

CEMVS-PM-E

Date:

MEMORANDUM FOR RECORD – TECHNICAL REVIEW COMPLETE

SUBJECT: Quality Control Review, Wappapello Lake Master Plan Revision

In accordance with the District's Quality Control Management Plan, the Quality Control Review for the Wappapello Lake Master Plan Revision has been complete and all comments are resolved. We certify the completion of this review.

X

Jon D. Summers
Technical Reviewer

X

Roxane B. Krutsinger
Quality Control Reviewer

Technical Checklist**Project: Wappapello Lake Master Plan Update**

Date _____

Item	Yes	No	N/A	Comments
GENERAL				
1, AUTHORITY				
Does the activity/project conform with authorized project purposes?				
2. SCOPE				
a. have all significant resources been adequately considered?				
b. Have all foreseeable short-term and long-term needs been adequately considered?				
c. Have all implications outside the activity/project area been properly addressed?				
3. OBJECTIVE OF MASTER PLAN				
Are Master Plan objectives clearly stated?				
4. COORDINATION				
a. Was there adequate coordination with appropriate State, local and Federal agencies and were their views considered in formulating the recommended plan?				
b. Has coordination conformed with law, executive orders and agreements between agencies; and, if not, has the departure been satisfactorily explained?				
c. Have the proper preservation, conservation, historical and scientific interests been consulted and were their views given adequate consideration during plan development?				
5. PUBLIC INVOLVEMENT				
a. Was the scoping process in accordance with EP 1130-2-550, section 3-4d?				
b. Was adequate public involvement conducted during the planning process to fully inform interested parties and to ascertain their views?				
c. Have implications associated with the recommended plan been properly addressed?				
d. Has there been adequate response to public concerns?				
e. Has the public involvement process been documented and a discussion of the process prepared?				

Item		No	N/A	Comments
6. POLICY ASPECTS:				
Does the proposed project conform to policies established in ER 1165-2-400 (Water Resource Policies and Authorities)?				
7. LEGAL/INSTITUTIONAL:				
Have the legal and institutional obstacles to project implementation been considered and has a plan been developed to overcome them?				
8. REPORT REVIEW:				
a. Does the report format follow the most recent guidance?				
b. Have all major technical review issues and resolutions been documented?				
c. Is the technical review certification signature page included?				
9. FINANCIAL ANALYSIS				
a. If applicable, does the report state the benefit-cost ratio (BCR) for the recommended plan assuming existing conditions prevail over the period of analysis?				
b. Has the economic evaluation of recreational development been adequately determined?				
10. RECREATION/AESTHETIC				
a. Have the necessary recreational coordination been conducted in accordance with the FNCA of 1944, FPWA of 1965, and the WRDA of 1986, the Land and Water Conservation Fund Act, and appropriate Corps regulations?				
b. Has the assessment of adverse effects dealing with recreation and aesthetic conditions been considered in each alternative plan?				
c. Has coordination with the State Department of Culture, Recreation and Tourism been conducted, and the State Comprehensive Outdoor Recreation Plan been consulted concerning proposed recreational development?				
d. Has appropriate NED unit day values been assessed via Economic Guidance Memorandum, Unit Day Values for recreation? Are current fiscal year rates being used?				

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COMMONLY USED ACRONYMS AND ABBREVIATIONS

ABA – ARCHITECTURAL BARRIERS ACT
BA – BIOLOGICAL ASSESSMENT
BO – BIOLOGICAL OPINION
CEQ – COUNCIL ON ENVIRONMENTAL QUALITY
CFR- CODE OF FEDERAL REGULATIONS
CFS – CUBIC FEET PER SECOND
CY – CALENDAR YEAR
DBH – DIAMETER AT BREAST HEIGHT
EA – ENVIRONMENTAL ASSESSMENT
EC – ENGINEER CIRCULAR
EIS – ENVIRONMENTAL IMPACT STATEMENT
EO – EXECUTIVE ORDER
EOP – ENVIRONMENTAL OPERATING PRINCIPLES
EP – ENGINEER PAMPHLET
ER – ENGINEER REGULATION
ESA – ENDANGERED SPECIES ACT
FONSI – FINDING OF NO SIGNIFICANT IMPACT
FTE – FULL TIME EQUIVALENT
FY – FISCAL YEAR
GPM – GALLONS PER MINUTE
HPMP – HISTORIC PROPERTIES MANAGEMENT PLAN
HS – HISTORIC SITE
IPaC – INFORMATION, PLANNING AND CONSULTATION SYSTEM
ISOP – INTERPRETIVE SERVICES AND OUTREACH PROGRAM
kVA – KILOVOLT-AMPERE
LERRD – LANDS, EASEMENTS, RIGHTS-OF-WAY AND RELOCATION
LIDAR – LIGHT IMAGING, DETECTION AND RANGING
LMVP – LAKES OF MISSOURI VOLUNTEER PROGRAM
MDC – MISSOURI DEPARTMENT OF CONSERVATION
MDNR – MISSOURI DEPARTMENT OF NATURAL RESOURCES
MoDOT – MISSOURI DEPARTMENT OF TRANSPORTATION
MGD – MILLION GALLONS PER DAY
MOA – MEMORANDUM OF AGREEMENT
MOU – MEMORANDUM OF UNDERSTANDING
MP – MASTER PLAN
MR&T – MISSISSIPPI RIVER AND TRIBUTARIES
MRTC – MISSISSIPPI RIVER TRANSMISSION CORPORATION
MSL – MEAN SEA LEVEL
NAGPRA – NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT
NEPA – NATIONAL ENVIRONMENTAL POLICY ACT
NHPA – NATIONAL HISTORIC PRESERVATION ACT

NOAA – NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NPS – NATIONAL PARK SERVICE
O&M – OPERATIONS AND MAINTENANCE
OMBIL – OPERATIONS AND MAINTENANCE BUSINESS INFORMATION LINK
OMP – OPERATIONAL MANAGEMENT PLAN
ORP – OXIDATION REDUCTION POTENTIAL
PDT – PROJECT DELIVERY TEAM
PL – PUBLIC LAW
PMP – PROJECT MANAGEMENT PLAN
PSA – PROJECT SITE AREA
RecBEST – RECREATION BUDGET EVALUATION SYSTEM
REDM – REAL ESTATE DESIGN MEMORANDUM
SCORP – STATE COMPREHENSIVE OUTDOOR RECREATION PLAN
SCWDA – SOUTH CENTRAL WORKFORCE DEVELOPMENT AREA
SHPO – STATE HISTORIC PRESERVATION OFFICE
SMSA – STANDARD METROPOLITAN STATISTICAL AREA
SP – STATE PARK
SWCD – SOIL AND WATER CONSERVATION DISTRICT
T&E – THREATENED AND ENDANGERED
TOC – TOTAL ORGANIC CARBON
TSI – TIMBER STAND IMPROVEMENT
TSS – TOTAL SUSPENDED SOLIDS
TVSS – TOTAL VOLATILE SUSPENDED SOLIDS
USACE – US ARMY CORPS OF ENGINEERS
USC – UNITED STATES CODE
USFS – US FOREST SERVICE
USFWS – US FISH AND WILDLIFE SERVICE
VERS – VISITOR ESTIMATION REPORTING SYSTEM
WDA – WORKFORCE DEVELOPMENT AREA
WNS – WHITE NOSE SYNDROME
WRDA – WATER RESOURCE DEVELOPMENT ACT
WRRDA – WATER RESOURCE & REFORM DEVELOPMENT ACT

PREFACE

Wappapello Lake was authorized for development by the Flood Control Act of 1936. Construction began in September 1938 and was completed in June 1941. Development and use of lands for recreational purposes was authorized by Section 4 of the Flood Control Act of 1944 and amended by subsequent Flood Control Acts. The original Master Plan, approved in 1946, was revised in 1958 and updated in 1963, 1975, 1985 and 2000. Each revision or update aligned the project's plan with current regulations, streamlined the planning process and provided best management practices suited to the region and its residents.

This Master Plan evaluates past development plans, current recreation trends, an evaluation of existing and future needs required to protect the resource and the impact of inholdings not yet purchased to recreation access around the lake. Wappapello Lake's future depends on organized development and partnerships that connect the lake to surrounding communities.

A summary of changes to this 2019 Wappapello Lake Master Plan revision includes:

- a. Changes to land classification of the former Poole Lodge Recreation Area from high density recreation to multiple resource management area, vegetative management. The Boy Scouts of America relinquished their lease and all facilities have been removed. Location is shown on Plate 32, *Proposed Land Classifications*.
- b. Changes to some acreages to reflect more accurate mapping capabilities, land management and inholding purchases.
- c. Coordination and completing road raise and relocation with MoDOT and Wayne County.
- d. Plate updates and land classification assignments to reflect inholding purchases and mitigation acquisitions as shown on Plate 32, *Proposed Land Classifications*.
- e. A list of proposed actions that include new construction and facility replacement.

Issues/Concerns include:

- a. MR&T funding that may impact project operations and efficiencies.
- b. Lines of communication and coordination with Memphis District, especially regarding road relocation and downstream impacts of water releases, is important to the successful management of the watershed. It is important to maintain this coordination.

The approval of this Master Plan does not assume all proposed projects will be implemented. Funding must be secured to complete each proposed action. Further environmental reviews, including required environmental assessments and design phases, will be conducted before moving forward.

WAPPAPELLO LAKE MASTER PLAN

ST. FRANCIS RIVER WATERSHED WAPPAPELLO MISSOURI

CHAPTER 1 – INTRODUCTION

1.1 PROJECT AUTHORIZATION

Federal laws provide that land and water areas of U. S. Army Corps of Engineers (Corps) water resource projects, constructed for the primary purposes of flood risk reduction management, navigation and/or power, shall be administered to encourage and develop collateral uses, such as recreation, conservation of fish and wildlife resources and other purposes in the public interest. The St. Francis Basin Project, which includes Wappapello Dam and Lake, was authorized for flood control by the Flood Control Act, approved 15 June 1936 (Overton Act), and amended by subsequent Flood Control Acts. Development and use of flood-control reservoir areas for recreational and related purposes was authorized by Section 4 of the Flood Control Act, approved 22 December 1944, and amended by the Flood Control Act approved 24 July 1946 and Section 209 of the Flood Control Act of 1954, approved 3 December 1954. The Fish and Wildlife Coordination Act, enacted 10 March 1934, as amended, provides authority for making project lands of value for wildlife purposes available for management by interested federal and state wildlife agencies.

1.2 PROJECT PURPOSES

Wappapello Lake's authorized purposes are to provide flood risk reduction management for the St. Francis River and its tributaries and to provide and manage recreation and fish and wildlife conservation on project lands and waters.

Wappapello Lake is managed by the St. Louis District but is an integral part of the Memphis District's St. Francis Basin Project, which manages the St. Francis and Little St. Francis Rivers through a combination of a reservoir, levees, a pumping station, channel improvements and interior drainage. Although flood risk reduction management is the primary authorized purpose, the lake has become a major regional recreation resource. The Corps has developed recreational facilities in accordance with Section 4 of the Flood Control Act of 1944. Lands have also been outgranted to the Missouri Department of Natural Resources (MDNR) for operation of Lake Wappapello State Park. The Missouri Department of Conservation (MDC) leases additional lands to manage for

a third authorized purpose, fish and wildlife conservation. The Corps also promotes habitat improvement and maintains refuges on project lands.

1.3 PURPOSE AND SCOPE OF THE MASTER PLAN

The original master plan served as a guide for the orderly and coordinated resource development and management of all land and water at the lake. The original document presented data on the scope of development considered adequate for initial public use and an estimate of future requirements. This revised master plan presents an inventory and assessment of the land and water resources and related physical improvements, an analysis of resource use and a reevaluation of existing and future needs required to protect and improve the values of the resource base.

This is the sixth update or revision of the Wappapello Lake Master Plan. It reflects current conditions, as well as formulation of resource use objectives, rehabilitation and relocation of existing facilities and proposed facilities and actions. This update was accomplished for the purposes of revising outdated material, reflecting the current status of Wappapello Lake, outlining future plans and revising land use classifications.

The master plan does not include water level management or shoreline management. These areas, if applicable, are covered in other project plans. Specific issues identified through the master plan process as they relate to shoreline management will be addressed in the Wappapello Lake Shoreline Management Plan. Other issues that arise will be coordinated with the appropriate agency.

Wappapello Lake's Operational Management Plan (OMP) provides more detail regarding proposed actions that have been approved in the Master Plan. The OMP outlines forthcoming construction and operation activities, which are then implemented through annual management plans. OMP's are updated more frequently to reflect changes in funding and operational priorities.

1.4 BRIEF WATERSHED AND PROJECT DESCRIPTION

Wappapello Lake is located on the Upper St. Francis River in southeastern Missouri. The dam site lies 22 miles southeast of Greenville, one mile southwest of Wappapello and 16 miles northeast of Poplar Bluff. Although most of the lake is in Wayne County, a small southern portion extends into Butler County.

St. Louis MO is approximately 144 miles to the north, Memphis TN approximately 159 miles to the south, Carbondale IL 127 miles northeast, Cape Girardeau MO 59 miles northeast and Jonesboro AR 97 miles southwest.

The St. Francis River begins its journey in Iron County, Missouri in an area that separates the Black, Big and St. Francis River drainages. The river flows northeasterly then winds south through the Ozark foothills to Wappapello Lake and continues its course through southeastern Missouri and Arkansas, emptying into the Mississippi River north of Helena, Arkansas. Of the 225 miles of the river in Missouri, most runs through hilly terrain. The lower river then winds through the lowlands of the Bootheel and on through Arkansas. The lighter yellow area on Figure 1 shows the St. Francis River Watershed. The darker yellow area became the Headwaters Diversion Channel in the 1910's as an effort to control flood water on the Little River.

Figure 1 – St. Francis River Watershed



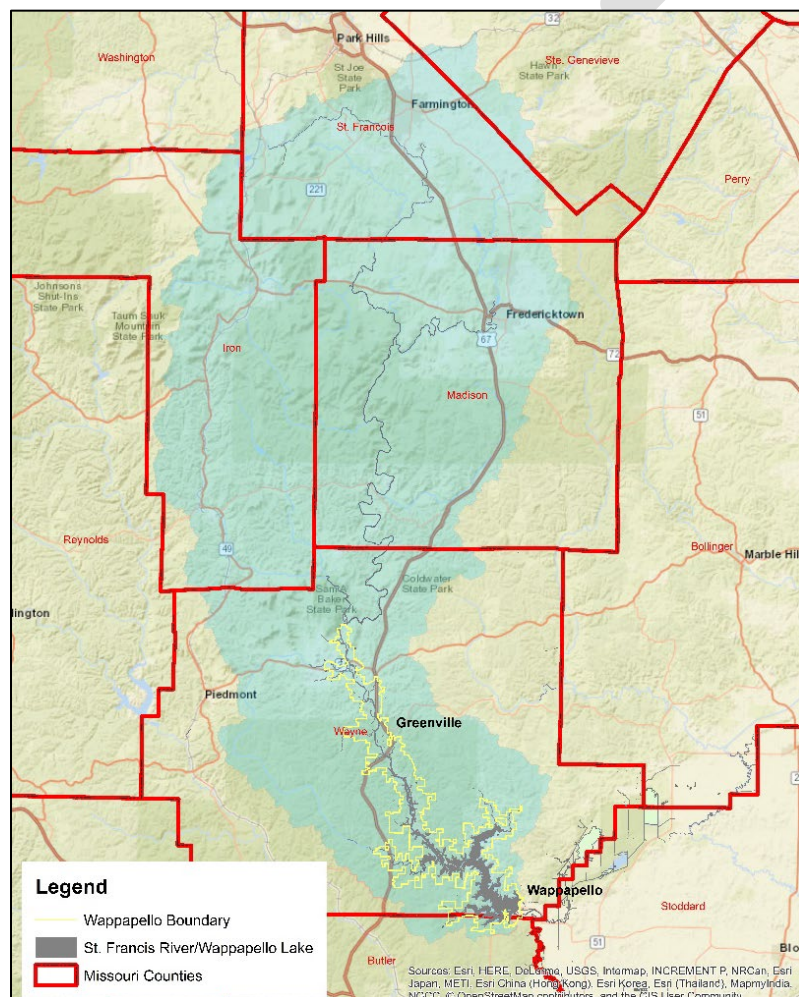
The dam lies approximately 16 miles east of U.S. Route 67 and 12 miles north of U.S. Route 60. Highways providing direct access to the lake include: U.S. Route 67 running north-south on the west side of the lake from Greenville south to Highway 172 and State Route D and BB running north-south on the east side of the lake. State Routes T, KK, W, PP, RA and 172 provide access to the southern end of the lake; and State Routes 34, 143, FF and F provide access to the northern end of the lake. The location of the lake and adjacent lands along with a regional highway network is presented on Plate 3, Road Network.

When Wappapello Lake was created, the rugged terrain and many small tributaries along the St. Francis River created an irregular shoreline. As a result a variety of coves can be found around the lake.

The basin drains 1,310 square miles. At normal recreation pool, the lake is approximately 28 miles long, with an average width of 1.3 miles and average depth of 6.5 feet, although some areas are up to 45 feet deep.

