 2019, annual average visitation was approximately 1.4 million. Visitation in 2019 was average, and visitors spent \$44.7 million in local economies within 30 miles of Norfolk Lake. This spending generated \$12.5 million in business sales revenue and supported about 480 full and part time jobs resulting in \$12.5 million in labor income for these local economies.

Executive Order 12898, entitled “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” addresses potential disproportionate human health and environmental impacts that a project may have on minority or low-income communities. Thus, the environmental effects of the project on minority and low-income communities or Native American populations must be disclosed, and agencies must evaluate projects to ensure that they do not disproportionately impact any such community. If such impacts are identified, appropriate mitigation measures must be implemented.

To determine whether a project has a disproportionate effect on potential environmental justice communities (i.e., minority or low-income population), the demographics of an affected population within the vicinity of the Project must be considered in the context of the overall region. Guidance from the Council on Environmental Quality (CEQ) states that “minority populations should be identified where either: (1) the minority population of the affected areas exceeds 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 (CEQ 1997)”.

Table 2-7 displays Census data summarizing racial and ethnic characteristics of the ZOI. Table 2-8 displays poverty indicators for the ZOI. The purpose is to analyze whether the demographics of the affected area differ in the context of the broader region; and if so, do differences meet CEQ criteria for an Environmental Justice community. Based on the analysis, it does not appear that minority or low-income populations in the study area are disproportionately affected.

Table 2-7 Population Distribution by Race and Ethnicity (2019)

Area	White alone	Black or African American alone	Hispanic or Latino (of any race)	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some other race alone	Two or more races
United States	61%	12%	18%	1%	5%	0%	0%	2%
Arkansas	72%	15%	7%	1%	1%	0%	0%	2%
Missouri	79%	11%	4%	0%	2%	0%	0%	2%
<b>Zone of Influence</b>	<b>80%</b>	<b>8%</b>	<b>7%</b>	<b>1%</b>	<b>2%</b>	<b>0%</b>	<b>0%</b>	<b>2%</b>

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

Table 2-8 also displays the percentage of children (individuals under the age of 18) by county in the ZOI. The purpose of the data is to assess whether the project disproportionately affects the health or safety risks to children as specified by Executive Order (E.O.) 13045 - Protection of Children from Environmental Health Risks and Safety Risks (1997).

Table 2-8 Poverty Indicators and Number of Children (2019)

Area	Unemployment Rate	Percent of population below poverty line (last 12 months)	Percent of Population Under 18 Years Old
United States	3.7%	13.4%	18.5%
Arkansas	3.5%	17.0%	23.7%
Missouri	3.3%	13.7%	18.7%
<b>Zone of Influence</b>	<b>3.4%</b>	<b>16.4%</b>	<b>22%</b>

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

## 2.16 Recreation Facilities, Activities, and Needs

The recreational opportunities and potential of Norfolk Lake is of great importance to this Ozark Mountain region. The Norfolk Project offers many recreational activities such as swimming, SCUBA diving, boating, water skiing, fishing, picnicking, camping, hunting, hiking, and wildlife viewing. There are 30 public use areas around Norfolk Lake. Eight campgrounds and six access areas on the lake are operated by the Corps of Engineers. In 2012, the Little Rock District prepared a Recreation Adjustment Plan that evaluated all the parks on Norfolk Lake.

Implementation of the plan led to the leasing of the camping portion of Jordan Park. The boat ramp in Jordan Park continues to be operated and maintained by USACE.

No significant park operational changes are included in this Master Plan. Since 1988, parks have been evaluated using an efficiency review process. Those parks chosen for closure for operational efficiencies were offered for lease through standard leasing procedures. All leased parks returned to the USACE, that do not qualify for the exceptions to policy in Appendix B of ER 1130-2-550, will be closed. The criteria discussed in this section are of a basic nature to be used for the planning, development, and management of the Norfolk Lake public use areas with consideration being given to the latest trends in recreational activities and needs. These criteria furnish guidelines for determining the type and number of facilities needed to satisfy the current and projected demand and furnishes guidelines for serviceability, operation, and maintenance of facilities. Universal accessibility will be included in the design of new facilities. Engineering and Design Recreational Facility and Customer Service Standards can be referenced in EM 1110-1-400. This manual provides guidance for the rehabilitation of existing and the design and construction of new recreation areas and facilities, and recreation program evaluation activities at recreation areas managed by USACE.

### **2.16.1 Facility Information**

The setting of facilities and development of parks should be of the highest quality, should be safe, and should promote the health, welfare, and aesthetic enjoyment of the public. The setting of each facility should result in the compromise between conservation of the natural environment and providing for public use. Only the most adaptable terrain should be used for setting of overall facilities with consideration given to the natural features so that the most scenic parts of the site may remain undeveloped for the enjoyment of visitors. Facility setting should be in harmony as much as feasible with the environment in which they are to be placed to avoid excessive grading and clearing for site preparation.

### **2.16.2 Recreation Areas**

Multiple parks, lake access points, boat ramps, etc. exist on Norfolk Lake. Some are Corps-operated, and some are operated by a county, resource agency (i.e., AGFC), or other entities. Park maps can be found in Appendix C. If adequate funding becomes available for park operation, recreation areas or portions of recreation areas will be brought up to current design standards and future development may occur as identified in the park descriptions below.

Table 2-9 Recreation Facilities at Norfolk Lake

Facility	Number of Sites
Recreation Areas	30
Picnic Sites	34
Camping Sites	464
Playgrounds	12
Swimming Areas	6
Fishing Docks/Piers	1
Boat Ramps	35
Marina Slips	2,472

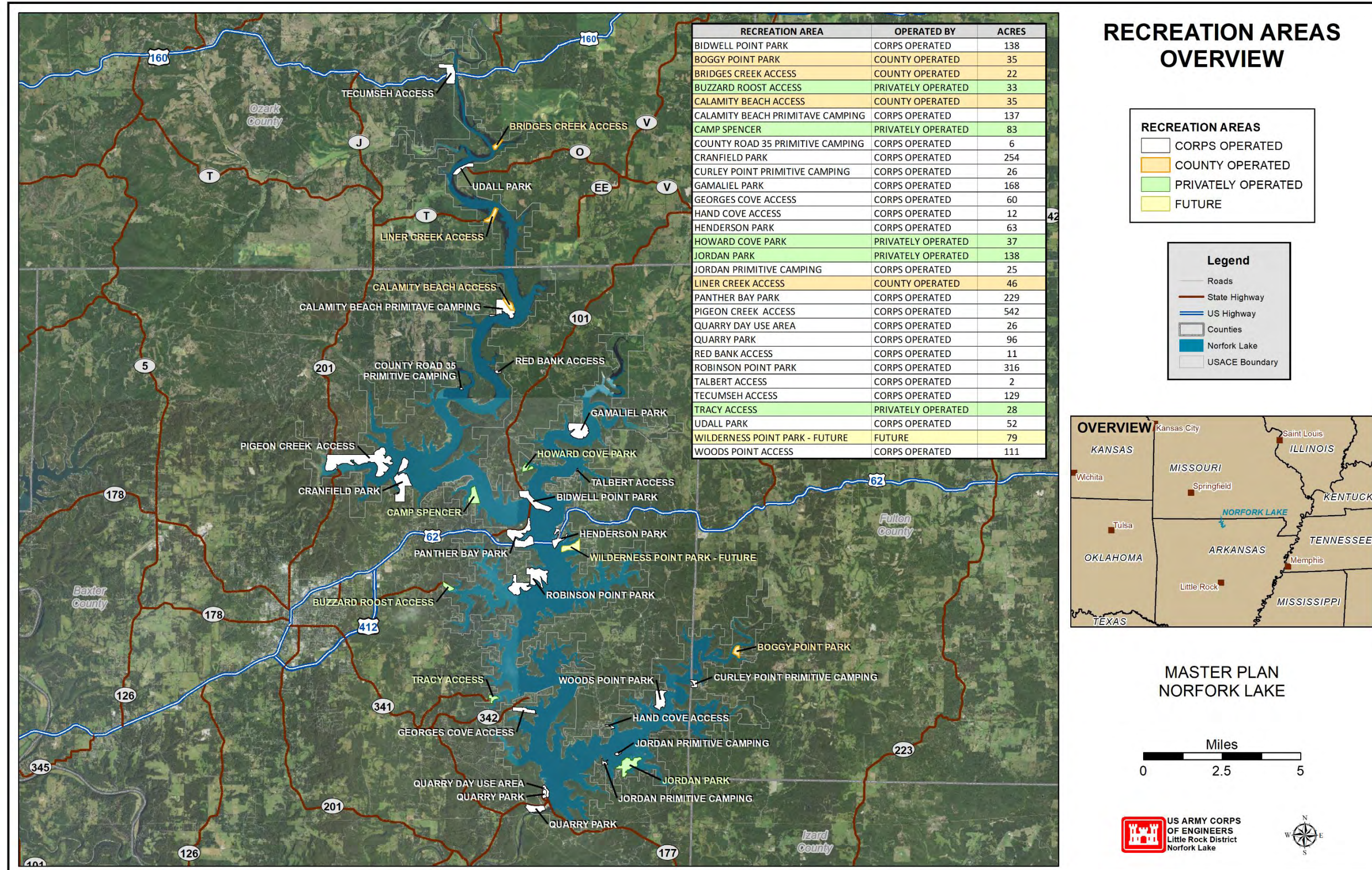


Figure 2-9 Norfolk Lake, Arkansas, Recreation Area Overview

During the master plan revision process, various name changes occurred for the Recreation Areas around Norfolk Lake. Table 2-10 below displays the current names for the remaining Recreation Areas.

Table 2-10 Recreation Areas, Current Names

Prior name	Current Name
Buzzard Roost Park	Buzzard Roost Access
Fulton County Proposed Park Lease Site	Boggy Point Park
Georges Cove Park	Georges Cove Access
Pigeon Creek Park	Pigeon Creek Access
Quarry Cove Dam Area Park (Portion)	Quarry Day Use Area
Quarry Cove Dam Area Park (Portion)	Quarry Marina
Quarry Cove Dam Area Park (Portion)	Quarry Park
Red Bank Park	Red Bank Access
Talbert Park	Talbert Access
Tecumseh Park	Tecumseh Access
Tracy Park	Tracy Access
Wilderness Point (Commercial Campgrounds)	Wilderness Point Park
Curley Point Park	Curley Point Primitive Camping
Ford Cove Park – Future (Portion)	Calamity Beach Access
Ford Cove Park – Future (Portion)	Calamity Beach Primitive Camping
Ford Cove Park – Future (Portion)	Liner Creek Access
Hand Park	Hand Cove Access
Jordan Park (Portion)	Jordan Primitive Camping
Boy Scout Camp	Camp Spencer
Woods Point Park	Woods Point Access

**The following areas are Corps operated:**

**Cranfield Park** – This 254-acre park is located approximately eight miles east of Mountain Home, off U.S. Highway 62. The site is generally steep sloped. A causeway, built to the “island” that was created by impoundment, accesses the main area of the park. Vegetation is heavy and predominantly oak - hickory with stands of Eastern Red Cedar found on the hilltops. Because of its close proximity to Mountain Home, the park is a very popular destination for both campers and day users. Cranfield Park is a class A campground comprised of 66 campsites with electric & water hookups and 3 primitive tent sites. Seven of the sites are located above the marina and the rest are found at the main park area. Other facilities in the camping area include flush toilets, an amphitheater, a one lane launch ramp, sanitary dump station, entrance complex, a fishing dock, and shower house. Separate day use areas feature two group shelters with playgrounds, flush toilets, a premier swim beach, four picnic sites, and a two-lane launch ramp. A commercial marina is located adjacent to the park. This park also contains a 0.6-mile trail named Big Tree Trail.

*Future improvements could include the following: Rehabilitation and modernization of campsites, raising of the causeway and launching facility for high water events, clearing of vegetation and addition of campsites along the western side of the island and removal of the amphitheater, replace existing restroom/shower house on the island.*

**Quarry Park** – This 96-acre park is located at the Norfork Dam. This park includes overnight facilities adjacent to the North Fork River and a separate group camping area. The site ranges from flat to sloping with vegetative cover that is intermittent to sparse in some areas, due to it being situated on a spoil area used during dam construction. A pine stand is in the group camping area. This park is especially popular with fishermen, offering access to the trout found in the river. The launch ramp for lake access is also highly used by fishermen and boaters. The nearby Norfork National Fish Hatchery and its outlet stream “Dry Run Creek” is an additional draw for this park. Quarry Park is a class A campground comprised of 68 campsites having electric hookups, showers, flush toilets, group shelter, playground, walk-in office, sanitary dump station, and a one-lane launching ramp are found along the river. The group camping area has 9 campsites (two with electric hook-ups), a group shelter, and a flush toilet. This park contains a 0.1-mile trail.

*Future improvements could include the following: Rehabilitation and modernization of campsites, convert some sites along the river to “full hookup”, upgrade sewage system to increase use of existing municipal sewage services within the park, construct an improved walk-in access point to the river within the camping area.*

**Quarry Day Use Area** – This 26-acre park is located on the lakeside, north of Norfork Dam. The day use area has a two-lane launch ramp, swim beach, group shelter, flush toilets, playground, sand volleyball court, basketball half-court, and a commercial marina. This park contains 0.1 miles of the Ozark Highlands Trail.

**Robinson Point Park** – This 316-acre park is located off U.S. Highway 62, providing good access to the center of the lake. The site is sloping to steep, with two flat points extending out forming a bay. Vegetation cover is heavy, with the exception of high traffic areas and those areas inundated at higher lake levels. Robinson receives heavy camping use and light day use. Robinson Point Park is a class A campground comprised of 99 campsites with electrical hookups, flush toilets, showers, swim beach, playground, sanitary dump station, and a one-lane launch ramp. A 1.6-mile National Recreation Trail called Robinson Point Trail is also located in the park. This park contains 2.2 miles of the Ozark Highlands Trail.

*Future improvements could include the following: Rehabilitation and modernization of campsites, install a new gatehouse, rehab park attendant sites, modernize “woods loop” area and thin vegetation, install high water parking.*

**Bidwell Point Park** – The 138-acre park is located off Arkansas Highway 101, at the confluence of the Bennett’s arm of the lake. The site is sloping to flat with a long point extending east, creating a sharp bend in the lake. Vegetation is heavy, with a good stand of pines along the shoreline. Several areas offer premier views of the lake. Bidwell is a popular camping park with high occupancy rates and fee collection through the recreation season. Day use is average, with



most traffic arriving from south central Missouri. Bidwell Point Park is a class A campground comprised of 48 campsites with electric hookups. Recent improvements have modernized much of the utilities, many 50-amp sites are available, and water is available at most sites, however the remaining utilities not recently repaired/renovated may require attention in the near future. Additional facilities include a small shower house, vault toilet near the beach, sanitary dump station, launch ramp, beach, and playground. A group shelter and small playground is located just inside the park entrance, separate from the camping area. This park contains 0.5 miles of the Ozark Highlands Trail.

*Future improvements could include the following: Rehabilitation and modernization of campsites, install additional campsites, install a new gatehouse, install replacement restroom/shower house facility, clearing of vegetation and addition of campsites along the western side of the campground/bluff.*

**Gamaliel Park** – This 168-acre park is located on the Bennett’s Bayou arm of the lake, off Arkansas Highway 101. The site is flat to sloping with heavy vegetation cover of oak-hickory forest type. The topography of this area would lend itself well to future expansion and development. Gamaliel Park is a class A campground comprised of 64 campsites with electrical hookups (30 and 50 amp), two shower houses, a waterborne toilet, vault toilet, a playground, sanitary dump station, and entrance complex in the camping area. A .9-mile hiking trail named Big Tree Trail is also located in Gamaliel Park. A separate day use area includes a swim beach, group shelter, a playground, two launch ramps, and a commercial marina.

*Future improvements could include the following: Rehabilitation and modernization of campsites, install additional class A campground loop, improve park drainage with new ditches and culverts, refurbish/install new gatehouse, improve accessibility/view to the lake and beach from the campground, replace vault toilet with waterborne restroom.*

**Panther Bay Park** – This 229-acre park is located between the northwest end of the U.S. Highway 62 Bridge and the southeast end of the Arkansas Highway 101 Bridge. The site is sloping to steep, with shoreline areas very suitable for launch ramp development. Heavy vegetation is prevalent throughout the park. A day use area has been located at the former Highway 101 ferry landing. The other abandoned ferry landings sites have been converted into launch ramps and are heavily used. Panther Bay is a small class A campground comprised of 14 campsites having electric hookups, shared water hydrants, and a small 2-unit shower/restroom. A vault toilet serves the Hwy 62 picnicking and day use area. A sanitary dump station is located near the park’s Hwy 101 entrance. The main day use area has a waterborne restroom, swim beach, group shelter, picnic sites, playground, two launch ramps, and a commercial marina. A main trailhead of David’s Trail, a segment of the Ozark Highlands Trail, is located near the group area and beach at this park. This trailhead serves as a staging area for several annual events. This park contains 2.7 miles of the Ozark Highlands Trail.

*Future improvements could include the following: Rehabilitation and modernization of campsites, addition of a full hookup park attendant campsite, thin the vegetation around the group shelter, repair many sections of the roadways, and construction of a high-water boat ramp.*

**Henderson Park** – This 63-acre park is located on the east end of U.S. Highway 62 bridge over Norfolk Lake. The site is flat and very susceptible to inundation at higher lake levels. As a result of periodic flooding, vegetative cover is sparse. Given its location, this park is very popular for camping and day use activities. Henderson is a class B campground comprised of 36 campsites with electrical hookups, shared water hydrants, a small waterborne toilet, two launch ramps, a small vault toilet at the high-water ramp, sanitary dump station, and a commercial marina.

*Future improvements could include the following: Rehabilitation and modernization of campsites, relocation of main electrical box, and construction of a high-water boat ramp.*

**Tecumseh Access** – This 129-acre access area is located at the northern end of the project where the North Fork River begins to pool as Norfolk Lake. Slightly sloping to flat, this site is flooded at higher lake levels. Vegetative cover is good with a short leaf pine plantation located in the downstream portion of the park. Used by fishermen, canoeists, boaters, this park is popular in the spring and fall. Due to its location alongside U.S. Highway 160 and its peaceful setting this park is a popular roadside stop for travelers. This area contains a kayak/canoe launch site and a 2-lane boat ramp.

**Udall Park** – This 52-acre park is located in Missouri on the upper North Fork arm. The site is sloping to flat and has good vegetative cover. Overall use of the park is very limited; during high water most of the park is flooded and during low water much of the lake turns into a small river channel with surrounding mud flats. Due to its remote location much of the use is from a small local community and destination fishermen. Udall Park is a small class C campground comprised of eight campsites, shared water hydrants, one vault toilet, two launch ramps, and a sanitary dump station.

*Future improvements could include continued development of the Ozark Highlands Trail.*

**Pigeon Creek Access** – This 542-acre access area is located north of Mountain Home off State Highway 201 North. This site is slightly sloping to flat. Vegetation is sparse in low-lying areas to heavy above the top of the flood pool. Due to its location close to Mountain Home, this park is heavily used by fishermen, walkers, bicyclists, swimmers, water sports, and sightseers. Due to its long gentle-sloping shoreline and open areas it is an ideal location for permitted special events. A well-organized and active volunteer group maintains the grounds, and a local bicycle club has established an extensive network of quality mountain biking/hiking trails totaling 10.1 miles in length. Two launch ramps and parking lots are maintained for lake access. The park's land base has space to allow for future addition of campsites as the public need for additional camping and other recreation activities growth.

*Future improvements could include development of campsites.*

**Red Bank Access** – This 11-acre access area is located on the upper North Fork arm of the lake and is accessed off State Highway 101. The launch ramp and parking area are maintained for lake access. This park contains 0.2 miles of the Ozark Highlands Trail.

*Future improvements could include the construction of a high-water boat ramp.*

**Talbert Access** – This 2-acre access area is located on the east side of the Bennett’s arm of the lake, off U.S. Highway 62. The site is steeply sloped and has heavy vegetation outside the developed area. There is a one lane launch ramp and parking.

*Future improvements could include the following: increase parking and construction of a high-water boat ramp.*

**Georges Cove Access** – This 60-acre access area is located off State Highway 342 on the west side of the lake and receives moderate use. The site has a flat gravel parking area with a gently sloping launch ramp. This park contains 0.2 miles of the Ozark Highlands Trail.

*Future improvements could include the following: improved parking lot and construction of a high-water boat ramp.*

**Woods Point Access** – This 111-acre access area is located off Baxter County Road 93. Woods Point has been reduced over the past decade to a one lane boat ramp and gravel parking supplying access to the upper reaches of Big Creek Arm of Norfolk Lake. This is a popular destination for fishermen and receives increased visitation in the spring.

**The following areas are leased to other agencies, government entities, or concessionaires. Operational costs and capital improvements are the responsibility of the lessee.**

**Boggy Point Park** – This 35-acre park is located off Boggy Point Road in Fulton County, Arkansas, and contains a ramp and gravel parking lot, along with eight primitive campsites. This primitive area is utilized by the residents of Fulton County and is a seasonal destination for fishermen. This park is leased to Fulton County.

**Buzzard Roost Access** – This 33-acre access area is leased by Buzzard Roost Marina. The area contains a two-lane boat ramp and large parking area.

*Future development could include construction of a segment of the Ozark Highlands Trail.*

**Howard Cove Park** – This 37-acre park is accessed off State Highway 101 and is leased by 101 Marina. This park contains one vault toilet and 12 total campsites, six electric and six nonelectric. This park has a gentle slope with extensive tree cover.

*Future improvements could include the following: upgrade campsite utilities, install restroom/showerhouse, and install playground.*

**Jordan Park** – The 138-acre park lease area contains 30 campsites with water and electric, seven primitive campsites, cabins for rent, two waterborne bathrooms, well house and water systems, one swim beach, associated asphalt roads and camping pads, one dump station, one gate

house, two septic fields, and commercial marina. The boat ramp is operated and maintained by the Corps of Engineers to ensure access to the lake for the public.

*Future improvements could include the following: upgrade campsite utilities, additional rental cabins, install restroom/showerhouse.*

**Tracy Access** – This 28-acre access area is located off Tracy Ferry Road. This access area is adjacent to Tracy Marina and contains a one lane ramp and a parking area. The boat ramp is Corps of Engineers managed and operated to ensure access to the lake for the public. This access area contains 0.3 miles of the Ozark Highlands Trail. This area is leased out to Tracy Marina.

**The following areas are located within a Low Density Recreation Land Classification and are Corps operated. Only minimal development and infrastructure that supports passive recreational use should occur in these areas:**

**Calamity Beach Primitive Camping** – This 137-acre primitive camping area is located off Baxter County Road 24 near the Arkansas/Missouri state line. A free permit can be obtained by contacting the Mountain Home Project Office.

**County Road 35 Primitive Camping** – This 6-acre primitive camping area is located off Baxter County Road 35, just south of Calamity Beach. The camping area is located within the Norfolk Lake Wildlife Management Area – Indian Head Unit, making it a popular camping area for fall hunters. A free permit can be obtained by contacting the Mountain Home Project Office.

**Curley Point Primitive Camping** – This 26-acre primitive camping area is located off Fulton County Road 15 near the community of Elizabeth. The camping area is located within the Norfolk Lake Wildlife Management Area – Fulton County Unit, making it a popular camping area for fall hunters. A free permit can be obtained by contacting the Mountain Home Project Office.

**Jordan Primitive Camping** – This 25-acre primitive camping area is located off Baxter County Road 70, near Jordan Park/Marina. This area offers a unique camping experience on white, beach-like sand that customers must access by boat only. The area is known locally as Sand Island and is a popular summer destination for boaters. A free permit can be obtained by contacting the Mountain Home Project Office.

**Liner Creek Access** – This 46-acre access area is located off Missouri Highway T in Ozark County. This area is flat and is subject to inundation at higher lake levels. Vegetative cover is sparse in the lower areas. The undeveloped area around the launch ramp is leased to the Missouri Department of Conservation for wildlife management purposes. The one-lane ramp is used by local area residents and has a gravel parking area. A portion of this access area is leased to Ozark County, MO.

**Hand Cove Access** – This 12-acre lake access only area is located off Baxter County Road 91 and consists of a one lane ramp and a gravel parking area.

**The following areas are within a Low Density land classification leased to other agencies, government entities, or private individuals. Only minimal development and infrastructure that supports passive recreational use should occur in these areas. Operational costs are the responsibility of the lessee.**

**Bridges Creek Access** – This 22-acre access area is located off Ozark County Road 551. This access consists of a one lane boat ramp and gravel parking area. This area is leased to Ozark County, MO.

**Calamity Beach Access** – This 35-acre access area is located off Baxter County Road 24. This access is very popular and has a 24-car paved parking lot, courtesy dock, and nightlight. This area is leased by Baxter County, AR.

### **2.16.3 Future Park Development Areas**

If future recreation development is needed, development will be accommodated within the existing High Density classified land areas. (Wilderness Point, see remarks below)

**Wilderness Point Park** – This 79-acre undeveloped park remains a High Density land classification. The PDT considered the qualities of Wilderness Point Park and its potential for future development. At the time of the writing of this document, the Corps does not have plans for any development of this park. It will remain classified as high density at this time.

## 2.16.4 Visitation Profiles (OMBIL)

Table 2-11 shows visitation trends as tabulated by Corps personnel and recorded in the Corps' nationwide Operation and Maintenance Business Information Link (OMBIL) database. The methodology used to capture the information in the following table has varied over the period of record shown and should not be relied upon for precise enumeration.

Table 2-11 Annual Attendance From 2007-2020

Visitation 2007-2020	
2007	1,423,857
2008	1,317,008
2009	1,448,569
2010	1,497,430
2011	1,239,410
*2012	1,174,827
2013	No data
2014	1,397,528
2015	1,254,622
2016	1,417,729
2017	1,533,885
2018	1,626,137
2019	1,389,501
2020	1,170,184

\*New Visitation Program Launched

## 2.16.5 Recreation Analysis

The Statewide Comprehensive Outdoor Recreation Plan (SCORP) is an integral part of capturing the history and popular activities to enhance recreation opportunities in Missouri and Arkansas. The SCORP ties together voices from the users of recreation sites, planners and developers, government officials, agency managers and elected officials. This collaboration effort is in place to formulate a plan to guide recreation development in a useful, beneficial, and sustainable manner. SCORP data may be found on the American Planning Association, Society of Outdoor Recreation Professionals website.

### 2.16.5.1.1 Arkansas SCORP Data (2019-2023):

In accordance with the Arkansas SCORP (2019-2023), Arkansas citizens enjoy the outdoors with 92% stating they are involved in some type of outdoor recreation throughout the year. The primary outdoor recreational activities that Arkansans prefer hasn't changed substantially over the past three decades. According to a recent survey done by the state, walking for pleasure tops the list for the most participation by Arkansans, along with 75% participating in some type of water-related recreation. Sightseeing by car, cooking-out, visiting lakes and rivers, relaxing, family gathering, swimming/wading in freshwater, swimming in pools, fishing, and farmers

markets round out the top ten most popular recreational activities. Trails are often shown as good tools to get people outside and involved in activities, especially for bicycling, walking, hiking, or nature viewing and photography. Access to parks and the bodies of water within the state is a high priority for Arkansans. The traditional outdoor activities of fishing, motor boating, hunting, swimming, diving, and camping are still highly participated in and considered important by Arkansans.

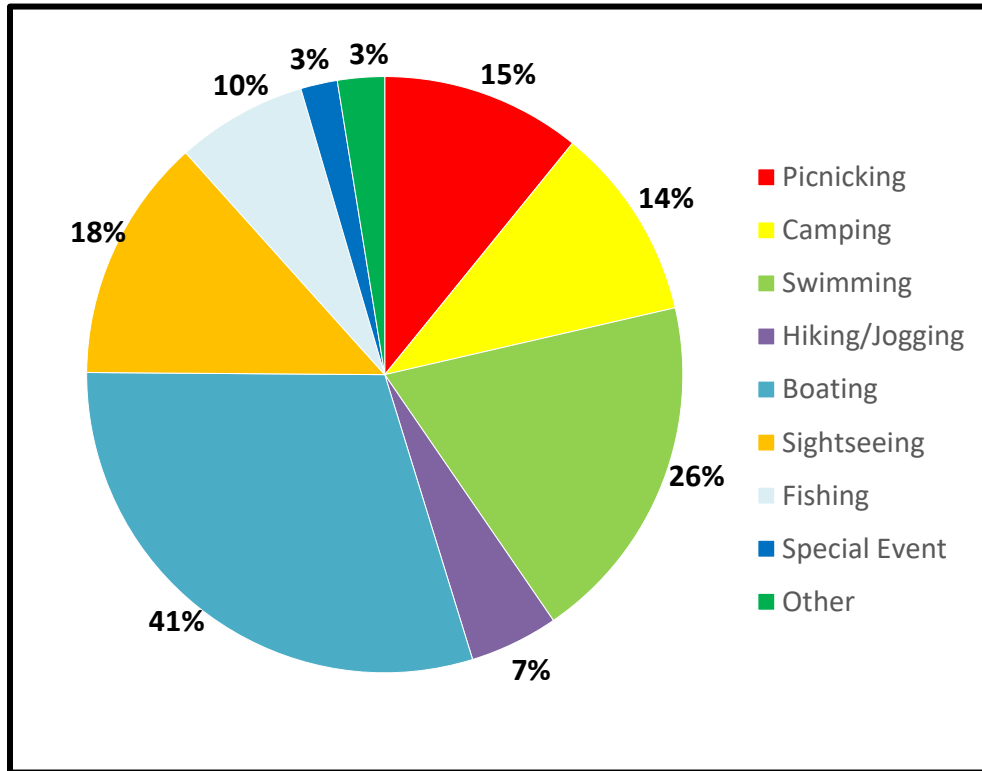
2.16.5.1.2 Missouri SCORP Data (2018-2022):

Missouri residents are shown to have a diverse user group and needs for outdoor recreation. Many benefits to mental and physical health are listed as positive attributes to outdoor recreation. Differing user groups by age, gender, race, and location of residence have distinctly different goals and needs for outdoor recreation. As a general trend, Missouri and Arkansas residents are similar in wanting trails and access to water bodies. Outdoor walking is the most common activity. During a recent survey 92% of Missourians stated being outside was fun and that they cared about nature and the environment. Water based recreation focus on swimming, motor boating, fishing, camping, and water sports.

2.16.5.1.3 Value to the Nation

Accounting for more than half of reported activities (Figure 2-10), water sports (swimming, boating, and fishing) are popular at Norfolk Lake, where nearly every variety of freshwater game fish can be found.

Figure 2-10 Distribution of Visitor Activities at Norfolk Lake



Source: USACE Institute for Water Resources, Value to the Nation 2019

## 2.16.6 Recreational Carrying Capacity

### Public Use Areas

Table 2-12 Norfolk Project Occupancy Percentage

Norfolk Lake Project Occupancy Percentage				
Park Name	# of Sites	Year 2018		
		# of Available Nights	Occupancy	Percent
Bidwell Point Park	49	7,021	3,754	53.47%
Cranfield Park	71	14,621	7,259	49.65%
Quarry Park	71	25,336	8,636	34.09%
Gamaliel Park	64	13,184	3,864	29.31%
Henderson Park	36	5,100	840	16.47%
Robinson Point Park	98	20,188	7,306	36.19%
<b>Total:</b>	<b>389</b>	<b>85,540</b>	<b>31,659</b>	<b>37.01%</b>

\* Due to unavailability of current occupancy data from the reservations system, the Norfolk Lake Project Occupancy Percentage report is based on occupancy rates in 2018.

Table 2-12 lists the Occupancy percentages for parks that are operated by the Corps of Engineers. The table represents the percent of occupancy for all 365 days of the year. Camping is largely a weekend recreational activity, which is reflected in these percentages. While the perception of occupancy percentage appears low, the national average for Corps facilities is at 35%.

## 2.17 Real Estate

### 2.17.1 Acquisition Policy

The Norfolk Dam and Lake project was authorized by the Flood Control Act approved 28 June 1938, (Public Law No. 761, 75<sup>th</sup> Congress, 3d Session) which was later modified by the Flood Control Act approved 18 August 1941, (Public Law No. 228, 77<sup>th</sup> Congress, 1<sup>st</sup> Session) for flood risk management and generation of hydroelectric power. The inclusion of storage for municipal and industrial water supply was authorized by the Water Supply Act of 1958. A Design Memorandum was completed, identifying all land and interests in land that would be necessary for the operation, maintenance, and control of the reservoir. The fee acquisition line for Norfolk Lake, as a general rule, was blocked out along regular land subdivision or property ownership lines to include all lands below elevation 580 msl (mean sea level) or to include the lands required for public access areas. In areas where the acquisition did not encompass lands needed for occasional flooding, flowage easements were typically acquired between the fee acquisition line and up to elevation 584 ft msl to account for the spillway design flood elevation of 584 ft msl.



## 2.17.2 Management and Disposal Policy

The Real Estate Management and Disposal program for Norfolk Lake is administered by the Little Rock District Real Estate Division in accordance with all applicable laws, regulations, and policies. Real Property Disposal on Norfolk Lake is prohibited under Section (8) eight of Public Law 104-52 wherein it states “Notwithstanding any provision of this or any other Act, during the fiscal year ending September 30, 1996, and thereafter, no funds may be obligated or expended in any way for the purpose of the sale, excessing, surplus, or disposal of lands in the vicinity of Norfolk Lake, Arkansas, administered by the Corps of Engineers, Department of the Army, without specific approval of Congress”. All other requests for real estate related actions must be received via a written request made to the Norfolk Lake Operations Project Manager, who makes a recommendation through the Little Rock District Chief of Operations to the Chief of Real Estate Division.

## 2.18 Pertinent Public Laws

### Application of Public Laws

Development and management of Federal reservoirs are regulated by a number of statutes and guided by USACE documents. The following sections provide a summary of the relevant policies and Federal statutes.

### Recreation

The policies and public laws listed below address development and management of recreational facilities on public lands and are pertinent to the Norfolk Lake project.

- PL 78-534, Flood Control Act of 1944 (22 December 1944), authorized the Chief of Engineers to provide facilities in reservoir areas for public use, including recreation and conservation of fish and wildlife.
- PL 79-526, Flood Control Act of 1946 (24 July 1946), amends PL 78-534 to include authority to grant leases to nonprofit organizations at recreational facilities in reservoir areas at reduced or nominal charges.
- PL 83-780, Flood Control Act of 1954 (3 September 1954), further amends PL 78-534 and authorizes the Secretary of the Army to grant leases to Federal, State, or governmental agencies without monetary considerations for use and occupation of land and water areas under the jurisdiction of the Department of the Army for park and recreational purposes when in the public interest.
- PL 87-874, Flood Control Act of 1962, broadened the authority under PL 78-534 to include all water resource projects.
- Joint Land Acquisition Policy for Reservoir Projects (Federal Register, Volume 27, 22 February 1962) allows the Department of the Army to acquire additional lands necessary for the realization of potential outdoor recreational resources of a reservoir.
- PL 88-578, Land and Water Conservation Fund Act of 1965 (3 September 1964) prescribes conditions under which USACE may charge for admission and use of its recreational areas.

- PL 89-72, Federal Water Project Recreation Act of 1965 (9 July 1965), requires sharing of financial responsibilities in joint Federal and non-Federal recreational and fish and wildlife resources with no more than half of the cost borne by the Federal Government.
- PL 90-480, Architectural Barriers Act of 1968 (12 August 1968), as amended, requires access for persons with disabilities to facilities designed, built, altered, or leased with Federal funds.
- PL 101-336, Americans with Disabilities Act of 1990 (ADA) (26 July 1990), as amended by the ADA Amendments Act of 2008 (PL 110-325), prohibits discrimination based on disabilities in, among others, the area of public accommodations and requires reasonable accommodation for persons with disabilities.
- PL 102-580, Water Resources Development Act of 1992 (31 October 1992), authorizes the USACE to accept contributions of funds, materials, and services from non-Federal public and private entities to be used in managing recreational facilities and natural resources.
- PL 103-66, Omnibus Budget Reconciliation Act–Day Use Fees (10 August 1993), authorized the USACE to collect fees for the use of developed recreational sites and facilities, including campsites, swimming beaches, and boat ramps.
- PL 104-333, Omnibus Parks and Public Lands Management Act of 1996 (12 November 1996), created an advisory commission to review the current and anticipated demand for recreational opportunities at lakes and reservoirs managed by the Federal Government and to develop alternatives to enhance the opportunities for such use by the public.

### **Water Resource Protection and Flood Risk Management**

A number of public laws address water resources protection and flood risk management and integration of these goals with other Project purposes such as recreation. The following are pertinent to Norfolk Lake.

- PL 75-761, *Flood Control Act of 1938* (28 June 1938), authorizes the construction of civil engineering projects such as dams, levees, dikes, and other flood risk management measures through the USACE. PL 77-228, *Flood Control Act of 1941* (18 August 1941), amended the Flood Control Act of 1938 and appropriated \$24M to support construction of multiple-purpose reservoir projects in the White River Basin.
- PL 78-534, *Flood Control Act of 1944* (2 March 1945), specifies the rights and interests of the states in water resources development and requires cooperation and consultation with State agencies in planning for flood risk management.
- PL 79-14, *Rivers and Harbors Act of 1945* specifies the rights and interests of the states in watershed development and water utilization and control, and the requirements for cooperation with state agencies in planning for flood control and navigation improvements.
- PL 85-500, *Water Supply Act of 1958* (3 July 1958), authorizes the USACE to include municipal and industrial water supply storage in multiple-purpose reservoir projects.
- PL 87-88, *Federal Water Pollution Control Act Amendments of 1961* (20 July 1961), requires Federal agencies to address the potential for pollution of interstate or navigable waters when planning a reservoir project.
- PL 89-80, *Water Resources Planning Act of 1965* (22 July 1965), provides for the optimum development of the Nation's natural resources through coordinated planning of

water and related land resources. It provides authority for the establishment of a water resources council and river basin commission.

- PL 89-298, *Flood Control Act of 1965* (27 October 1965), authorizes the Secretary of the Army to design and construct navigation, flood risk management, and shore protection projects if the cost of any single project does not exceed \$10 million.
- PL 92-500, *Federal Water Pollution Control Act Amendments of 1972 (Clean Water Act)* (October 18, 1972) Establishes a national goal of eliminating all discharges into U.S. waters by 1985 and an interim goal of making the waters safe for fish, shellfish, wildlife and people by July 1, 1983. Also provides that in the planning of any Corps reservoir consideration shall be given to inclusion of storage for regulation of streamflow.
- PL 95-217, *Clean Water Act of 1977* (15 December 1977), amends PL 87-88 and requires the Environmental Protection Agency (EPA) to enter into written agreements with the Secretaries of Agriculture, the Army, and the Interior to provide maximum utilization of the laws and programs to maintain water quality.
- PL 99-662, *Water Resource Development Act of 1986* (17 November 1986), establishes cost sharing formulas for the construction of harbors, inland waterway transportation, and flood risk management projects.

### **Fish and Wildlife Resources**

A number of public laws address protection and maintenance of fish and wildlife resources. The following are pertinent to the Norfolk Lake project:

- PL 79-732, *Fish and Wildlife Coordination Act* (10 March 1934) provides authority for making project lands available for management by interested State agencies for wildlife purposes. PL 85-624, *Fish and Wildlife Coordination Act* (12 August 1958), states that fish and wildlife conservation will receive equal consideration with other project purposes and be coordinated with other features of water resources development programs.
- PL 89-77, *The Federal Water Project Recreation Act of 1965* (9 July 1965), requires consideration of opportunities for fish and wildlife enhancement in planning water resources projects. Non-Federal bodies are encouraged to operate and maintain the project fish and wildlife enhancement facilities. If non-Federal bodies agree in writing to administer the facilities at their expense, the fish and wildlife benefits are included in the project benefits and project cost allocated to fish and wildlife. Fees may be charged by the non-Federal bodies to repay their costs. If non-Federal bodies do not so agree, no facilities for fish and wildlife may be provided.
- PL 91-190, *National Environmental Policy Act of 1969 (NEPA)* (1 January 1970), establishes a broad Federal policy on environmental quality stating that the Federal government will assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings, and preserve important historic, cultural, and natural aspects of our national heritage.
- PL 93-205, *Endangered Species Act of 1973* (28 December 1973), requires that Federal agencies will, in consultation with the U.S. Fish and Wildlife Service (USFWS), further conservation of endangered and threatened species and ensure that their actions are not likely to jeopardize such species or destroy or modify their critical habitat.

- PL 95-632, Endangered Species Act Amendments of 1978 (10 November 1978), specifies a consultation process between Federal agencies and the Secretaries of the Interior, Commerce, or Agriculture for carrying out programs for the conservation of endangered and threatened species.
- PL 101-233, North American Wetland Conservation Act (13 December 1989), directs the conservation of North America wetland ecosystems and requires agencies to manage their lands for wetland/waterfowl purposes to the extent consistent with missions.
- PL 106-147, Neo-tropical Migratory Bird Conservation Act (20 July 2000) promotes the conservation of habitat for neo-tropical migratory birds.
- Title 16 U.S. Code (U.S.C.) §§ 668, Bald and Golden Eagle Protection Act of 1940 (8 June 1940) as amended, prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles (*Haliaeetus leucocephalus*), including their nests or eggs.

### **Forest Resources**

The following law pertains to management of forested lands and is pertinent to the Norfolk Lake project:

- PL 86-717, Conservation of Forest Land Act of 1960 (6 September 1960), Stewardship management concept derives primarily from Public Law 86-717, The Forest Cover Act, which was written specifically to address the conservation and management of trust resources at Corps projects. This law provides for the protection of forest cover in reservoir areas and specifies that reservoir areas of projects developed for flood risk management or other purposes that are owned in fee and under the jurisdiction of the Secretary of the Army and the Chief of Engineers will be developed and maintained so as to encourage, promote, and ensure fully adequate and dependable future resources of readily available timber through sustained yield programs, reforestation, and accepted conservation practices to increase the value of such areas for conservation, recreation, and other beneficial uses: Provided, that such development and management shall be accomplished to the extent practicable and compatible with other uses of the project. The Act further states in part that the, "...Chief of Engineers, under the supervision of the Secretary of the Army, shall provide for the protection and development of forest or other vegetative cover and the establishment and maintenance of other conservation measures on reservoir areas under his jurisdiction, so as to yield the maximum benefit and otherwise improve such areas."

### **Cultural Resources**

A number of public laws mandate protection of cultural resources on public lands. The following are pertinent to USACE project lands at the Norfolk Lake project:

- PL 59-209, Antiquities Act of 1906 (8 June 1906), applies to the appropriation or destruction of antiquities on federally owned or controlled lands and has served as the precedent for subsequent legislation.
- PL 74-292, Historic Sites Act of 1935 (21 August 1935), declares that it is a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States.

- PL 86-523, Reservoir Salvage Act of 1960 (27 June 1960), provides for the preservation of historical and archaeological data that might otherwise be lost as the result of the construction of a dam and attendant facilities and activities.
- PL 89-665, National Historic Preservation Act of 1966 (NHPA) (15 October 1966), establishes a national policy of preserving, restoring, and maintaining cultural resources. It requires Federal agencies to take into account the effect an action may have on sites that may be eligible for inclusion on the National Register of Historic Places.
- PL 93-291, Archaeological and Historic Preservation Act of 1974 (24 May 1974), amends PL 86-523 and provides for the Secretary of Interior to coordinate all Federal survey and recovery activities authorized under this expansion of the Reservoir Salvage Act of 1960. The Federal construction agency may expend up to 1 percent of project funds on cultural resource surveys.
- PL 96-95, Archaeological Resources Protection Act of 1979 (31 October 1979), updates
- PL 59-209 and protects archaeological resources and sites on public lands and fosters increased cooperation and exchange of information among governmental authorities, the professional archaeological community, and private individuals.
- PL 101-601, Native American Graves Protection and Repatriation Act (16 November 1990), requires Federal agencies to return Native American human remains and cultural items, including funerary objects and sacred objects, to their respective peoples.

### **Leases, Easements, and Rights-of-Way**

A number of laws and regulations govern the granting of leases, easements, and rights-of-way on Federal lands. The following are pertinent to USACE project lands at the Norfolk Lake project:

- 16 U.S.C. § 663, Impoundment or Diversion of Waters (10 March 1934), for wildlife resources management in accordance with the approved general plan.
- 10 U.S.C. § 2667, Leases: Non-excess Property of Military Departments and Defense Agencies (10 August 1956), authorizes the lease of land at water resource projects for any commercial or private purpose not inconsistent with other authorized project purposes.
- U.S.C. Titles 10, 16, 30, 32, and 43 address easements and licenses for project lands.
- 16 U.S.C. § 460d, Construction and Operation of Public Parks and Recreational Facilities in Water Resource Development Projects; Lease of Lands; Preference for Use; Penalty; Application of Section 3401 of Title 18; Citations and Arrests with and without Process; Limitations; Disposition of Receipts (22 December 1944), authorizes use of public lands for any public purpose, including fish and wildlife, if it is in the public interest.
- 16 U.S.C. §§ 470h-3, Lease or Exchange of Historic Property (12 December 1980), for historic properties.
- PL 91-646, Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (2 January 1971) establishes a uniform policy for fair and equitable treatment of persons displaced as a result of Federal or Federally assisted programs.
- PL 94-579, Federal Land Policy and Management Act of 1976 (21 October 1976) establishes a policy that the Federal Government receive fair market value for the use of the public lands and their resources unless otherwise provided for by statute. Provides for the inventory of public land and land use planning. It also establishes the extent to which the executive branch may withdraw lands without legislative action.

## Chapter 3 Goals and Objectives

### 3.1 The Norfolk Lake Master Plan Vision Statement

The Norfolk Master Plan Revision Project Delivery Team (PDT) developed the following vision statement to help guide the process of revising the Norfolk Lake Master Plan:

*“Conserve the natural, cultural, and community resources in a sustainable manner to provide benefits for future generations.”*

### 3.2 Policy and Master Plan Revision Schedule

Recreation and natural resource management policy and guidance are set forth in Corps regulations ER and EP 1130-2-550 and EP 1130-2-540. Included in these guidance documents is the process by which Master Plans are revised as well as broadly stated management principles for recreation facilities and programs, and stewardship of natural and cultural resources. Of particular importance in the formulation of recreation goals and objectives are the policies governing the granting of park and recreation and commercial concession leases (outgrants) which dictate that such outgrants must serve recreational needs and opportunities created by the project and are dependent on the project’s natural or other resources. Other important guidance for management of all resources is the policy governing non-recreational outgrants such as utility easements as well as the guidance in ER and EP 1130-2-540 to adhere to ecosystem management principles.

The Norfolk Lake Master Plan Revision began in December 2019 and the process was divided by the Project Delivery Team (PDT) into five phases:

**Assumptions:** unlimited resources, this master plan revision is everyone’s 1<sup>st</sup> priority, shoreline moratorium implemented.

The Master Plan is implemented in five phases: Phase 1, Initiate Master Plan Revision Process; Phase 2, Develop Draft Master Plan; Phase 3, Develop Final Master Plan; Phase 4, Receive Approval of Final Master Plan; and Phase 5, Implement Final Master Plan. For more information regarding details of each phase and project schedule, please reference the Norfolk Lake Project Management Plan for the Master Plan revision.

### 3.3 Goals and Objectives

#### 3.3.1 Goals

The terms “goal” and “objective” are often defined as synonymous, but in the context of this Master Plan, goals express the overall desired end state of the Master Plan whereas resource objectives are the specific task-oriented actions necessary to achieve the overall Master Plan goals.

The following excerpt from EP 1130-2-550, Chapter 3, express the goals for the Norfolk Lake Master Plan.

- GOAL A.** Provide the best management practices to respond to regional needs, resource capabilities and suitabilities, and expressed public interests consistent with authorized project purposes.
- GOAL B.** Protect and manage project natural and cultural resources through sustainable environmental stewardship programs.
- GOAL C.** Provide public outdoor recreation opportunities that support project purposes and public demands created by the project itself while sustaining project natural resources.
- GOAL D.** Recognize the particular qualities, characteristics, and potentials of the project.
- GOAL E.** Provide consistency and compatibility with national objectives and other State and regional goals and programs.

### 3.3.2 Objectives

Resource objectives are defined as clearly written statements that respond to identified issues and that specify measurable and attainable activities for resource development and/or management of the lands and waters under the jurisdiction of the Little Rock District, Mountain Home Project Office. The objectives stated in this Master Plan support the goals of the Master Plan, Environmental Operating Principles (EOPs), and applicable national performance measures. They are consistent with authorized project purposes, Federal laws and directives, regional needs, resource capabilities, and take public input into consideration. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in this Master Plan. Both the Missouri and Arkansas State Comprehensive Outdoor Recreation Plans (SCORP) were considered as well. The objectives in this Master Plan to the best extent possible aim to maximize project benefits, meet public needs, and foster environmental sustainability for Norfolk Lake.

#### Recreational Objectives

- Evaluate the demand for improved recreation facilities and increased public access on Corps-managed public lands and water for recreational activities (i.e., camping, walking, hiking, biking, boating, hunting, fishing, wildlife viewing, etc.) and facilities (i.e., campsites, picnic facilities, overlooks, all types of trails, boat ramps, courtesy docks, interpretive signs/exhibits, and parking lots). Goal A, C, D
- Monitor current public use levels (i.e., with a special focus on boating use and trends) and evaluate impacts from overuse and crowding. Take action to prevent overuse, conflict, and public safety concerns. Goal A, C
- Provide a unique natural resource and aesthetic based recreation experience within the White River watershed projects. Goal A, B, C, D
- Evaluate recreational use zoning and regulations for natural resource protection, quality recreational opportunities, and public safety concerns. Goal A
- Follow the Environmental Operating Principles associated with recreational use of waterways for all water-based management activities and plans. Goal B, C, E

- Increase universally accessible facilities on Norfolk Lake. Goal A, C, E
- Evaluate need for commercial facilities on public lands and waters. Goal A, C
- Consider flood/conservation pool to address potential impact to recreational facilities (i.e., campsites, docks, etc.); Note that water level management is not within the scope of the Master Plan. Goal A, B, C, D
- Ensure consistency with USACE Natural Resources Management Strategic Plan. Goal E
- Reference the Missouri Statewide Comprehensive Outdoor Recreation Plan (SCORP) and the Arkansas Statewide Comprehensive Outdoor Recreation Plan to ensure consistency in achieving recreation goals. Goal E
- Assess current public use levels (i.e., with focus on boating, camping, and day use trends) and evaluate impacts from overuse and crowding. Take action to prevent overuse, conflict, and public safety concerns. Goal A, C, E
- Evaluate recreational activities (public and private use) for natural resource protection, quality recreational opportunities, and public safety concerns. Goal A, B, C, D, E

#### Natural Resource Management Objectives

- Consider flood/conservation pool levels to optimize habitat conditions, as long as there is no interference with the Project's other authorized purposes, i.e., flood risk management and hydroelectric power generation. Note that water level management is not within the scope of the Master Plan. Goal A, B, D
- Actively manage and conserve forest, fish, and wildlife resources, special status species, by implementing ecosystem management principles and best management practices to ensure sustainability and enhance biodiversity. Goal A, B, D, E
- Consider watershed approach during decision-making process. Goal E
- Optimize resources, labor, funds, and partnerships for protection and restoration of fish and wildlife habitats. Goal B, E
- Optimize resources, labor, funds, and partnerships for the management and prevention of invasive species in Norfolk Lake. Goal B
- Minimize development on Federal lands to preserve the scenic beauty and aesthetics of the project. Goal A, B, C, D
- Continually evaluate erosion control and sedimentation issues at Norfolk Lake. Goal A, B, E
- Identify and protect unique or sensitive habitat areas. Goal A, B, D, E
- Stop unauthorized uses of public lands such as agricultural trespass, timber theft, unpermitted docks and other structures, clearing of vegetation, unauthorized roadways, off-road vehicle (ORV) use, trash dumping, and placement of advertising signs that create negative environmental impacts. Goal A, B, C, D, E
- Promote forest health through forest management actions to create a diverse and sustainable suite of forest habitats. Goal A, B, D
- Evaluate and determine appropriate non-statutory mitigation for adverse environmental impact actions. Goal A and B
- Enhance aquatic habitat and associated fisheries management improvement projects. Goal A, B, C, D
- Identify, restore, and manage ecological land types. Goal A, B, D, E



- Encourage State and Federal natural resource partnerships to continue sustaining project lands and waters. Goal A, B, C

#### Environmental Compliance Objectives

- Manage project lands and water to sustain healthy fish and wildlife populations and habitat conditions and avoid negative effects to public water supply, ensuring public health and safety. Goal A, B, C, D, E
- Consider both point and non-point sources of water quality problems during decision making. Goal A, B, D, E
- Improve coordination, communication, and cooperation between regulating agencies and non-governmental organizations to resolve and/or mitigate environmental problems. Goal A, B, D, E
- Ensure compliance with Environmental Review Guide for Operations (ERGO) at all Norfolk Lake facilities. Goal A, B, E
- Eliminate PODSS (Privately Owned Domestic Sewer Systems) on Federal lands. Goal A and B

#### Visitor Information, Education, and Outreach Objectives

- Provide more opportunities (i.e., town hall meetings) for communication between agencies, special interest groups, and the general public. Goal A, D, E
- Implement more educational and outreach programs on the lake. Topics to include Project operations, water quality, history, cultural resources, water safety, recreation, nature, and ecology. Goal A, B, C, D, E
- Establish a network among local, state, and Federal agencies concerning the exchange of lake-related information for public education and management purposes. Goal A, D, E
- Increase public awareness of special use permits or other authorizations required for special activities, organized special events, and commercial activities on public lands and waters of the lake. Goal A, B, C
- Capture trends concerning boating accidents and other incidents on public lands and waters and coordinate data collection with other public safety officials. Goal A, C, D, E
- Promote Corps Water Safety message. Goal A, C, D, E
- Educate adjacent landowners on public land and shoreline use policies. Goal A, B, C, D, E
- Continue to educate public on White River Control Plan and White River Minimum Flows and associated impacts to the surrounding communities. Goal A, C, D, E
- Educate the public on what is a Master Plan, Operational Management Plan, Shoreline Management Plan and associated other plans. Goal A, C, D, E

#### Economic Impacts Objectives

- Balance economic and environmental interests involving Norfolk Lake. Goal A, B, C, D, E
- Evaluate the type and extent of additional commercial development that is compatible with national Corps policy on both recreation and non-recreational outgrants and that may be sustained on public lands classified for High Density Recreation. Goal A, B, C, D, E

- Work with local communities to promote tourism and recreational use of the lake. Goal A, B, C, D, E

#### General Management Objectives

- Maintain the public lands boundary lines to ensure it is clearly marked and recognized in all areas. Goal A, B, D
- Secure sustainable funding for the environmental stewardship program. Goal A, B, C, D, E
- Ensure consistency with USACE Campaign Plan (national level), Implementation Plan (regional level), Operations Plan (District level). Goal E
- Adapt to funding level changes in future years. Goal E
- Ensure consistency with Executive Order 13148, ‘Greening the Government Through Leadership in Environmental Management’ (21 April 2000). Goal E
- Ensure consistency with Executive Order 13693, ‘Planning for Federal Sustainability in the Next Decade’ (19 March 2015), to guarantee compliance with Leadership in Energy and Environmental Design (LEED) criteria for government facilities. Goal E
- Manage non-recreation outgrants, such as utility easements, in accordance with national guidance set forth in ER 1130-2-550. Goal A, B, D, E
- Manage public lands in accordance with PL 104-52. Goal A, B, E

#### Cultural Resources Management Objectives

- Monitor and better coordinate lake development and the protection of cultural resources with State Historic Preservation Offices and Federally recognized Tribes. Goal A, B, D, E
- Inventory cultural resources on the project. Goal A, B, D, E
- Increase public awareness and education of regional history. Goal B, D, E
- Maintain compliance with Section 106 and 110 of the National Historic Preservation Act; the Archeological Resources Protection Act; and the Native American Graves Protection and Repatriation Act on public lands surrounding the lake. Goal B, D, E
- Prevent unauthorized or illegal excavation and removal of cultural resources on project lands. Goal B, D, E

## Chapter 4 Land Allocations, Land Classifications, Water Surface Classifications, and Project Easement Lands

### 4.1 Introduction

Norfolk Lake is a multipurpose project constructed primarily for flood risk management and generation of hydroelectric power. Water supply and recreation are also project purposes resulting primarily from the impoundment of water and the presence of public land. Management of recreational resources must not conflict with the regulation of the lake for the two primary purposes for which it was authorized. Fish and Wildlife enhancement of project lands and waters is also an important project purpose and must be taken into consideration in all project management activities. The principal concept in planning Norfolk Lake was for public use and benefit. This concept has been implemented, and first among priorities for public use are stringent standards for public health, safety, and sanitation. The Resource Plan in Chapter 5 considers these standards in land use classification and in planning for the recreational activities and stewardship of the lands and waters associated with the project.

To provide the greatest possible recreational/outdoor experience, safeguards have been implemented over the use of Government-owned land adjacent to the shoreline. At Norfolk Lake, much of the shoreline is being retained in its rugged, natural state. Forest management practices are implemented to maintain existing vegetation in a healthy state while juvenile plant material is being planted to revegetate open spaces.

Ownership of land adjacent to Government-owned land does not convey any rights to the adjacent landowner(s) that would allow private and exclusive access to the lake across Government-owned land. To satisfy public demand for access to the lake, access roads and docks of quasi-public nature are permitted provided that the nature and extent of these facilities satisfy a valid public need. This need should be in harmony with the overall development of the lake and not in conflict with management practices as determined by the District Engineer.