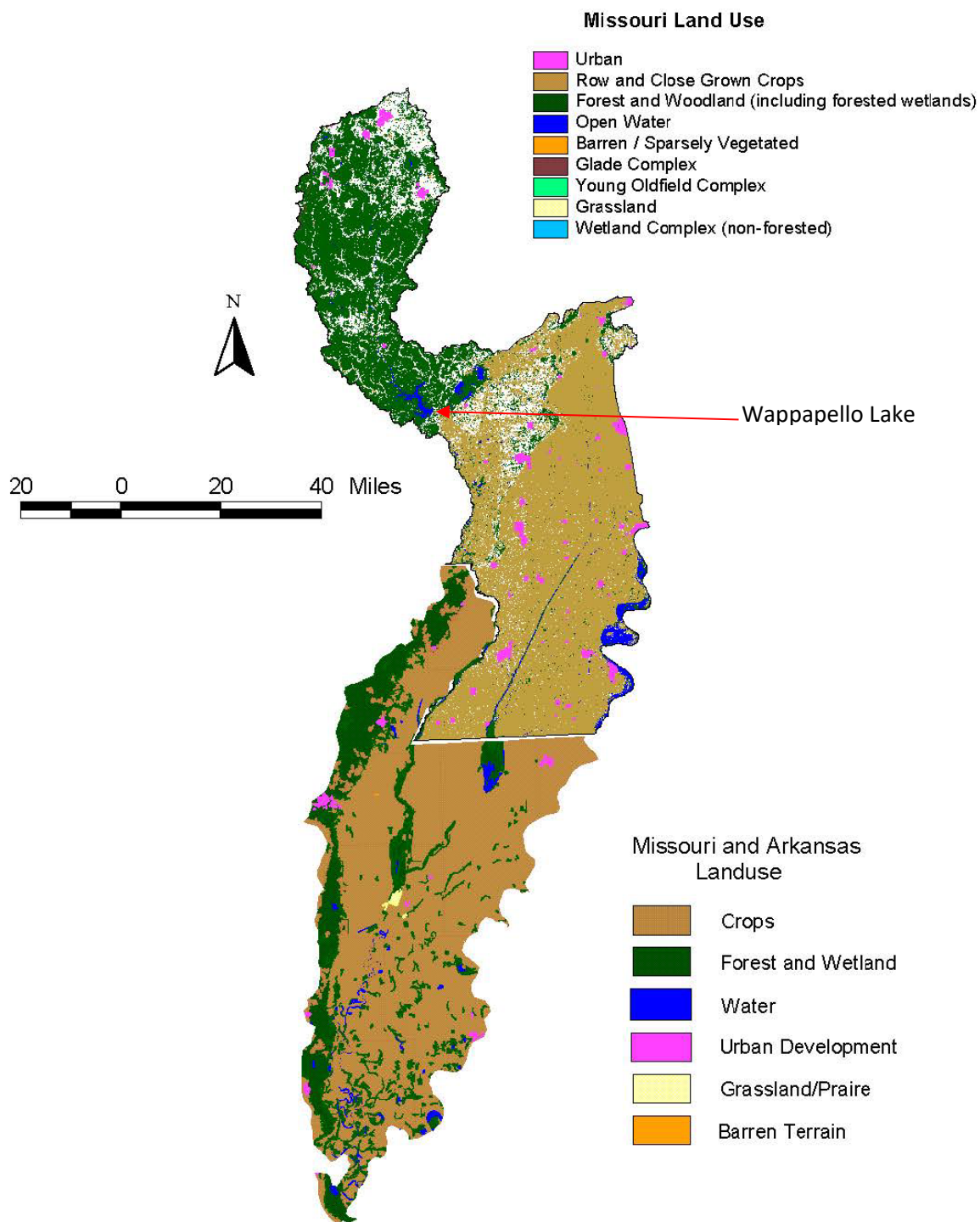
St. Francis River tributaries that enter Wappapello Lake include the East Fork Lost Creek, West Fork Lost Creek, Mink Creek, Asher Creek, Big Lake Creek, Clark Creek, Hubble Creek, Logan Creek, Perkins Branch and Hickory Flat Creek. Hermitte (DiSalvo) Lake near the St. Francis River headwaters is within the Bismarck Conservation Area. According to a 2001 Missouri Department of Conservation inventory – ‘Historical land use in the upper subbasin includes mining, timber harvesting, annual burning, upland row cropping and livestock grazing. Presently, land-use in the upper subbasin can be classified as 77 percent woodland, 10 percent grassland, 7 percent cropland and 6 percent other uses. Wetland drainage, timber clearing and flood control projects have converted the lower subbasin from an immense swampland forest to a vast agricultural area. Eighty-eight percent of the lower subbasin is now used for crop land, followed by 7 percent woodland and 3 percent grassland.’ (Boone, 2001)

Figure 2 – Wappapello Lake Watershed



The following graphic shows the sharp division between the upper basin and lower basin with Wappapello Lake Dam sitting on the divide. Upper St. Francis River land use is heavily woodlands and forest, while the lands below the dam are largely agriculture.

Figure 3 – St. Francis River Watershed Land Use



(Boone, 2001)

1.5 LISTING OF PERTINENT PROJECT INFORMATION

TABLE 1
WAPPAPELLO LAKE PERTINENT DATA

LOCATION OF DAM	
Stream	St. Francis River, Missouri
River Mile Above Mouth	213.2
County (MO)	Wayne
Nearest Town	Wappapello, Missouri
LOCATION OF LAKE	
River Mile Above Mouth	213.2
Counties (MO)	Wayne, Butler
Drainage Area (Sq. Mi.)	1,310
LAKE	
Inactive Pool (minimum pool)	
Top Elevation (Ft.)	338.74
Area (Acres of Water)	360
Storage Capacity (Acre-Feet)	1,290
Runoff Capacity (Inches)	0.02
Joint Use Pool (conservation pool)	
Elevation (Ft.)	338.74 – 354.74
Top Surface Area (Acres)	4,260
Storage Capacity (Acre-Feet)	26,290
Runoff Capacity (Inches)	0.39
Flood Control Pool	
Elevation (Ft.)	354.74 – 394.74
Recreation Pool (Ft.)/ Surface Acres	359.74*/ 8,400
Top Surface Area (Acres)	23,180
Storage Capacity (Acre-Feet)	583,740
Runoff Capacity (Inches)	8.38
Maximum Regulated Outflow (Cubic Feet Per Second, cfs)	10,000
Maximum Preemptive Surcharge Released (Cubic Feet Per Second, cfs)	15,000
Surcharge Pool	
Elevation (Ft.)	394.75-413.74
Top Surface Area (Acres)	28,950
Storage Capacity (Acre-Feet)	522,860
Runoff Capacity (Inches)	16.23
Freeboard	
Elevation (Ft.)	413.74-419.74
Height (Ft.)	6.00

DAM STATISTICS	
Dam	
Type	Earth Fill
Elevation, Top of Dam (Ft.)	419.74
Maximum Height above Streambed (Feet)	109
Length of Crest (Feet)	2,700
Crown Width (Feet)	30
Maximum Base Width (Feet)	765
Volume of Earth in Dam (Cubic Yard)	2,700,000
Spillway	
Length (Feet)	740
Elevation of Crest (Ft.)	394.74
Outlet Structure	
Length of Structure (Feet)	724
Gates	
Number	3
Size (Feet)	10 wide X 20 high
Elevation of Gate Sill (Ft.)	338.1
Capacity, Spillway Crest (cfs)	17,000
Capacity, Top of Surcharge (cfs)	20,000
Number of Conduits	1
Inside Diameter of Conduits (Feet)	22

*Recreation Pool is operated within the Flood Control Pool

1.6 LAKE REGULATION AND POOL DESCRIPTIONS

Wappapello Lake pool provides downstream flood protection during wet periods while maintaining the pool as close as possible to the schedule maintained in the Water Control Plan. Fluctuations at the lake are seasonal in nature, occurring in late winter/early spring. Spring through fall fluctuations complement the recreational use of the project as well as work to maintain ideal conditions for fish and wildlife conservation efforts. Plate 2 provides information on fluctuation of reservoir levels and hydrological data. A detailed plan of regulation and pertinent information related to Wappapello Lake is contained in the Water Control Manual, Wappapello Lake, St. Francis River Drainage Basin, Missouri, approved 9 February 2016.

Storage Allocation

a. Inactive Storage Pool

Inactive storage pool is that portion of the lake below elevation 338.74 Feet. At this elevation, the lake has a storage capacity of 1,290 acre-feet. This capacity is sufficient to allow for silt accumulation.

b. Joint-Use Storage Pool (Conservation Pool)

Joint use pool is that portion of the lake between 338.74 Feet and 354.74 Feet. This zone has a storage capacity of 26,290 acre-feet and a surface area of 4,260 acres. Recreation and fish & wildlife conservation are authorized uses of joint use pool.

c. Flood Control Storage Pool

The flood control pool is that portion of the lake between elevations 354.74 Feet and 394.74 Feet, having a storage capacity of 583,740 acre-feet with a surface area of 23,180 acres. The Recreation Pool is operated at 359.74 Feet which occupies 5.5% of the Flood Control Pool.

d. Surcharge Pool

Surcharge pool is that portion of the lake above 394.74 Feet. At this level, the waters of Wappapello Lake flow freely over the auxiliary spillway and a constant 10,000 cfs will be released from the gated outlet structure.

WAPPAPELLO LAKE MASTER PLAN

ST. FRANCIS RIVER WATERSHED WAPPAPELLO MISSOURI

CHAPTER 2 – PROJECT SETTINGS & FACTORS INFLUENCING MANAGEMENT & DEVELOPMENT

2.1 DESCRIPTION OF RESERVOIR

2.1.1 Lake and Shoreline

The St. Francis River, which forms Wappapello Lake, flows south from its headwaters in the St. Francois Mountains and enters a flatter plain downstream of Wappapello Dam. The St. Francis River north of the lake has a deep valley with steep slopes and a narrow floodplain. The lake is confined by these same steeply sloped Ozark hills. South of the lake the river exits the hills and meanders through the low-lying bottom lands of the Mississippi Alluvial Valley to its mouth at the Mississippi River near Helena, Arkansas.

The topography varies due to the many small tributaries entering the river above the dam site. This results in ravines, valleys and an irregular shoreline with many timbered slopes. The lake has a water surface area of 8,400 acres at recreation pool with a 180 mile shoreline. The pool at this elevation is a maximum of 45 feet deep and extends approximately 28 miles above the dam. Table 1 in Chapter 1 shows pertinent elevation and surface area data.

2.1.2 Project Structures

The complete structure consists of an earth dam, a concrete outlet structure and a concrete auxiliary spillway. The main dam is a rolled earth fill with riprap stone protection on the slopes. It has a length of 2,700 feet and height of approximately 73 feet. The crown is 30 feet wide with a 22 foot roadway. Supplementing the main dam are three small auxiliary dikes that rim the north abutment with a total length of about 1,700 feet and a maximum height of approximately 30 feet.

The outlet control structures are 400 feet south of the dam in the south abutment. The conservation pool weir, with crest elevation at 354.74 Feet and a width of 70 Feet, has five sluices, each 6 feet wide and 7.5 feet high, with invert elevation at 338.74 Feet. The intake section of the control structure lies within the gate house and contains three water passages, each controlled by a motor-operated, tractor-type gate, 10 feet wide and 20 feet high. A diesel engine directly connected to a 150-kVA generator serves as a

stand-by unit. The auxiliary spillway is located in a natural saddle about 1,200 feet south of the south end of the dam. This concrete structure, founded on bedrock, has a 740-foot long spillway with a crest elevation of 394.74 Feet. Equipment formerly used to generate power for the dam was removed in 2014.

2.2 HYDROLOGY

Wappapello Lake and Dam is located almost central to a divide between the upper high-relief Ozark Plateau and the low-relief Mississippi Alluvial Plain. The St. Francis River, which originates in Iron County, forms the lake and flows south through the Bootheel on its way through Arkansas emptying into the Mississippi River. Upper basin precipitation averages 43.3 inches per year according to NOAA National Centers for Environmental Information. (NOAA National Centers for Environmental Information, 2017)

The upper basin is mostly impervious rock, which restricts groundwater infiltration. This often results in rapid runoff and frequent flooding. Closer to Wappapello Lake, the land rests on a much younger, water-soluble Gasconade dolomite, allowing considerable groundwater movement. Some small tributary streams drain directly into the lake (e.g. Otter Creek, Happy Hollow Creek). Others, such as Blue Springs, are losing streams that emerge as springs on the lake bottom. (Schroeder, 1986) A losing stream is a stream that loses water as it flows downstream by recharging the aquifer or by completely disappearing from the surface, flowing underground, and reemerging downstream.

Groundwater in the Wappapello Lake area is part of the Salem Plateau Groundwater Province, one of the most extensive in the State of Missouri. Two major aquifers underlie the region, the St. Francois aquifer and the Ozark aquifer. The movement of water between the Ozark and St. Francois aquifers is controlled by the thickness and hydraulic conductivity of the St. Francois confining unit and the water-level difference between the two aquifers. About 46.6 percent of Missouri's potable groundwater is in this region. All but a very few communities and nearly all rural residents draw their water from the aquifers. (Missouri Department of Natural Resources, n.d.)

2.3 SEDIMENTATION AND SHORELINE EROSION

The initial lake sediment survey, which set a base-line, was completed in 1947. Other surveys completed in 1964, 1993 and 2012 recorded changes in sedimentation over time. According to the 2012 Final Report of Sedimentation *Report on Resurvey of Sedimentation Wappapello Reservoir St. Francis River, Missouri*:

"The calculated sedimentation rates indicate the rate of sedimentation of the reservoir has slowed considerably since the 1964 survey. The final report shows a 28.6% storage loss at conservation pool from 1940 to 2012 as well as a 0.5% loss in flood control pool storage during the same period." (West Consultants, Inc., 2012) The report calculated reservoir

inflow to determine sedimentation and determined that 1 inch of runoff equals 69,867 acre-feet. Average annual inflow from 1941 to 2012 was 1,109,628 acre-feet.

2.4 WATER QUALITY

A combination of the Corps of Engineers, the Lakes of Missouri Volunteer Program (LMVP), and contractors conduct water quality monitoring testing on a routine basis. Samples are collected at beaches, designated lake sites and upstream and downstream of the dam in the outlet channel. Monitoring provides early warning signs of possible future degradation within the lake area.

The State of Missouri has established criteria for contaminant levels in the state's water resources. These parameters include heavy metals, pesticides, herbicides, organics and other contaminants. Water quality sampling focuses on parameters needed to indicate if the water is able to sustain adequate plant and animal life and to ensure safety for human recreation.

In addition to water samples, sediment samples are taken once a year. This data provides supplemental information on the relative amounts of contaminants transported by sediments versus contaminants dissolved in the water column. Trend analysis of this data is performed every five years.

2.5 PROJECT ACCESS

Wappapello Lake is located mostly in Wayne County in southeastern Missouri. A small portion of the southern part of the lake is in Butler County. The dam site is located on the St. Francis River, about one mile southwest of Wappapello, Missouri. Regional access to the lake is by way of U.S. Highways 60 and 67. The major state roads provide access to township and county roads, which, in turn, connect to project roads. Roads are shown on Plate 3.

2.5.1 Primary Roads

Major access to Wappapello Lake is provided by two major U.S. highways, Routes 60 and 67, which intersect at Poplar Bluff, Missouri. U.S. Route 60, an east-west highway, provides four-lane access from Interstate 57 at Sikeston, Missouri, to the east, through Poplar Bluff and west to Springfield, Missouri. U.S. Route 67, a north-south highway, crosses the lake one mile south of Greenville, Missouri. It provides four-lane access from St. Louis, Missouri to the north and south of Poplar Bluff to State Highway 158. U.S. Route 67 continues south as a two-lane road to Corning, Walnut Ridge and Little Rock, Arkansas.

2.5.2 Secondary Roads.

Eleven secondary state highways provide direct access to the project. These include Highways 172, 34, 143, T, RA, W, PP, F, FF, D and BB. All of these are paved with bituminous asphalt and are in good condition.

2.5.3 County Roads.

All of the county roads located on the project are in Wayne County, with the exception of one in Butler, and are maintained by the local county authorities. Some of these roads are narrow, which reduces their carrying capacities during peak visitor weekends and presents hazardous conditions to the visiting public.

2.5.4 Access Roads to Recreation Areas

The following access descriptions are the primary routes of travel used by the public to access Wappapello Lake recreation areas:

- (a) State Route T is a major access road to Wappapello Lake. It provides access across the dam and to Spillway Recreation Area, Redman Creek Recreation Area with Totten's Lakeside Resort & Marina and Eagle Point Recreation Area.
- (b) State Route RA from State Route T provides access to Rockwood Point Recreation Area and Baker Lodge Recreation Area.
- (c) State Route 172 from U.S. Highway 67 or State Route W provides access to Lake Wappapello State Park.
- (d) State Route W, also accessible from U.S. Highway 67 or State Route 172 provides access to Chaonia Landing Recreation Area.
- (e) State Route F accessible from U.S. Highway 67 provides access to Holliday Landing Recreation Area. Wayne County maintains a small section of this road (approximately 1,000 feet) until it reaches the project boundary.
- (f) State Route 34 provides access to 34 Bridge Recreation Area.
- (g) U.S. Highway 67 provides direct access to North Greenville Recreation Area and Greenville Recreation Area.
- (h) State Route D is a major east access road to Wappapello Lake. It provides access to Sulphur Springs Recreation Area, People's Creek Recreation Area, Sundowner Recreation Area and Eagle Point Recreation Area.

(i) State Route BB to County Road 526 to County Road 527 provides access to Lost Creek Recreation Area.

(j) State Route D to County Road 523 to County Road 522 provides access to Camp SEMO Recreation Area.

(k) State Route D to County Road 521 provides access to Possum Creek Recreation Area and Camp Latonka Recreation Area.

2.5.5 Raising County Roads and Highway

Flooding of certain county roads and highways and the raising of those roads and highway is discussed in Chapter 6.

2.5.6 Approved Traditional Access Plan

After Wappapello Lake was built, many of the “traditional access” points located in remote areas were not maintained. These accesses, used primarily for hunting and fishing, created safety issues and negative impacts to the environment. In an effort to provide safe and adequate public access around the lake while protecting the natural resources, a Traditional Access Plan was prepared and approved in 1988. The plan recommended which accesses to be maintained and remain open to the public and which should be closed. In addition, the plan identified areas where primitive camping was allowed, and the regulations and facilities necessary to support primitive camping areas. All action items proposed in the Traditional Access Plan have been completed.

2.6 CLIMATE

2.6.1 Temperature and Precipitation

The climate of the area is mild, with humid summers and variable winters. The average annual temperature is about 58.2° Fahrenheit (F). The first killing frost normally occurs in mid to late October and the last frost occurs mid to late April. The average temperature for January is 34.4°F and for July, it is 80.1°F. The highest temperature recorded in Missouri was 118°F in Warsaw and Union, July 14, 1954, while the highest recorded Wayne County temperature of 108°F was recorded on August 9, 1934. Coldest recorded Missouri temperature was -40°F in Warsaw on February 13, 1905. The coldest Wayne County temperature occurred at Greenville on January 24, 1963 at -25°F. (Infoplease, 2018)

Figure 4 – Climate Wappapello – Missouri 1981 – 2010

Wappapello Lake area weather averages – 1981 - 2010

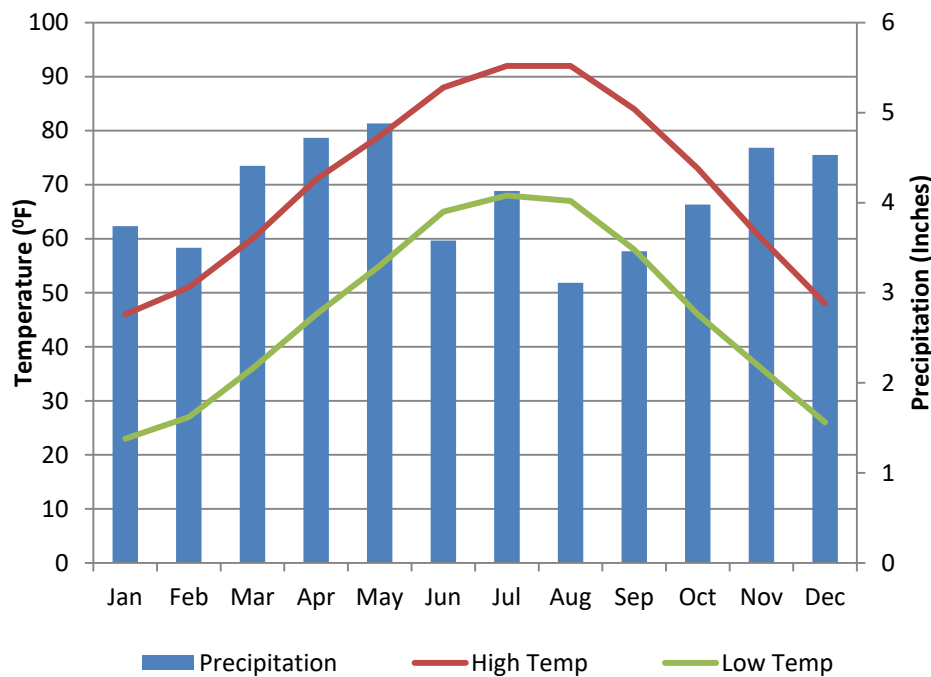
Annual high temperature: 70.3°F

Annual low temperature: 46.1°F

Average temperature: 58.2°F

Average annual precipitation - rainfall: 48.65 inch

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average high in °F:	46	51	60	71	79	88	92	92	84	73	60	48
Average low in °F:	23	27	36	46	55	65	68	67	58	46	36	26
Average precipitation in inches:	3.74	3.5	4.41	4.72	4.88	3.58	4.13	3.11	3.46	3.98	4.61	4.53

WAPPAPELLO CLIMATE CHARTSource: <https://www.usclimatedata.com/climate/wappapello/missouri/united-states/usmo0911>

Normal annual rainfall in the St. Francis Basin in the Ozark uplands is about 49 inches per year. Normal monthly rainfall varies from about 3 to nearly 5 inches in the region, the heaviest occurring spring and late fall. Normal monthly rainfall in the southern portion, which lies in the Mississippi River Valley, varies from about 2.8 to 6.0 inches, with the heaviest occurring during the months November through May. Average annual snowfall is about 8 to 12 inches in the reservoir area, diminishing to about 4 inches in

the southern portion of the basin, with the heaviest in January and February. Snow rarely remains on the ground more than a few days at a time.