The existing lands required for project operation purposes and recreation have been indicated on land classification maps and park maps. The lands described in the various designations throughout the lake are very similar in general characteristics of soil, topography, and vegetative cover typical of the foothills of the Ozark Mountains.

Project lands and waters total 54,410 acres. There are an additional 253 acres of flowage easement lands. Generally, the easement lands lie above or landward of the fee acquisition line but below the 584 ft msl elevation and are indicated by the purple color on the land classification maps.

All Norfolk Lake Project lands are allocated as project operations to provide for safe, efficient operation of the project. Project operations lands reserved for recreational purposes and lands reserved for preservation of natural resources are indicated by color coding on the land classification maps. Land use allocations are discussed as follows.

## 4.2 Land Allocations

Lands are allocated by their congressionally authorized purposes for which the project lands were acquired. There are four land allocation categories applicable to Corps projects:

1. Operation: These are the lands acquired for the congressionally authorized purpose of constructing and operating the project. Most project lands are included in this allocation.
2. Recreation: These lands were acquired specifically for the congressionally authorized purpose of recreation. These lands are referred to as separable recreation lands. Lands in this allocation can only be given a land classification of “Recreation”.
3. Fish and Wildlife: These lands were acquired specifically for the congressionally authorized purpose of fish and wildlife management. These lands are referred to as separable fish and wildlife lands. Lands in this allocation can only be given a land classification of “Wildlife Management”.
4. Mitigation: These lands were acquired specifically for the congressionally authorized purpose of offsetting losses associated with development of the project. These lands are referred to as separable mitigation lands. Lands in this allocation can only be given a land classification of “Mitigation”.

## 4.3 Land Classifications

Land classification designates the primary use for which project lands are managed. Project lands are classified for development and resource management consistent with authorized project purposes and the provisions of the National Environmental Policy Act (NEPA) and other Federal laws.

1. Project Operations: This category includes those lands required for the dam, spillway, switchyard, levees, dikes, offices, maintenance facilities, and other areas that are used solely for the operation of the project.

Current acreage: 166.4 acres

2. High Density Recreation: Lands developed for intensive recreational activities for the visiting public including day use areas and/or campgrounds. These could include areas for concessions (marinas, comprehensive resorts, etc.), and quasi-public development.

Current acreage: 2,671.8 acres

3. Mitigation: This classification will only be used for lands with an allocation of Mitigation and that were acquired specifically for the purposes of offsetting losses associated with development of the project.

Current acreage: None

4. Environmentally Sensitive Areas: Areas where scientific, ecological, cultural or aesthetic features have been identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the Endangered Species Act, the National Historic Preservation Act or applicable State statutes. These areas must be considered by management to ensure they are not adversely impacted. Typically, limited or no development of public use is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration. These areas are typically distinct parcels located within another, and perhaps larger, land classification area.

Current acreage: 6,685.6 acres (\*from 1988 plan, this area was called 'Natural Areas')

5. Multiple Resource Management Lands: This classification allows for the designation of a predominate use as described below, with the understanding that other compatible uses described below may also occur on these lands (e.g., a trail through an area designated as Wildlife Management). Land classification maps must reflect the predominant sub-classification, rather than just Multiple Resource Management.

- a. Low Density Recreation: Lands with minimal development or infrastructure that support passive public recreational use (e.g., primitive camping, fishing, hunting, trails, wildlife viewing, etc.).

Current acreage: 2,136.7 acres

- b. Wildlife Management: Lands designated for stewardship of fish and wildlife resources.

Current acreage: 20,873.0 acres

- c. Vegetative Management: Lands designated for stewardship of forest, prairie, and other native vegetative cover.

Current acreage: None

- d. Future/Inactive Recreation Areas: 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.

Current acreage: None

## 4.4 Water Surface Classifications

If the project administers a surface water zoning program, then it should be included in the Master Plan.

6. Restricted: Water areas restricted for project operations, safety, and security purposes.

Current acreage: 61.9 water surface acres

7. Designated No-Wake: To protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and for public safety.

Current acreage: None

8. Fish and Wildlife Sanctuary: Annual or seasonal restrictions on areas to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning.

Current acreage: None

9. Open Recreation: Those waters available for year-round or seasonal water-based recreational use.

Current acreage: 21,815 water surface acres

## 4.5 Project Easement Lands

All lands for which the Corps holds an easement interest, but not a 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 the Corps as other lands.

1. Operations Easement: The Corps retains rights to these lands necessary for project operations.

Current acreage: None

2. Flowage Easement: The Corps retains the right to inundate these lands for project operations.

Current acreage: 253.4 acres

3. Conservation Easement: The Corps retains rights to lands for aesthetic, recreation, and environmental benefits.

Current acreage: None

## Chapter 5 Resource Plan

This chapter describes in broad terms how project lands and water surface will be managed. For Norfolk Lake, the PDT chose the Management by Classification approach as set forth in EP 1130-2-550. This chapter is reflective of the Corps' Selected Alternative.

The Draft Master Plan contained land classifications proposed for Alternative 2, which was the Corps' "Preferred Alternative" at the time. The accompanying Final Environmental Assessment evaluated 4 alternatives: Alternative 1, the Increased Preservation alternative; Alternative 2, Increased Conservation alternative; Alternative 3, the No Action alternative, and Alternative 4, the Selected Alternative.

The Selected Alternative in this final Norfolk Lake Master Plan is a slightly modified version of Alternative 2, the Increased Conservation.

The decrease in High Density Recreation acreage is primarily due to a large amount of land classified as High Density in the 1988 Master Plan that has been identified as areas of fee land that have not been developed for high density primarily due to steep terrain, wildlife habitat conservation or cultural resources. Additionally, a large increase in Wildlife Management acreage is caused primarily by reclassifying areas of High Density Recreation, Low Density Recreation, and Environmentally Sensitive Areas to coincide with the lands leased to the Missouri Department of Conservation as well as the Arkansas Game and Fish Commission for Wildlife Management Areas. These areas have been reclassified to better suit the needs and current management of the project as a whole. In response to the public's concerns during the scoping comment period for additional boat ramps and launch sites, especially during high water events, six high-water ramps and sites have been proposed at the following Corps recreation areas: Quarry, Panther Bay, Talbert, Red Bank, Henderson and Georges Cove.

### 5.1 Alternatives Developed During the Master Plan Revision Process

A brief description for each alternative is as follows (a more detailed description is provided in the accompanying Environmental Assessment, Appendix A to this document). Each land classification provides a justification paragraph that outlines the methodology used in developing the selected alternative.

Table 5-1 Comparison of Classifications by Alternative

Classification	Alternative 1 – Increased Preservation		Alternative 2 – Increase Conservation		Alternative 3 – No Action (1988 Plan)		Selected Alternative	
	Acres	Percentage of land	Acres	Percentage of land	Acres	Percentage of land	Acres	Percentage of land
High Density	2,451.8	8%	2,683.8	8%	10,367.3	32%	2,671.8	8%
Low Density	2,116.3	7%	2,136.7	7%	11,965.8	37%	2,136.7	7%
Environmentally Sensitive	14,552.8	45%	6,686.8	21%	7,528.9	23%	6,685.6	21%
Project Operations	166.4	1%	166.4	1%	76.7	< 1%	166.4	1%
Wildlife Management	13,246.2	41%	20,859.7	64%	2,258.2	7%	20,873.0	64%
Not Allocated	0	0%	0	0%	336.5	1%	0	0%
Open Recreation (water)	21,816.9	NA	21,816.9	NA	21,822.7	NA	21,815.0	NA
Restricted (water)	61.9	NA	61.9	NA	56.1	NA	61.9	NA



### 5.1.1 Alternative 1 – Increase Preservation

Alternative 1 reclassifies a large percentage of undeveloped High Density and Low Density to Environmentally Sensitive Areas, with the exception of areas that are leased for Wildlife Management Areas that were reclassified to Wildlife Management. A concerted effort was made to include all glades and riparian corridor areas in the back of coves within Environmentally Sensitive under this alternative.

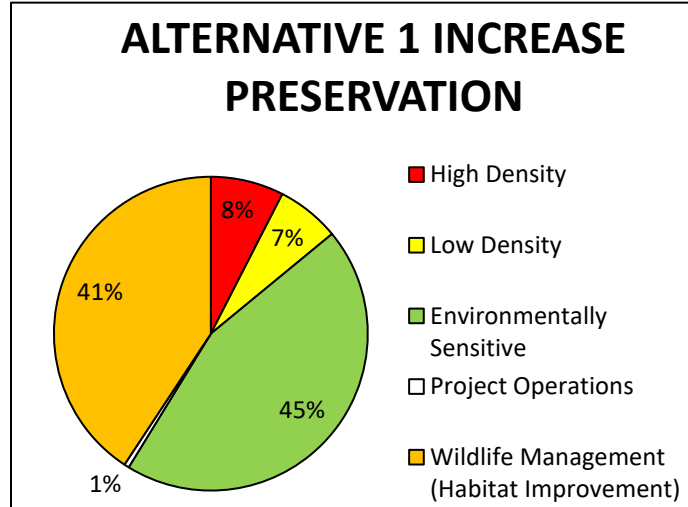


Figure 5-1 Alternative 1

No Action	Converted to	Increased Preservation	Acres	% from No Action
No Allocation	Converted to	Low Density Recreation	13.2	3.9%
		Environmentally Sensitive	62.1	18.4%
		High Density Recreation	1.4	0.4%
		Wildlife Management	247.5	73.5%
		Project Operations	12.3	3.7%
Wildlife Management	Converted to	Low Density Recreation	6.0	0.3%
		Environmentally Sensitive	328.6	14.5%
		High Density Recreation	0.0	0.0%
		Wildlife Management	1923.7	85.2%
		Project Operations	0.0	0.0%
Environmentally Sensitive	Converted to	Low Density Recreation	205.1	2.7%
		Environmentally Sensitive	3959.8	52.6%
		High Density Recreation	0.0	0.0%
		Wildlife Management	3364.0	44.7%
		Project Operations	0.0	0.0%
Low Density Recreation	Converted to	Low Density Recreation	1159.9	9.7%
		Environmentally Sensitive	6734.1	56.3%
		High Density Recreation	83.2	0.7%
		Wildlife Management	3988.6	33.3%
		Project Operations	0.0	0.0%
High Density Recreation	Converted to	Low Density Recreation	732.0	7.1%
		Environmentally Sensitive	3468.3	33.5%
		High Density Recreation	2367.2	22.8%
		Wildlife Management	3722.5	35.9%
		Project Operations	77.4	0.7%
Project Operations	Converted to	Low Density Recreation	0.0	0.0%
		Environmentally Sensitive	0.0	0.0%
		High Density Recreation	0.0	0.0%
		Wildlife Management	0.00	0.0%
		Project Operations	76.7	100.0%
Total=			32,533.5 acres	

Table 5-2 Land Classification Changes from No Action to Alternative 1

### 5.1.2 Alternative 2 – Increase Conservation

Alternative 2 land classifications were mapped to reflect current land and resource management practices and in response to agency and public comments received during the revision process. Changes include reclassifying undeveloped High Density Recreation land classifications (i.e., future/closed Corps parks) to other land classifications, reclassifying undeveloped Low Density Recreation land to Wildlife Management, Project Operations, or Environmentally Sensitive Area land classifications, and reclassifying some lands that contained active shoreline use permits or outgrants to Low Density.

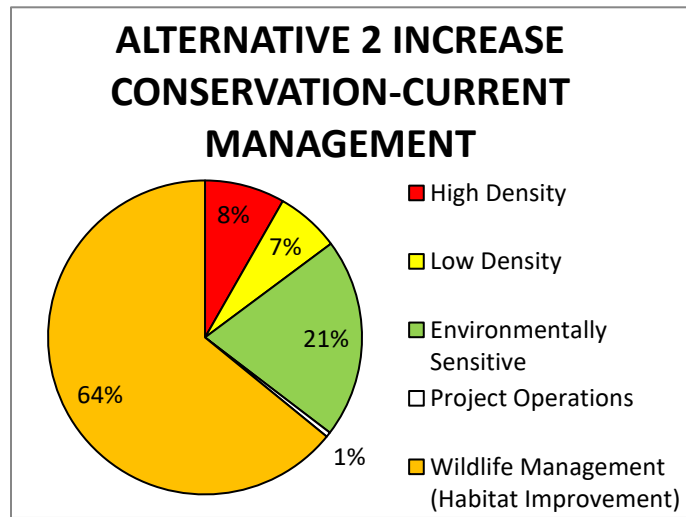


Figure 5-2 Alternative 2

<u>No Action</u>	<u>Converted to</u>	<u>Increase Conservation</u>	<u>Acres</u>	<u>% from No Action</u>
No Allocation	Converted to	Low Density Recreation	13.5	4.0%
		Environmentally Sensitive	61.6	18.3%
		High Density Recreation	1.4	0.4%
		Wildlife Management	247.7	73.6%
		Project Operations	12.3	3.7%
Wildlife Management	Converted to	Low Density Recreation	6.0	0.3%
		Environmentally Sensitive	0.0	0.0%
		High Density Recreation	0.0	0.0%
		Wildlife Management	2252.2	99.7%
		Project Operations	0.0	0.0%
Environmentally Sensitive	Converted to	Low Density Recreation	208.7	2.8%
		Environmentally Sensitive	1385.1	18.4%
		High Density Recreation	0.0	0.0%
		Wildlife Management	5935.1	78.8%
		Project Operations	0.0	0.0%
Low Density Recreation	Converted to	Low Density Recreation	1166.0	9.7%
		Environmentally Sensitive	3021.7	25.3%
		High Density Recreation	83.2	0.7%
		Wildlife Management	7694.8	64.3%
		Project Operations	0.0	0.0%
High Density Recreation	Converted to	Low Density Recreation	742.5	7.2%
		Environmentally Sensitive	2218.4	21.4%
		High Density Recreation	2599.2	25.1%
		Wildlife Management	4729.9	45.6%
		Project Operations	77.4	0.7%
Project Operations	Converted to	Low Density Recreation	0.0	0.0%
		Environmentally Sensitive	0.0	0.0%
		High Density Recreation	0.0	0.0%
		Wildlife Management	0.00	0.0%
		Project Operations	76.7	100.0%
Total=			32,533.5 acres	

Table 5-3 Land Classification Changes from No Action to Alternative 2

### 5.1.3 Alternative 3 – No Action

The No Action Alternative, utilizing the 1988 Master Plan land use classifications remain the same and none of the 32,533.5 acres of land around the lake will be reclassified. This alternative has the potential to allow for increased land and water-based impacts within the High Density and Low Density land classifications.

Alternative three (1988 master plan) land classifications do not accurately reflect the current land use activities and resource management of the lake. In addition, this alternative does not address resource management laws, policies, and regulations that were implemented after the 1988 Norfolk Lake Master Plan. The 1972 Land Use Plan (land classification map) for Norfolk Lake was not updated but was included as part of the 1988 Norfolk Lake Master Plan.

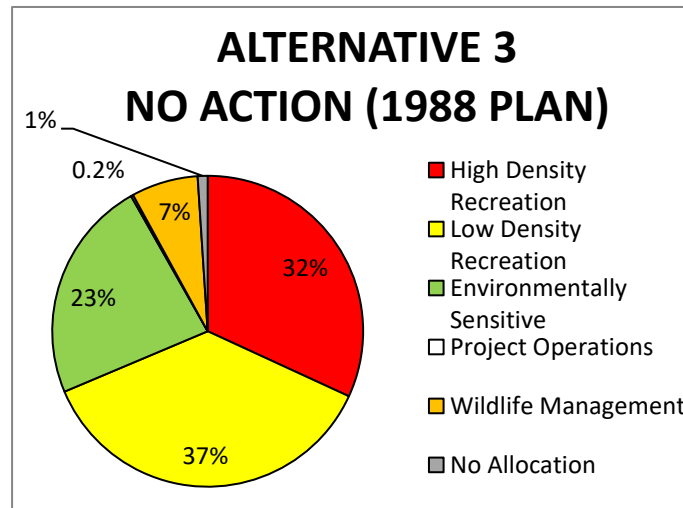


Figure 5-3 Alternative 3

### 5.1.4 Selected Alternative

The selected alternative is a slightly modified version of Alternative 2. This alternative includes slight decrease in High Density lands; a slight increase in Environmentally Sensitive Area lands; and a slight increase in Wildlife Management lands compared to alternative 2. There was no change in Project Operation lands from alternative 2.

The slight increase/decrease in acreage from Alternative 2 is attributed to the modification to the Tracy Marina lease area to adjust for lease changes that occurred during the revision process, therefore adjusting the High Density Land Classification around the lease area.

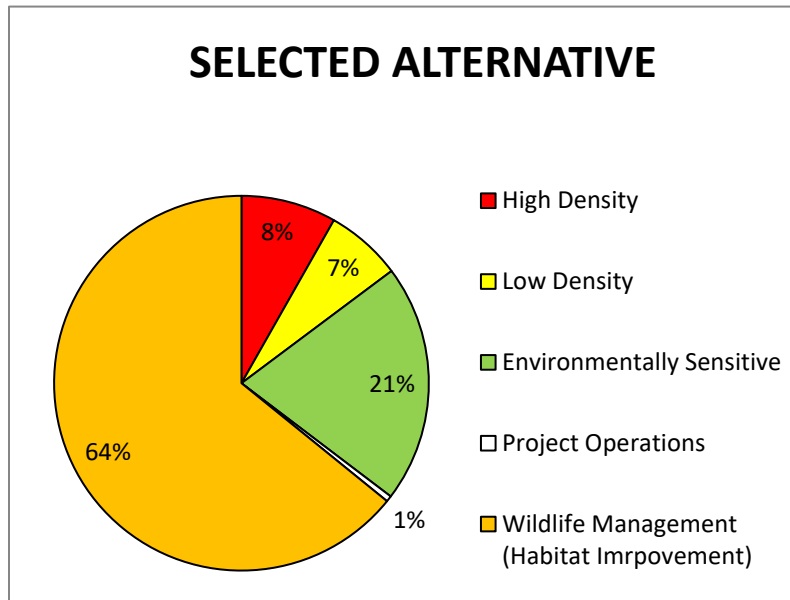


Figure 5-4 Selected Alternative

<u>No Action</u>	<u>Converted to</u>	<u>Selected Alternative</u>	<u>Acres</u>	<u>% from No Action</u>
No Allocation	Converted to	Low Density Recreation	13.5	4.0%
		Environmentally Sensitive	61.6	18.3%
		High Density Recreation	1.4	0.4%
		Wildlife Management	247.7	73.6%
		Project Operations	12.3	3.7%
Wildlife Management	Converted to	Low Density Recreation	6.0	0.3%
		Environmentally Sensitive	0.0	0.0%
		High Density Recreation	0.0	0.0%
		Wildlife Management	2,252.2	99.7%
		Project Operations	0.0	0.0%
Environmentally Sensitive	Converted to	Low Density Recreation	208.7	2.8%
		Environmentally Sensitive	1,385.1	18.4%
		High Density Recreation	0.0	0.0%
		Wildlife Management	5,935.1	78.8%
		Project Operations	0.0	0.0%
Low Density Recreation	Converted to	Low Density Recreation	1,166.0	9.7%
		Environmentally Sensitive	3,021.7	25.3%
		High Density Recreation	83.2	0.7%
		Wildlife Management	7,694.8	64.3%
		Project Operations	0.0	0.0%
High Density Recreation	Converted to	Low Density Recreation	742.5	7.2%
		Environmentally Sensitive	2,217.2	21.4%
		High Density Recreation	2,587.2	25.1%
		Wildlife Management	4743.1	45.6%
		Project Operations	77.4	0.7%
Project Operations	Converted to	Low Density Recreation	0.0	0.0%
		Environmentally Sensitive	0.0	0.0%
		High Density Recreation	0.0	0.0%
		Wildlife Management	0.00	0.0%
		Project Operations	76.7	100.0%
Total=			32,533.5 acres	

Table 5-4 Land Classification Changes from No Action to the Selected Alternative

## 5.2 Classification and Justification

The PDT made general assumptions during the land classification review process. Those assumptions include:

- Valid boat dock permits would be located in the Low Density Recreation land classification.
- The 200 ft. access rule in the current Norfolk Lake Shoreline Management Plan would remain the same.
- The six physical criteria for placing a boat dock on Norfolk Lake would remain the same (200 ft., water depth, lateral spacing, 1/3 cove rule, parking availability, and legal access to shoreline).
- Past classification lines, legal access points to the Limited Development Area, edges of zoning and shoreline use permits, Corps boundary monuments and corners, edges of roads, and terrain such as drainage inlets were used as boundaries between classifications.

In addition, the PDT considered what the land classification was before (from the 1988 master plan), the feasibility of keeping or changing the existing land classification, potential future development needs around the lake, and all agency and public comments received during the revision process.

### 5.2.1.1 Project Operations

Project Operations land classification includes those lands required for the dam, spillway, switchyard, levees, dikes, offices, maintenance facilities, and other areas that are used solely for the operation of the project.

*Justification:* On Norfolk Lake, the lands classified as Project Operations have been classified by definition. Areas adjacent to the dam and powerhouse were reclassified from High Density to Project Operations. Additionally, some lands around the Norfolk Dam were changed from unclassified to Project Operations.

In anticipation of a new water intake structure site, the identified land is classified as Project Operations. The existing water intake structure is expected to be removed from project lands and the area restored using best management practices once a new structure has been constructed and is in use. At which time, a review of the land classification should be considered to determine the need for a supplement to the master plan.

Resource Objectives: General Management

(Acreage = 166.4 acres or 1% of USACE managed land)

### 5.2.1.2 High Density Recreation

High Density Recreation land classification is for those lands intended to be developed or are currently developed for intensive recreational activities for the visiting public including day use



areas, parking and launch areas, and/or campgrounds. These could include areas for commercial concessions (marinas, comprehensive resorts, etc.) and quasi-public development.

*Justification:* There were various undeveloped future-use and closed Corps parks on Norfolk Lake in the 1988 master plan that have been reclassified from High Density to Wildlife Management, Environmentally Sensitive, or Low Density Recreation land classifications. That list includes:

1. Big Creek Park Future .....(247 acres)
2. Curley Point Park.....(302 acres)
3. Ford Cove Park – Future .....(952 acres)
4. Hand Park.....(171 acres)
5. Lick Creek Park – Future.....(182 acres)
6. Newton Landing Park.....(195 acres)
7. Seward Point Park – Future.....(1,260 acres)

Wilderness Point – Future – at the time of the writing of this master plan, the Corps does not have any plans for development of this park (79 acres). This area will remain classified as High Density for potential future development.

From the 1988 master plan, High Density areas in Bidwell Point Park, Buzzard Roost Park, Cranfield Park, Henderson Park, Howard Cove, Jordan Park, Panther Bay Park, Red Bank, Robinson Point Park, Talbert Park, Tecumseh Park, Tracy Park, and Wilderness Point Park, contained lands reclassified to ESA, Low Density and Wildlife Management. These changes are in response to current and expected future land use. Boggy Point Park, formerly known as Fulton County Proposed Park Lease Site, that is leased to Fulton County, remains as High Density.

Camp Spencer, a leased area to Boy Scouts of America, previously classified as Low Density is now classified as High Density due to current and projected use of the lease area.

In response to public comments received during the master plan revision process regarding the need for additional boat ramps and/or additional launch access around Norfolk Lake for use primarily during high water events, six locations were identified as adequate locations for future high water boat ramps or launch access areas. These locations are within High Density land classifications. The site locations determined are as follows:

- a) Quarry Day Use Area
- b) Panther Bay Park
- c) Talbert Access
- d) Red Bank Access
- e) Henderson Park
- f) Georges Cove Access

Two permitted private floating facilities exist within a High Density Land Classification within Henderson Park. No new future public requests for Limited Development Areas (LDA) in a

High Density classification will be granted based upon guidance received to keep private/community use separated from commercial use activities.

Quarry Marina remains within the High Density land classification.

*Resource Objectives:* Recreation, Economic Impacts, General Management

(Acreage = 2,671.8 or 8% of USACE managed lands)

### **5.2.1.3 Mitigation**

Mitigation land classification allows for lands with an allocation of Mitigation and that were acquired specifically for the purpose of offsetting losses associated with development of the project.

When Norfolk Lake was created, no mitigation lands were purchased because it was not a requirement at that time. Therefore, there are currently no lands classified as mitigation land at the Norfolk Lake project.

### **5.2.1.4 Environmentally Sensitive Area (ESA)**

ESA land classification is for those land areas where scientific, ecological, cultural, or aesthetic features have been identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the Endangered Species Act, the National Historic Preservation Act or applicable State statutes. These areas must be considered by management to ensure they are not adversely impacted. Typically, limited or no development of public use facilities is allowed on these lands; currently examples of permits that could be issued are unimproved walking paths, specific erosion control measures, and removal of invasive species. Generally, right-of-ways for public utilities in the ESA land classification will not be considered.

At Norfolk Lake, approximately 0.25% of ESA lands have permitted residential and municipal amenities. These areas include shoreline use permits, roads, and county roads.

No agricultural, grazing, or mowing for residential/commercial uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration.

*Justification:* ESA lands are classified as such to preserve the scenic, historical, archaeological, scientific, water quality, or ecological value of the overall project.

Classification of lands as ESAs took into consideration, the location of, or habitat of threatened, endangered, and state species of concern at Norfolk Lake. The classification of ESA also considers locations, of significant cultural or historic resource sites, as well as resource protection (i.e., glade restoration areas, fragile habitats, bluffs), and aesthetics. The ESA classification is also responsive to public comment seeking to keep the lake natural, scenic and to ensure that water quality is maintained for future generations. Typically, areas that were previously classified as Natural Areas in the 1988 master plan and have no active boat dock permits remained as ESA or have been reclassified to Wildlife Management. Areas that were

previously classified as Natural Areas and have active boat dock permits and/or has LDA shoreline allocation have been classified as Low Density Recreation. To maintain contiguous land classifications, if small portions of land were previously classified of a different land classification of the neighboring land classification, the land classification was changed. When feasible, lands adjacent to major tributaries were converted to ESA. Areas located in the back of coves were changed to ESA for the purpose of protecting water quality due to run off. Islands that were located near mainland ESA areas were classified to ESA.

Vegetation Modification Permits issued in ESA prior to the signing of this plan may remain until a change of ownership occurs, at which time the permits will not be reissued.

There are public utilities and residential amenities (i.e., power lines, roads, etc.) that are found in ESA land classifications. As stated previously, generally, future right-of-ways for public utilities in ESA will not be considered.

Resource Objectives: Environmental Compliance, Cultural Resource Management, Natural Resource Management

(Acreage = 6,685.6 or 21 % of USACE managed Lands)

## 5.2.2 Multiple Resource Management

Multiple Resource Management land classification allows for the designation of a predominate use as described below, with the understanding that other compatible uses described below may also occur on these lands (e.g., a trail through an area designated as Wildlife Management). Land classification maps must reflect the predominant sub-classification, rather than just Multiple Resource Management. Right-of-ways for public utilities in Multiple Resource Management land classifications will be considered and reviewed on a case-by-case basis.

### 5.2.2.1 Low Density Recreation

Low Density Recreation land classification includes lands with minimal development or infrastructure that support passive public recreational use (e.g., primitive camping, fishing, hunting, trails, wildlife viewing, shoreline use permits etc.). Low Density Recreation lands may contain Limited Development Areas within the context of the Shoreline Management Plan (SMP). *Note: Distribution of Limited Development Areas requires a revision of the Norfolk Lake SMP.*

*Justification:* In areas which were previously Low Density Recreation within the 1988 master plan that had no lake access, no active shoreline permits, no existing passive recreation, and no limited development area, these areas were typically reclassified to ESA or Wildlife Management to allow for habitat improvements and/or preserve the scenic, historical, archaeological, scientific, water quality, or ecological value of the overall project.

Criteria for existing paths and docks in Low Density: If there was a dock and path existing on land that was previously classified as Natural Area, it was changed to Low Density. If there

was a dock, it was reclassified to, or remained Low Density. Lands adjacent to docks located outside of LDA, have been reclassified as Low Density.

To accurately reflect existing recreation areas, a name change and classification change of Ford Cove – Future Park as referred to in the 1988 Norfolk Master Plan has been renamed Liner Creek Access, Calamity Beach Primitive Camping, and Calamity Beach Lake Access and have been reclassified from High Density to Low Density and Wildlife Management.

The following areas are classified within Low Density and are considered Lake access only or Primitive Camping:

1. Bridges Creek Access
2. Calamity Beach Access
3. Hand Cove Access
4. Liner Creek Access
5. Woods Point Access
6. Calamity Beach Primitive Camping
7. County Road 35 Primitive Camping
8. Curley Point Primitive Camping
9. Jordan Primitive Camping

All resorts were placed in Low Density land classification. Limited motel/resorts are quasi-private recreational facilities located on public land but owned and operated by individuals for commercial purposes. All resorts are located on private property and are operated along with the supporting facilities outgranted on public land. The facilities on public land are open to registered overnight resort guests only. Therefore, all current activities related to limited motel/resorts must comply with the lease and follow the Project's approved Shoreline Management Plan (SMP) and Master Plan to the maximum extent possible. For more information on this type of lease, please refer to SWLR 405-1-16, Real Estate outgrants, Limited Motel/Resort Leases.