According to the USDA, a plant hardiness zone is the standard by which gardeners and growers can determine which plants are most likely to thrive at a certain location. Between 1990 and 2012 the plant hardiness zones shifted northward. In 1990, Zone 7a covered an area from just north of Pascola down to Hornersville and south to the Arkansas border. By 2012, Zone 7a had moved north to a line that roughly covers an area from Benton to Myrtle to the southern Bootheel. Zone 7b now covers the extreme southern end of the Bootheel. The south end of the lake, which covers an area from approximately Rockwood Point to People's Creek south to the dam, is currently in Zone 7a. If this trend continues, the landscape and vegetation may change to a more Deep South one. This may also affect vegetation and wildlife around the lake.

Figure 5 – 2012 Plant Hardiness Map Zone
Zones 5b to 7b

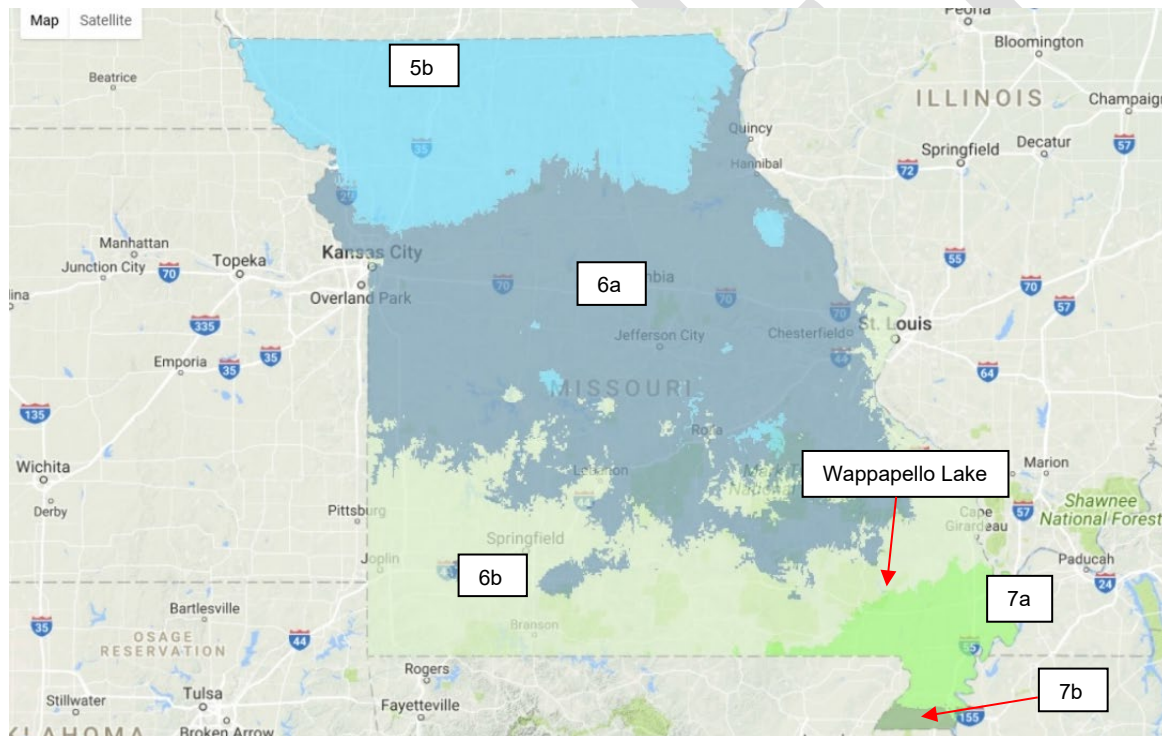
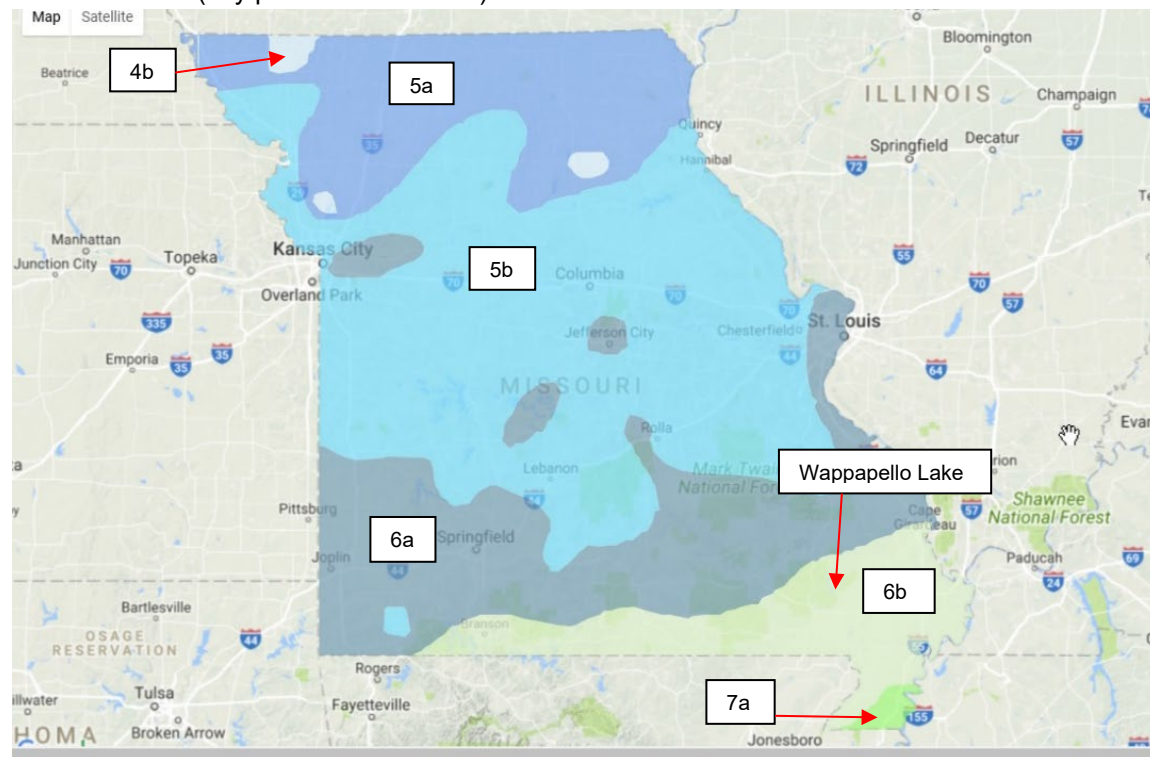


Figure 6 – 1990 Plant Hardiness Map Zone
Zones 4b to 7a (tiny portion of Bootheel)



Source: Plantmaps.com

2.7 TOPOGRAPHY, GEOLOGY AND SOILS

2.7.1 Topography

Wappapello Lake is located in Wayne and Butler Counties in southeastern Missouri in what is classified as the Ozark Uplands. The area around the lake lies on the edge of the Uplands and is often referred to as the Poplar Bluff Brown Iron District of the Ozark Foothills. The topography of the lake is characterized by steeply sloping hills with dense forest cover. The valleys, which are tributaries to the St. Francis River, are generally narrow. The lake lies adjacent to the Southeastern Lowlands province, an area of flat, poorly drained land that occupies extreme southeastern Missouri. To the immediate north of the lake lies the edge of the true Ozark Uplands, typified by the St. Francois Mountains which begin in Sam A. Baker State Park. In this area, the land is steep and extremely dissected, with granitic outcrops prevailing.

Cleared fields on the level land along parts of the lake offer diversity for wildlife. Wooded hills along the bluffs near the lake add to the scenic value. The northern end of the lake narrows to the point that it occupies only the old riverbed. Although relatively large areas periodically flood along the river, this high water is only temporary and does not form a part of the lake.

2.7.2 Geology

Wappapello Lake lies within the southeastern limits of the Salem Plateau section of the Ozark Plateau Physiographic Province. This province is frequently referred to as the Ozark Dome since the area is topographically an east-west elongated dome of outward dipping Paleozoic rocks. The Salem Plateau section contains most of the higher summits of the province.

Rock formations in the area consist of lower Paleozoic sedimentary rocks, primarily Ordovician calcium and magnesium carbonates. Since carbonate rocks are somewhat soluble in groundwater, karst features such as caves, springs and sinkholes are common throughout the area.

Wayne County is geologically diverse with four distinct physiographic regions:

- a. The St. Francois Mountains, which extend into the northwestern part of Wayne County and include several areas over 1,200 feet above sea level. Clark Mountain is the highest at over 1,400 feet above sea level,
- b. The Patterson Basin, which is old valley fill material covered by a thin loess mantle,
- c. The Salem Plateau, consisting of Ordovician age rocks, which covers most of Wayne County. It is an extensive land region surrounding the St. Francois Mountains,
- d. The Mississippi River alluvial delta area, which is in the southeastern part of Wayne County, is primarily lowland produced by the Mississippi River during a previous era. It is level and made up of terraces and intra-terrace flatland. Swamps are predominant on the intra-terrace flatlands, unless they are drained. (Holbrook, 2005)

The lands surrounding the lake are moderately dissected with outcrops of bedrock occurring along the streams. These outcroppings consist of Ordovician cherty dolomite and interbedded finely grained dolomite of the Gasconade Formation and sandstone and cherty and finely grained dolomite of the Roubidoux Formation. Some of the ridges extend a considerable distance into the lake forming long bays and peninsulas of land; others are stubby with short bays. There is a difference of nearly 340 feet between normal pool elevation and the higher ridgetops. Caves, many not explored, are found throughout the county. Rebel Cave, the only named cave in the lake area, was once open for commercial tours. Fossils are not common in either of these formations but occasionally fossil mollusks are found in the chert layers.

2.7.3 Soils

The most abundant soil association at Wappapello Lake is that of the Clarksville-Fullerton-Lebanon series found on the cherty-stony uplands. They are developed from cherty limestones and occasionally interbedded sandstone and some shallow loess.

The Clarksville is a cherty silt loam. It possesses a grayish brown cherty silt loam surface over a yellowish brown cherty silt loam mid-layer with a light silty clay loam subsoil. The soil is excessively to moderately well-drained. Major problems are droughtiness, steepness, erosiveness and low fertility. On the flat ridgetops, the Fullerton series possesses a cherty fragipan at 18-30 inches.

Soils of the Baxter-Dewleyville-Hagerston series are found on some gently to steeply sloping areas. These are red cherty soils developed from cherty limestone. The soils are similar to the above, being suited for forests, grassland and orchards. Huntington silt loam occupies the first terraces of the bottomland. This is a deep, well-drained, silty alluvial soils. Enis soils may be found on the extreme bottomlands. These are similar to the above.

2.7.4 Earthquake Activity

The major earthquake activity in the area was the 1811-1812 New Madrid series, whose epicenter was located near New Madrid, Missouri. These earthquakes occurred between December 1811 and February 1812 and were some of the largest events known to have occurred in the contiguous states. Many smaller earthquakes have occurred in this region since the New Madrid series.

The *Lake Wappapello Dam Outlet Works & Tunnel Seismic Analysis*, which evaluates the dam structure's response in a potential earthquake, was completed in 2010. The conclusion was that, although there might be some damage and leakage in the tunnel in the event of an earthquake, no remedial action was required at the time. The report suggested that if a major earthquake were to occur, post-earthquake inspection, damage assessment and repair evaluation should be made. The report went on to say that although there may be some deformation in the outlet structure itself, the conclusion was there would not be a structural collapse because of the heavy reinforcement of the structure itself. The study also mentioned there may be some leakage along the sides of the outlet works adjacent to the structure. (Shannon & Wilson, Inc., 2010)

2.8 RESOURCE ANALYSIS

The Corps' natural resource management program objective is to improve and sustain ecosystem health that will support both game and non-game wildlife for the benefit of the public.

2.8.1 Fish & Wildlife Resources

The animal species that exist at Wappapello Lake are typical of deciduous woodlands, edge habitat, open lands and Ozark streams. Together game and non-game species of fish, birds, insects, reptiles and mammals use the landscape for food, shelter and reproduction. Unregulated hunting in the 1800's took its toll on big game species such

as white-tailed deer, elk, black bear, mountain lion, bobcat, gray wolf and eastern wild turkey. Regulated hunting in combination with quality conservation and wildlife habitat management has restored healthy populations of many big game species on Wappapello Lake project lands. Currently deer and turkey populations are thriving within the Wappapello Lake Project area. Furbearers are found along riverbanks, streams and shoreline. Small game such as the eastern cottontail and squirrels are plentiful in and along the woodland edge habitat. Migratory waterfowl commonly use the lake and associated moist soil units as resting and feeding areas.

Wappapello Lake supports a high diversity of aquatic organisms including phytoplankton, zooplankton, aquatic insects, crustaceans, mollusks, amphibians, reptiles and fish species. The U.S. Army Corps of Engineers and Missouri Department of Conservation (MDC) work in a collaborative effort to manage the lake for water quality and ecosystem sustainability. Aquatic habitat degradation is a normal process as lakes age. To refurbish some of the structural habitat that decomposes over time, the agencies have partnered to add brush piles to the lake and investigate new ways to re-establish aquatic vegetation. Additionally, the partners are investigating new ways to better manage water levels in the lake to provide and promote healthy and productive fish populations.

Over 50 different species of fish reside in the St. Francis River and Wappapello Lake supports many of these species. Common sport fish species that attract a large number of anglers to the lake include white crappie, black crappie, white bass, largemouth bass, spotted bass, bluegill, redear sunfish, channel catfish and flathead catfish. The upper portion of the St. Francis River watershed provides for increased chances of catching walleye, smallmouth bass, goggle-eye and suckers. Spillway waters below the lake also offer opportunities to catch a variety of fish species.

The Missouri Department of Conservation (MDC) has been managing for quality fisheries in Wappapello Lake since its construction. Surveys are conducted each year in the spring and fall to monitor the population, assess existing regulations and determine future management practices. Long-term monitoring allows MDC to track changes over time in the quality of the fishery. The partnering agencies also conduct creel surveys, which produces specific fishing trip information from anglers as they are exiting the lake.

2.8.2 Vegetative Resources

The dominant vegetation type within the Wappapello Lake Project boundary consists of open and closed woodland community types. Tree species include white oak, black oak, shagbark hickory and mockernut hickory. Pignut hickory and post oak are dominant in the ridge tops where soils have a low moisture content throughout much of the season. Shortleaf pine and oak-pine mixed forests dominate the landscape where sandstone based soils are present. Eastern red cedar tends to be locally abundant where limestone derived soils are present and close to the surface.

While the upland oak-hickory community type dominates the higher elevations, tree species such as red oak, chinquapin oak, white ash, green ash, basswood, black walnut and bitternut hickory make up the majority of forest composition within the transition elevations, i.e. drainage and toe slope landscape features. Persimmon, blackgum, butternut and sugar maple occur within the transition elevation areas. Within the lowest poorly drained bottoms, sycamore, sweetgum, cottonwood and river birch dominate the forest community.

Upland understory tree species primarily include eastern redbud, flowering dogwood, sugar maple and serviceberry.

The U.S. Forest Service (USFS) inventory of Wappapello Lake's 20,171 acres of woodlands, completed in 1972, listed the following forest types and quantities:

- a. oak-hickory, 16,837 acres or 83 percent;
- b. bottomland hardwoods, 2,351 acres or 12 percent;
- c. oak-pine forest, 814 acres or 4 percent;
- d. pinewoods, 117 acres, less than 1 percent; and
- e. cedar-hardwoods, 52 acres, less than 1 percent.

Forest stands positioned on highly productive soils contain tree species that consist of large, high quality specimens. These high quality tree specimens exhibit superior growth form and vigor. Trees found on the dry ridge top sites exhibit slower growth, poor form and vigor. These lower quality trees attain an overall smaller stature compared to trees growing on the higher quality sites. The majority of bottomland forest stands are dense stands with average tree diameters ranging from 5-9 inches diameter breast height (DBH) (pole-timber).

Open land habitat is a critical component found within Wappapello Lake Project lands. Open lands consist of rotational agricultural crops, warm season grasses, forbs, woody vegetation and wetland plants. These lands are maintained in early successional stages by prescribed fire, bush-hogging, and agricultural practices.

Other minor plant communities found on project lands include small canebrakes growing within field edges, along river and stream corridors, in addition to willow and buttonbush thickets found within areas that contain poorly drained soils.

2.8.3 Threatened and Endangered Species

The U.S. Fish and Wildlife Service (USFWS) issued Biological Opinions (BOs) in 2013, 2015 and 2017 under section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*). These BOs were based upon their review of the three phases of forest management actions described within the 2011 Wappapello Lake (Compartments 2, 6 and 8) Timber Stand Improvement Management Strategies Environmental Assessment (EA) and respective biological assessments. The BOs addressed effects of the proposed action on the Indiana bat (*Myotis solidalis*), northern long eared bat (NLEB) (*Myotis septentrionalis*), gray bat (*Myotis grisecens*), rabbitsfoot mussel (*Quadrula cylindrica cylindrica*) and the snuffbox mussel (*Epioblasma triquetra*). The USFWS agreed with the USACE effects determinations of likely to adversely affect both Indiana and NLEBs. A statement of anticipated take for Indiana bat species was provided within the BOs resulting from the proposed action. Incidental take for the NLEB complied with final 4(d) rule (50 CFR & 17.40 (o)). The effects of activities under the 4(d) rule were previously evaluated within a programmatic biological opinion issued by the USFWS on January 5, 2016. In an effort to conserve the northern long-eared bat (*Myotis septentrionalis*), the U.S. Fish and Wildlife Service implemented a final rule under section 4(d) of the Endangered Species Act (ESA) on January 14, 2016 to tailor protections to areas affected by white-nose syndrome (WNS) during the bat's most sensitive life stages. The rule is designed to protect the bat while minimizing regulatory requirements for landowners, land managers, government agencies and others within the species' range. The Corps is in the process of preparing a Comprehensive Biological Assessment and Bat Monitoring Plan for Wappapello Lake, which would reduce the cumulative monitoring efforts required by the 2013, 2015 and 2017 BO's.

The USFWS also concurred with the USACE effect determinations of may affect, but are not likely to adversely affect the gray bat, rabbitsfoot mussel and snuffbox mussel.

Although the bald eagle (*Haliaeetus leucocephalus*) is no longer protected under the Endangered Species Act of 1973, as of August 2007, other enacted laws still provide protection. The Bald and Golden Eagle Protection Act of 1940 prohibits the "Take", i.e. pursuit, wound, kill, shoot, capture, trap, collect, molest or disturbance of bald eagles. Take permits are allowable under the law and issued by the USFWS on a case by case basis. The Wappapello Lake Project provides potential and existing habitat for bald eagles. There are approximately 7 bald eagle nests located at Wappapello Lake, all are occupied and considered active as of 2018. The Northern States Bald Eagle Recovery Plan describes actions believed to be necessary to assure the survival and recovery of the species within the 24 states encompassed by the plan, including Missouri. The document was written by multiple cooperating agencies and universities and was approved by the USFWS in 1983. Bald eagles will be managed in accordance with the objectives outlined within the Northern States Bald Eagle Recovery Plan.