Resource Objectives: Recreation, Economic Impact, Natural Resource Management, Environmental Compliance, Cultural Resource Management, Visitor Information and Education

(Acreage = 2,136.7 or 7% of USACE managed lands).

### **5.2.2.2 Wildlife Management**

Wildlife Management land classification is designated for stewardship of fish and wildlife resources.

*Justification:* On Norfolk Lake, areas which have been classified as wildlife management lands consist of large tracts of land and shoreline areas where habitat improvement activities can be established to enhance the existing wildlife habitats. The areas classified have been determined to contain sustainable habitat for native wildlife and will be managed for this purpose. The majority of these areas have been established in locations that are accessible by road or water for the public. If these areas are developed as wildlife management in the future, hunting will be allowed, unless otherwise posted.

Norfolk Lake, unique to the other lakes within the White River system, has large tracts of public land containing natural resources and wildlife. Throughout the 32,750-acre land base adjacent to Norfolk Lake a variety of habitats occur, closed canopy forest, dolomite glades, mature pine stands, agriculture fields, wildlife openings, alluvial flood plains and riparian corridors just to name a few. These diverse habitats require diversity of management actions to achieve habitat improvement for the benefit of wildlife and environmental sustainability. Viable habitats and healthy project lands require prudent management. Through classifying appropriate projects

lands as Wildlife Management, they are protected from resource degradation and development while ensuring their continued health and sustainability by allowing quality management practices. The majority of lands classified as Wildlife Management are currently being managed for wildlife habitat. The state of Arkansas and Missouri have a license for wildlife management purposes that exceed 39% of the total project acres. Much of the additional acres proposed for Wildlife Management have and continue to be managed by COE biologists and foresters. Classifying 64% of the land base adjacent to Norfolk Lake will align the land classification with how the land has historically been managed along with projected future management practice.

The States of Arkansas and Missouri actively manage numerous areas for the purpose of Wildlife Management on lands surrounding Norfolk Lake; the master plan land classifications revisions now coincide with this management approach. Both states have separate licenses with the Corps to operate and manage these areas for the purpose of Wildlife Management.

Resource Objectives: Natural Resource Management, Recreation, Environmental Compliance

(Acreage = 20,873 or 64% of USACE managed lands)

### 5.2.2.3 Future or Inactive Recreation Areas

Future or Inactive Recreation Areas land classification is for those land 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.

The project has no developed recreation areas that have been completely closed. This plan suggests that if future recreation development is needed, this development will be accommodated either within the existing High Density classified land areas or on private property.

## 5.2.3 Water Surface

Water surface is for those waters classified for particular purposes when the project administers a surface water zoning program. Norfolk Lake did not have water surface classifications in prior master plans.

### 5.2.3.1 Restricted

Restricted surface waters are restricted for project operations, safety, and security purposes.

*Justification:* Restricted water surface classifications are areas restricted due to Corps policy for safety and security. These areas include immediately above and below the dam and areas around water intake structures.

Resource Objectives: General Management

(Acreage = 62 water surface acres; less than 1% of surface water)

In addition, it is generally understood that areas near designated swim beaches are considered ‘restricted’ for swimmer safety.

### **5.2.3.2 Designated No Wake**

Designated “No Wake” surface waters are established to protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and for public safety. Norfolk Lake has no water surface area in this classification category; however, it is generally understood (i.e., posted and/or buoyed) that areas near designated boat ramps and marinas are considered ‘no wake’ for boater safety.

### **5.2.3.3 Fish and Wildlife Sanctuary**

Fish and Wildlife Sanctuary surface waters are areas where annual or seasonal restrictions on areas to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and or spawning are present. Norfolk Lake has no water surface areas in this classification category.

### **5.2.3.4 Open Recreation Areas**

Open Recreation Areas classification is for those waters available for year-round or seasonal water-based recreation use.

*Justification:* On Norfolk Lake all water surface acres are classified as open recreation, with the exception of restricted areas immediately above and below the dam and areas near water intake structures.

Resource Objectives: Recreation, Natural Resources Management, Economic Impact, General Management

(Acreage = 21,815 water surface acres; almost 99% of the surface water)

## **5.2.4 Project Easements**

Project Easement land classification is for those lands for which the Corps 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 the Corps as other lands. The following types of easements were acquired for the Norfolk Project.

### **5.2.4.1 Operations Easement**

The Corps retains rights to these lands necessary for project operations (access, etc.). There are no known Operations easements on Norfolk Lake.

#### **5.2.4.2 Flowage Easement**

The Corps retains the right to inundate these lands for project operations.

*Justification:* The easements acquired for the operation of the Norfolk Lake are typically applicable to that portion of the described property lying between elevation 584 ft msl and the Government Fee Take Line. The typical flowage easement estate grants the Government the perpetual right to occasionally overflow the easement area, if necessary, for the operation of the reservoir; and specifically provides that, “No structures for human habitation shall be constructed or maintained on the land [...]; and provided further that, No other structures of any other type shall be constructed or maintained on the land except as may be approved in writing by the representative of the United States in charge of the project”. All flowage easement deeds should be checked for exact rights acquired prior to proceeding in any action on the easement.

Resource Objectives: General Management

Acreage: 253.4 Acres

#### **5.2.4.3 Conservation Easement**

The Corps retains the rights to lands for aesthetic, recreation, and environmental benefits. There are currently no known conservation easements on Norfolk Lake.



## **Chapter 6 Special Topics/Issues/Considerations**

This chapter discusses the special topics, issues, and considerations the Project Delivery Team identified as critical to the future management of Norfolk Lake. Special topics, issues, and considerations are defined in this context as any problems, concerns, and/or needs that could affect or are affecting the stewardship and management potential of the lands and waters under the jurisdiction of the Little Rock District, Mountain Home Project Office Area of Responsibility (AOR). For simplicity, the topics are discussed below under generalized headings.

### **6.1 Dry Run Creek**

Dry Run Creek is a natural streambed, located below the Norfolk Dam, running in a southerly direction for approximately 0.4 mile to the North Fork River. Norfolk National fish hatchery was established in 1955. By 1957, Dry Run Creek became a perennial tributary for the Norfolk hatchery effluent, carrying 32 million gallons per day to the North Fork River. With the cool 44-degree water flowing to the confluence of the North Fork River many large trout attempt to migrate to the hatchery making this a World Class Trout Stream. Boardwalks and wheelchair ramps were constructed in 1989 to provide access for handicapped anglers and kids 16 and under. Dry Run Creek is a catch and release area with Arkansas Game and Fish special regulations in place.

### **6.2 Ozark Highlands Trail**

The Ozark Highlands Trail is a trail system that runs from St. Louis, Missouri to Fort Smith, Arkansas. A portion of this trail, once complete, will run the length of Norfolk Lake and will be comprised of approximately 76 miles of hiking trail on USACE managed land. Due to uneven terrain and the potential for slight variances due to unforeseen obstacles during trail construction, mileage may vary slightly once complete. It passes towering bluffs and scenic lake views as it runs north and south through the project. The trail is marked with blue markers to guide hikers along with numerous trail heads located at road crossings for convenient access.

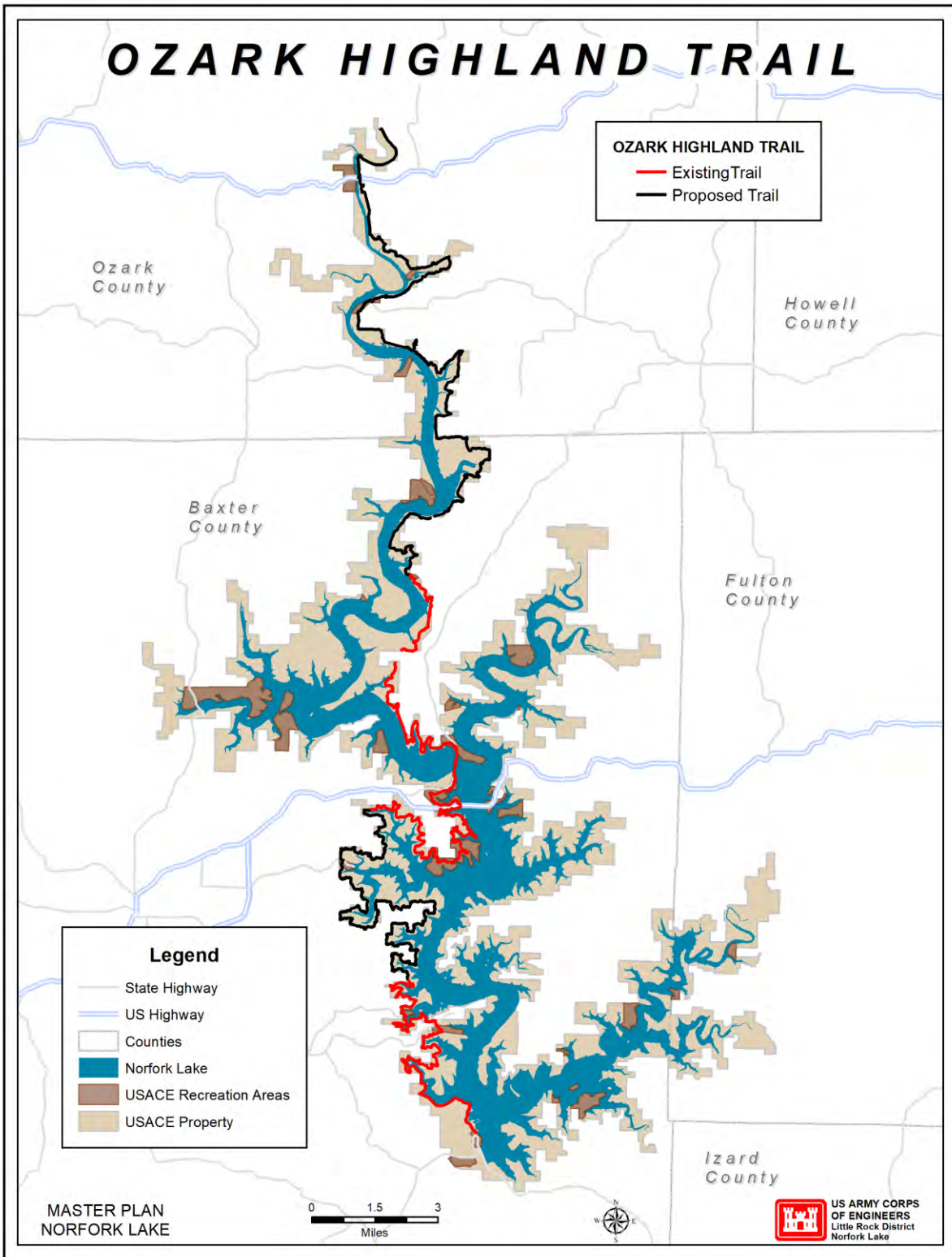


Figure 6-1 Ozark Highlands Trail Map

### **6.3 Mallard Point Homesite Land Acquisition**

The Mallard Point Homesite area for Norfolk Lake project was acquired by private landowners. In an attempt to promote economic growth to the area, unlike anywhere else on the lake, cottage sites were leased in Baxter County. The original Mallard Point Homesite area subdivision map consisted of 57 lots averaging 2.0 acres of land per lot leased somewhere between elevations 580 ft. to 700 ft. msl Public Law No. 999 enacted in August 1956, was enabling legislation that permitted sale of leased project lands which were designated as cottage sites. In the late 1980's, the Corps of Engineers sold all 57 leased lots in the Mallard Point Homesite area, which were eligible for sale under Public Law 999.

### **6.4 Norfolk National Fish Hatchery**

The Norfolk National Fish Hatchery, built and operated by the U.S. Fish and Wildlife Service (USFWS), opened in 1957, supplies all trout that are stocked into the Norfolk tailwater. The hatchery is in the mountainous terrain of north Arkansas near Mountain Home. Intensive stocking of trout is necessary due to a range of environmental factors that limit natural reproduction in the fishery. Each year, an average of approximately 1,184,000 rainbow trout, 105,000 brown trout, 150,000 cutthroat trout, and 34,500 brook trout from the Norfolk Hatchery and from the USFWS Fish Hatcheries at Greers Ferry Lake and the Arkansas State Fish Hatchery at Mammoth Springs, AR are stocked in the White and North Fork Rivers. Biologists from the AGFC are responsible for trout management in the Norfolk tailwater. The Norfolk Tailwater Management Plan can be found on the AGFC website ([www.agfc.com](http://www.agfc.com)). Since the trout program began, the fishery has flourished and is now known as a “world class trout fishery” and has become a popular international trout fishing destination.

### **6.5 Pigeon Creek ATV and Motorcycle Area**

Situated along the banks of Pigeon Creek, this 40-acre off-road area is designated for motorcycles and ATVs with axles 50 inches wide or less. The area consists of a series of short trails with the outer boundaries being marked with fencing. No permit or fee is required. This USACE operated recreation area is located off Hwy 201 N. at the end of Baxter County Rd. 486.

### **6.6 White River Minimum Flows**

“White River Minimum Flows” as part of the Water Resource Development Acts (WRDA) of 1999 and 2000 modified authorization and operation for the five multipurpose White River Basin lakes, Beaver, Table Rock, and Bull Shoals Lakes on the White River; Norfolk Lake on the North Fork River; and Greer Ferry Lake on the Little Red River. The August 2008 Supplemental DEIS analyzed the impacts to the five White River Reservoirs, however; emphasis is placed on Bull Shoals and Norfolk Lakes due to the changes made with the FY 2006 Energy and Water Resources Development Act (P.L. 109-103). As a result of this law Norfolk Lake increased its conservation pool by 1.75' to 553.75 msl. This additional water is designed to be released through the Norfolk Siphon in the river to create a minimum flow for downstream river

health. The siphon is a 42” steel pipe with a multilevel intake on the lake side of the dam that terminates in a cone valve spraying cold water across the stilling basin into the North Fork River. This spraying action injects atmospheric oxygen and increases dissolved oxygen in the tail race waters. The siphon releases 185 cubic feet per second of water during times of no generation.

## Chapter 7 Agency and Public Coordination

### 7.1 Introduction

No single agency has complete oversight of stewardship activities on the public lands and waters surrounding Norfolk Lake. Responsibility for natural resource and recreation management falls to several agencies that own or have jurisdiction over these public lands and waters.

Increasingly, competition for the use of these lands and waters and their natural resources can create conflicts and concerns among stakeholders. The need to coordinate a cooperative approach to protect and sustain these resources is compelling. Many opportunities exist to increase the effectiveness of Federal programs through collaboration among agencies and to facilitate the process of partnering between government and non-government agencies.

To sustain healthy and productive public lands and waters with the most efficient approach requires individuals and organizations to recognize their unique ability to contribute to commonly held goals. The key to progress is building on the strengths of each sector, achieving goals collectively that could not be reasonably achieved individually. Given the inter-jurisdictional nature of Norfolk Lake, partnering opportunities exist and can promote the leveraging of limited financial and human resources. Partnering and identification of innovative approaches to deliver justified levels of service defuse polarization among interest groups, and lead to a common understanding and appreciation of individual roles, priorities, and responsibilities.

To the extent practical, this Master Plan and a proactive approach to partnering will position Norfolk Lake to aggressively leverage project financial capability and human resources in order to identify and satisfy customer expectations, protect and sustain natural and cultural resources and recreational infrastructure, and programmatically bring Corps management efforts and outputs up to a justified level of service.

Public involvement and extensive coordination within the Corps of Engineers and with other affected agencies and organizations is a critical feature required in developing or revising a Project Master Plan.

Agency and public involvement and coordination has been a key element in every phase of the Norfolk Lake Master Plan revision.

### 7.2 Scoping

The process of determining the scope, focus, and content of a NEPA document is known as “scoping”. Scoping is a useful tool to obtain information from the public and governmental agencies. In March of 2020, a global coronavirus pandemic (COVID-19) was declared. This prompted changes in the workforce, including USACE implementing telework schedules to keep employees safe and social distanced. In addition, and due to the evolving Federal, State, and Local policies designed to address the spread of COVID-19, the project delivery team (PDT)

determined that no in-person agency or public scoping workshops would occur until the threat of the virus subsided. As an alternative, the Norfolk Master Plan Revision website was created to be the primary source of information during this time. Website information was provided through various sources, such as notification postcards, news releases, agency scoping letters, and media outreach. These sources invited individuals to visit the project website to find out more information about the Master Plan revision process, to solicit comments for scoping, and to communicate to the public the reason behind changing the traditional USACE scoping process in response to the global pandemic. As part of the initial phase of the environmental process, an extended public scoping comment period was held between November 16, 2020 and December 31, 2020, to gather agency and public comments on the MP and issues that should be examined as part of the environmental analysis. The extension from 30 days to 45 days on the comment period was one of many responses to the change in the traditional USACE scoping process due to the pandemic.

In particular, the scoping process was used as an opportunity to get input from the public and agencies about the vision for the MP update and the issues that the MP should address. Participants were provided a comment card that asked for responses to specific questions in addition to providing general comments about the plans and the environmental review. The specific questions included:

- How would you like to see Norfolk Lake in 20 years?
- What about Norfolk Lake is most important to you?
- What about Norfolk Lake is least important to you?
- What changes, if any, would you like to see at the lake?

USACE published notice of the scoping workshops through an email notification, press releases made available to several regional and local papers, and announcements on the Norfolk Lake Master Plan Revision webpage. The email notification was sent to adjacent landowners, dock permit holders, marina and resort owners, dock builders, and those whom had reserved campsites at Norfolk Lake campgrounds during calendar year 2019. Agency coordination letters were sent to potentially interested agencies.

The comment period was posted from November 16 to December 31, 2020. The comment period was announced on November 16, 2020, on the USACE webpage and through a news release.

One hundred and sixty-five comment forms and letters were received during the comment period. A full breakdown of comments and analysis is available in the Scoping Report, which may be found in Appendix A.

### **7.3 Draft Master Plan/Draft Environmental Assessment**

The Draft Master Plan and Draft Environmental Assessment were released to the public on September 15, 2021. A forty-five-day public review period was held from September 15th through October 29, 2021.

Notification of the public review and workshops was developed and dispersed, such as news releases, post card notifications, comment cards, and fact sheets.

Public workshops were held on September 30, and October 1, 2021, fifteen days after the draft plans became available to the public. In total, two public workshops were held at the Arkansas State University, Mountain Home Campus. To provide the greatest opportunity for community participation, workshops were held on two separate days of the week and at different times during the day, afternoon and evening.

Copies of the draft Master Plan/draft Environmental Assessment, fact sheet, and comment card were provided on the Norfolk Lake Master Plan website, <https://www.swl.usace.army.mil/Missions/Planning/Norfolk-Lake-Master-Plan-Revision/>

A total of 89 people signed in at the two workshops. A total of 10 comment cards were received at the workshops. An additional 384 comment submittals were received via letters, email, and mailed comment cards by the close of the public comment period. In total, approximately 394 comment submittals from members of the public and 3 letters from agencies were received by the end of the comment period. The public comments, in their entirety, are located within Appendix B of the EA.

### **7.4 Final Master Plan/Final Environmental Assessment**

The final Norfolk Lake Master Plan was completed in February 2022.

Due existing and ongoing concerns with the COVID-19 pandemic during the revision process, no workshops were held for the final master plan release. The final Norfolk Lake Master Plan was posted on the Norfolk Lake Master Plan revision website once signed by the District Engineer and any questions that occur as a result of the final Master Plan release shall be directed to the Mountain Home Project Office staff.

## **Chapter 8 Summary of Recommendations**

### **8.1 Summary Overview**

The proposals made in previous chapters of this MP are for the courses of action necessary to manage Norfolk Lake current and future challenges. Actions set forth in this plan can ensure the future health and sustainability of Norfolk Lake's natural resources while still allowing for continued use and development. The factors considered cover a broad spectrum of issues including, but not limited to, public use, environmental, socioeconomic, and manpower. Information on each one of these topics was thoroughly researched and discussed before any proposals were made.

This master plan establishes the basic direction for development and management of the Norfolk project consistent with the capabilities of the resource and public needs. The plan is flexible in that supplementation can be achieved through a formal process to address unforeseen needs. The master plan will be periodically reviewed to facilitate the evaluation and utilization of new information as it becomes available.

This MP, for Norfolk Lake, will continue to provide for and enhance recreational opportunities for the public, improve the environmental quality and sustain the management philosophy in place.

### **8.2 Land Classifications**

As described in detail in Chapter 5, the PDT strived to achieve the current management and philosophy approach in making the land classification decisions. The team took numerous factors and expressed public concerns into consideration when determining land classification for the 2022 Norfolk Lake Master Plan revision, which included but are not limited to: how lands were previously classified in 1988; what kind of development or non-development was taking place adjacent to Corps property; if there are existing shoreline use permits and what SMP shoreline allocations existed in the prior land classification; and what kinds of activities are currently taking place in those areas.

### **8.3 Recommendation**

This revised Master Plan presents an inventory of land resources and how they are classified, existing park facilities, an analysis of resource use, anticipated influences on project operation and management, and an evaluation of existing and future needs (required to provide a balanced management plan for cultivating the value of the land and water resources). It is recommended that this Master Plan be approved as the basis for future development and management of the Norfolk land and water resources.



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## Appendix A NEPA Documents

Reserved for the Norfolk Lake Master Plan Revision Environmental Assessment and associated  
appendices

Appendix B Norfolk Lake Prior Design Memorandums  
and Supplements

<u>Design Memorandum or Supplement #</u>	<u>Date Submitted</u>	<u>Date Approved</u>	<u>Description</u>
Design Memorandum 1-A	Jan-46	Jan-46	The Norfolk Plan - Recreational Facilities at Norfolk Lake, Missouri and Arkansas
Design Memorandum 1-B	26-Feb-60	1-Nov-60	Master Plan for Reservoir Development Management updated Jan 1960.
Design Memorandum 1-C	31-Mar-64	23-Jun-66	Norfolk Dam & Reservoir Updated Master Plan for Reservoir Development and Management
Design Memorandum 1-D	Jul-73	Jul-73	Norfolk Lake, Updated Master Plan for Development and Management of Norfolk Lake.
Design Memorandum 1-E	Aug-87	Unknown	Norfolk Lake Master Plan
Design Memorandum 1-E Supplement #1A	19-Nov-87	28-Jul-88	Primary consideration in updating the Norfolk Lake Master Plan was to rework the existing parks to gain greater control over use of the parks, to eliminate conflicts between uses, to consolidate facilities in order to reduce operation and maintenance costs, and to increase fee collections.
Design Memorandum 1-E Supplement #1	28-Feb-89	10-Mar-89	Add an additional 1.5 acres to the lease area of the Buzzard Roost Boat Dock.
Design Memorandum 1-E Supplement #2	7-Feb-85	8-Nov-90	Relocation of group picnic shelters at Cranfield and Bidwell Point Parks which were destroyed during the flood of May 1990.
Design Memorandum 1-E Supplement #3	15-Jan-93	18-Feb-93	Temporary location of a group picnic shelter at Quarry Cove Park.



Design Memorandum 1-E Supplement #4	19-Jul-93	23-Jul-93	Reallocate approximately 32 acres of land from Operations: Natural Area (classified as multiple resource management area) to Recreation.
Design Memorandum 1-E Supplement #5	12-Apr-94	7-Jun-94	Reestablish a commercial lease expansion area at Henderson Park.
Design Memorandum 1-E Supplement #6	20-May-96	11-Jun-96	Designate a lease expansion area at Tracy Park.
Design Memorandum 1-E Supplement #7	13-Jan-97	7-Feb-97	Reorganize the lease area and provide for a 3.89-acre lease expansion at Jordan Park.
Design Memorandum 1-E Supplement #8	Unknown	8-Dec-97	Make Buzzard Roost Park available for leasing to the commercial concessionaire.
Design Memorandum 1-E Supplement #9	17-Mar-99	16-Apr-99	Provide a 5.6-acre expansion to the existing marina lease area and an additional 2.8-acre parcel for commercial concession use.
Design Memorandum 1-E Supplement #10	Unknown	16-Feb-05	Make available lands in Jordan Park for use by the commercial concessionaire for additional boat storage space and vehicular access to the lease expansion area.

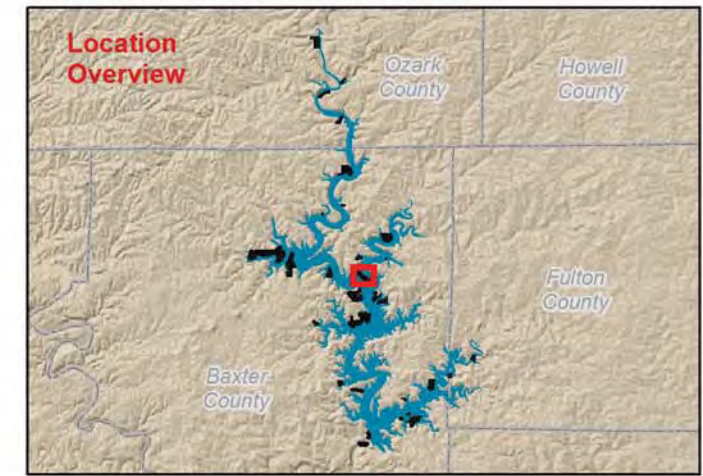
## Appendix C Park Maps

# BIDWELL POINT PARK



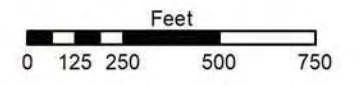
**Legend**

- ▲ Monuments
- 🏠 Gate House
- 🚤 Corps Operated Boat Ramp
- Gate
- State Highway
- Recreation Trail
- 10 Foot Contours
- Flood Control Pool
- USACE Boundary Line
- 🚻 Restroom
- 🚻 Restroom w/ Shower
- 🏠 Group Shelter
- 🎡 Playground
- 🏖️ Swim Beach
- 🚤 Boat Ramp
- 🛣️ Road
- 🅇 Parking
- ▭ Park Boundary
- 🌊 Conservation Pool



## MASTER PLAN NORFOLK LAKE

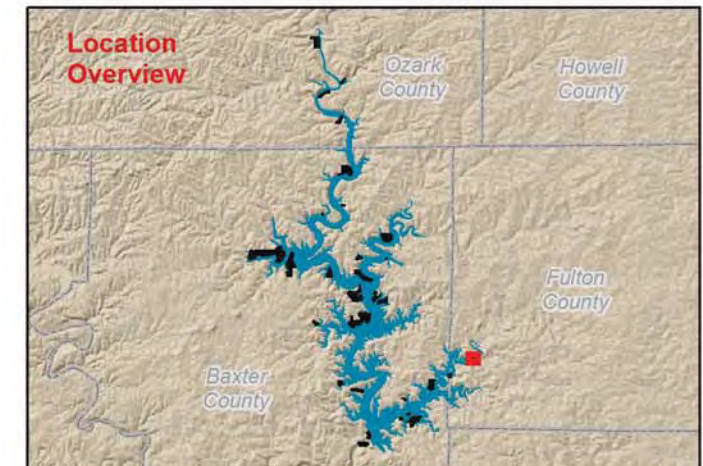
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# BOGGY POINT PARK

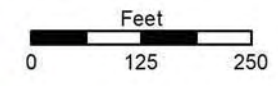
**Legend**

- ▲ Monuments
- 🚤 County Operated Boat Ramp
- 10 Foot Contours
- Flood Control Pool
- USACE Boundary Line
- ▨ Boat Ramp
- Road
- Parking
- Park Boundary
- Conservation Pool



## MASTER PLAN NORFOLK LAKE

Imagery Date: 2020

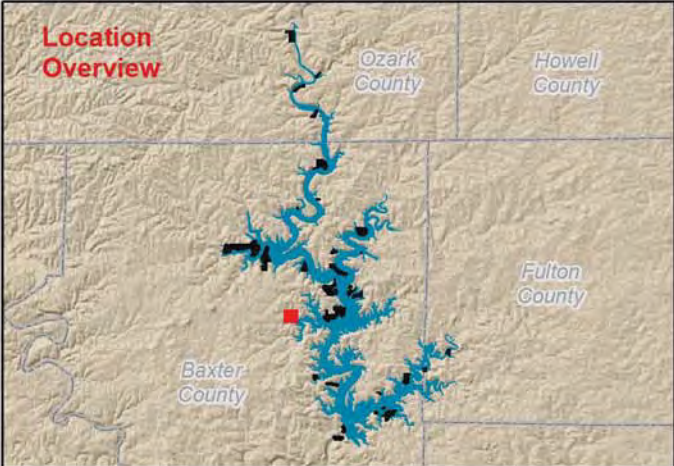


# BUZZARD ROOST ACCESS



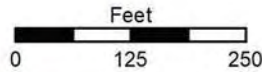
**Legend**

- ▲ Monuments
- ⊗ Corps Operated Boat Ramp
- State Highway
- - - Proposed Trail
- - - 10 Foot Contours
- - - Flood Control Pool
- - - USACE Boundary Line
- ▨ Boat Ramp
- Road
- Parking
- Park Boundary
- Conservation Pool