Additional observations and inventories are needed to determine the presence or absence of any or all federal and state endangered or threatened plants and animals on project lands and waters. Any operation and maintenance plans or actions will consider any possible effects on all species documented in the area. If endangered or threatened species are confirmed on Wappapello Lake Project lands, appropriate federal or state agencies will be notified. Recovery plans will be developed and incorporated for protection of those species, if feasible, and in accordance with ER 1130-2-540, *Environmental Stewardship Operations and Maintenance Policies*.

The following tables were developed based upon the USFWS Information, Planning and Consultation System (IPaC) report, Missouri Department of Conservation Heritage Survey report, and the Missouri Species and Communities* of Conservation Concern Checklist document, 2018. They show other federally identified threatened or endangered species, or species of concern recognized by the USFWS. Efforts should be taken to minimize potential impacts to these species and their habitats.

TABLE 2
FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES IDENTIFIED OR POTENTIALLY PRESENT WITHIN THE WAPPAELLO LAKE AREA

FEDERAL LIST	STATUS	SCIENTIFIC NAME
Curtis' Pearlymussel	E	<i>Epioblasma florentina curtisi</i>
Gray Bat	E	<i>Myotis grisescens</i>
Indiana Bat	E	<i>Myotis sodalis</i>
Pink Mucket	E	<i>Lampsilis orbiculata</i>
Running Buffalo Clover	E	<i>Trifolium stoloniferum</i>
Snuffbox	E	<i>Epioblasma triquetra</i>
Northern Long-eared Bat	T	<i>Myotis septentrionalis</i>
Rabbitsfoot	T/CH	<i>Quadrula cylindrica cylindrica</i>
Alligator Snapping Turtle	S	<i>Macrolemys temminckii</i>
Crystal Darter	S	<i>Ammocrypta asprella</i>
Longnose Darter	S	<i>Percina nasuta</i>
Western Fanshell	S	<i>Cyprogenia aberti</i>

*E – Endangered

S – Species of Concern (USFWS)

CH – Critical Habitat

T – Threatened

R – Rare

TABLE 3
MISSOURI STATE LISTED SPECIES OF CONSERVATION CONCERN IDENTIFIED
OR POTENTIALLY PRESENT WITHIN THE WAPPAPELLO LAKE AREA

STATE LIST	STATUS	SCIENTIFIC NAME
Gray Bat	E	<i>Myotis grisescens</i>
Indiana Bat	E	<i>Myotis sodalis</i>
Northern Long-eared Bat	T	<i>Myotis septentrionalis</i>
Longnose Darter	E	<i>Percina nasuta</i>
Mountain Madtom	E	<i>Noturus eleutherus</i>
Alligator Snapping Turtle	S2	<i>Macrochelys temminckii</i>
Western Fanshell	S2	<i>Cyprogenia aberti</i>
Rabbitsfoot	E	<i>Quadrula cylindrica cylindrica</i>
Swainson's Warbler	E	<i>Limnothlypis swainsonii</i>
A Leatherflower	S1	<i>Clematis viorna</i>
Little Leafed Alum Root	S1	<i>Heuchera parviflora var parviflora</i>
Loesel's Twayblade Orchid	S2	<i>Liparis loeselii</i>
Four-toed Salamander	S4	<i>Hemidactylium scutatum</i>
Few-lobed Grape Fern	S1	<i>Botrychium Bitermatum</i>
Canada Rush	S1	<i>Juncus canadensis var canadensis</i>
Bald Eagle	S3	<i>Haliaeetus leucocephalus</i>
Running Buffalo Clover	E	<i>Trifolium stoloniferum</i>
Mole Salamander	S2	<i>Ameiurus Talpoideum</i>
Brown Bullhead	S3	<i>Ameiurus Nebulosus</i>
Lake Cress	S2	<i>Armoracia Lacustris</i>
A Sedge	S2	<i>Carex Bromoides</i>
Spreading Sedge	SU	<i>Carex Laxiculmis</i>
Tussock Sedge	SH	<i>Carex Stricta</i>
Rose Turtlehead	S2	<i>Chelone Obliqua Var Speciosa</i>
Curtis' Pearlymussel	E	<i>Epioblasma Florentina curtisi</i>
Snuffbox	E	<i>Epioblasma Triquetra</i>
Lake Chubsucker	S2	<i>Erimyzon Sucetta</i>
Featherfoil	S2	<i>Hottonia Inflata</i>
Southern Brook Lamprey	S2	<i>Ichthyomyzon Gagei</i>
Mississippi Kite	S3	<i>Ictinia Mississippensis</i>
Pink Mucket	E	<i>Lampsillis Abrupta</i>
American Frogbit	S2	<i>Limnobium Spongia</i>
Geometrid Moth	SU	<i>Lytrosis Permagnaria</i>
A Liverwort	S2	<i>Metzgeria Furcata</i>
Arrow Arum	S2	<i>Peltandra Virginica</i>
Yellow-Fringed Orchid	S1	<i>Platanthera Ciliaris</i>
Green wood Orchid	S2	<i>Platanthera Clavellata</i>
Pale Manna Grass	S1	<i>Torreyochloa Pallida</i>

*E – Endangered

S1 – Critically Imperiled

S2 – Imperiled

S3 – Vulnerable

S4 – Apparently Secure

SU – Un-Rankable (Lack of Information/Conflicting Information)

SH – Possibly Extirpated

2.8.4. Invasive Species

Exotic species are becoming a greater issue. These invasive species diminish habitat quality and can cause the local extinction of populations that promote diversity and a healthy environment.

Native and non-native species populations are present throughout Wappapello Lake Project lands. Some of these species are located within isolated patches, while others are more abundant and widely distributed. A current list of native and non-native invasive species are shown in Table 4.

TABLE 4
INVASIVE SPECIES

INVASIVE SPECIES	CATEGORY	DISTRIBUTION
Emerald Ash Borer	Non-native	Widely Distributed
Red Oak Borer	Native	Widely Distributed
Multiflora Rose	Non-native	Isolated Patches
Purple Loosestrife	Non-native	Isolated Patches
Feral Hogs	Non-native	Widely Distributed
Johnson Grass	Non-native	Widely Distributed
Sericea Lespedeza	Non-native	Widely Distributed
Autumn Olive	Non-native	Isolated Patches
Sudden Oak Death	Non-native	*Moderate Risk

*This invasive fungal disease is currently limited to the western U.S., but the Ozark Region is at moderate risk due to the likelihood of spread if disease is introduced.

2.8.5 Ecological Setting

River valleys were used almost exclusively for farming prior to the construction of Wappapello Lake. The majority of the lands not used for farming (i.e. uplands), were densely forested with second-growth shortleaf pine, oak, walnut, poplar, hickory, ash and cherry tree species. The forest products industry was thriving within the Ozark geographic region prior to construction of Wappapello Lake. The railroad industry utilized large amounts of timber from the Ozark region and greatly influenced forested land use. Clearing of timber land for railroad tie production and charcoal was a primary driver for land use during the late 1800s to early 1900s. As a result much of the Ozark region was cleared during this time period and many areas were left to naturally reforest if not used for more intensive grazing land.

Since acquisition of Wappapello Lake Project lands by the Corps, minimal land disturbance has occurred. Fire suppression and minimal forest management activities have shaped the current forest health and structure. Mature hardwood forests bordering the lake have developed into even-aged mature stands.

Epidemic outbreaks of insects and damaging diseases historically were not common to the Ozark timberlands. However, the Emerald Ash Borer made its initial appearance in

Missouri in Greenville Campground in August of 2008 and continues to be a threat to ash tree species throughout region.

Sustainable healthy forest management practices are outlined in the OMP. The recommended forest management practices combined with sustainable wildlife management practices outlined within the OMP, will provide long term quality recreational opportunities for the public in and around Wappapello Lake.

2.8.6 Wetlands

Wappapello Lake has a network of sloughs, oxbows and depressions that act as independent self-sustaining wetlands. These along with ponded areas created by beavers offer a diverse community of plants, fish, reptiles and amphibians species. The wetland areas are used year round by these species. Additionally, with constant lake fluctuations many of the forested lowlands, scrub shrub communities and open field areas are flushed multiple times annually with shallow to deep water lasting from a day to a few weeks.

Multiple shallow impoundments were created to establish a more manageable wetland community. Lidar (light imaging, detection and ranging) data was used to develop, design and construct low elevation/broad based levees to improve water retention capabilities. Water control structures were also constructed within the newly created impoundments to allow for more intensive and controlled water level management. This allows for an increased production of moist soil plants by varying water level depths independent of seasonal wet and dry periods. Additional management options can be found in *“An Evaluation of Ecosystem Restoration and Management Options for St. Francis River Floodplain Lands at Wappapello Lake, Mo”*, Heitmeyer Pub 10-03, May 2010.

2.9 **BORROW AREAS AND ROADS**

2.9.1 Borrow Areas

The lake has several old borrow areas within its boundaries. Borrow from these areas was used primarily for dam construction and the construction of three dikes near the dam and U.S. Highway 67 relocation. The borrow areas have been re-vegetated and do not impair the scenic qualities of the lake. All excavated areas have been re-vegetated to blend into the natural terrain. Borrow areas have also been identified as part of the relocation of state highways and Wayne County roads.

2.9.2 Highways and Roads

U.S. Highway 67 was relocated during construction of the dam to avoid high water when the lake floods. Highway T was relocated following the 2011 flood which washed out the road across the auxiliary spillway. The new road, which washed out again in 2017, was

rebuilt downstream. This new location exposes a smaller portion of the road to flood waters and can be quickly rebuilt in the event of a washout.

2.10 MINERAL AND TIMBER RESOURCES

2.10.1 Mineral Resources

The major mineral resources of the area include sand and gravel, agricultural and building stone, clay deposits and brown iron ore. The gravels are predominately cherts with minor amounts of igneous rocks. The sand fraction is mostly quartz. Deposits of brown iron ore are widespread in this region. The most important deposits occur in cherty clay residuum derived from the weathering of Ordovician dolomites. Limonite is the ore mineral and occurs as irregular masses in the residuum. All mining has been done using open pit methods. Because of their small individual size and scattered occurrence they are not well suited to large mechanized operations.

The stone quarried in the area is dolomite from the Eminence and Gasconade formations. Principal use of the quarried stone is for agricultural liming although crushed stone production does increase during periods of highway construction. A building stone quarry in the Roubidoux Formation sandstone operates intermittently in southern Wayne County.

There are no mineral mining operations on Corps property at the present time. A protocol specific to mining operations that may affect Corps lands is presently being developed and will be made a part of the OMP.

2.10.2 Timber Resources

In November 2011, the Wappapello Lake (Compartments 2, 6 and 8) Timber Stand Improvement Management Strategies Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) was completed and signed by the USACE Commander. Biological assessments have been completed in phases as the forest management program progresses in phases as well. The EA proposed action described plans to implement timber stand improvement (TSI) within three compartments at Wappapello Lake. TSI work began in 2012 following the FONSI signature. The work will be conducted over the next eight years and includes approximately 12,000 acres of forested habitat divided into 45 separate forest stands or management units. Forest management goals and objectives are discussed in Chapter 3.

2.11 CULTURAL RESOURCES

Wappapello Lake is potentially rich in cultural (archaeological and historical) resources. Because the lake was constructed prior to legislation requiring the inventory, evaluation and management of cultural resources National Historic Preservation Act, PL 96-515, new archaeological and historical sites are being discovered which have not been previously recorded.

2.11.1 Archeological Studies

A Programmatic Agreement was developed in 1993 and accepted by the Advisory Council for Historic Preservation and the Missouri State Historic Preservation Office for the management of the cultural resources. A Historic Properties Management Plan was developed in 1998, in accordance with the Programmatic Agreement. It is used to locate, inventory, evaluate, nominate and manage archaeological and historical properties. This plan is used to identify and prioritize items of work for cultural resource inventory, evaluation and management.

The *Historic Property Priority Plan for Wappapello Lake* was developed in 2000 in compliance with the Programmatic Agreement. The plan synthesizes previous work and outlines a priority for documenting historic properties around the lake.

An Archeological Inventory and Assessment of Wappapello Lake in Wayne and Butler Counties, Missouri was completed with American Recovery and Reinvestment Act 2009 funds. The primary goal of the inventory was to record and assess the integrity of archeology sites, determine those worthy of National Register of Historic Places nomination and make recommendations for their management. This inventory also documented 39 new archeological sites out of the 53 surveyed. (John Milner Associates, Inc., 2011)

2.11.2 Previous Archeological Survey and Investigation Results

Extensive testing was performed at the Shell Lake site in 1983 by the Center for American Archeology. This palisaded Mississippian village, located in the Spillway Recreation Area, is among the earliest identified Mississippian settlements. The conclusion was that the site had a high degree of archaeological integrity and potential for additional data. (Price, 1984)

The Town of Greenville was located along the St. Francis River where the Natchitoches Trace and later Bettis' Ford once crossed. When the lake was built, the town moved in its entirety to nearby higher ground. An archeological survey was conducted in 1985 in the Old Greenville area in preparation for nomination to the National Register of Historic Places. The area was accepted as a National Register site in 1990.

The Missouri Department of Transportation improved U.S. Highway 67 from Fredericktown to Poplar Bluff from a two-lane to a four-lane highway. Prior to

construction, MoDOT developed an Environmental Impact Statement addressing effects of construction on Wappapello Lake lands in particular Old Greenville. The final route through the area was determined based on the studies, resulting in minimal impact to the historic area. (Missouri Department of Transportation, 2001)

2.11.3 Cemeteries

Table 5 is a list of cemeteries located on Corps lands by township and section:

TABLE 5
CEMETERIES

LAND CLASSIFICATION	NAME	OWNER	TOWNSHIP	RANGE	SECTION
MR-VM-10	Jones	COE	27N	R7E	03
MR-VM-10	Shiloh	Private	27N	R7E	04
MR-VM-10	Long	COE	27N	R7E	03
MR-VM-9	Kirkpatrick	Private	28N	R6E	33
MR-VM-9	Page	COE	27N	R6E	10
MR-VM-8	Oak Grove	COE	28N	R6E	29
MR-VM-8	Twidwell	COE	28N	R6E	29
MR-ES-E-2	Brown	COE	28N	R6E	18
MR-VM-6	Stephens (Woods)	Private	28N	R6E	07
MR-VM-6	Bennett (Bounds)	Private	29N	R5E	23
MR-VM-6	New Prospect	Private	29N	R5E	24
MR-VM-6	Hannapel	Private	29N	R5E	15
MR-VM-6	Smith	COE	29N	R5E	23
MR-VM-6	Sebastian	COE	29N	R5E	23
MR-VM-6	Bollinger	COE	28N	R5E	01
MR-VM-5	Hixson	Private	29N	R5E	16
MR-VM-5	A.L. Holmes (Meador)	Private	29N	R5E	21
MR-VM-5	Campbell	COE	29N	R5E	35
MR-VM-5	Washington	COE	28N	R5E	11
MR-VM-5	Old Rubottom	COE	28N	R5E	10
MR-VM-5	New Rubottom	Private	28N	R5E	10
MR-VM-5	Bollinger	COE	28N	R5E	09
R-9	Union (Old Greenville)	Private	28N	R5E	13
MR-VM-4	Wight	COE	28N	R5E	13
MR-VM-4	Unknown Soldier	COE	28N	R5E	23
MR-VM-4	Pleasant Valley	Private	28N	R5E	23
MR-VM-4	A.E. Jones	Private	28N	R6E	30
MR-VM-4	Kite	COE	28N	R6E	31
MR-VM-4	Garrison	COE	27N	R6E	05
MR-VM-3	New Liberty	Private	27N	R6E	05
MR-VM-3	Estes	Private	27N	R6E	06
MR-VM-3	Bethel	Private	27N	R6E	15
MR-VM-3	Woolard	Private	27N	R6E	28
R-4	Allison	COE	27N	R7E	32
MR-VM-2	Robinson	COE	26N	R6E	12

2.11.4 Historic

As a colonial territory, present-day Wayne County was originally part of French Louisiana. In 1762, France ceded Louisiana to Spain and grants of land were given by Spain to various settlers on the St. Francis River. After Spain ceded Louisiana back to France, the United States purchased Louisiana from France including the grants that were recognized by this country. Along Wappapello Lake, these start at Kime and follow the river northerly. Three of the grants later became villages on what is now Wappapello Lake.

Up to 1818, the territory now known as Wayne County, formed St. Francois Township of Cape Girardeau County. When the township became a county, it was nicknamed the State of Wayne because it was so large. The first settler arrived in 1802 but by 1809 there were still no roads in the county.

2.12 DEMOGRAPHICS

2.12.1 Population Growth and Distribution

Wappapello Lake is primarily located in Wayne County, with a small portion of the dam and south region located in Butler County. Wayne County is predominantly rural; much of the county is in public lands owned and operated by the Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Forest Service, Missouri Department of Conservation or Missouri Department of Natural Resources. Wayne County, with an area of 764 square miles, has a population density of 18 people per square mile. Butler County, 699 square miles, is also rural with the exception of Poplar Bluff, resulting in a larger population density of 63 people per square mile. There is some manufacturing in both counties, with industrial parks located in Piedmont (Wayne County) and Poplar Bluff (Butler County).

According to the Missouri Office of Administration, Division of Budget and Planning, Wayne County is expected to lose residents through 2030. The 2010 census contradicts the early estimate from 2000. However, Census Bureau population estimates between 2015 and 2017 did show a decline more in line with Missouri's estimates. *Missouri County Projections 2030* show an estimated increase in population of residents over age 65 by 2030 and a decline in most other age groups.

Figure 7 – Wayne County, MO Population Projections by Age, 2000-2030

Population Projections by Age
Missouri Counties: 2000 through 2030

County	Age	Year					
		2000	2005	2010	2015	2020	2030
Wayne	0-4	702	706	732	689	597	505
Wayne	5-9	806	648	641	665	624	484
Wayne	10-14	948	794	629	621	643	532
Wayne	15-19	946	930	766	608	599	592
Wayne	20-24	561	738	711	585	464	484
Wayne	25-29	600	484	628	604	495	396
Wayne	30-34	687	600	476	620	594	394
Wayne	35-39	923	705	608	481	626	498
Wayne	40-44	908	958	722	622	492	623
Wayne	45-49	878	973	1,013	763	656	523
Wayne	50-54	856	960	1,050	1,095	824	711
Wayne	55-59	923	929	1,030	1,129	1,178	778
Wayne	60-64	895	970	971	1,081	1,188	1,251
Wayne	65-69	856	870	936	944	1,057	1,176
Wayne	70-74	691	713	721	784	800	1,031
Wayne	75-79	465	496	510	524	576	600
Wayne	80-84	309	283	301	314	327	367
Wayne	85+	305	273	248	249	261	280
Wayne	Total	13,259	13,030	12,693	12,378	12,001	11,200

Components of Change - Total Over the Previous Five Years

Wayne	Births	-	776	815	768	665	583	552
Wayne	Deaths	-	887	841	806	783	757	748
Wayne	Net Migration	-	-118	-311	-277	-259	-233	-198

Source: Missouri Office of Administration, Division of Budget and Planning

<https://oa.mo.gov/budget-planning/demographic-information/population-projections/2000-2030-projections>

TABLE 6
 POPULATION FOR WAYNE AND BUTLER COUNTIES AND OTHER SELECTED
 AREAS 1950 – 2010

PLACE	1950	1960	1970	1980	1990	2000	2010
Missouri	3,954,653	4,319,813	4,676,501	4,916,686	5,117,073	5,595,211	5,988,927
Wayne Co.	10,514	8,638	8,546	11,277	11,543	13,259	13,521
Greenville	270	282	328	393	437	451	511
Piedmont	1,548	1,555	1,906	2,359	2,166	1,992	1,977
Butler Co.	37,707	34,656	33,529	37,698	38,675	40,867	42,794
Poplar Bluff	15,064	15,926	16,653	17,139	16,996	16,651	17,023
St. Louis Metro (MO & IL)	1,928,159	2,284,794	2,557,457	2,497,882	2,444,099	2,603,607	2,787,701
Arkansas	1,909,511	1,786,272	1,923,295	2,286,435	2,350,725	2,673,400	2,915,918
Little Rock	102,213	107,813	132,483	159,151	175,795	183,133	193,524
Tennessee	3,291,718	3,567,089	3,923,687	4,591,120	4,877,185	5,689,283	6,346,105
Memphis	396,000	497,524	623,988	646,174	610,337	650,100	646,889

2.12.2 Employment

One hundred years ago, the main employers in the county were the timber and mining industries. Wayne County's economy today specializes in Mining/Quarrying/Oil/Gas Extraction; Agriculture/Forestry/Fishing/Hunting; and Utilities. The largest industries are Manufacturing, Healthcare & Social Assistance and Retail Trade.