## MASTER PLAN NORFOLK LAKE

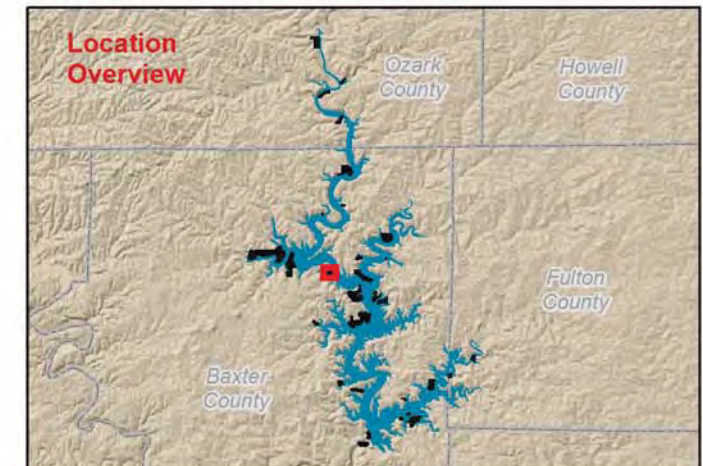
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# CAMP SPENCER

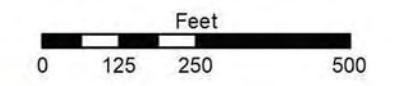
**Legend**

- ▲ Monuments
- ⊙ Corps Operated Boat Ramp
- 10 Foot Contours
- Flood Control Pool
- USACE Boundary Line
- Restroom
- ▨ Boat Ramp
- ▬ Road
- ▭ Park Boundary
- Conservation Pool



## MASTER PLAN NORFORK LAKE

Imagery Date: 2020

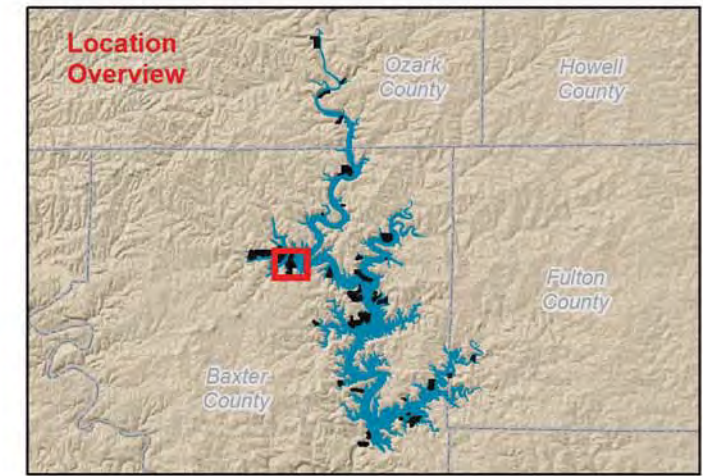


# CRANFIELD PARK



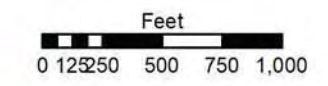
**Legend**

- ▲ Monuments
- Picnic Site
- Fishing Dock
- Gate House
- ⊖ Corps Operated Boat Ramp
- ⊖ Marina Operated Boat Ramp
- ⊖ Amphitheater
- Trailhead
- Gate
- - Recreation Trail
- - 10 Foot Contours
- - Flood Control Pool
- - USACE Boundary Line
- Restroom
- Restroom w/ Shower
- Group Shelter
- Playground
- Swim Beach
- Boat Ramp
- Road
- Parking
- Park Boundary
- Conservation Pool



## MASTER PLAN NORFOLK LAKE

Imagery Date: 2020



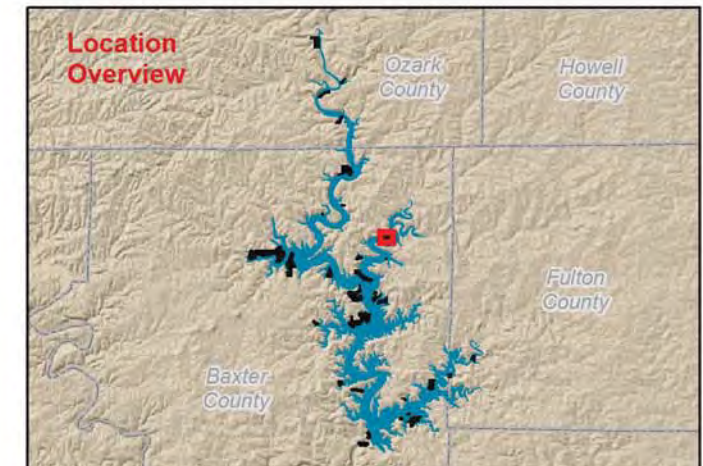
**US ARMY CORPS  
OF ENGINEERS**  
Little Rock District  
Norfolk Lake



# GAMALIEL PARK

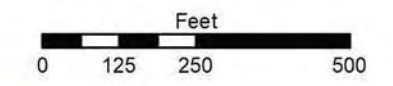
**Legend**

- ▲ Monuments
- 🏠 Gate House
- 🚤 Corps Operated Boat Ramp
- 🚶 Trailhead
- Gate
- Recreation Trail
- 10 Foot Contours
- Flood Control Pool
- USACE Boundary Line
- 🚻 Restroom
- 🚻 Restroom w/ Shower
- 🏠 Group Shelter
- 🎡 Playground
- 🏊 Swim Beach
- 🚤 Boat Ramp
- 🛣 Road
- 🅐 Parking
- ▭ Park Boundary
- 🌊 Conservation Pool



## MASTER PLAN NORFOLK LAKE

Imagery Date: 2020



**US ARMY CORPS  
OF ENGINEERS**  
Little Rock District  
Norfolk Lake



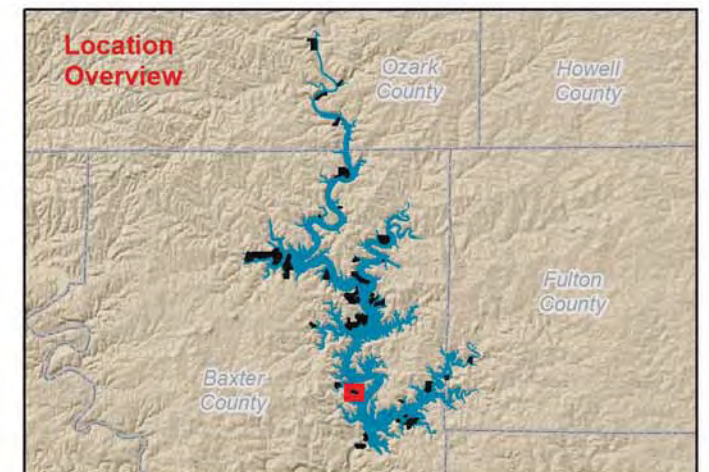


# GEORGES COVE ACCESS



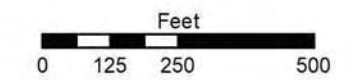
**Legend**

- ▲ Monuments
- Proposed High Water Ramp
- Corps Operated Boat Ramp
- State Highway
- - - Recreation Trail
- - - 10 Foot Contours
- - - Flood Control Pool
- - - USACE Boundary Line
- ▨ Boat Ramp
- Road
- Parking
- ▭ Proposed High Water Parking
- ▭ Park Boundary
- Conservation Pool



## MASTER PLAN NORFOLK LAKE

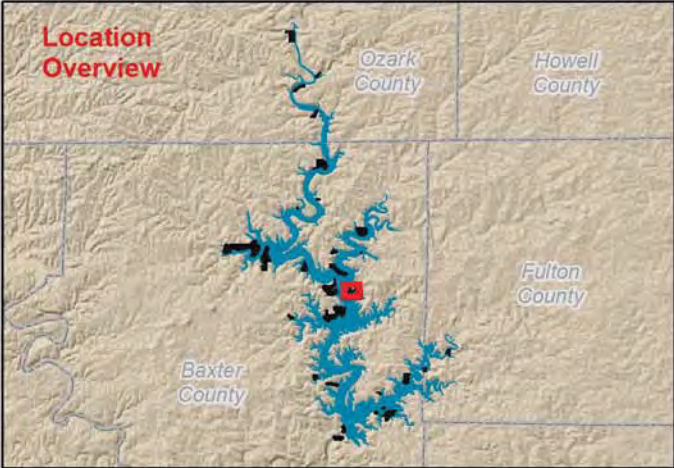
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# HENDERSON PARK

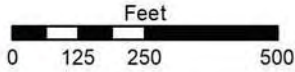
**Legend**

- ▲ Monuments
- Picnic Site
- ◆ Gate House
- ⊗ Proposed High Water Ramp
- ⊗ Corps Operated Boat Ramp
- Gate
- US Highway
- - - 10 Foot Contours
- - - Flood Control Pool
- - - USACE Boundary Line
- Restroom
- ▨ Boat Ramp
- Road
- Parking
- ▭ Proposed High Water Parking
- ▭ Park Boundary
- Conservation Pool

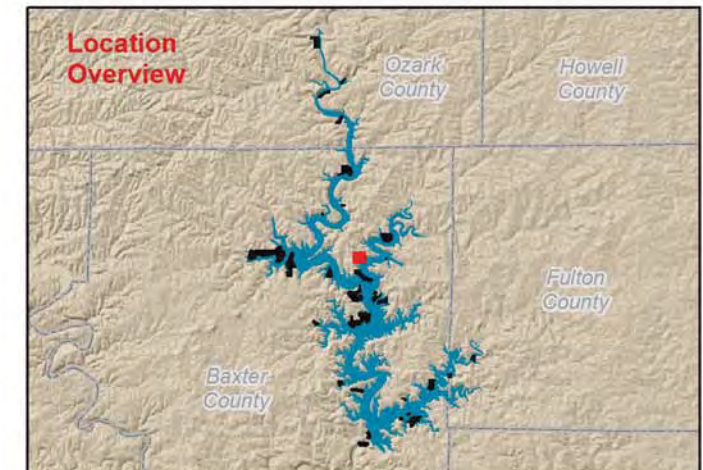
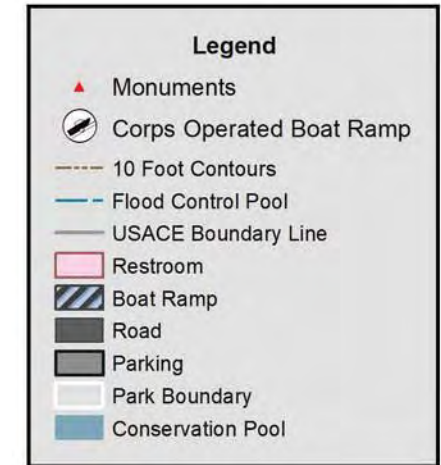


## MASTER PLAN NORFOLK LAKE

Imagery Date: 2020

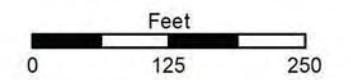


# HOWARD COVE PARK



## MASTER PLAN NORFOLK LAKE

Imagery Date: 2020

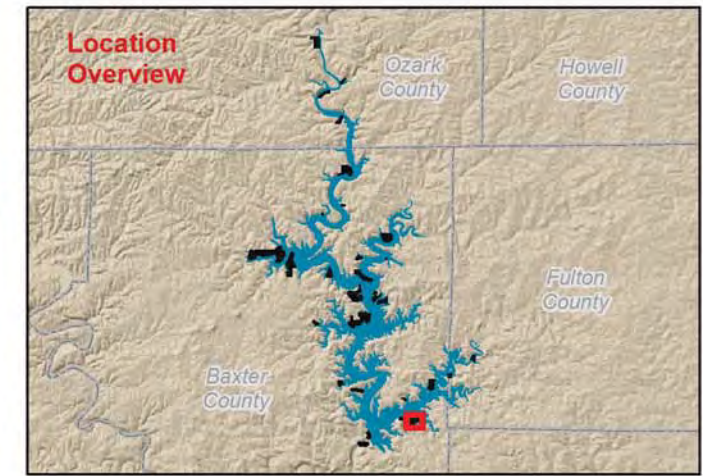


# JORDAN PARK



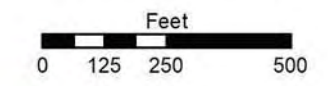
**Legend**

- ▲ Monuments
- ⚓ Corps Operated Boat Ramp
- 10 Foot Contours
- Flood Control Pool
- USACE Boundary Line
- Restroom
- Group Shelter
- Swim Beach
- Boat Ramp
- Road
- Parking
- Park Boundary
- Conservation Pool



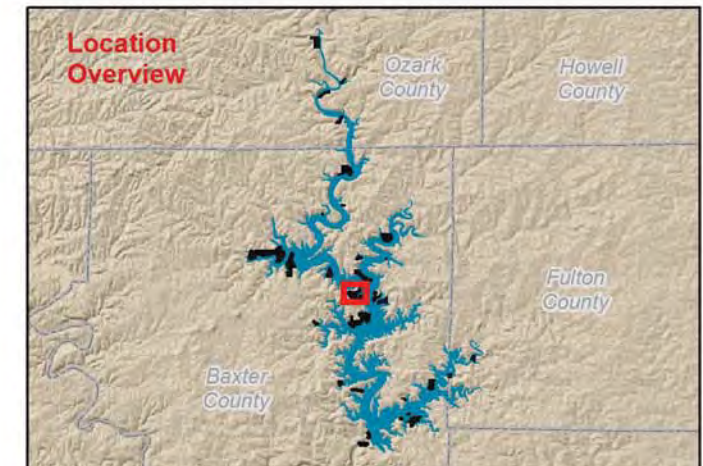
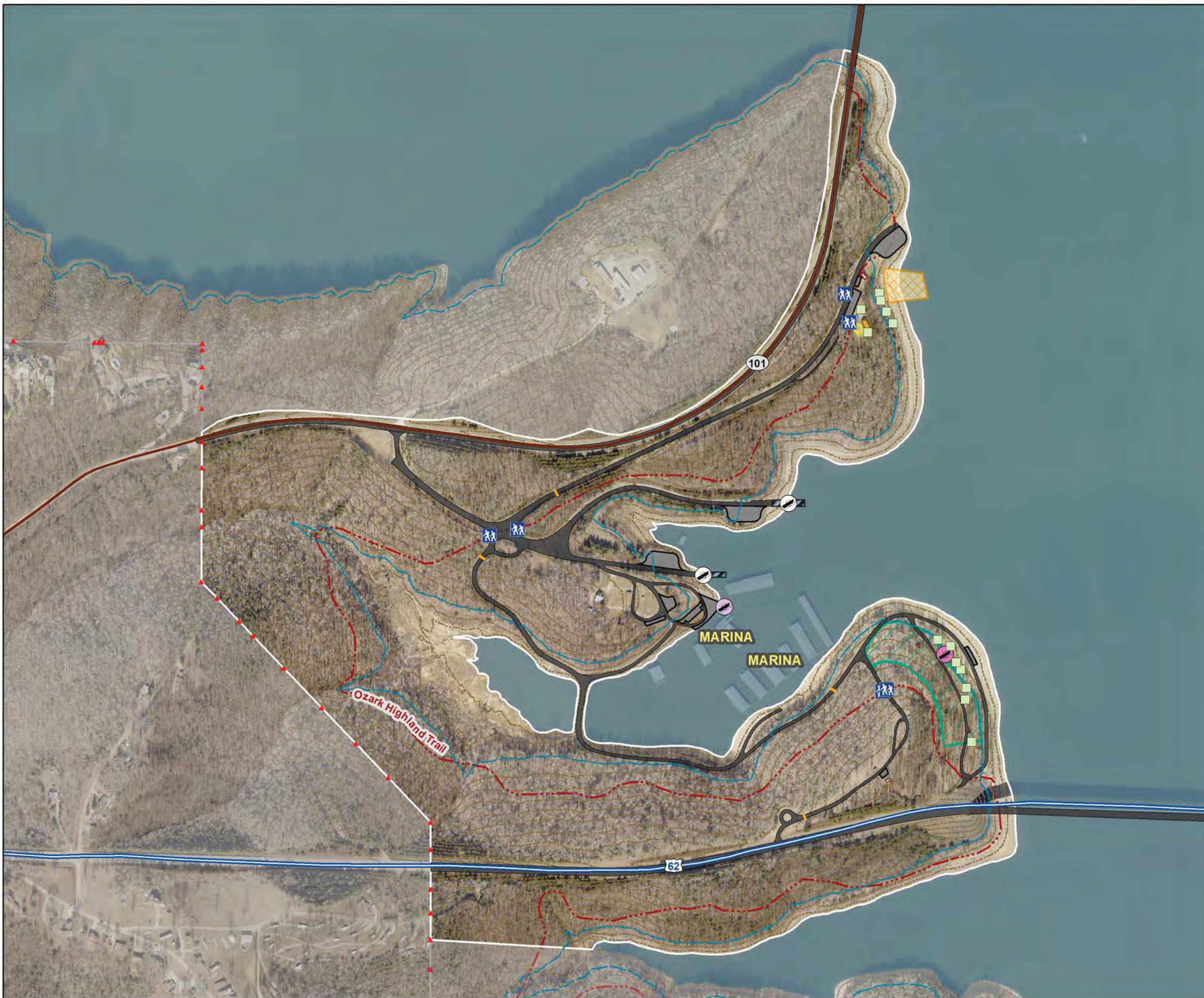
## MASTER PLAN NORFOLK LAKE

Imagery Date: 2020



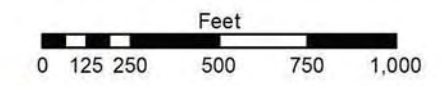
# PANTHER BAY PARK

Legend	
	Monuments
	Picnic Site
	Proposed High Water Ramp
	Corps Operated Boat Ramp
	Marina Operated Boat Ramp
	Trailhead
	Gate
	State Highway
	US Highway
	Recreation Trail
	10 Foot Contours
	Flood Control Pool
	USACE Boundary Line
	Restroom
	Restroom w/ Shower
	Group Shelter
	Playground
	Swim Beach
	Boat Ramp
	Road
	Parking
	Proposed High Water Parking
	Park Boundary
	Conservation Pool



## MASTER PLAN NORFOLK LAKE

Imagery Date: 2020

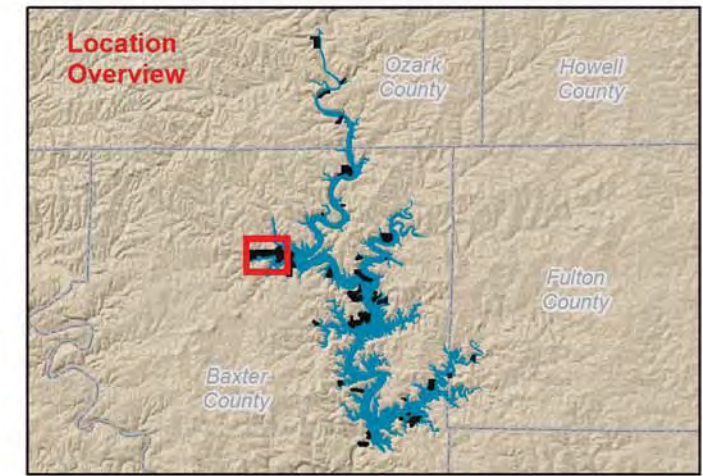


# PIGEON CREEK ACCESS



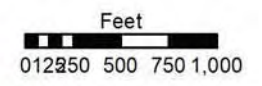
**Legend**

- ▲ Monuments
- Picnic Site
- Fishing Dock
- ⊙ Corps Operated Boat Ramp
- Trailhead
- Gate
- State Highway
- Recreation Trail
- 10 Foot Contours
- Flood Control Pool
- USACE Boundary Line
- Restroom
- Group Shelter
- Playground
- Boat Ramp
- Road
- Parking
- Park Boundary
- Conservation Pool



## MASTER PLAN NORFORK LAKE

Imagery Date: 2020

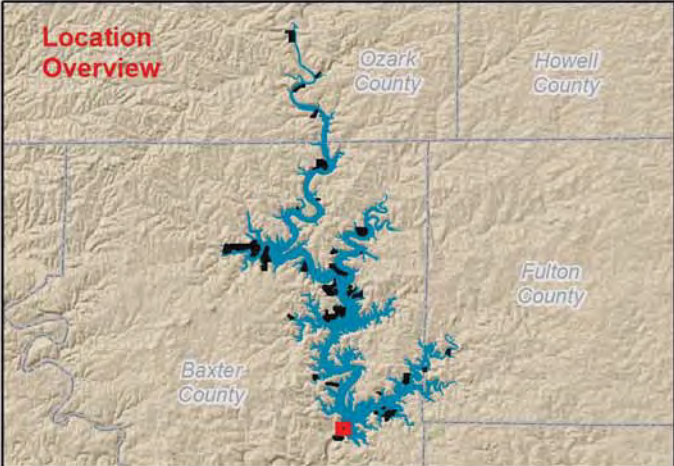


# QUARRY DAY USE AREA



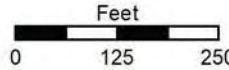
**Legend**

- Picnic Site
- Proposed High Water Ramp
- Corps Operated Boat Ramp
- Trailhead
- Gate
- State Highway
- Recreation Trail
- 10 Foot Contours
- Flood Control Pool
- Restroom
- Group Shelter
- Playground
- Volleyball Court
- Boat Ramp
- Road
- Parking
- Proposed High Water Parking
- Park Boundary
- Conservation Pool



## MASTER PLAN NORFOLK LAKE

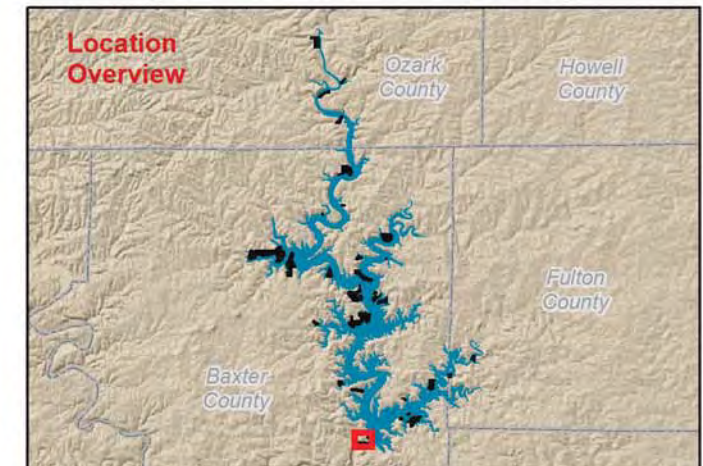
Imagery Date: 2020



# QUARRY PARK

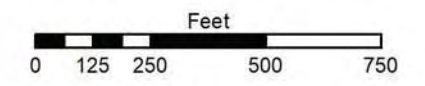
## Legend

- ▲ Monuments
- Picnic Site
- Fishing Area
- Gate House
- Proposed High Water Ramp
- Corps Operated Boat Ramp
- Trailhead
- Gate
- State Highway
- Dry Run Creek
- Recreation Trail
- 10 Foot Contours
- Flood Control Pool
- USACE Boundary Line
- Observation Deck
- Restroom
- Restroom w/ Shower
- Group Shelter
- Playground
- Volleyball Court
- Boat Ramp
- Road
- Parking
- Proposed High Water Parking
- Park Boundary
- Conservation Pool



## MASTER PLAN NORFOLK LAKE

Imagery Date: 2020



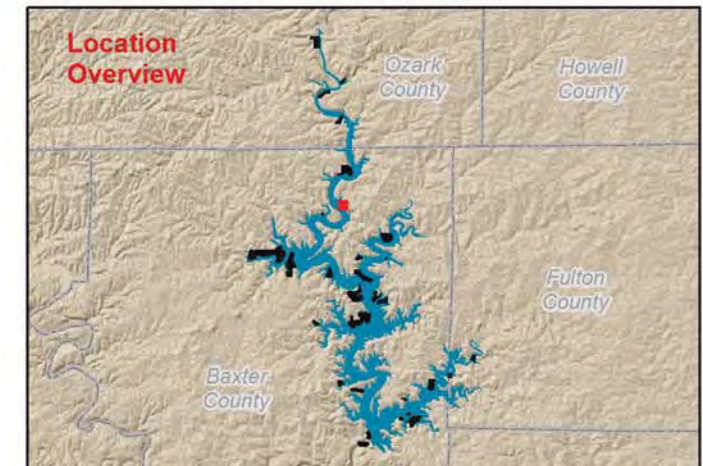


# RED BANK ACCESS



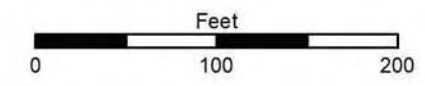
**Legend**

- ▲ Monuments
- ⊗ Proposed High Water Ramp
- ⊗ Corps Operated Boat Ramp
- Proposed Trail
- - - Recreation Trail
- - - 10 Foot Contours
- Flood Control Pool
- USACE Boundary Line
- ▨ Boat Ramp
- Road
- Parking
- ▨ Proposed High Water Parking
- Park Boundary
- Conservation Pool



## MASTER PLAN NORFOLK LAKE

Imagery Date: 2020

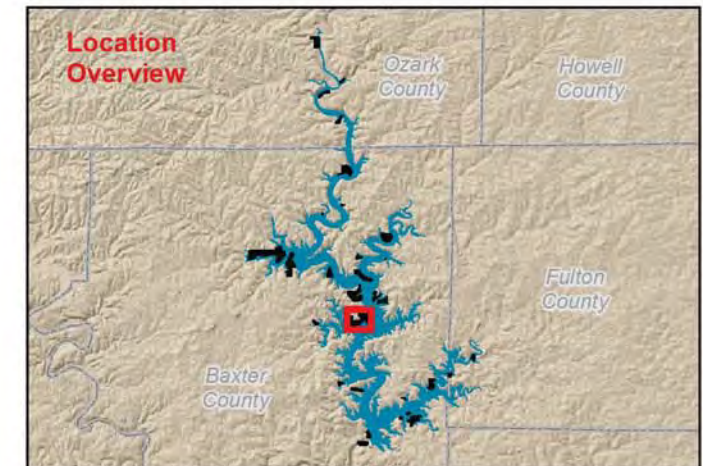


# ROBINSON POINT PARK



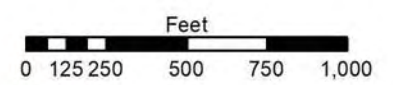
**Legend**

- ▲ Monuments
- Picnic Site
- Gate House
- ⚓ Corps Operated Boat Ramp
- 🚶 Trailhead
- Gate
- - - Recreation Trail
- - - 10 Foot Contours
- - - Flood Control Pool
- - - USACE Boundary Line
- ▭ Restroom w/ Shower
- Playground
- ▨ Swim Beach
- ▨ Boat Ramp
- ▨ Road
- ▨ Parking
- ▭ Park Boundary
- ▭ Conservation Pool

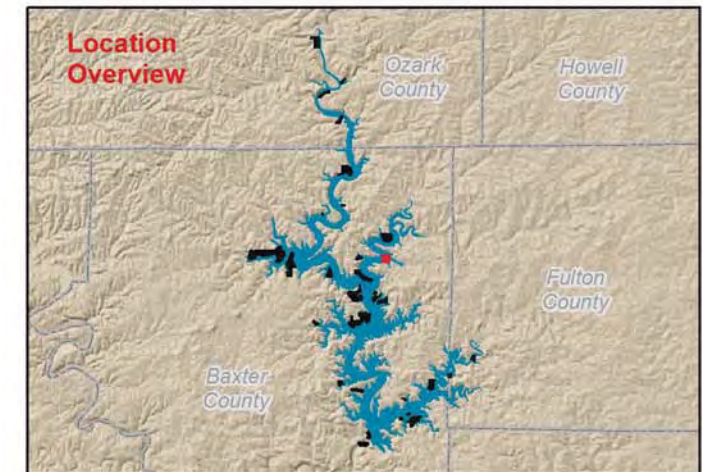
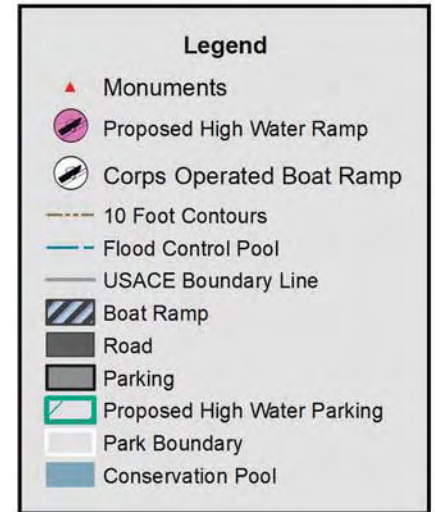