<https://datausa.io/profile/geo/wayne-county-mi/> (Deloitte, Datawheel, Cesar Hidalgo, n.d.) Although few active mines remain today, mining employees are in some of the highest income positions in the Wayne County.

The late 1800's saw tremendous growth in the timber industry largely due to vast tracts of virgin timber. The arrival of the railroads brought low cost transportation for lumber products resulting in Missouri becoming one of the top lumber-producing states in the nation. Companies exploited the forests resulting in a depleted resource by the early 1900's. The timber industry has regained strength through conservation and forest management practices such as timber stand improvement (TSI). Wappapello Lake's TSI and timber sales program helps maintain and improve the health of the woodlands around the lake.

Over the last 10 years unemployment in Butler and Wayne Counties has fallen from their peak in 2010, although still behind State of Missouri averages. Table 7 shows Civilian Labor Force and Unemployment Changes for the area. Unemployment rates of both Wayne and Butler Counties reached lows of 3.7% and 3.3% respectively in October 2018, while the State of Missouri reached a low of 2.3% in October 2018.

TABLE 7
CIVILIAN LABOR FORCE STATUS WAYNE AND BUTLER COUNTIES AND THE
STATE OF MISSOURI, 2016

	WAYNE	BUTLER	MISSOURI
Population 16 Years and Over	10,827	34,016	4,823,223
Labor Force Participation Rate	47.0%	55.7%	63.3%
Employment/Population Ratio	42.8%	50.3%	58.8%
Unemployment Rate	4.3%	5.4%	4.1%

Source: Census.gov, American Fact Finder

UNEMPLOYMENT RATE CHANGES, 2010-2019

	WAYNE			BUTLER			MISSOURI	
	Average 2010	May 2018	May 2019	Average 2010	May 2018	May 2019	Average 2010	May 2019
Unemployment Rate	10.8%	4.6%	5.0%	9.6%	5.1%	5.5%	9.6%	3.1%

Source: Bureau of Labor Statistics <https://www.missourieconomy.org/indicators/LAUS/default.aspx>

TABLE 8
CIVILIAN EMPLOYMENT BY INDUSTRY 2016

	WAYNE	BUTLER	MISSOURI
Industry	Employed Persons	Employed Persons	Employed Persons
Agriculture, Forestry, Fishing, Hunting & Mining	212	643	48,454
Construction	331	804	171
Manufacturing	855	2,269	326,225
Wholesale Trade	96	393	75,937
Retail Trade	458	2,354	339,134
Transportation and warehousing, and utilities	274	1,030	145,568
Information	97	129	58,164
Finance and Insurance, and Real Estate and Rental & Leasing	242	803	192,031
Professional, Scientific & Management, and Administrative and Waste Management Services	260	730	270,132
Education Services and Health Care & Social Assistance	941	5,439	687,769
Arts, Entertainment, & Recreation & Accommodation & Food Services	397	1,154	262,441
Other Services (except Public Administration)	192	547	135,928
Public Administration	274	826	121,722
Total	4,629	17,121	2,835,183

According to the US Census report 'Young Adults Then and Now', young adult minority population, while growing, is still only 3.2% of the Wayne County population. Butler County young adult minority population has grown to 11.2%, up from 6.3% in 1980.

(United States Census Bureau, n.d.)

The same report shows young adults 18 - 34 have declined from 20.5% of the population in 1980 to 16.4% by 2013. While more are employed, median income for this age group has been stagnant since 1980. Lack of a quality infrastructure may push young adults out of the area. Reliable high speed broadband Internet can now be considered important to a community's healthy infrastructure. Without this, more young people may leave the county in search of well-paying jobs or expanded entrepreneurial opportunities. This could harm the future well-being of the area.

The South Central Workforce Development Area (SCWDA) is a 12 county region that includes Wayne and Butler Counties. The Missouri Career Guide 2014 - 2024, produced by the Missouri Department of Economic Development, gives careers letter grades based on their outlook over the next decade. Grade A careers have the best outlook. These grades are based on a combination of total job openings, percent growth, and the average wages of an occupation. The SCWDA is projected to have over 20,700 total openings between 2014 and 2024, with 26.4 percent of these coming

from new growth. Grade B occupations make up the largest portion of the area workforce and have the largest chance for growth (service industry).

Source: https://missourieconomy.org/pdfs/career_grades.pdf (Missouri Department of Economic Development, 2014)

TABLE 9
MEDIAN INCOMES FOR SELECTED AREAS, 2012-2016

	FAMILY	HOUSEHOLD
Missouri	\$62,285	\$49,593
Wayne County	\$39,419	\$33,954
Greenville	\$46,750	\$29,722
Butler County	\$44,911	\$36,302
Poplar Bluff	\$40,999	\$31,675
Cape Girardeau County	\$61,241	\$48,458
Cape Girardeau	\$58,998	\$41,673
St. Louis County	\$79,904	\$61,103
St. Louis City (Independent City)	\$46,878	\$36,809
St. Francois County	\$50,945	\$41,461
Farmington	\$54,492	\$41,649
Arkansas	\$51,782	\$42,336
Greene County	\$53,185	\$42,755
Paragould	\$53,125	\$41,717
Craighead County	\$53,115	\$43,892
Jonesboro	\$51,908	\$42,732

(U.S. Census Bureau, 2012 - 2016 Median Values)

Four low-income housing complexes with 77 affordable apartments are located in Wayne County. There are also other low income housing units available that may not necessarily offer rental assistance. Considering that households who pay more than thirty percent of their gross income for rent are regarded as overburdened, 45% of Wayne County residents are overburdened. (*Affordable Housing in Wayne County Missouri*, 2018) However, 23% of Wayne County population is considered to be living in poverty.

TABLE 10
GENERAL HOUSING CHARACTERISTICS

	2000	2010
WAYNE COUNTY		
Number of Housing Units	7,496	8,083
Percent Occupied	74.1	70.7
Percent Owner Occupied	78.2	77.4
Percent Renter Occupied	21.8	22.6
Percent Vacant	25.9	29.3
CITY OF GREENVILLE		
Number of Housing Units	222	234
Percent Occupied	85.6	82.1
Percent Owner Occupied	62.6	71.4
Percent Renter Occupied	37.4	28.6
Percent Vacant	14.4	17.9
BUTLER COUNTY		
Number of Housing Units	18,707	19,731
Percent Occupied	89.4	89.3
Percent Owner Occupied	68.9	66.3
Percent Renter Occupied	31.1	33.7
Percent Vacant	10.6	10.7
CITY OF POPLAR BLUFF		
Number of Housing Units	7,871	8,038
Percent Occupied	89.9	89.3
Percent Owner Occupied	54.8	51.7
Percent Renter Occupied	45.2	48.3
Percent Vacant	10.1	10.7

(U.S. Census Bureau, n.d.)

2.12.3 Existing Land Use

Wayne County is primarily rural and wooded with much of the land owned and operated by the Corps of Engineers, Fish and Wildlife Service, Forest Service, Missouri Department of Natural Resources or Missouri Department of Conservation. These lands all provide a variety of public recreation options. An industrial park, located in Piedmont, provides employment opportunities for the surrounding area. Other communities in Wayne County are small, averaging fewer than 500 residents.

Approximately 45% (9,793 acres) of Mingo National Wildlife Refuge is located in Wayne County. Much of the refuge is located in adjacent Stoddard County. The refuge's boundary lies about one mile from Wappapello Lake Dam. The refuge contains the only remaining large tract of bottomland forest native to the Missouri Bootheel (15,000 acres). Mingo Wilderness is also located within the refuge. The refuge is important to

the Wappapello area as it serves as a resting and feeding area for migratory birds. These birds spill over to Wappapello Lake providing hunting opportunities there.

The Clearwater Lake dam lies on the western edge of Wayne County. Piedmont, the largest city in the County, is located close to Clearwater Lake.

Mark Twain National Forest is also a large part of Wayne County with 88,372 acres. Another 48,494 acres, mostly south of the lake, is located in Butler County.

Approximately 25% of the Wayne County's land is in agriculture. Most of the agriculture land is in farms of 50 – 179 acres in size, operated by farmers with an average age of 59 years.

According to Missouri Department of Conservation woodland survey estimates, 78 percent (386,000 acres) of Wayne County is forested. These woodlands are covered by oak-hickory, oak-pine and eastern red cedar communities. About 44,900 acres in the survey area, or 9 percent of the total acreage, meets the soil requirements for prime farmland. Most of this land is in the southern part, although there are scattered areas throughout the county. A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty and less productive and cannot be easily cultivated. (Holbrook, 2005)

USDA census data reports that cropland use decreased between 1997 and 2012 while woodlands and pasture lands have increased slightly. Overall, there has been a slight drop in farmland totals.

TABLE 11
WAYNE COUNTY FARMLAND CHANGES

FARMLAND	1997	2012	PERCENT CHANGE
Cropland	40,155	27,981	-30%
Woodlands	49,847	52,777	+6%
Pasture	44,154	48,902	+11%
Farmland Totals	134,156	129,660	-3%

Source: www.USDA.gov

Quick Stats, Census by County Farming Operations

2.12.4 Future Land Use

Future land use in Wayne and Butler Counties will largely be determined by the amount of use Wappapello Lake receives as a major recreation area. Because Clearwater and Wappapello Lakes are close, their combined success will influence the growth of the counties.

2.13 ECONOMICS

According to the Corps' Value to the Nation Fast Facts from FY 2016, Wappapello Lake's visitation resulted in more than \$25,000,000 in visitor spending within 30 miles of the lake, supporting 241 jobs. With multiplier effects, visitor trip spending resulted in more than \$20,000,000 in total sales, 295 jobs and \$10,018,973 in value added (wages & salaries, payroll benefits, profits, rents and indirect business taxes).

Wayne County is very rural. Piedmont, the largest community in the county, has under 2,000 residents and the county seat, Greenville, has fewer than 500. Because of its rural makeup, Wappapello Lake is important to the economic health of the area. Poplar Bluff (Butler County), the largest community in the area at 17,000 residents, is 19 miles from the lake. Clearwater Lake, a Corps lake at the western edge of Wayne County, is also important to the rural economy.

The 10-year population growth within 25 miles of the lake is falling. Wayne County has seen a 2.2% decline. The biggest employers in the area are in health care and social services (22% of the total employment). Within 50 miles, only three counties (Butler, Carter and Madison) have seen positive growth. (*Stats America, 2017*)

Wappapello and Clearwater lakes, along with other Federal and State facilities are vital to the economic health of the area. In particular, Old Greenville Recreation Area, which recently underwent major renovations, is important to the economic health of the Greenville area. The entire recreation area is listed on the National Register of Historic Places, which complicated the work. Because of the area's historic significance, plans must be thoroughly reviewed with any construction. The recent reopening of the recreation area with improved camping facilities and proposed improvements to other facilities around the lake will enable Wappapello Lake to successfully compete for visitors, which, in turn, will benefit the economy of Butler and Wayne Counties.

2.14 RECREATION FACILITIES, ACTIVITIES AND NEEDS

Recreational development at Wappapello Lake varies. Major activities are sightseeing, fishing, boating, waterskiing, camping, picnicking, swimming, hiking and hunting. Park and recreation areas, which provide both extended-use and day-use opportunities, have been developed. Included in these recreation areas are campsites, picnic sites, boat launching ramps, beaches, interpretive facilities and hiking and nature trails. Lands classified wildlife management are available for a variety of recreational uses. Lands are operated by the Corps and through lease agreements with Missouri Department of Natural Resources, Missouri Department of Conservation and private marina concessions. A description of land use and recreational development is presented in Chapter 5.

2.14.1 Zones of Influence

The last Visitor Use Survey, conducted in 1984, provided data showing 43 percent of lake visitors traveled a distance greater than 75 miles, 20 percent came from within a 25-mile radius, 26 percent from within a 26 to 50 mile radius and 11 percent from within a 51 to 75 mile radius. Analysis of 2017 camper registrations and marina usage (several marinas have private campground or cabin rental on private property adjacent to public marina slips) show marina cabin or campground patrons are largely from out of the area (St. Louis, Cape Girardeau, Farmington) while slip renters are 50% or more local users. Figures 7 and 8 show that the majority of Corps of Engineers campers come from the Southeast Missouri region and around the St. Louis Area.

Figure 8 – Missouri Camper Visitation

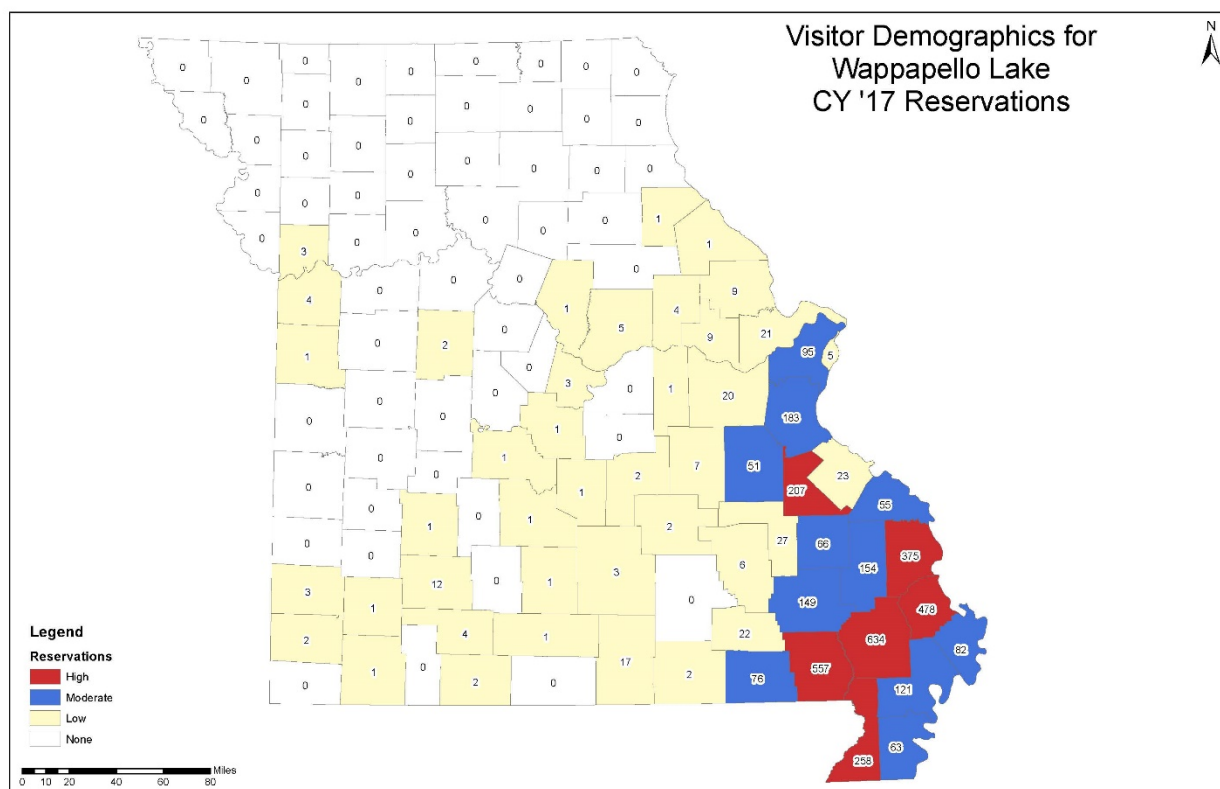
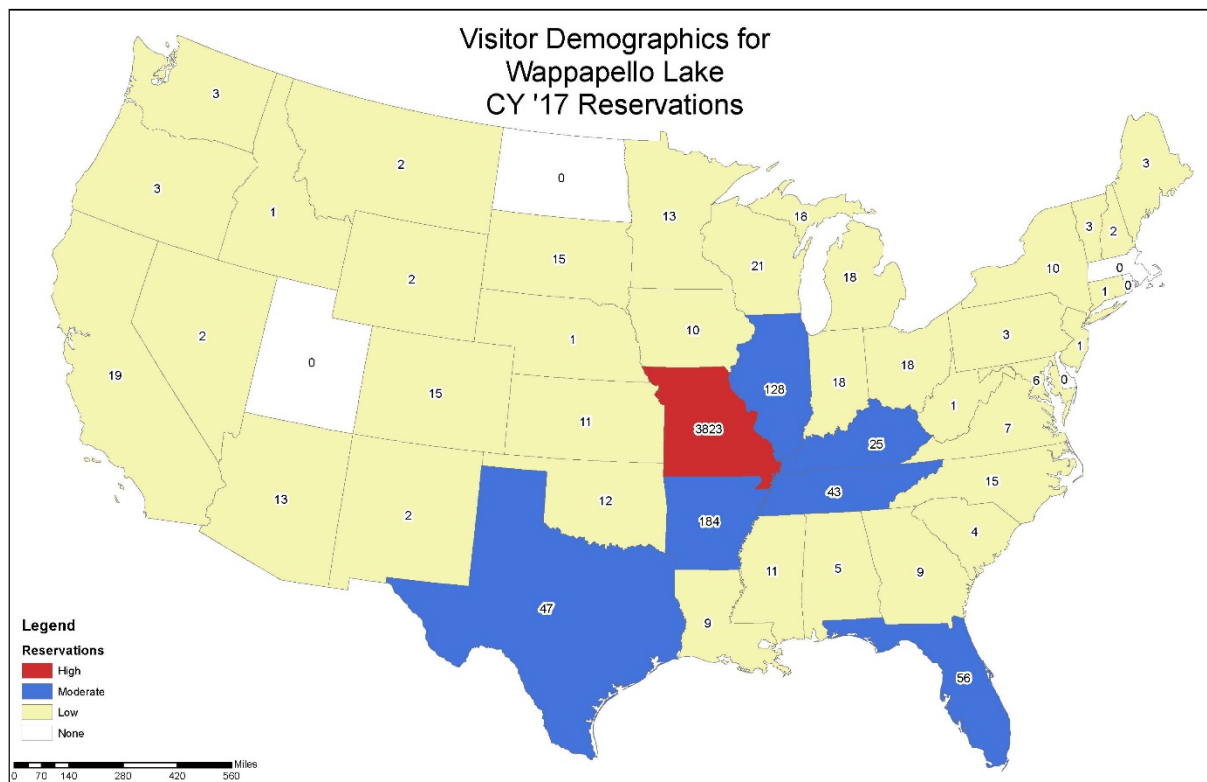


Figure 9 – Visitor Demographics for Wappapello Lake, CY17



A new Visitor Use Survey will give updated insight into visitor patterns and needs as it appears that it has changed over the last 30 years. The 2019 Comment Card survey, conducted every three years, combined with analysis of camper registration and marina usage will provide more up-to-date visitation details. Table 12 presents a summary of actual visitation from 1958 through 2012.

TABLE 12
WAPPAPELLO LAKE
VISITATION DATA 1958 – 2012

YEAR	RECREATION DAYS (except as noted)	YEAR	RECREATION DAYS (except as noted)
1958	423,590	1990	2,223,379
1959	440,100	1991♦	2,263,199
1960	476,800	1992	2,215,805
1961	533,500	1993	2,371,532
1962	601,100	1994	2,182,090
1963*	1,229,885	1995	2,300,425
1964	1,163,772	1996	2,362,248
1965	1,110,446	1997	2,016,356
1966	1,292,381	1998	1,995,338
1967	1,200,440	1999	2,072,087
1968	1,319,558	2000	2,134,388
1969	1,580,627	2001	2,184,578
1970	1,664,980	2002	1,519,191
1971	1,870,774	2003	1,907,938
1972	2,031,451	2004	1,648,016
1973	1,743,825	2005	1,631,966
1974	2,120,739	2006	1,878,803
1975	1,998,595	2007	1,678,983
1976	1,743,825	2008	1,398,790
1977	1,868,096	2009	1,460,402
1978	1,600,600	2010	1,630,692
1979	2,168,808	2011	1,258,161
1980	1,936,856	2012**	1,318,161
1981	1,549,150		
1982	1,974,778		
1983	2,038,873		
1984	2,101,600		
1985	2,106,246		
1986	2,094,309		
1987	2,084,047		
1988	2,304,706		
1989	2,237,817		

* Initial year of traffic counter/load factor use

** 2012 most recent visitation data available

♦ Visits (calculated using VERS data) begins

2.14.2 Visitation Profile

Wappapello Lake visitors come to enjoy a range of recreational opportunities. There is a good mix of public and private accommodations from campgrounds to cabins and a variety of activities from special events to hiking. Other public lands in the area compete with the lake for fishermen and hunters.

Since 1958, visitation has been calculated using several different methods. Traffic counters and formulas have estimated visitation through the Visitor Estimation Reporting System (VERS) since 1991. This method allows for consistent visitation reporting nationwide. In general, visitation has fluctuated more because of weather or lake levels rather than changes to the formulas. The only exception is 1963 when load formulas were introduced.

High water levels negatively impact visitation. In 2011, the lake saw the lowest visitation numbers since the early 1960's. Most likely these low numbers were due to high lake levels with the lake overtopping the auxiliary spillway for the first time since 1945. The lake overtopped the auxiliary spillway again in 2017. After each occurrence, portions of Highway T washed out, forcing residents and visitors to use longer alternate routes. Plans to develop high water facilities will allow visitors access to the lake when other facilities are closed. This will help local businesses that depend on the lake and visitors for their success.

Other factors that may impact visitation can be attributed to changes in weather conditions, fluctuations in lake levels, cost and supply of gasoline, general economic conditions and the level of facility development occurring on the lake.

Vacation rental properties, while not common, are available around the lake. Websites such as Airbnb and VRBO offer homes for rent. This method of rental does not currently impact Wappapello Lake visitation, but may be more influential in the future. Cabins associated with marinas on the lake continue to attract visitors from out of the area.

2.14.3 Recreation Analysis

The Missouri Statewide Comprehensive Outdoor Recreation Plan (SCORP), updated every five years, is an outdoor planning document that looks at current recreational opportunities within the State and outlines future needs. This 2013 document engaged residents and professionals to determine the direction of recreation within the State. It also included a comprehensive inventory of the State's trail system. This impacts Wappapello Lake as parts of the Ozark Trail cross Corps lands. According to the report, Missourians are more active than the average American. More than 75% of those surveyed participated in outdoor recreation at least once in 2010, compared with less than 50% nationwide. Missourians also consider outdoor recreation funding a budget priority. This thought is continued in an Adventure Sports Network article: "Accounting for population increases, the country's outdoor participation rate continued to hover

around 48 percent, but outdoor participation by adults ages 18 to 24 was up 5 percent, demonstrating definitive interest in the outdoors by a younger set.” (Kailus, 2016) Young adults are more physically active than older generations.

Top considerations for campers when selecting a campground include clean bathrooms, being kid and/or pet friendly, recreational activities and free Wi-Fi. Recreational activities while camping show some differences between ethnicities, however, hiking/backpacking and fishing are the most popular activities among all generations.

Generational differences have emerged in how visitors use the lake and its resources. Younger visitors rely on Wi-Fi or cell service to share experiences and say they enjoy an average of four additional days of camping thanks to technology. (Cairn Consulting Group, 2018) Access to technology while camping, along with the use of social media, is helping to eliminate barriers to camping. Having available service and a web presence can be important to drawing visitors to Wappapello Lake and then leaving it up to them to ‘unplug’ once they arrive.

TABLE 13
GENERATIONS AS PERCENT OF THE U.S. POPULATION 2020

COHORT	DATES of BIRTH	AGE in 2000	POPULATION (000's)*	% of POPULATION in 2020
Matures	Prior to 1946	75+	23,173	6.9
Baby Boom	1946 to 1964	56 to 74	75,560	22.6
Generation X	1965 to 1980	40 to 55	60,836	18.2
Millennials/Gen Y	1981 to 2001	19 to 39	89,792	26.9
Gen Z/ iGen	Post 2001	<19	84,537	25.3

Source: CRMTrends.com, U.S. Census Bureau - 2012

*Measures are approximate given Census Bureau age group breaks e.g. Census age 40-54 vs CRM Trends 40-55 above

According to the 2017 American Camper Report, early exposure to outdoor activities and other recreation has a lasting impact on future choices. A study on youth participation in sports and recreation shows that among age groups 6-12 and 13-17, those who camp at a young age are more likely to participate in other outdoor recreation than their non-camping counterparts. (Coleman Company, Inc. and the Outdoor Foundation, 2017)

TABLE 14
YOUTH PARTICIPATION IN SPORTS AND RECREATION AMONG CURRENT
CAMPER

ACTIVITY	ADULTS AT AGE 6-12		ADULTS AT AGE 13-17	
	OUTDOOR PARTICIPANT	NON-OUTDOOR PARTICIPANT	OUTDOOR PARTICIPANT	NON-OUTDOOR PARTICIPANT
PE at School	69%	65%	67%	63%
Outdoor Activities	44%	31%	50%	38%
Team Sports	36%	31%	41%	35%
Cycling	33%	27%	34%	29%
Running or Jogging	22%	18%	33%	29%
Swimming for Fitness	20%	16%	22%	18%
Water Sports	19%	13%	21%	16%
Winter Sports	15%	11%	18%	15%
Racquet Sports	7%	5%	13%	12%
Golf	6%	4%	10%	10%
Fitness or Health Club-based Activities	5%	3%	11%	9%
None	15%	21%	15%	18%

Source: (Coleman Company, Inc. and the Outdoor Foundation, 2017)

The camping industry saw a 25% increase in new/returning participants. However, lost camping participants were only slightly less than new/returning campers. The overall outcome showed a slight increase in camping participation from 13.6% to 13.7%. The study also showed 37% of campers stay within 50 miles of home. Since there is a great deal of competition from other Federal, State and local facilities in the area, it is important for Wappapello Lake to continue modernizing and upgrading facilities to stay competitive.

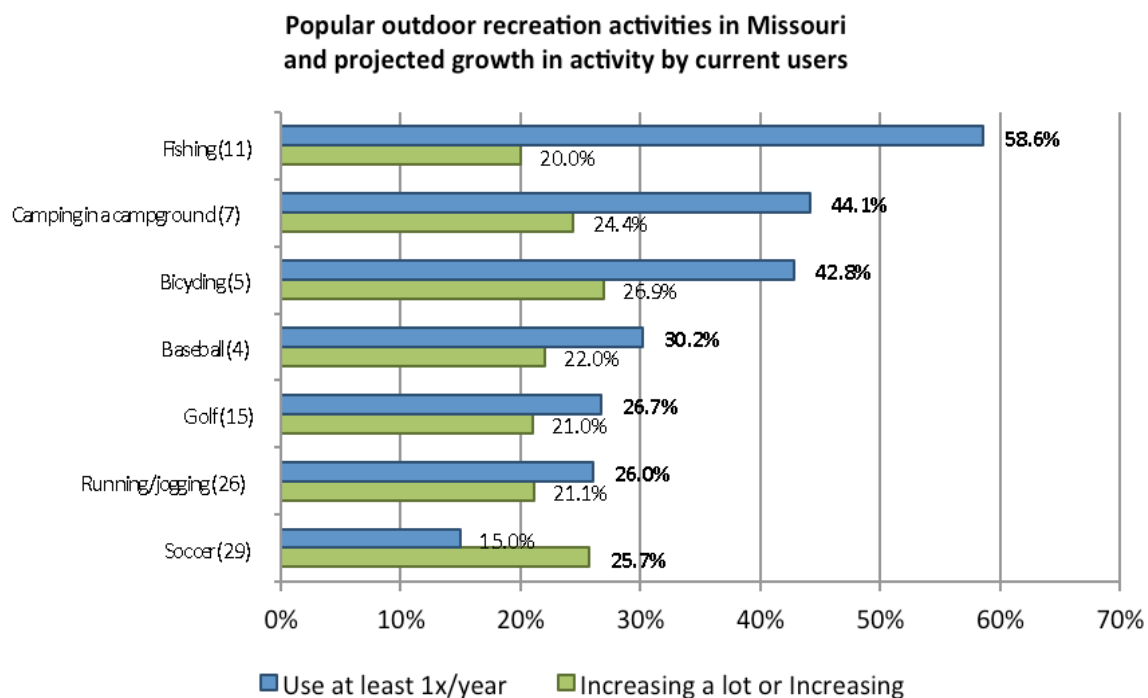
Recreational vehicle usage is also on the rise. According to the Recreation Vehicle Industry Association's *RV Consumer Demographic Profile* recreation vehicle ownership is on the rise, having grown to a new peak of 8.9 million households in 2017, up from 7.9 million in 2005. (Broom, 2017)

Sales of trailers to younger buyers has helped push RV sales into record territory. "But even more encouraging for the industry is the age of the buyers. Sales are being largely driven by younger enthusiasts seeking cheap, versatile vacation travel, not just retirees looking to tour the country in motor homes." (Kruzman, 2017)

Trails stand out as the most popular outdoor recreation facility type in Missouri and demand is expected to continue over the next five years, according to outdoor recreation professionals. Trails are the most popular Missouri adult activity, from 19-year-olds to seniors, now and in the near future.

Missourians camp at the same rate as the national average, about 15 percent of the population. Camping strongly influences people to participate in other outdoor activities, as more than three fourths of people who camp also have other outdoor interests.

Figure 10 – Popular Outdoor Recreation Activities in Missouri, 2013



Source: (Missouri Department of Natural Resources, 2013)

Recreation professionals in St. Louis-Eastern Missouri (314 area code) expect an increased demand for gardens and nature areas while those in Northeast-Central-Southeast Missouri (573 area code) predict a higher demand for football fields and target shooting sites in their areas. (Missouri Department of Natural Resources, 2013)

Playgrounds are the most popular outdoor recreation activity for children up to 12 years of age, followed by water parks/pools and swimming. Teens 13 – 18 years of age are more interested in sports fields/courts, followed by water parks/pools/swimming. Trails are the most popular outdoor recreation activity for adults 19 and older. Sports field/courts are the second most popular activity for 19 – 34 year olds, while picnic areas are the second most popular for adults over 35 year olds.

SCORP's recommendations that can be incorporated into Wappapello Lake's development to meet Missourian's outdoor recreation needs include:

☐ **Provide easily accessible outdoor recreation facilities.**

Children and adults are more likely to participate in outdoor recreation if a facility is available close to home. Less than half of Missouri children currently have an outdoor recreation facility within a half-mile of their homes.

☐ **Focus on multi-use facilities.**

Trails, multi-use sports fields and other multi-use facilities help communities "do more with less" and serve the needs of more residents.

☐ **Encourage gateway activities.**

People who bike, run or walk on trails, go camping or fishing tend to participate in other sports as well. Gateway activities like these get people moving and often introduce them to new outdoor recreation options.

☐ **Provide more organized activities.**

Missourians want to see more organized activities, particularly for teenagers, who tend to lose interest in outdoor recreation.

☐ **Increase youth participation.**

Young people today are less active outdoors than any previous generation. Most active adults were first introduced to outdoor recreation as a child, by an adult. Research has shown that children who are active outdoors are healthier and more focused than those who more sedentary. (Hepp, 2017)

☐ **Increase participation by minorities and older adults.**

Minorities are underrepresented in our parks and outdoor programs and older adults are the second most underserved population after teenagers. Both groups make up growing segments of the population in Missouri.

Wappapello Lake has the unique opportunity to partner with other agencies through projects such as connecting a trail with Mingo National Wildlife Refuge or connecting the Ozark Trail with lake trails or extending them into Corps recreation areas.

2.14.4 Recreational Carrying Capacity

The U.S. Army Corps of Engineers is the largest water-based outdoor recreation provider in the country. Most of the projects are close to metropolitan areas.

Wappapello Lake is a 2 to 4 hour drive from major cities including St. Louis and Springfield in Missouri, Memphis Tennessee and Little Rock Arkansas.

Wappapello Lake complements other Federal, State and local facilities in attracting visitors who are looking for a place to unwind and relax in an outdoor setting while

competing for the fishermen and hunters. There is a desire to enjoy the parks and waters of the lake, especially Memorial Day to Labor Day. During this time, especially weekends, the lake can appear to be overcrowded. Carrying capacity is the maximum number of individuals an area's resources can sustain indefinitely without significantly depleting or degrading those resources. Determining the carrying capacities for most organisms is fairly straightforward. For humans, carrying capacity is much more complicated. The definition is expanded to include not degrading our cultural and social environments and not harming the physical environment in ways that would adversely affect future generations. (Abel)

Carrying capacity can also have a different meaning depending on its application. In a recreational setting, carrying capacity relates to the resource and the point at which it becomes degraded from overuse. The degradation can be to the environment or the social quality. If a visitor does not have a satisfactory experience because of overcrowding, they may not return whether it be from noise, too close neighbors or poor physical quality of the recreation area itself.

Many factors influence the carrying capacity at Wappapello Lake. They can be the number of visitors, vehicles or boats; types of users; level of adjacent development; or changing demographics. Wappapello Lake visitors are very diverse. Some come for the solitude, others for the community of fellow users. The lake is large enough to host a variety of summer recreation users. Overcrowding in the summer can be self-regulating. In other cases, a change in how the park is managed can relieve pressure on the resources. None of the proposed actions in this plan are expected to exceed the recreational carrying capacity of the lake or specific portions of the lake.

At Wappapello Lake, there are no Corps specific restrictions on most hunters as the project receives only moderate use during the hunting season. Waterfowl hunters and their floating blinds are regulated to prevent overuse and possible safety concerns.

The most popular recreation areas are located in the southern end of the lake, putting more pressure on those facilities. The lake is wider and deeper, more attractive to larger boats. Total marina slip rentals is less than 100% depending on the marina location on the lake. Sundowner and Totten's Marinas, located in the southern portion of the lake, are at 100% with a wait list. Most of Sundowner's slip renters are local, while Lost Creek with only a 5% rental rate, caters to campers at the Lost Creek Marina campground located on adjacent private property. Holliday Landing is 50% occupied. The marina's location on the more secluded, shallow river environment, is more accommodating to hunters and fishermen.

A little more than 50% of Wappapello Lake's campsites are full hookup and are more desirable than other sites. Proposed actions in this plan include upgrading sites to full hookup where possible and improving other sites to the same standard regardless of

whether or not they are full hookup. The improved sites will be more attractive to campers and could lead to higher occupancy.

2.15 RELATED RECREATIONAL, HISTORICAL AND CULTURAL AREAS

The Southeast Missouri area offers a variety of recreational opportunities to the visiting public. Wappapello Lake's facilities complements and sometimes competes with other Federal, State and local facilities. Of these facilities, Wappapello Lake and Clearwater Lake are the only areas with marinas. Clearwater, Wappapello, Sam Baker State Park and Council Bluff Lake on Forest Service lands offer swimming, while Ozark Scenic Riverways, Sam Baker, Clearwater and Wappapello offer lodging on or nearby public lands. Wappapello Lake is one of the few areas that offers a variety of recreational opportunities.

TABLE 15
FEDERAL RECREATIONAL FACILITIES WITHIN AREA OF INFLUENCE

	ACRES	FISHING	SWIMMING	BOATING/ CANOEING	CAMPING	PICNICKING	HUNTING	MARINA	LODGE	TRAILS/HIKING	PRINCIPAL MANAGING AGENCY	MILES FROM WAPPAPELLO LAKE
Clearwater Lake	19,600	X	X	X	X	X	X	X	X	X	USACE	42
Mark Twain National Forest	1,494,247 Wayne Co 88,372	X	X	X	X	X	X			X	USFS	1
Mingo National Wildlife Refuge	21,676 Wayne Co 9,793	X		X		X	X			X	USFWS	12
Ozark National Scenic Riverways	80,000	X		X	X	X	X		X	X	NPS	50 – 100

Larger Federal facilities within 100 miles are shown in Table 14. The State of Missouri also offers a wide variety of recreational opportunities in Southeast Missouri. The State operates forest, conservation, wildlife management and small access areas, all offering similar opportunities to the lake. Recreational facilities operated by Missouri Department of Natural Resources and located within 100 miles of the lake are listed in Table 15.

The Missouri Department of Conservation also manages a wide range of facilities in Southeast Missouri. Table 16 shows MDC lands in counties within 50 miles of Wappapello Lake. The two tables show there are nearly 350,000 acres of State

managed lands in Southeast Missouri that compete with Wappapello Lake for visitors. This is in addition to the over 1.6 million acres of land managed by the Corps and other Federal agencies.