## MASTER PLAN NORFORK LAKE

Imagery Date: 2020

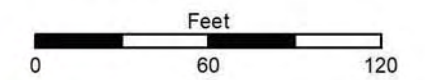


# TALBERT ACCESS



## MASTER PLAN NORFORK LAKE

Imagery Date: 2020

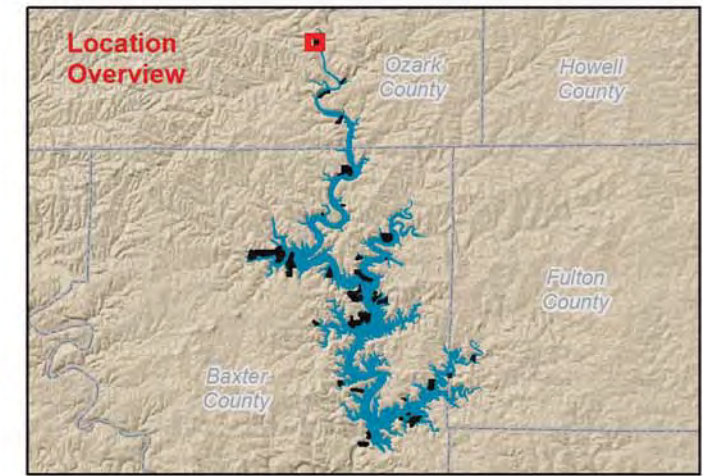


# TECUMSEH ACCESS



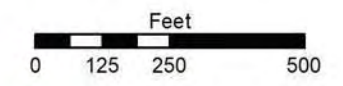
**Legend**

- ▲ Monuments
- ⊙ Corps Operated Boat Ramp
- Gate
- US Highway
- Proposed Trail
- - - 10 Foot Contours
- Flood Control Pool
- USACE Boundary Line
- ▨ Canoe/Kayak Launch Site
- ▨ Boat Ramp
- ▨ Road
- ▨ Parking
- ▭ Park Boundary
- ▭ Conservation Pool



## MASTER PLAN NORFOLK LAKE

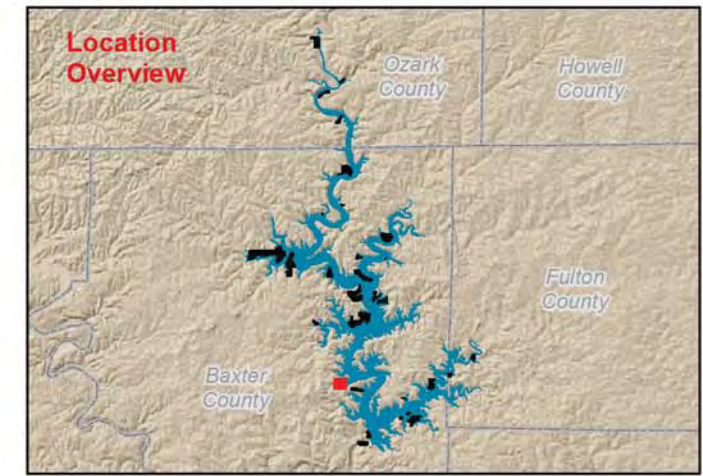
Imagery Date: 2020



# TRACY ACCESS

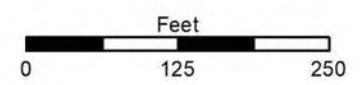
**Legend**

- ▲ Monuments
- ⊗ Corps Operated Boat Ramp
- - - Recreation Trail
- - - 10 Foot Contours
- - - Flood Control Pool
- - - USACE Boundary Line
- ▨ Boat Ramp
- Road
- Parking
- Park Boundary
- Conservation Pool



## MASTER PLAN NORFORK LAKE

Imagery Date: 2020

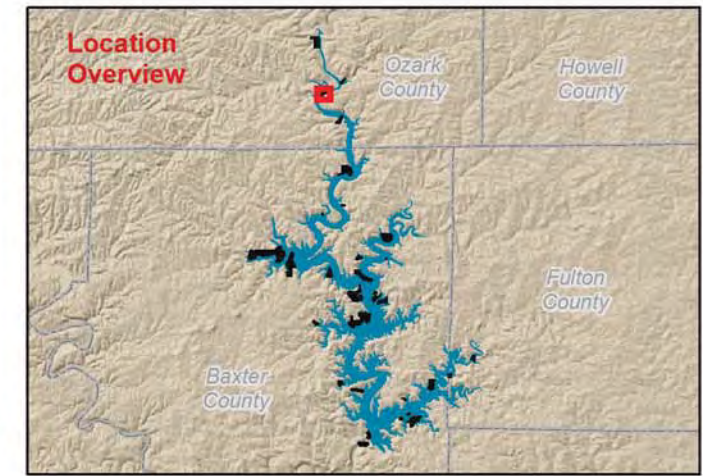


# UDALL PARK



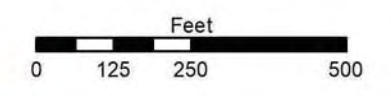
**Legend**

- ▲ Monuments
- ⊗ Corps Operated Boat Ramp
- State Highway
- - - Proposed Trail
- - - 10 Foot Contours
- Flood Control Pool
- USACE Boundary Line
- Restroom
- ▨ Boat Ramp
- Road
- Parking
- Park Boundary
- Conservation Pool



## MASTER PLAN NORFOLK LAKE

Imagery Date: 2020

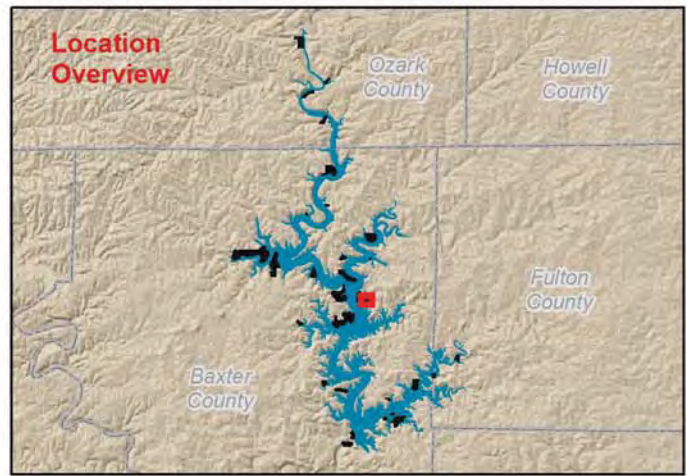


# WILDERNESS POINT PARK - FUTURE



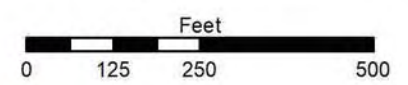
**Legend**

- ▲ Monuments
- - - 10 Foot Contours
- Flood Control Pool
- USACE Boundary Line
- Road
- Parking
- Park Boundary
- Conservation Pool



## MASTER PLAN NORFORK LAKE

Imagery Date: 2020

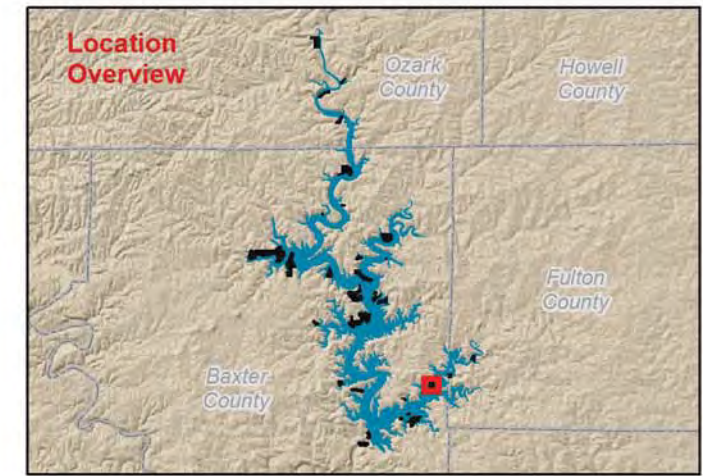


# WOODS POINT ACCESS



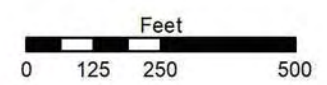
**Legend**

- ▲ Monuments
- ⦿ Corps Operated Boat Ramp
- - - 10 Foot Contours
- - - Flood Control Pool
- - - USACE Boundary Line
- ▨ Boat Ramp
- Road
- Parking
- Park Boundary
- Conservation Pool



## MASTER PLAN NORFORK LAKE


Imagery Date: 2020





## Appendix D Land Classification and Easement Maps

# MAP SHEET INDEX SELECTED ALTERNATIVE

 MAP SHEET INDEX

**Legend**

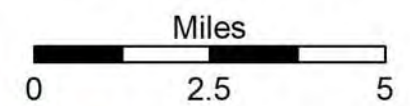
-  Cities
-  Point Markers
-  Roads
-  State Highway
-  US Highway
-  Counties
-  Flowage Easement

**LAND CLASSIFICATIONS**

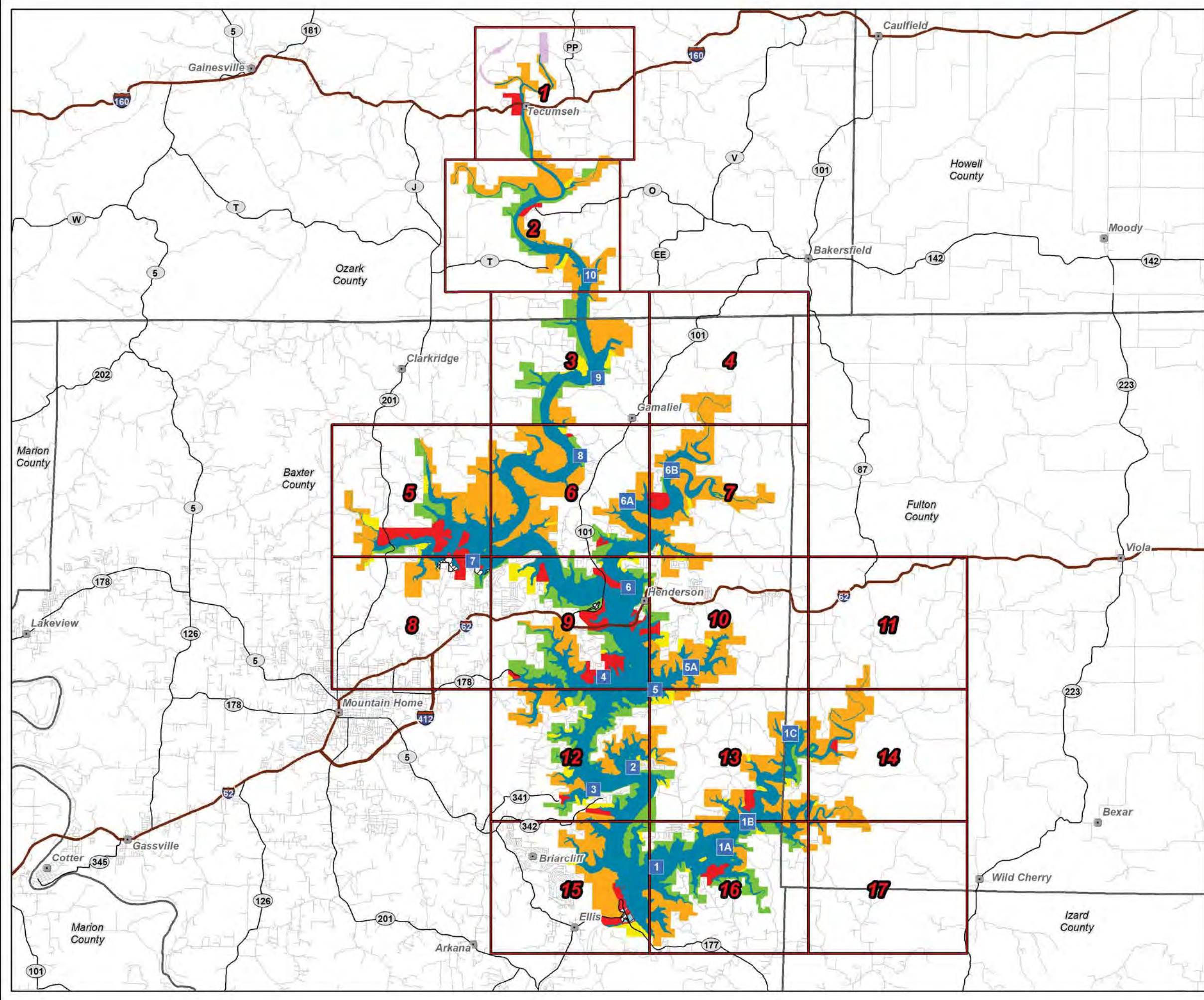
-  HIGH DENSITY RECREATION
-  LOW DENSITY RECREATION
-  WILDLIFE MANAGEMENT
-  ENVIROMENTAL SENSITIVE AREA
-  PROJECT OPERATIONS RESTRICTED
-  RESTRICTED
-  OPEN RECREATION

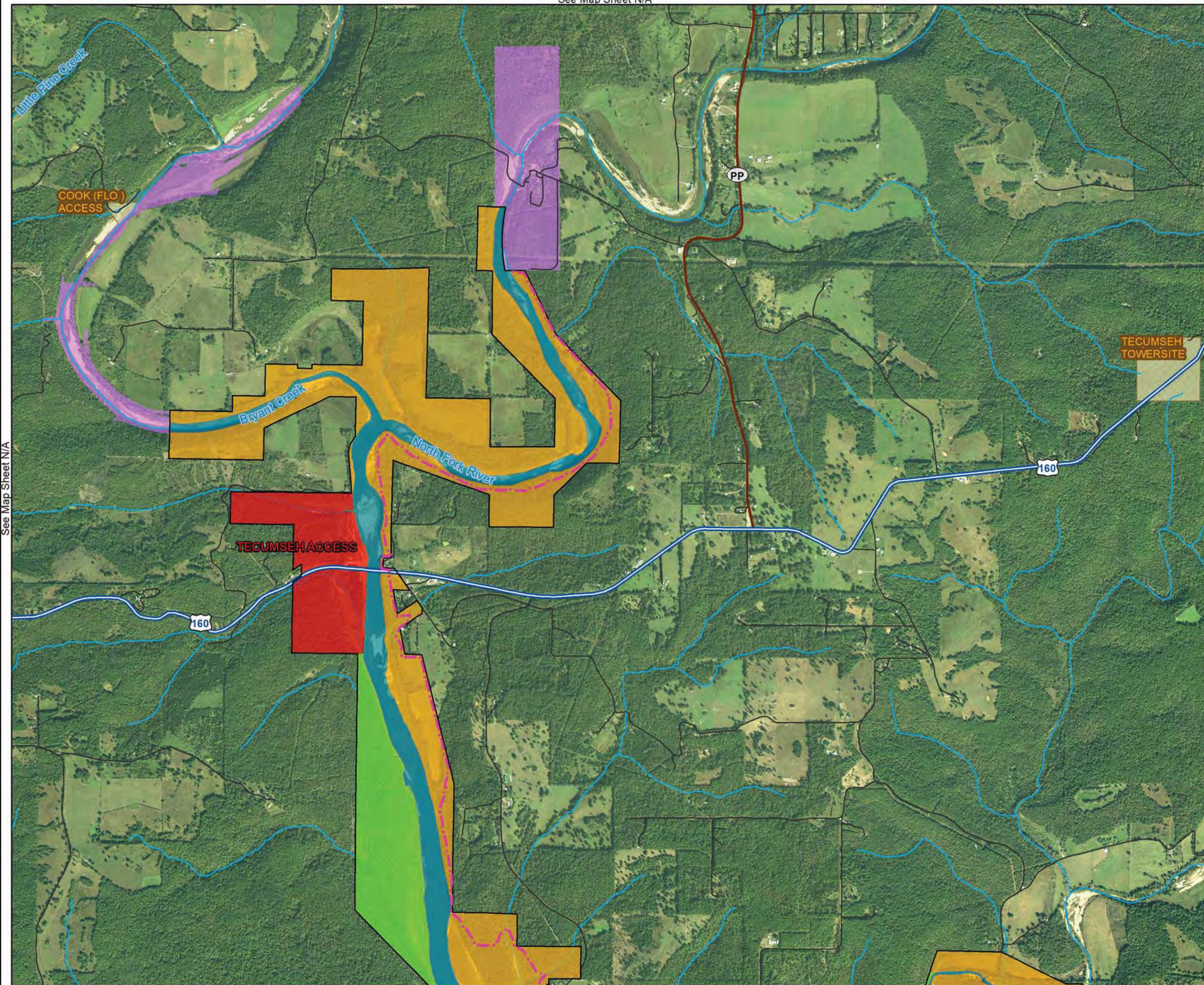


## MASTER PLAN NORFOLK LAKE



 US ARMY CORPS  
OF ENGINEERS  
Little Rock District  
Norfolk Lake





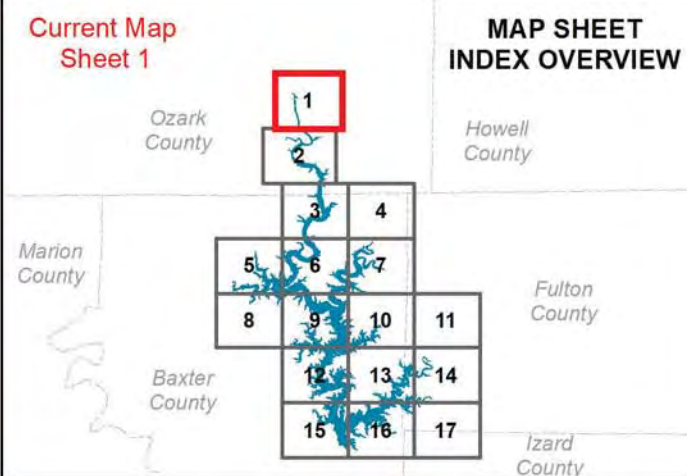
# SELECTED ALTERNATIVE

## LAND CLASSIFICATION

- HIGH DENSITY RECREATION
- ENVIROMENTAL SENSITIVE AREA
- WLDLIFE MANAGEMENT
- OPEN RECREATION

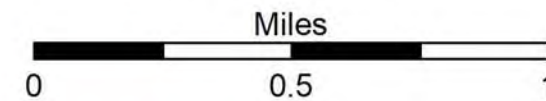
## Legend

- Proposed Trail
- Roads
- State Highway
- US Highway
- Rivers/Streams
- Counties
- USACE Boundary
- Flowage Easement
- Missouri Department of Conservation Lands



## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018

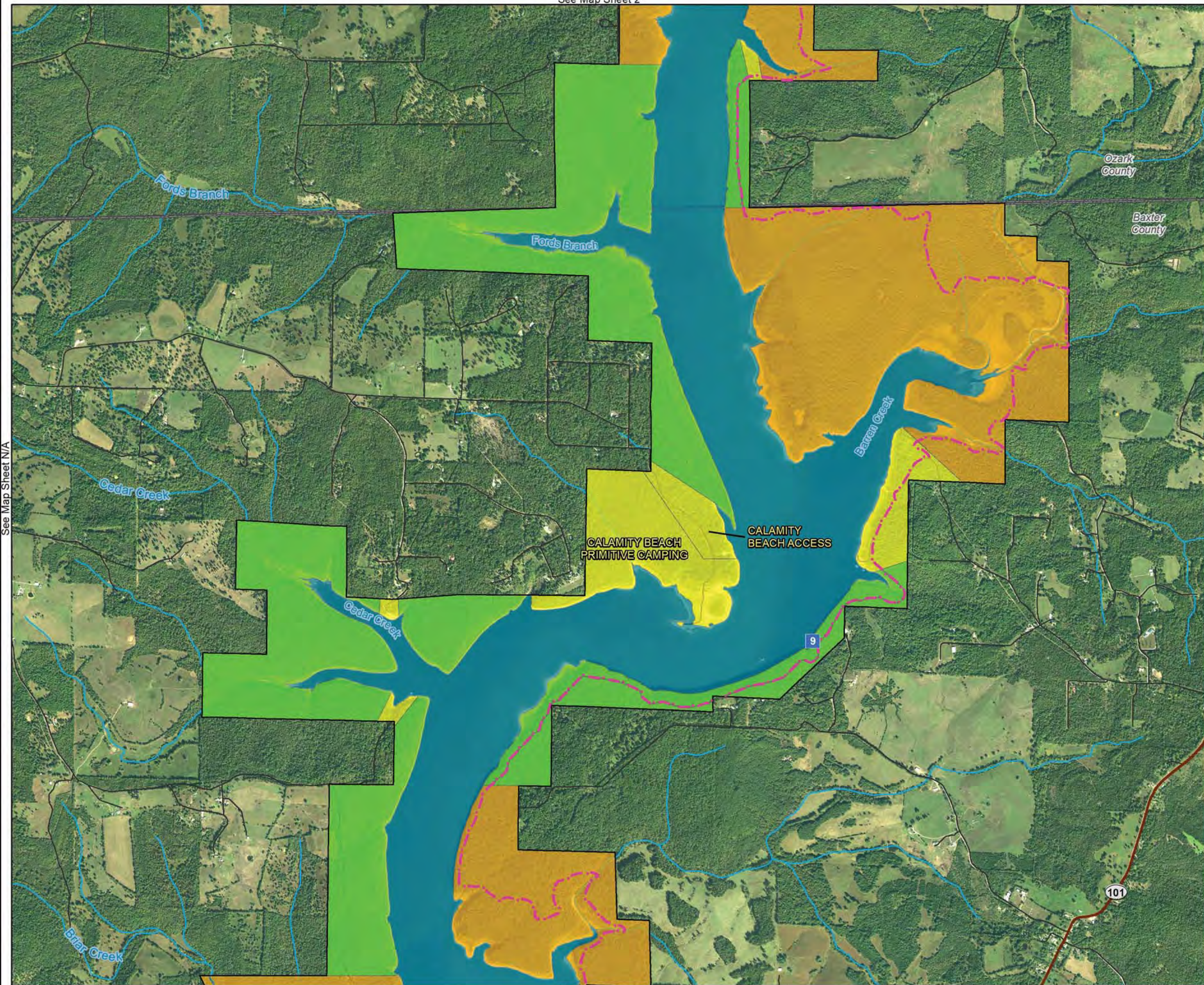


See Map Sheet N/A

See Map Sheet N/A



See Map Sheet 2



See Map Sheet N/A

See Map Sheet 4

See Map Sheet 6

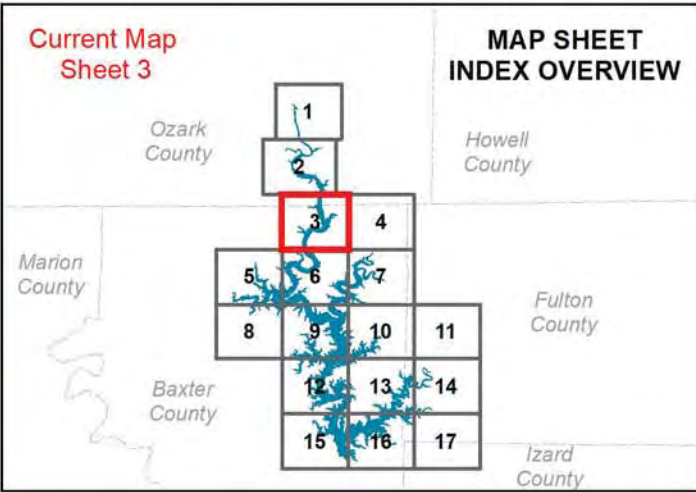
# SELECTED ALTERNATIVE

**LAND CLASSIFICATION**

- LOW DENSITY RECREATION
- ENVIROMENTAL SENSITIVE AREA
- WLDLIFE MANAGEMENT
- OPEN RECREATION

**Legend**

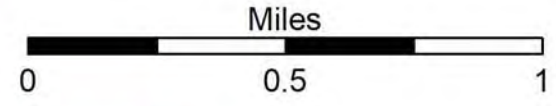
- Point Markers
- Proposed Trail
- Roads
- State Highway
- Rivers/Streams
- Counties
- USACE Boundary



Current Map Sheet 3



## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018



# SELECTED ALTERNATIVE

## LAND CLASSIFICATION

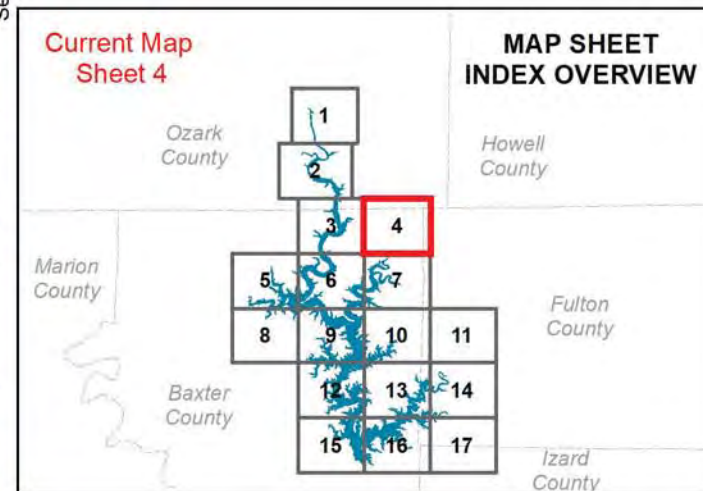
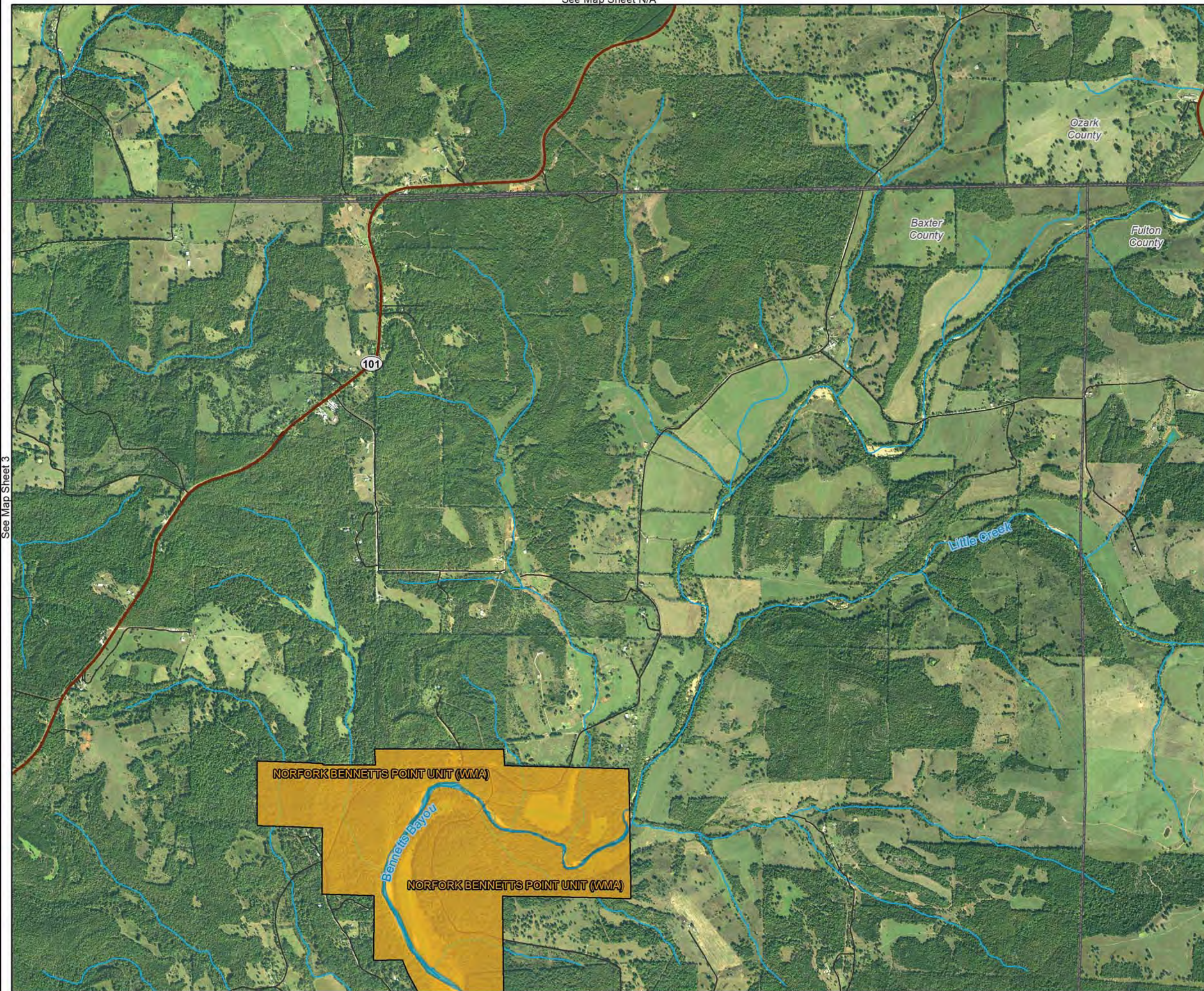
-  WILDLIFE MANAGEMENT
-  OPEN RECREATION

## Legend

-  Roads
-  State Highway
-  Rivers/Streams
-  Counties
-  USACE Boundary

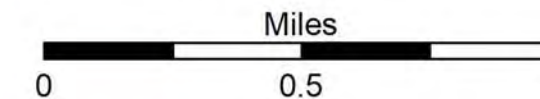
See Map Sheet 3

See Map Sheet N/A



## MASTER PLAN NORFORK LAKE

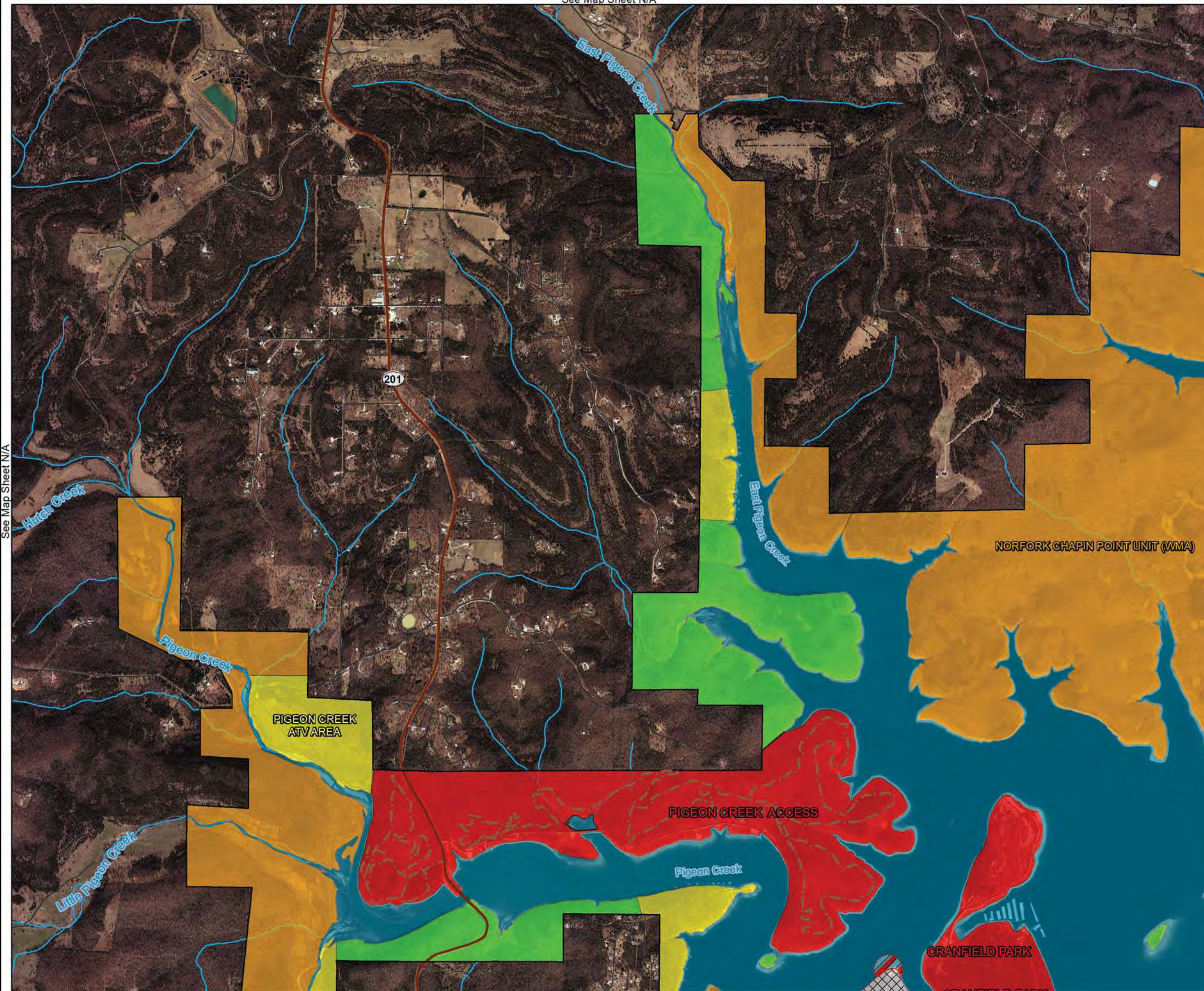
Imagery Date: 2017/2018



See Map Sheet N/A

See Map Sheet N/A

See Map Sheet 6



See Map Sheet 8

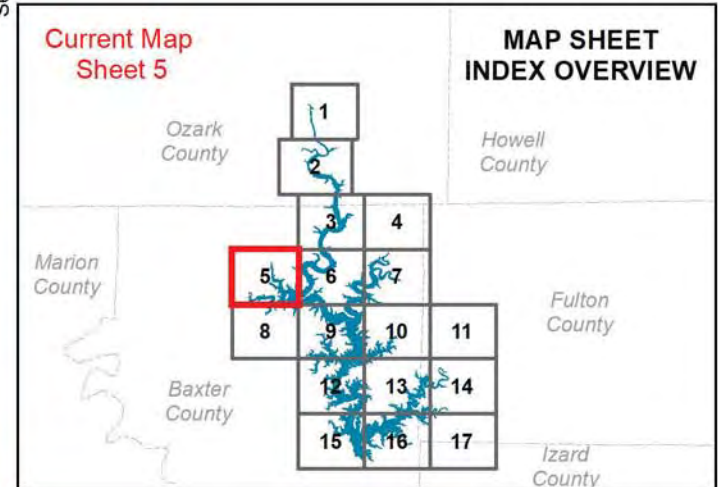
# SELECTED ALTERNATIVE

**LAND CLASSIFICATION**

- HIGH DENSITY RECREATION
- LOW DENSITY RECREATION
- ENVIROMENTAL SENSITIVE AREA
- WLDLIFE MANAGEMENT
- PROJECT OPERATIONS
- RESTRICTED
- OPEN RECREATION

**Legend**

- Existing Trails
- Roads
- State Highway
- Rivers/Streams
- Counties
- USACE Boundary



**MASTER PLAN NORFORK LAKE**

Imagery Date: 2017/2018

Miles

US ARMY CORPS OF ENGINEERS  
Little Rock District  
Norfolk Lake



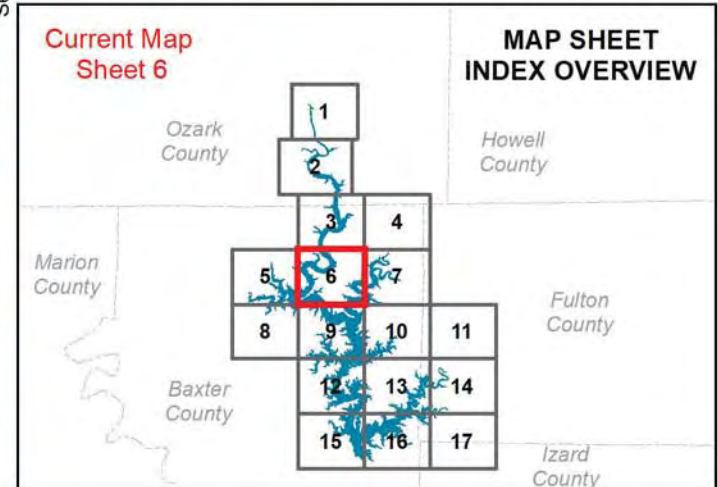
# SELECTED ALTERNATIVE

**LAND CLASSIFICATION**

- HIGH DENSITY RECREATION
- LOW DENSITY RECREATION
- ENVIROMENTAL SENSITIVE AREA
- WILDLIFE MANAGEMENT
- OPEN RECREATION

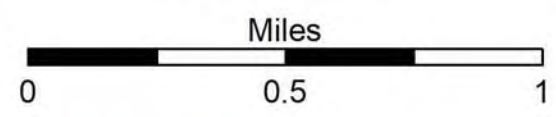
**Legend**

- Point Markers
- Proposed Trail
- Existing Trails
- Roads
- State Highway
- Rivers/Streams
- Counties
- USACE Boundary
- Flowage Easement



## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018



See Map Sheet 5

See Map Sheet 3

See Map Sheet 7

See Map Sheet 9



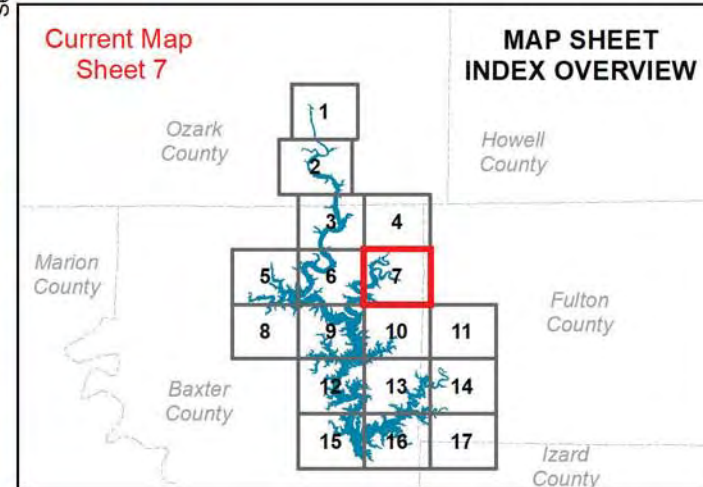
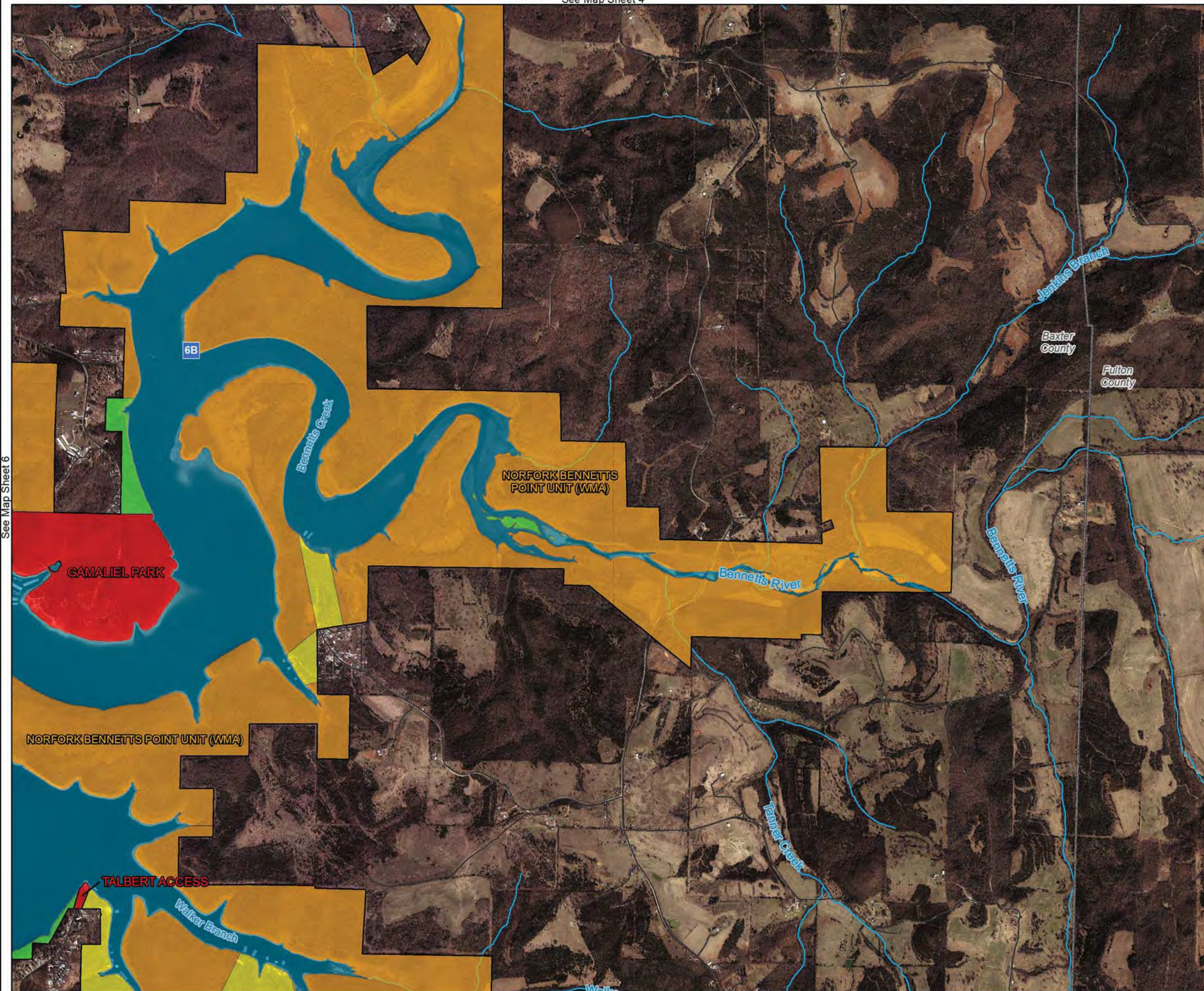
# SELECTED ALTERNATIVE

## LAND CLASSIFICATION

- HIGH DENSITY RECREATION
- LOW DENSITY RECREATION
- ENVIROMENTAL SENSITIVE AREA
- WILDLIFE MANAGEMENT
- OPEN RECREATION

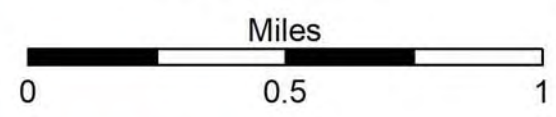
## Legend

- Point Markers
- Roads
- Rivers/Streams
- Counties
- USACE Boundary



## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018



See Map Sheet 5

See Map Sheet N/A

See Map Sheet 9



See Map Sheet N/A

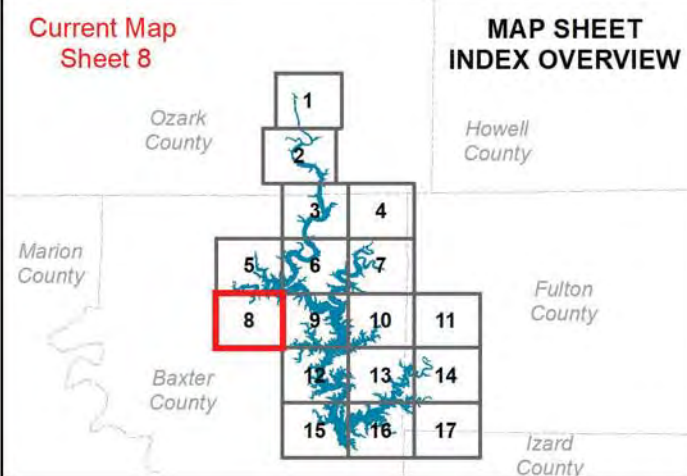
# SELECTED ALTERNATIVE

## LAND CLASSIFICATION

- HIGH DENSITY RECREATION
- LOW DENSITY RECREATION
- ENVIROMENTAL SENSITIVE AREA
- WILDLIFE MANAGEMENT
- PROJECT OPERATIONS
- RESTRICTED
- OPEN RECREATION

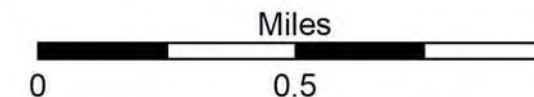
## Legend

- Point Markers
- Roads
- State Highway
- US Highway
- Rivers/Streams
- Counties
- USACE Boundary
- Flowage Easement



## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018



See Map Sheet 6

See Map Sheet 8

See Map Sheet 10

See Map Sheet 12

# SELECTED ALTERNATIVE

## LAND CLASSIFICATION

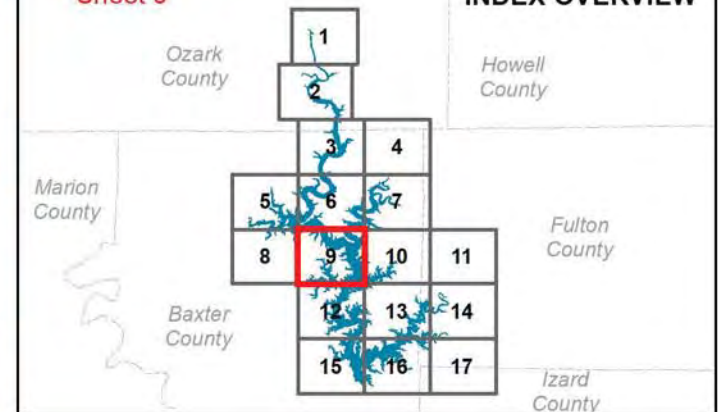
- HIGH DENSITY RECREATION
- LOW DENSITY RECREATION
- ENVIROMENTAL SENSITIVE AREA
- WILDLIFE MANAGEMENT
- PROJECT OPERATIONS
- OPEN RECREATION

## Legend

- Point Markers
- Proposed Trail
- Existing Trails
- Roads
- State Highway
- US Highway
- Rivers/Streams
- Counties
- USACE Boundary
- Flowage Easement

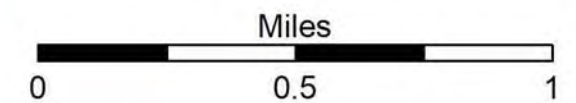
Current Map Sheet 9

## MAP SHEET INDEX OVERVIEW



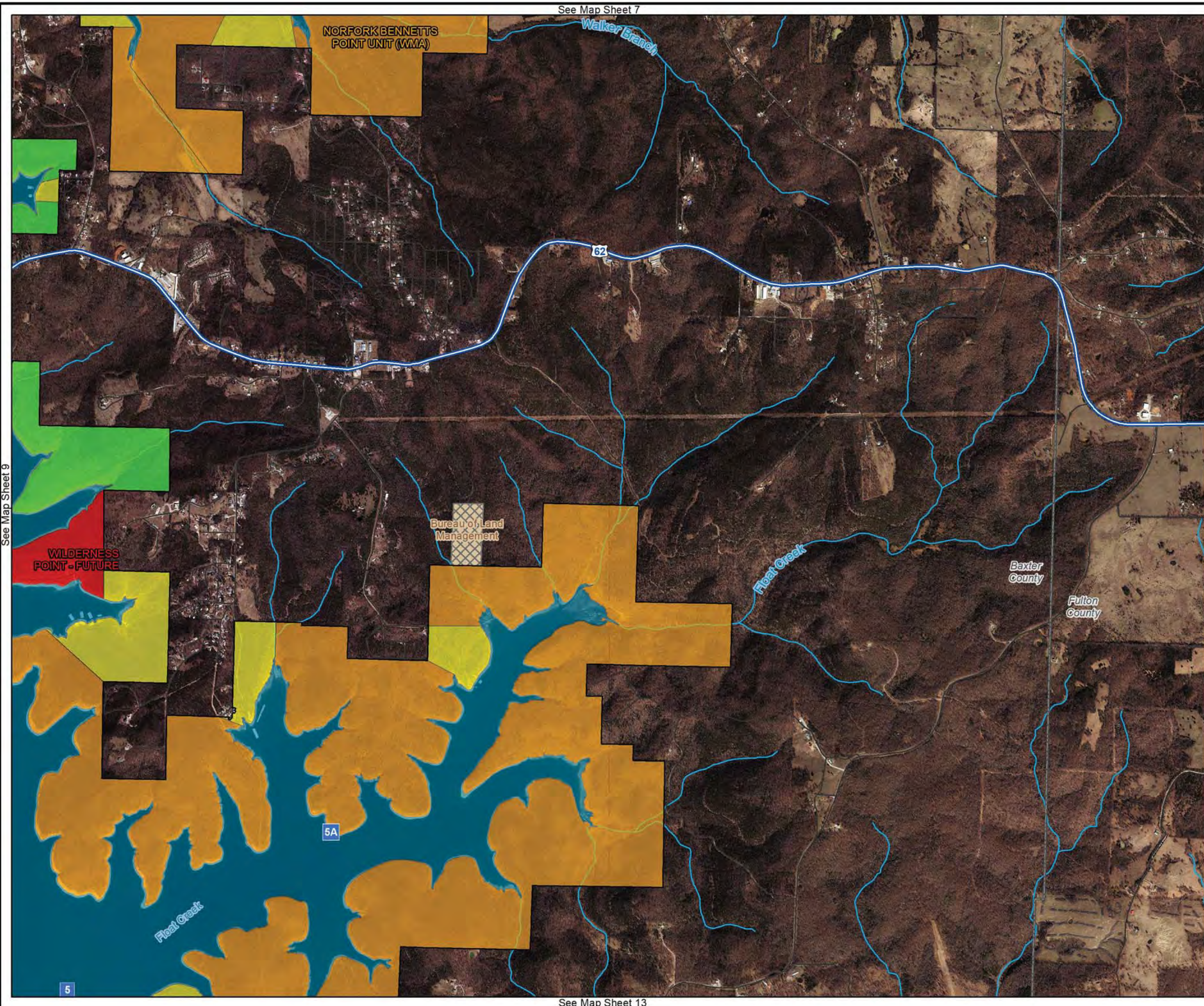
## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018



**US ARMY CORPS OF ENGINEERS**  
Little Rock District  
Norfolk Lake





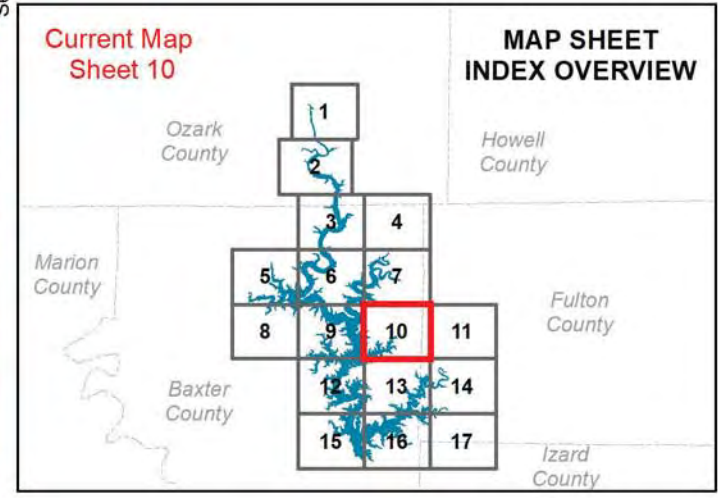
# SELECTED ALTERNATIVE

**LAND CLASSIFICATION**

- HIGH DENSITY RECREATION
- LOW DENSITY RECREATION
- ENVIROMENTAL SENSITIVE AREA
- WLDLIFE MANAGEMENT
- OPEN RECREATION

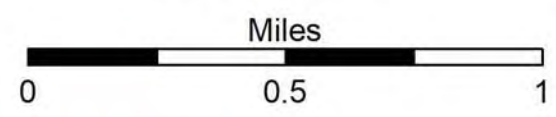
**Legend**

- Point Markers
- Roads
- US Highway
- Rivers/Streams
- Counties
- USACE Boundary
- Bureau of Land Management Land



## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018



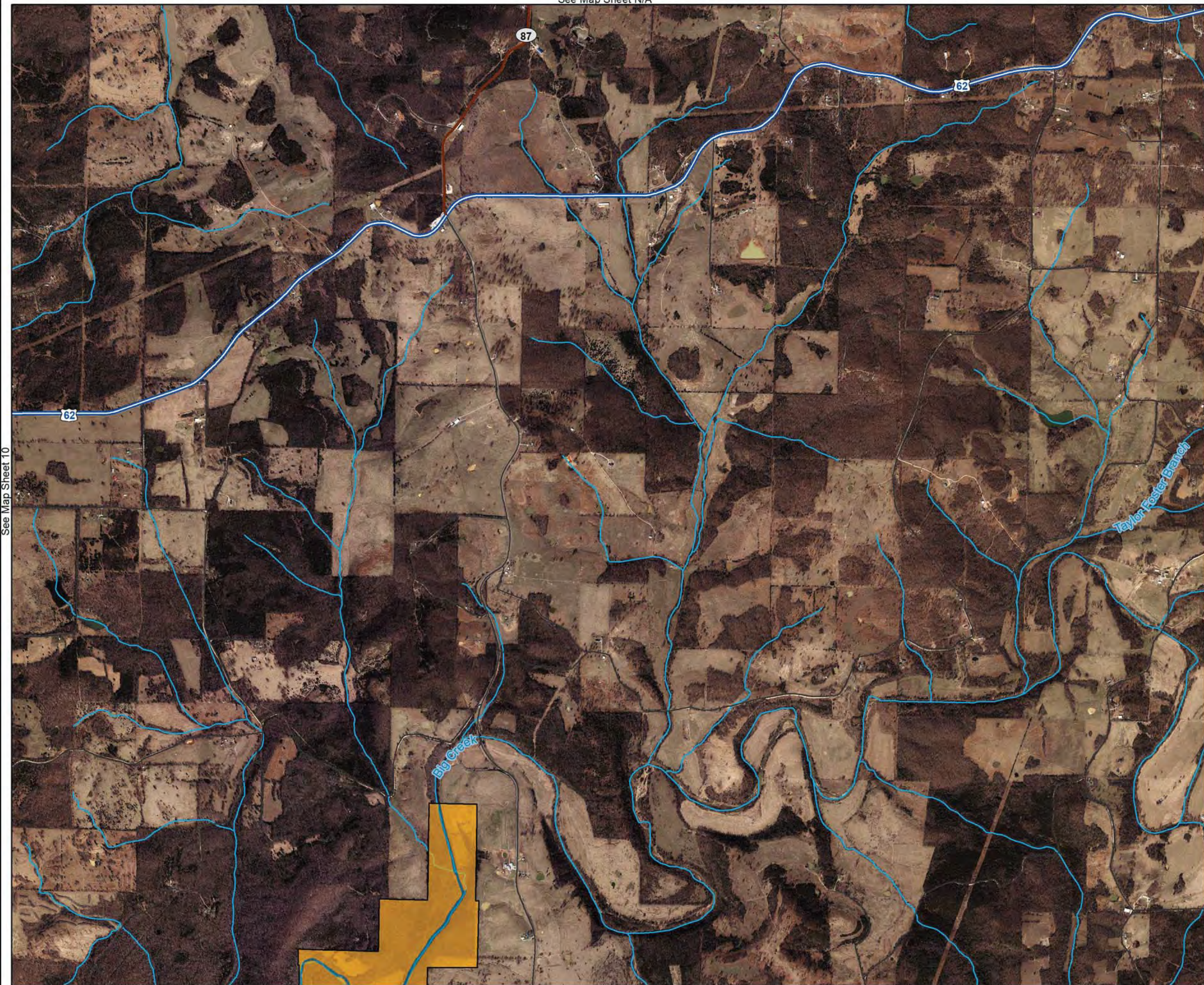
See Map Sheet 9

See Map Sheet 11

See Map Sheet 7

See Map Sheet 13

See Map Sheet N/A



See Map Sheet 10

See Map Sheet N/A

See Map Sheet 14

# SELECTED ALTERNATIVE

## LAND CLASSIFICATION

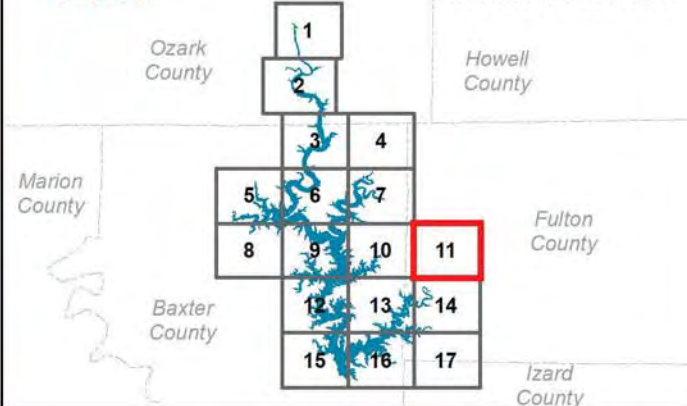
- WILDLIFE MANAGEMENT
- OPEN RECREATION

## Legend

- Roads
- State Highway
- US Highway
- Rivers/Streams
- Counties
- USACE Boundary