TABLE 16
LANDS MANAGED BY MISSOURI DEPARTMENT OF NATURAL RESOURCES

PROJECT NAME	ACRES	FISHING	SWIMMING	BOATING/ CANOEING	CAMPING	PICNICKING	HUNTING	MARINA	LODGE	TRAILS/ HIKING	MILES FROM WAPPAPELLO LAKE
Battle of Pilot Knob HS	77					X				X	77
Big Oak Tree SP	1,005	X				X				X	80
Bollinger Mill HS	44					X					53
Elephant Rocks SP	129	X				X				X	78
Grand Gulf SP	322					X				X	99
Hawn SP	4,804				X	X				X	88
Johnson's Shut-ins SP	8,469	X	X		X	X			X	X	84
Morris SP	161									X	41
Sam A. Baker SP	5,324	X		X	X				X	X	32
St. Francois SP	2,735	X	X	X	X	X				X	90
St. Joe SP	8,238	X	X	X	X	X				X	76
Taum Sauk Mountain SP	8,732				X	X				X	75
Trail of Tears SP	3,415	X	X	X	X	X				X	70
Total Acres	43,455										

TABLE 17
LANDS MANAGED BY MISSOURI DEPARTMENT OF CONSERVATION

COUNTY	ACCESS AREAS (acres)	COMMUNITY LAKES (acres)	CONSERVATION AREAS (acres)	NATURAL AREAS (acres)	TOWER SITES (acres)	WILDLIFE AREAS (acres)
Bollinger	314		11,460		80	
Butler	126		11,957	240		
Cape Girardeau	100	3	3,078			804
Carter	11	61	25,584		75	
Dent	87		16,902		45	520
Dunklin	176		6,560			
Iron			7,804			179
Madison	169	140	2,446			
Mississippi	121		5,290			
New Madrid	157		6,159			
Oregon	39		185		8	282
Pemiscot	5		9,151			
Perry		310	1,658	32	5	
Reynolds	1,443		36,610			
Ripley	4		8,546	971	10	
St. Francois	39	15	610		80	
Ste. Genevieve	10		2,391	673		
Scott		128	1,371		56	
Shannon			141,458		40	
Stoddard	92	14	10,781	447		
Washington	362		9,791	462		
Wayne	149		20,709			
Totals (acres)	3,404	671	340,501	2,825	399	1,785
Grand Total (acres) = 349,585						

2.16 REAL ESTATE

2.16.1 Acquisition Policy

The acquisition policy for the Wappapello Lake Project was based on the hydrology and hydraulic analyses and on engineering requirements.

2.16.2 Boundary Monumentation

Wappapello Lake boundary monumentation is complete with the exception of some areas around inholdings. This process is complicated and involves access easements to an inholding in some cases, as well as a process to purchase other inholdings. Wappapello Lake staff continue to work with USACE, St. Louis District Real Estate Specialists and private land owners to purchase necessary inholdings.

2.17 PERTINENT PUBLIC LAWS

Development and management of federal reservoirs for various purposes is provided under several statutes. These laws cover development of recreation facilities, licensing

of project lands for fish and wildlife purposes, protection of natural resources and leasing of public lands for incidental uses other than recreation.

2.17.1 Recreation

Development and management of recreation facilities by the Corps, other governmental agencies, local groups or individuals is authorized under the following public laws:

- a. The Flood Control Acts of 1944, 1954, and 1962, codified in current statute 16 USC § 460d, as amended, (1) authorizes providing facilities for public use, (2) authorizes the Secretary of the Army to grant leases for public park and recreation purposes in the public interest to federal, state or governmental agencies without monetary consideration, and (3) authorizes the Chief of Engineers to permit construction, maintenance and operation of public recreation facilities at water resource development projects under control of the Department of the Army.
- b. The River and Harbors Act, approved 2 March 1945 (PL 79-14), 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.
- c. PL 79-526, Flood Control Act of 1946 (24 July 1946), amends PL 78-534 (Flood Control Act of 1944) to include authority to grant leases to nonprofit organizations at recreational facilities in reservoir areas at reduced or nominal charges.
- d. Section 209 of the Flood Control Act of 1954 (PL 83-780), approved 3 September 1954, amended the Flood Control Act of 1944. It authorized 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 recreation purposes when in public interest.
- e. The Land and Water Conservation Fund Act, 16 USC § 460I, approved 3 September 1964 (PL 88-578, 78 Stat. 897), allows the Corps to charge for admission and use of its recreation areas under prescribed conditions.
- f. The Federal Water Project Recreation Act, approved 9 July 1965 (PL 89-72, 79 Stat. 213) contains cost sharing provisions for acquisition of lands and development of recreation facilities for water resources projects authorized after 1965. It also provides for cost sharing development of new areas that were not part of initial project construction.

g. Laws listed below provide information and guidance regarding universal accessibility for persons with disabilities to the Corps recreation facilities and programs:

The Architectural Barriers Act of 1968, 42 USC § 4151, et seq., approved 12 August 1968 (PL 90-480), as amended;

The Rehabilitation Act of 1973, 29 USC § 701, approved 26 September 1973 (PL 93-112), as amended;

The Americans with Disabilities Act of 1990, 42 USC §12101 (PL 101-336);

The Architectural Barriers Act (ABA) standards and guidelines for accessible design, 2010; and

The Accessibility Guidelines for Outdoor Developed Areas, 23 September 2013

h. The Water Resources Development Act of 1986, approved 17 November 1986, (PL 99-662), Section 103 states that the non-Federal share of the costs assigned to recreation, is 50 percent of the separable costs, to be paid during the construction period. Non-Federal sponsors must also provide all lands, easements, rights of way, relocations and disposal sites (LERRD) assigned to the recreation purpose and perform all necessary relocations.

i. The Water Resources Development Act of 1992, approved 31 October 1992 (PL 102-580), authorized the Challenge Cost Sharing Program (Section 225) that permits the Corps to develop and implement a program to accept contributions of funds, materials and services from non-Federal public and private entities to be used in managing recreation facilities and natural resources.

j. The Omnibus Budget Reconciliation Act of 1993 – Day Use Fees, approved 10 August 1993 (PL 103-66), contains provisions by which the Corps may collect fees for the use of developed recreation sites and facilities, including campsites, swimming beaches and boat launching ramps but excluding a site or facility which includes only a boat launch ramp and a courtesy dock.

k. The Water Resources Development Act of 1996, approved 12 October 1996 (PL 104-303), Section 208 (Recreation Policy and User Fees) directed the Corps to put increased emphasis on recreation opportunities at Corps projects and specifies that a portion of the recreation fees collected at Corps projects remain for use at the project where they are collected. Section 519 (Recreation Partnership Initiative) directed that, in general, the Corps is to promote federal, non-federal and private sector cooperation in creating public recreation opportunities at Corps projects

I. PL 104-333, Omnibus Parks and Public Lands Management Act of 1996 (12 November 1996), created an advisory commission to review current and anticipated demand for recreational opportunities at lakes and reservoirs managed by the Federal Government and develop alternatives to enhance opportunities for such use by the public.

2.17.2 Fish and Wildlife

Fish and wildlife resources are maintained and protected in compliance with the following public laws:

a. The Fish and Wildlife Coordination Act, enacted 10 March 1934, as amended, 14 August 1946 (PL 79-732), 1958 (PL 85-624), provides authority for making project lands of value for wildlife purposes available for management by interested federal and state wildlife agencies. It further provides for more effective integration of a fish and wildlife conservation program with federal water resources developments by receiving equal consideration with other project purposes.

b. Title 16 U.S. Code (U.S.C.) §§ 668-668a-d, 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.

c. The Federal Water Project Recreation Act of 1965 (PL 89-72), as amended, 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.

d. The National Environmental Policy Act of 1969, as amended (42 USC 4321 et seq), declares a national environmental policy and requires that all federal agencies shall, to the fullest extent possible, use a systematic, interdisciplinary approach which integrates natural and social sciences and environmental design arts in planning and decision making.

e. The Endangered Species Act of 1973 as amended (16 USC 1531 and 1536) requires that federal agencies shall, in consultation with the U.S. Fish and Wildlife Service (USFWS) (or the National Marine Fisheries Service), use their authorities in furtherance of conserving endangered and threatened species and take such action as necessary to assure that their actions are not likely to jeopardize such species or destroy or modify their critical habitat.

- f. The Water Resource Development Act of 1986, Section 1135, provides for modifications in the structures or operations of a project, consistent with authorized project purposes to improve the quality of the environment, i.e. restoration of fish and wildlife habitat.
- g. Executive Order (EO) 12962, 7 June 1995, as amended, entitled Recreational Fisheries, directs Federal agencies to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities by means of a number of duties. In addition, it establishes a National Recreational Fisheries Coordination Council consisting of seven members (including one designated by the Secretary of Defense). The "Coordination Council" is charged with developing a comprehensive Recreational Fishery Resources Conservation Plan. This EO also directs all Federal agencies to identify and minimize conflicts between recreational fisheries and their responsibilities under the Endangered Species Act of 1973 and expands the role of the Sport Fishing and Boating Partnership Council.
- h. PL 104-303 (the Water Resources Development Act of 1996). 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.
- i. PL 106-147, Neo-tropical Migratory Bird Conservation Act (20 July 2000) promotes the conservation of habitat for neo-tropical migratory birds.

2.17.3 Forest Resources – Protection and Improvement of Natural Resources.
The Forest Conservation Act (PL 86-717) approved 6 September 1960, provides for the protection of forest cover in reservoir areas, and specifies that reservoir areas of projects for flood control, navigation, hydroelectric power development and other related purposes, owned in fee and under the jurisdiction of the Secretary of the Army and the Chief of Engineers, shall be developed and maintained so as to encourage, promote and assure fully adequate and dependable future resources of readily available timber through sustained yield programs, reforestation and accepted conservation practices, and 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 law further provides that in order to carry out the national policy declared in the first section of this Act, 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. Programs and policies developed pursuant to the preceding sentence shall be coordinated with the Secretary of Agriculture and with appropriate state conservation agencies.

2.17.4 Other Incidental Uses.

- a. Title 10, United States Code, Section 2667, authorizes the lease of land at water resource projects for any commercial or private purpose not inconsistent with other authorized purposes, subject to specific restrictions thereupon, as set out in regulations, policy, and Delegations of Authority.
- b. Title 16, United States Code, Section 460d, authorizes use of public lands for any public purpose, including fish and wildlife, if it is in the public interest. Such uses are also subject to regulations, policy and Delegations of Authority. The use of project lands for easements and licenses is authorized in various Congressional Acts and codified in Titles 10, 16, 30, 32 and 43 of the United States Code.
- c. Lands and rights-of-way will be acquired pursuant to provisions of the Uniform Real Property Acquisition and Relocation Assistance Act of 1970, PL 91-646, as amended.

2.17.5 Cultural and Historical Considerations

A number of laws mandating the protection of cultural resources on public lands have been passed during the past 75 years. These laws and Executive Orders are summarized in Appendix A of the St. Louis District Cultural Resource Management Policy (April 1982). The following laws subsume, clarify or supersede all previous cultural resource law:

- a. The Antiquities Act of 1906, 16 USC § 431-433 provided for the general protection of cultural or natural resources. It established the first national historic preservation policy to protect these resources and required permitting of qualified institutions to conduct research on federal lands.
- b. The Historic Sites Act of 1935, (PL 74-292) specifically establishes national policy to preserve prehistoric sites of national significance. The National Park Service was directed to make the necessary investigations to obtain the “true and accurate... facts and information...”
- c. 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.
- d. The National Historic Preservation Act of 1966, approved 15 October 1966 (PL 89-665), as amended, states a policy of preserving, restoring and maintaining cultural resources and requires that federal agencies take into account the effect any undertaking may have on sites that may be eligible for inclusion on the National Register of Historic Places.

- e. The Archaeological and Historic Preservation Act of 1974 (PL 93-291, 16 USC 469 et seq.) which amended and expanded the Reservoir Salvage Act (PL 86-523, 27 June 1960) provides for the preservation of historical and archaeological data which might otherwise be lost or destroyed as the result of flooding or any alteration of the terrain caused as a result of any federal construction projects.
- f. The Archeological Resources Protection Act of 1979 (16 USC 470 et seq.), PL 96-95, 96th Congress Revision and update of 1906 Antiquities Act. Protects archaeological resources and sites that are on public lands and Indian land, and fosters increased cooperation and exchange of information between governmental authorities, the professional community and private individuals.
- g. American Indian Religious Freedom Act, approved 11 August 1978 (PL 95-341) 42 USC § 1996, amended 1994. As stated in the implementing guidance, Chapter 6 of ER and EP 1130-2-540, the Commander shall consult with affected tribes, groups or individuals regarding appropriate action for project effect upon sacred sites, important to the practice of Native American religion.
- h. Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, 1983, 48 FR 44716-44742 are intended to provide technical advice about archeological and historic preservation activities and methods. These standards and guidelines are not regulatory and do not set or interpret agency policy.
- i. The Native American Graves Protection and Repatriation Act (PL 101-601) 16 November 1990, requires federal agencies and museums to inventory human remains and associated funerary objects and to provide culturally affiliated tribes with the inventory of collection. The Act requires repatriation, on request, to the culturally affiliated tribes and establishes a grant program within the Department of the Interior to assist tribes in repatriation and to assist museums in preparing the inventories and collections summaries.
- j. Curation of Federally-Owned and Administered Archeological Collections, 1990 (36 CFR 79) governs the Federal Archeology Program that establishes definitions, standards, procedures and guidelines to be followed by Federal agencies to preserve collections of prehistoric and historic material remains, and associated records, recovered under authority of the Antiquities Act, the Reservoir Salvage Act, a section of the National Historic Preservation Act or the Archeological Resources Protection Act.
- k. Religious Freedom Restoration Act of 1993, approved 16 November 1993 (PL 103-141), 42 USC § 2000bb, guarantees application of the compelling interest test in all cases where free exercise of religion is substantially burdened by government. The compelling interest test, as set forth in prior Federal court rulings is a workable test for

striking sensible balances between religious liberty and competing prior governmental interests.

l. Indian Sacred Sites, Executive Order 13007 of May 24, 1996 (61 FR 26771-26772) orders Executive branch agencies to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. Where appropriate the agency shall maintain the confidentiality of sacred sites.

m. The Water Resources Development Act of 2000, approved 11 December 2000 (PL 106-541) Section 208, authorizes the Army to rebury Native American human remains that were discovered on Civil Works project lands and have been rightfully claimed by a tribe on those lands.

n. Preserve American, Executive Order 13287, of 4 March 2003 states it is the policy of the Federal Government to provide leadership to preserve America's heritage by advancing the protection, enhancement and contemporary use of intergovernmental cooperation and partnerships for the preservation and use of historic properties.

2.18 MANAGEMENT PLANS

A detailed list of management plans used to guide lake operations is listed in the OMP.

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CHAPTER 3 – MANAGEMENT GOALS & RESOURCE OBJECTIVES

This section defines a series of resource use objectives for Wappapello Lake. Resource use objectives are statements specific to Wappapello Lake that describe the selected options for resource use, development and management as determined through study and analysis of regional needs, resource capabilities and potentials and public desires. As defined, resource use objectives provide general guidance and direction for the use, development and management of project resources. Site specific resource use objectives include development and management measures.

As stated in Chapter 1, the authorized purposes of Wappapello Lake are flood risk reduction management on the St Francis River, recreation and fish and wildlife management. Certain project purposes by nature may conflict with each other. For example, under certain conditions, the lake's flood control purpose can conflict with other project purposes such as recreation and fish and wildlife management. Determining management goals sets the overall vision for the future path of development. These goals can be summarized as:

- a. Protect the lake's natural and cultural resources;
- b. Identify visitor needs and provide quality facilities;
- c. Engage in partnerships that promote the lake regionally and leverage resources to provide a quality outdoor recreation experience;
- d. Provide educational opportunities that encourage the visitor to respect the environment and safe use of the project; and
- e. Maintain and build upon local, regional and statewide connections that will link Wappapello Lake to the community.

The development of sound resource use objectives should assist in minimizing conflicts between project purposes through compromises that do not seriously detract from

achievement of any or all authorized purposes. Resource use objectives based on project purposes at Wappapello Lake are identified and discussed in the following paragraphs.

The general resource use objectives, applicable to the project as a whole are presented below. They are formulated so as to provide general guidance and direction to the overall management and development of Wappapello Lake resources. These objectives give a general guide to Wappapello Lake operations. A more detailed description and outline of operation is listed in the OMP. The objectives are grouped into three categories: Project Operations, Recreation and Environmental Stewardship. Additional information that supports these objectives can be found in Chapter 5.

3.1 PROJECT OPERATIONS

- a. Ensure that quality administration and management of all project lands, waters and other associated man-made and natural resources is consistent and thorough and that project administrative and management decisions/actions adhere to all applicable laws, regulations, polices and agreements.
- b. Partner with existing and potential concessionaires to provide quality, viable recreation opportunities. These will include both lodging and marina type services.
- c. Provide public use areas and facilities that are safe and environmentally sound.
- d. Partner with other agencies, groups, organizations and individuals to:
 - (1) Accomplish resource use objectives.
 - (2) Use all available opportunities to maximize efficiency in operations and funding.
 - (3) Periodically review and improve management practices.
 - (4) Utilize the land and its natural resources while effectively protecting them.
 - (5) Manage the public land and create a safe and enjoyable environment.
 - (6) Make facility improvements that optimize the visitor experience.

3.2 RECREATION

- a. As funds become available, renovate and upgrade recreation areas to improve the available facilities and to reduce maintenance costs.

- b. Identify and undertake the modifications necessary to make facilities accessible to all user groups as mandated by Uniform Federal Accessibility Standards (UFAS), Americans with Disabilities Design Guidelines (ADDG) and new recreation standards.
- c. Maintain and improve camping facilities to meet public demand, reduce operation and maintenance costs and generate revenues for future operation and maintenance of recreation facilities.
- d. Accommodate water and land-based day-use activities in a manner compatible with other site activities while maintaining the integrity of the project's natural resources.
- e. Improve high water access where applicable by expanding facilities where appropriate.
- f. Maximize public contact by utilizing all available Interpretive Services and Outreach Program (ISOP) methods through Public Affairs, Public Safety, Education / Events, Outreach, Interpretive Efforts, Marketing Efforts and Visitor Center Operations programs.
- g. Collaborate to leverage resources through partnerships, stakeholders, community members, volunteers and the project's cooperating association.
- h. Improve the lake's website to provide visitors with current, relevant information and provide online interactive opportunities for visitors and potential visitors to include a smart phone application.

3.3 ENVIRONMENTAL STEWARDSHIP

- a. Continue to monitor resources to ensure protection against fire, overuse, erosion and insect and disease infestation. This includes control of non-native pests. Take corrective actions when warranted.
- b. Encourage optimal utilization by the greatest number of wildlife species through manipulation, management and protection of diverse habitats through methods such as succession control, prescribed fire, native warm season grass plantings, planting forbs and grasses that attract wildlife, timber stand improvements and exotic plant/animal control.
- c. Continue to monitor and maintain the vegetative conditions of trees for their scenic, recreational, wildlife and monetary values.
- d. Re-establish native warm season grasses and forbs where warranted and manage timber stands through prescribed fire.

- e. Re-establish and maintain high quality wetlands to improve water quality and to provide habitat for wetland dwelling species.
- f. Partner with the Missouri Department of Conservation (MDC) in the management, maintenance and enhancement of a high quality fishery as a perpetual resource.
- i. Conduct water quality and sedimentation surveys to reflect current conditions and present a clearer picture of storage capabilities.
- j. Identify, evaluate and preserve significant archaeological and historical sites through yearly monitoring and protection as needed.

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CHAPTER 4 – LAND ALLOCATION, LAND CLASSIFICATION, WATER SURFACE & EASEMENT LANDS

Project zoning provides guidance for the orderly development, use and management of the lake's resources. Resource planning recognizes the authorized project purposes and the opportunities and constraints that influence development and management. All development is screened to determine compatibility with the lake's natural and cultural resources. Primary planning and zoning considerations include seasonal flooding, soils, ecological conditions, existing and projected recreation demands, state and local participation and interests and applicable laws, regulations and policies. It also considers effects on adjacent commercial, private and public properties. Chapter 5, Resource Plan, describes areas in more detail.

4.1 LAND ALLOCATION

The project required public lands and water total approximately 44,669 acres. These lands were allocated according to the authorized purpose for which they were acquired. One land allocation category exists for Wappapello Lake:

Operations. This allocation includes lands acquired according to the authorizing documents for operation of the project, which is flood control.

4.2 LAND CLASSIFICATION

Land use classifications have been determined through the guidance contained in ER 1130-2-550 and EP 1130-2-550 and are shown on Plate 5. Land use classifications and descriptions are as follows:

4.2.1 Project Operations

The objective of this resource classification is to provide adequate land for safe and efficient operation and management of the lake's land and water resources for all authorized purposes. Lands classified in this category include the main dam, dike structures, gatehouse, auxiliary spillway, the outlet structure, land treatment systems

and land required for administrative and maintenance needs. Lands classified as Project Operations are shown on Plate 6.

4.2.2 High Density Recreation

These park and recreation lands are developed to provide for the recreational activities of the visiting public. No agricultural uses are permitted on these lands except on an interim basis where the terrain is adaptable for maintenance of open space and/or scenic values. Factors such as road access, natural resources, recreational facility design and management practices make these lands conducive to accommodating major use by the visiting public. Lands in this classification include areas for concessions and quasi-public and group use development. Lands classified as High Density Recreation are shown on Plate 7.

4.2.3 Mitigation

No mitigation lands currently exist at Wappapello Lake.

4.2.4 Environmentally Sensitive Areas.

In this classification, areas are identified for the preservation of scientific, ecological, historical, archeological and/or aesthetic value. A general description of the Ecological Areas and Cultural Areas classification are as follows. Lands shown as Environmentally Sensitive are shown on Plate 9.

a. Ecological Areas

Included in this category are areas providing habitats for rare or endangered species. Limited agricultural practices are permitted in certain portions of these areas. Normally, development for public use is prohibited or limited on land in this classification.

b. Cultural Areas

Included in this category are areas that have historical and archeological significance. Management practices are followed to insure protection of these resources.

4.2.5 Multiple Resource Management Lands

This classification includes three categories that further define lands based on their location and natural resources: (a) Recreation–Low Density, (b) Wildlife Management, and (c) Vegetative Management. These include lands that may be managed for one or more activities to the extent that they are compatible with the primary allocation(s). Areas classified in these categories are shown on Plate 8.

a. Low Density Recreation

Lands zoned in this category offer recreation to the public in an unstructured natural setting as an alternative to the experience generally associated with intensively developed recreation areas. These areas also serve as a buffer between other land uses. Uses for these areas include hiking, walk-in hunting and fishing and nature study.

Agricultural use is not permitted except on an interim basis to maintain open space, provide a supplemental food source and scenic values.

b. Wildlife Management

Lands zoned in this category are continuously available for low-density recreational activities. Agricultural leases and timber harvesting are allowed to the extent practicable and compatible with other uses of the project. These activities generate revenue and maintain habitat conditions beneficial to wildlife. The Operational Management Plan (OMP) describes the general practices and techniques employed to implement a viable program for fish and wildlife management at Wappapello Lake. Lands on the northern end of the lake, managed by the MDC, have been assigned to this land-use classification.

c. Vegetative Management

Management activities for these lands include protection and development of forest and vegetative cover and wetland restoration. Use for these lands also includes hiking, walk-in hunting, fishing and nature study. All lands in government fee ownership are being managed to maintain forest resources for recreation, wildlife and scenic values. Timber will be harvested when required to achieve other management objectives such as wildlife habitat improvement. Forest management is a secondary purpose for areas zoned for recreation or low-density recreation. Specific resource use objectives and management practices are described in the OMP on an area-by-area basis.

d. Inactive and/or Future Recreation Areas

These areas include those areas designated for future intensive recreation, or those lands that have been used for intensive recreation in the past and are now temporarily closed. When they recover or meet criteria for recreation use they will be opened or reopened for intensive recreation. Interim use should follow the guidelines described for low-density recreation. No land at Wappapello Lake is in this land classification.

4.2.6 Water Surface

The waters of Wappapello Lake are zoned into the following units shown on Plate 10. They are described as follows:

a. Restricted

Water areas restricted for project operations, safety and security purposes. An area of water around the upstream side of the spillway structure is signed and all public use is restricted in this area for safety and security reasons. The upstream side of the dam is buoyed and all public use is restricted as well. These areas are zoned as Project Operation Lands (OP-1) as part of the Main Dam. All beaches are also restricted. Wildlife refuges are restricted periodically according to management plan.

b. Designated No-Wake

Water restricted to wakeless speeds in order to protect environmentally sensitive shoreline areas, recreational water access areas from disturbance and for public safety.

c. 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. Wappapello Lake areas, known as Waterfowl Refuge, are located in Lost Creek, Asher Creek and Holliday Landing Wetlands.

d. Open Recreation

Acreage of open lake waters is zoned for all legitimate forms of water recreation. Most of the lake's waters are zoned open recreation. The Shoreline Management Plan outlines further restrictions to open recreation.

4.2.7 Easement Lands

Use and management of easement lands is in accordance with the terms and conditions of the easement estate, which was acquired for the project. Easement lands at Wappapello Lake are lands the Corps maintains the right to use including flowage and operational easements.

a. Flowage Easement

Flowage easements give the government the right to flood lands as the lake enters flood stage. The Corps holds an easement interest on 162.7 acres of land outside the fee boundary. Additional lands where there is no easement agreement occasionally flood. Flowage easements are managed under the St. Louis District Policy on Management of Flowage Easement Lands. Easement maps will be added to the master plan as a supplement at a later date.

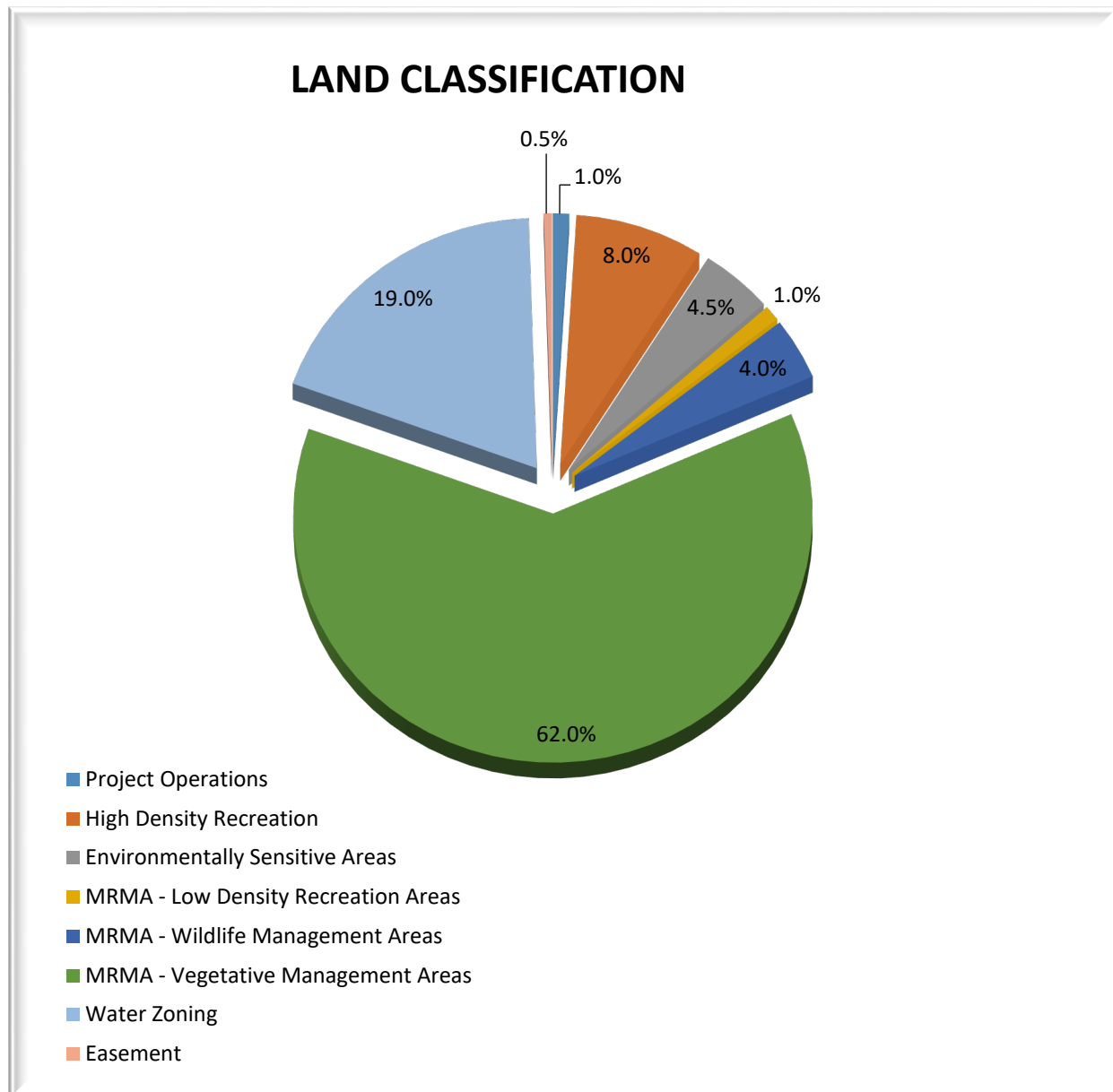
b. Operational Easement

Operational easements give the government access to its lands across private property. There are no operational easements at Wappapello Lake.

c. Conservation Easement

There are no conservation easements at Wappapello Lake.

Figure 11 – Land Classification



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CHAPTER 5 – RESOURCE PLAN

5.1 INTRODUCTION

Recreational development at Wappapello Lake is restricted by steep slopes and narrow access to the shoreline. Since no lands were purchased primarily for recreation, very little is suitable for large scale construction. Changing regulations and management practices determine how lands are classified. Land classifications have changed to provide an integration of appropriate land and water uses into a balanced plan. Land classifications described in Chapter 4 are shown on Plate 5, *Land Classification Map*.

The Wappapello Lake Master Plan provides guidance for the orderly development, use and management of Project resources. Resource planning takes into consideration:

- a. Authorized Project Purposes
- b. Public Input and Interests
- c. Regional Needs, Opportunities and Constraints

All proposed development is designed to be compatible with the project's natural and cultural resources. Project planning and land classification takes into consideration several factors:

- a. Seasonal Flooding
- b. Soils
- c. Ecological Conditions
- d. Existing and Projected Recreation Demand
- e. State and Local Interests
- f. Applicable Laws, Regulations and Policies

Some proposed actions in this plan may require NEPA review and evaluation. When applicable, NEPA evaluation and documentation will be obtained before the proposed action is implemented.

5.2 RESOURCE PLANS – GENERAL

Implementation of resource management objectives is dependent upon land classification, anticipated concurrent use and other environmental, geologic and topographic variables. The Operational Management Plan (OMP) subdivides land and water classifications into management units based upon land use objectives, natural and man-made resources and environmental sustainability. The OMP establishes achievable goals to maintain and improve ecological conditions and outdoor recreation opportunities.

5.2.1 Basic Information

This section of the master plan provides basic information and data about each Project Site Area (PSA) at Wappapello Lake and includes:

- a. Area Name
- b. Basic information and data about the area
- c. Listing of existing facilities and a brief discussion
- d. Listing of proposed actions and a brief discussion

Proposed Actions are actions being proposed in this master plan and are intended to be implemented depending on funding and environmental clearances within approximately ten years or by the next master plan update.

5.2.2 Land Classifications

The Land Classifications for Wappapello Lake are:

- a. Project Operations
- b. High Density Recreation
- c. Multiple Resource Management
- d. Environmentally Sensitive Areas
- e. Water Surface

f. Flowage Easement Lands

These land classifications are described fully in Chapter 4, Paragraph 4.2 – Land Classification.

5.2.3 Resource Objectives

General resource objectives are described in Chapter 3. These objectives cover operations, recreation and environmental lands (multiple resource management and environmentally sensitive areas) mentioned below. Site specific objectives, if any, are described within each area.

5.2.4 Acreages

Table 17 provides a summary of land classification acreages including non-Corps owned flowage easements for Wappapello Lake. The acreages include all lands acquired through inholding purchase or mitigation since the last Master Plan update.

TABLE 18
LAND CLASSIFICATION ACREAGES

LAND CLASSIFICATION	ACRES	TOTAL ACRES
Project Operations		369
High Density Recreation		3,655
Environmentally Sensitive		2,001
Multiple Resource Management Areas		30,244
Low Density Recreation	554	
Wildlife Management	1,880	
Vegetative Management	27,810	
Water Surface		8,400
Restricted	21	
No Wake	61	
Open Water	7,242	
Waterfowl Refuge	1,076	
Easement		
Operations	0	0
Flowage		162.7
Total Acres		44,831.7

5.2.5 Description of Use by Classification

a. Operations Lands

The following paragraphs provide a brief description of areas classified as Project Operations Lands. A detailed description of project structures is contained in the OMP.

These areas are depicted on Plate 5 *Land Classification Map* and Plate 6 *Project Operations*, of this master plan.

TABLE 19
PROJECT OPERATIONS LANDS

AREA NAME	AREA NO.	ACRES	PLATE NO.
Main Dam, Office, Spillway	OP-1	362	6, 11, 12, 30, 31
Dikes 1, 2, 3	OP-2	7	6, 29
Total Acres		369	

OP-1. Wappapello Lake Main Dam, Office Complex, Spillway, Auxiliary Spillway and Gatehouse Area (362 acres) (Plates 6, 11, 12, 30, 31)

This area contains the main dam, spillway, auxiliary spillway, gatehouse and a waste water treatment facility. This area is necessary for the operation of Wappapello Lake as a flood control project.

Wappapello Lake Main Dam – The main dam consists of a rolled earth-fill structure extended across 2.5 acres of the St. Francis River valley floor. The total length of the dam at its crest is 2,700 feet. The crest of the dam is at elevation 419.74 feet with a maximum height above the streambed of 109 feet. Other pertinent data can be found in Chapter 1, Table 1.

Spillway – The Spillway includes the stilling basin and outlet channel with retaining walls. It is 21.5-feet wide as it exits the conduit and expands to 60 feet at the downstream end. It has two rows of baffle blocks that are 4 feet wide and rise 5 feet above the basin floor. The outlet channel expands from a width of 60 feet at the stilling basin to a 120-foot width in a distance of 300 feet. The channel bottom and side slopes are protected with a riprap blanket.

Auxiliary Spillway – The auxiliary spillway is located to the south of the dam. This 740-foot long concrete spillway has a crest of 394.74 Feet. When the lake exceeds this elevation water is released over the auxiliary spillway.

Gatehouse – The gatehouse structure contains three gates 10 feet wide by 20 feet high for controlling the rate of discharge through the outlet structure. Equipment previously used to generate electricity has been removed.

Office Complex – The Wappapello Lake Project Office and Maintenance Compound are located just south of the dam. The facilities include staff offices, a visitor reception area, a lunch room, an electrical shop, a plumbing shop, a carpenter shop, open and closed storage bays, a storage building, a fenced vehicle and equipment compound, above ground fuel tanks, a storage yard, an employee and visitor parking area, a radio tower and a water well.

Wastewater Treatment Facility – The wastewater treatment facility is located below the dam and serves Redman Creek, Peoples Creek, Eagle Point and Spillway Recreation Areas, as well as the office complex. A stabilization pond and spray field process and treat the incoming waste from these areas. Other facilities include an operator building, storage building, lift station, hydrant/fountain and an access road.

Proposed Actions:

Develop multi-use trail across the Main Dam.

Redesign and reconfigure Storage Area, Maintenance Compound and Administration Office areas.

Renovate and upgrade wastewater treatment facility.

OP-2 Dikes 1, 2 & 3 (7 acres) (Plates 6, 29)

Dikes 1, 2 and 3 are an integral part of the flood control capacity of the main dam.

Proposed Actions:

Develop multi-use trail across Dike 1.

b. Recreation Lands

A description of recreation development at Wappapello Lake is presented in this section. A total of 18 areas are classified as recreational. A summary of development, including existing, proposed and replacement actions are listed for each recreation area and are shown on Plate 5, *Land Classification Map*, Plate 7 *High Density Recreation Lands*, and the individual plates as noted.

TABLE 20
RECREATION LANDS

AREA NAME	AREA NO.	ACRES	PLATE NO.
Redman Creek Recreation Area	R-1	185	11, 12
Rockwood Point Recreation Area	R-2	66	13, 14
Baker Lodge Recreation Area	R-3	82	15
Lake Wappapello State Park	R-4	1,854	16
Chaonia Landing Recreation Area	R-5	29	17
Holliday Landing Recreation Area	R-6	21	18
34 Bridge Recreation Area	R-7	38	19
North Greenville Recreation Area	R-8	55	20
Greenville Recreation Area	R-9	250	21, 22
Sulphur Springs Recreation Area	R-10	6	23
Lost Creek Recreation Area	R-11	17	24
Camp SEMO Recreation Area	R-12	175	25
Possum Creek Recreation Area	R-13	8	26
Camp Latonka Recreation Area	R-14	369	27
Peoples Creek Recreation Area	R-15	340	28, 29
Sundowner Recreation Area	R-16	17	29
Eagle Point Recreation Area	R-17	128	30
Spillway Recreation Area	R-18	15	31
Total Acres		3,655	

R-1 Redman Creek Recreation Area (185 acres) (Plates 11, 12)

The Redman Creek Recreation Area consists of three separate areas, day use, picnic and camping. The Day Use area has one four-lane boat ramp, three bulletin boards, one courtesy dock, one fish cleaning station, four fountain/hydrants, three horseshoe pits, two lift stations, an overlook, three picnic shelters, seven picnic sites, four play courts, one playground, three waterborne restrooms, one swimming beach, one .75 mile trail and one visitor center. The campground features two administrative sites, two bulletin boards, 109 full hookup sites, one fee booth, 111 fountain/hydrants, six lift stations, two playgrounds, two waterborne restrooms, two showerhouses, one trail, one trailer dump station and one well. The picnic area has one bulletin board, one fountain/hydrant, one lift station, one picnic shelter 10 picnic sites and one waterborne restroom. This area, located south of the dam, has been intensively developed for day-use and camping opportunities. The recreation area receives the most use and visitors at the project.

The Pine Ridge Trail, a double loop trail of one-half and three-quarter mile segments has been designated a National Recreation Trail. This trail provides a view of the dam and the St. Francis River Valley.

Existing Facilities:

DAY USE		CAMPING		PICNIC AREA	
Boat Ramp (Lanes)	1(4)	Administrative Sites	2	Bulletin Board	1
Bulletin Board	3 (1) Loaner Life Jacket	Bulletin Board	2	Fountain/ Hydrant	1
Courtesy Dock	1	Campsites	109F	Lift Station	1
Fish Cleaning Station	1	Fee Booth	1	Picnic Shelter	1
Fishing Pier	1	Fountain/ Hydrant	111	Picnic Site	10
Fountain/ Hydrant	4	Lift Station	6	Restroom	1W
Horseshoe Pits	3	Playground	2		
Lift Station	2	Restroom	2W		
Overlook	1	Showerhouse	2		
Picnic Shelter	3	Trail	1		
Picnic Site	7	Trailer Dump Station	1		
Play Court	4	Well	1		
Playground	1				
Restroom	3W				
Swimming Beach	1				
Trail (Miles)	1(.75)				
Visitor Center	1				

F – Full Hookup, W – Waterborne

Proposed Actions:

Remove tennis courts.

Replace existing basketball and tennis courts with a multi-use covered ball court area that can function as a covered event area.

Improve parking area near event area.

Upgrade restroom adjacent to event area.

Remove existing playground in day use area and install new playground in another location in the day use area.

Construct multi-use trail from Redman Creek Recreation Area, across dam to Eagle Point Recreation Area.

Replace Redman West Campground shower building.

Upgrade Redman West and East