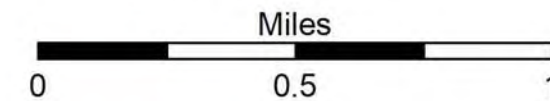
Current Map Sheet 11

## MAP SHEET INDEX OVERVIEW



## MASTER PLAN NORFORK LAKE

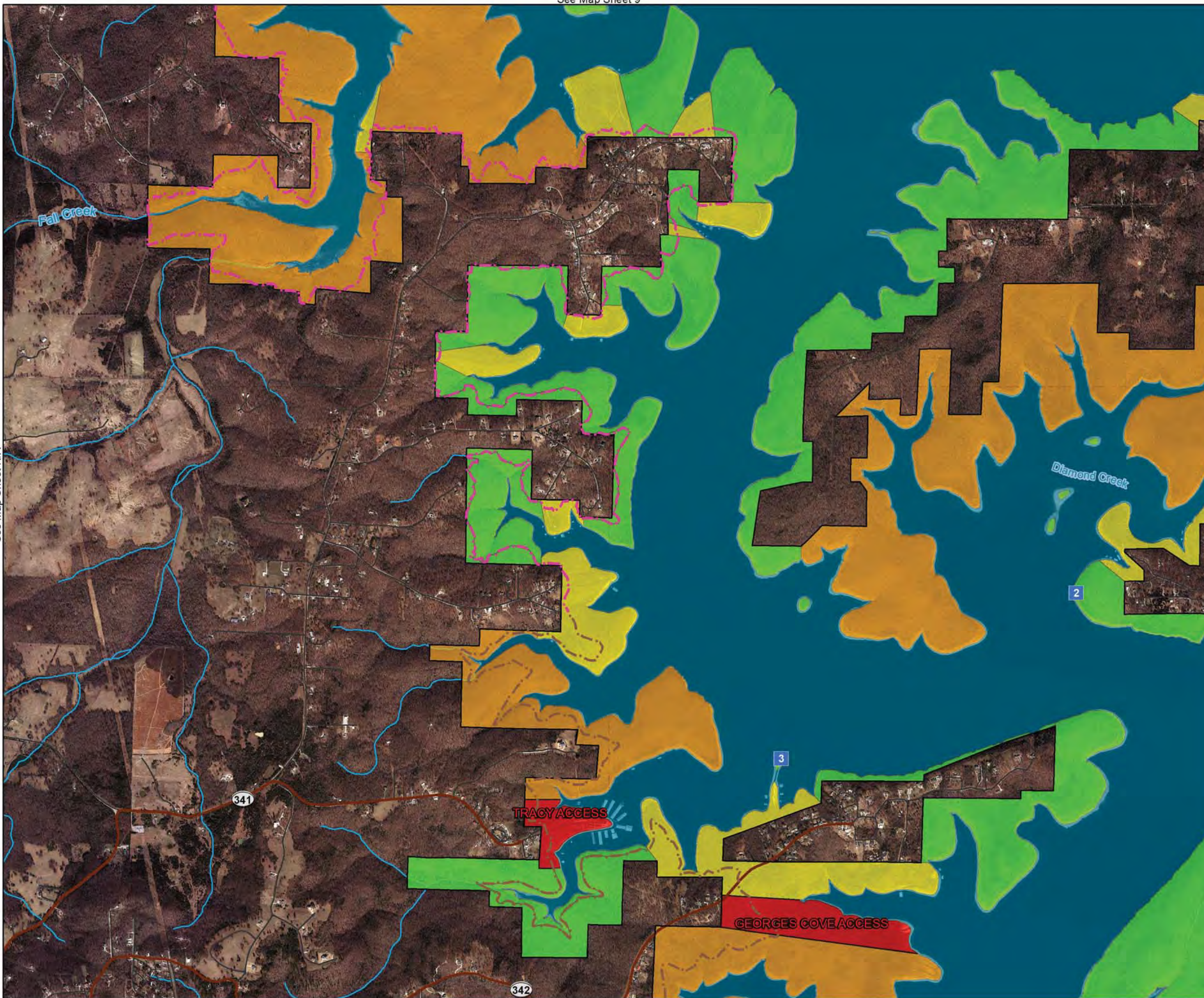
Imagery Date: 2017/2018



See Map Sheet 9

See Map Sheet N/A

See Map Sheet 13



See Map Sheet 15

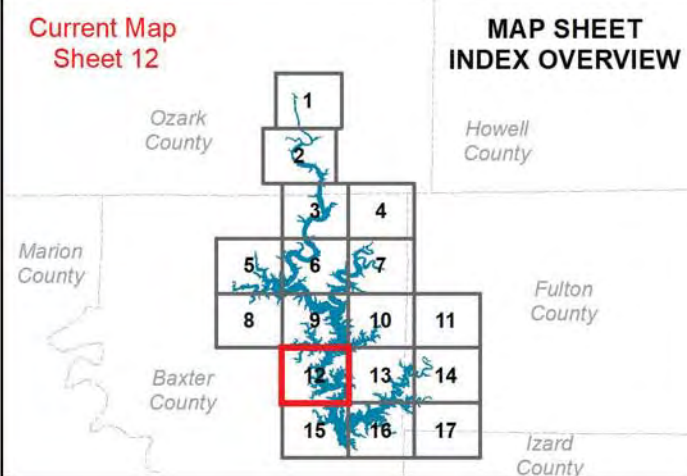
# SELECTED ALTERNATIVE

## LAND CLASSIFICATION

- HIGH DENSITY RECREATION
- LOW DENSITY RECREATION
- ENVIORNMENTAL SENSITIVE AREA
- WILDLIFE MANAGEMENT
- OPEN RECREATION

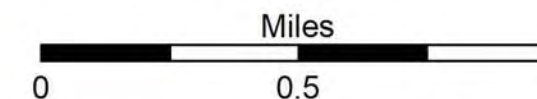
## Legend

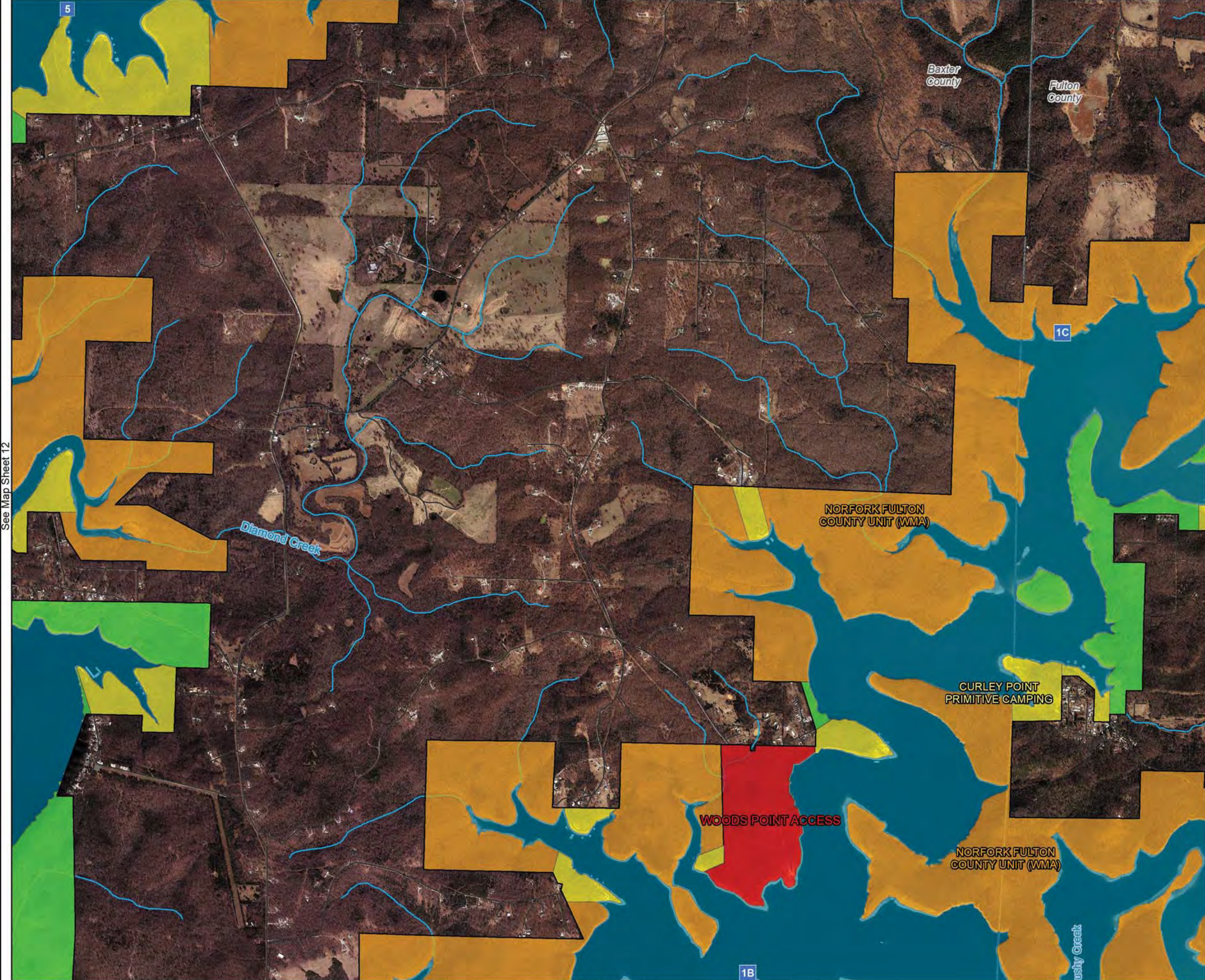
- Point Markers
- Proposed Trail
- Existing Trails
- Roads
- State Highway
- Rivers/Streams
- Counties
- USACE Boundary



## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018





See Map Sheet 12

See Map Sheet 14

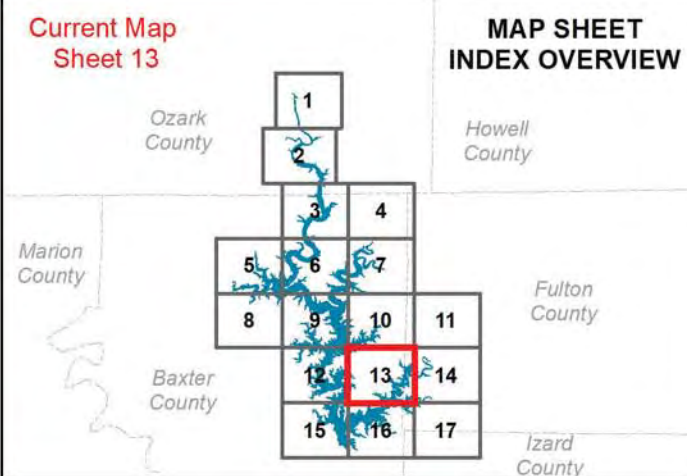
# SELECTED ALTERNATIVE

## LAND CLASSIFICATION

- HIGH DENSITY RECREATION
- LOW DENSITY RECREATION
- ENVIORNMENTAL SENSITIVE AREA
- WILDLIFE MANAGEMENT
- OPEN RECREATION

## Legend

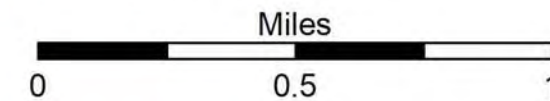
- Point Markers
- Roads
- Rivers/Streams
- ▭ Counties
- ▭ USACE Boundary

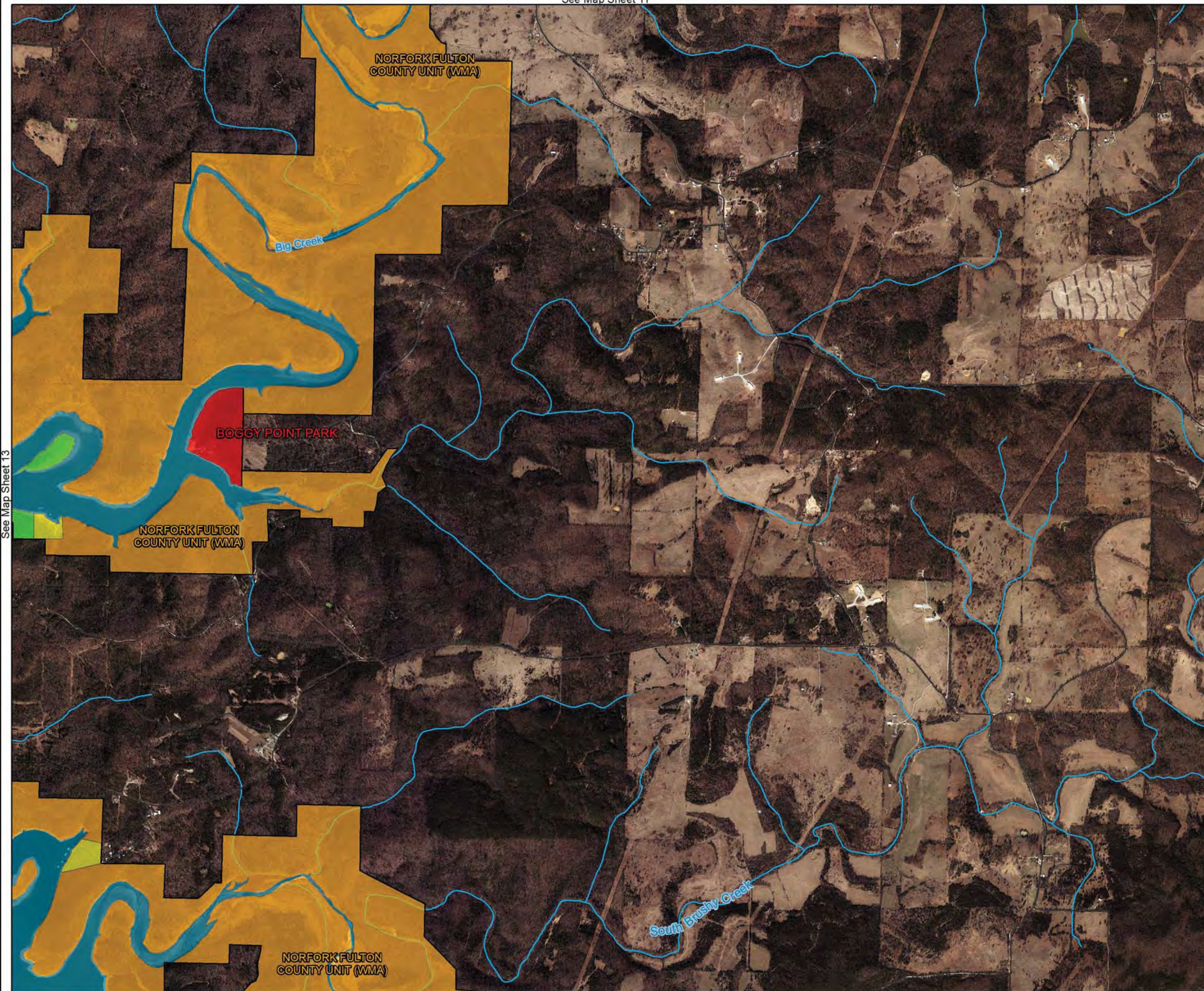


Current Map Sheet 13

## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018





See Map Sheet 13

See Map Sheet N/A

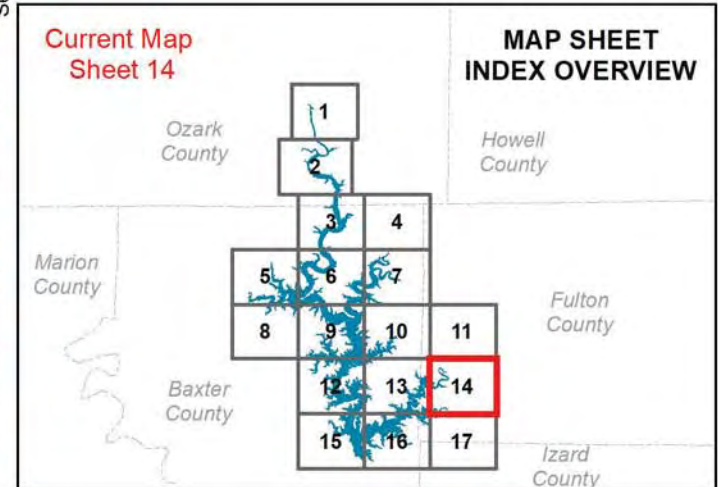
# SELECTED ALTERNATIVE

**LAND CLASSIFICATION**

- HIGH DENSITY RECREATION
- LOW DENSITY RECREATION
- ENVIORNMENTAL SENSITIVE AREA
- WILDLIFE MANAGEMENT
- OPEN RECREATION

**Legend**

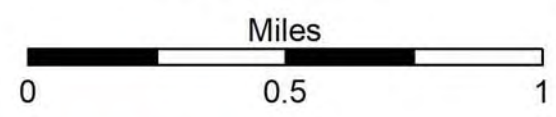
- Roads
- Rivers/Streams
- Counties
- USACE Boundary



Current Map Sheet 14

## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018

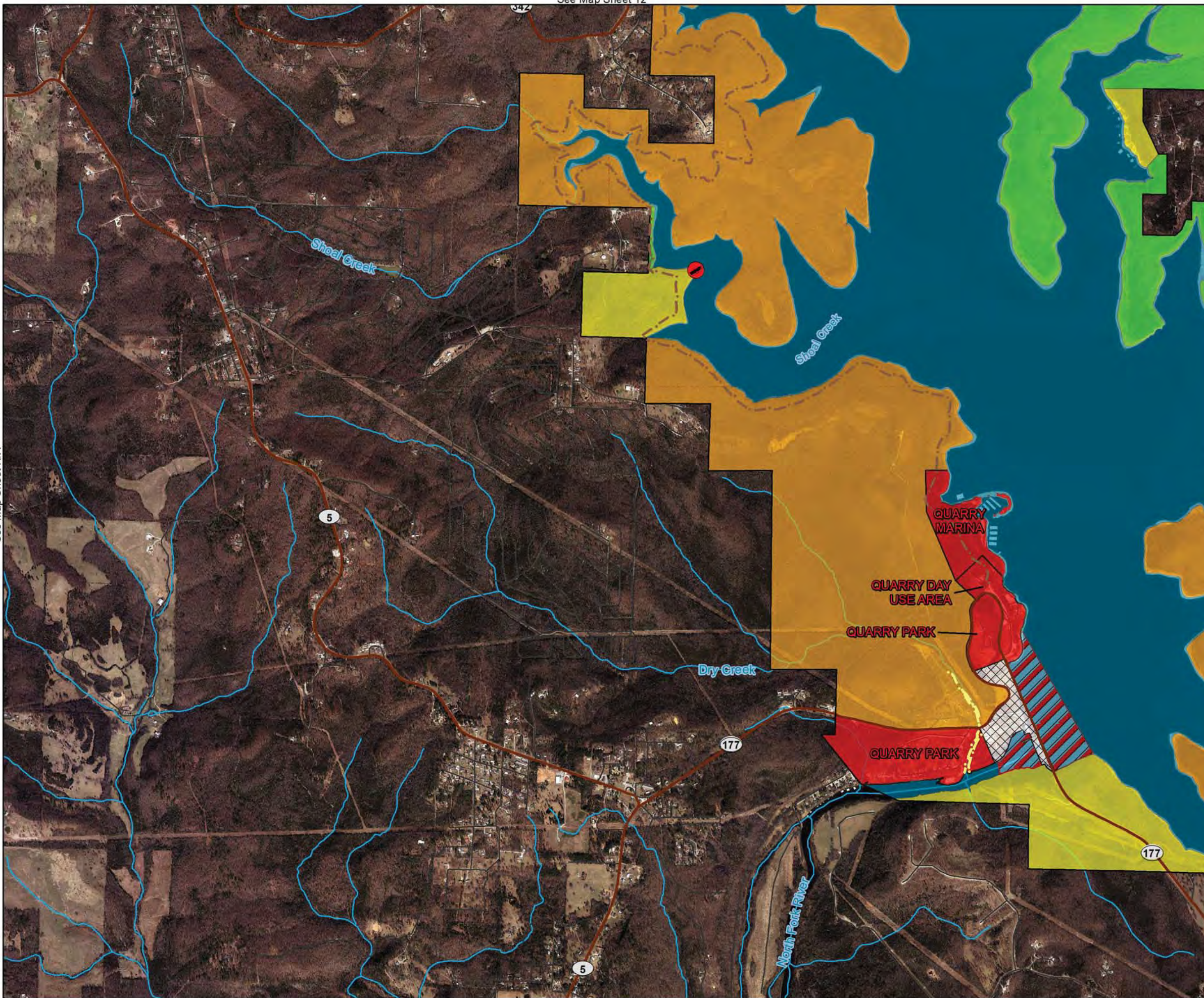




See Map Sheet 12

See Map Sheet N/A

See Map Sheet 16



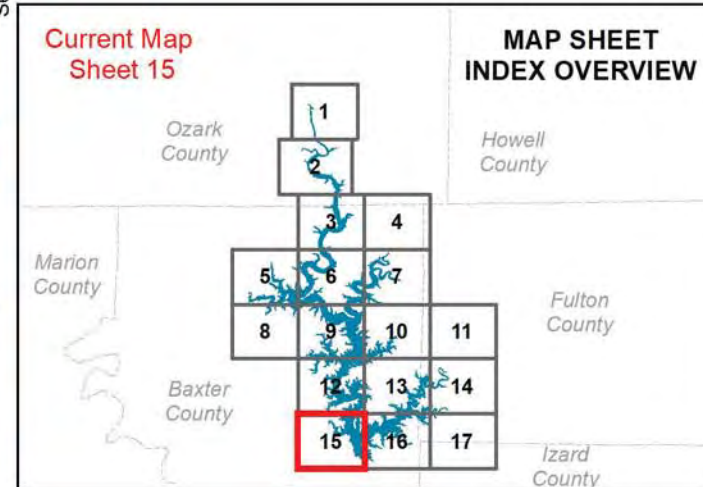
# SELECTED ALTERNATIVE

## LAND CLASSIFICATION

- HIGH DENSITY RECREATION
- LOW DENSITY RECREATION
- ENVIORNMENTAL SENSITIVE AREA
- WILDLIFE MANAGEMENT
- PROJECT OPERATIONS
- RESTRICTED
- OPEN RECREATION

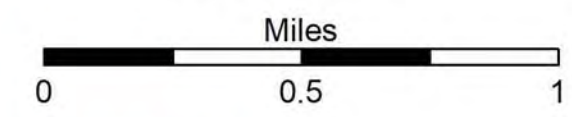
## Legend

- Proposed Ramp
- Dry Run Creek
- Existing Trails
- Roads
- State Highway
- Rivers/Streams
- Counties
- USACE Boundary

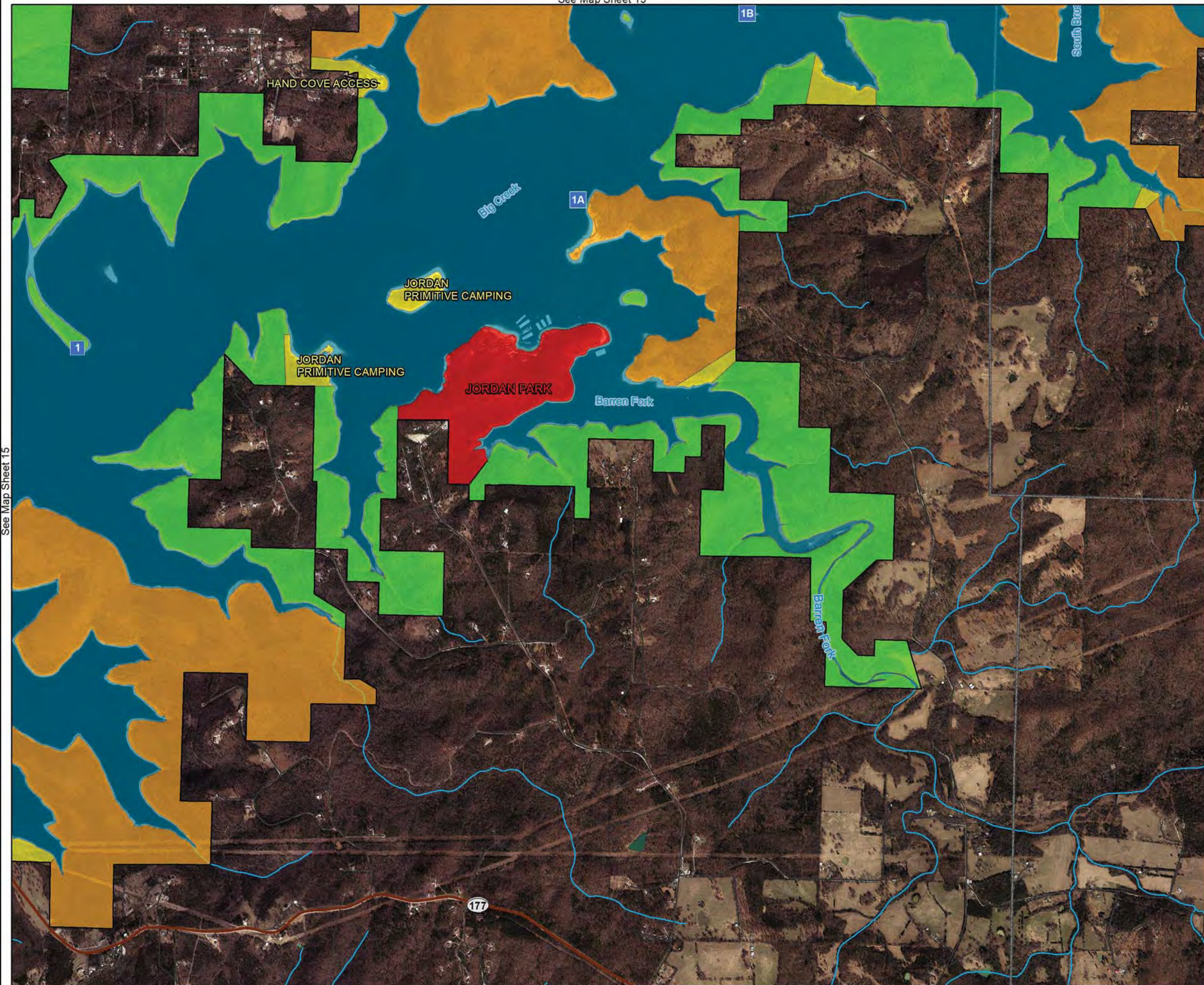


## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018



See Map Sheet N/A



See Map Sheet 15

See Map Sheet 17

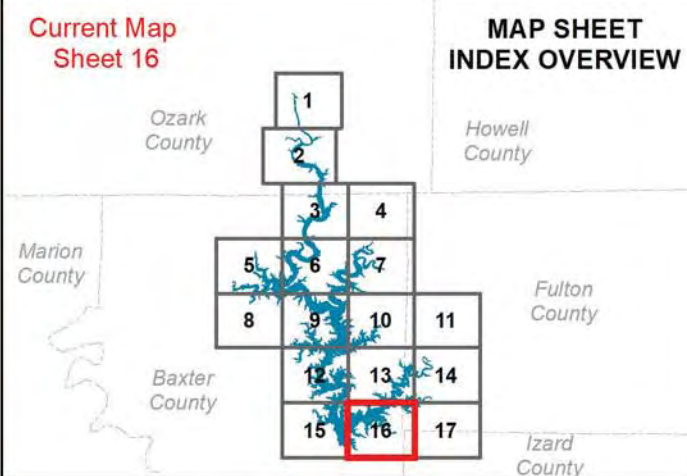
# SELECTED ALTERNATIVE

## LAND CLASSIFICATION

- HIGH DENSITY RECREATION
- LOW DENSITY RECREATION
- ENVIORNMENTAL SENSITIVE AREA
- WILDLIFE MANAGEMENT
- OPEN RECREATION

## Legend

- Point Markers
- Roads
- State Highway
- Rivers/Streams
- Counties
- USACE Boundary



Current Map Sheet 16

## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018





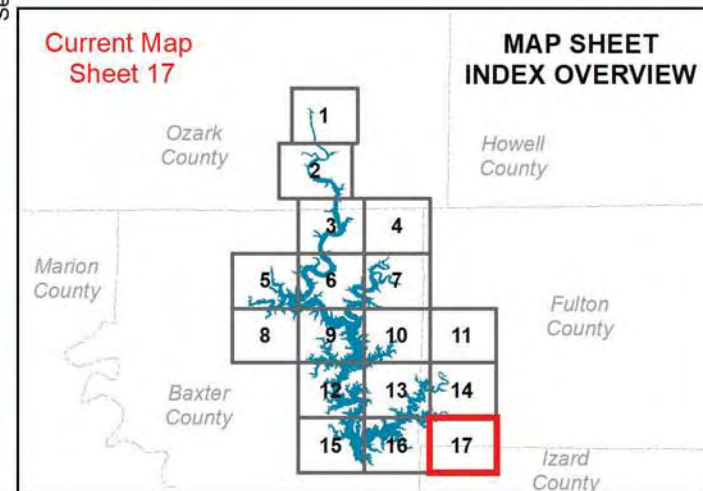
# SELECTED ALTERNATIVE

**LAND CLASSIFICATION**

- WILDLIFE MANAGEMENT
- OPEN RECREATION

**Legend**

- Roads
- State Highway
- Rivers/Streams
- Counties
- USACE Boundary



## MASTER PLAN NORFORK LAKE

Imagery Date: 2017/2018

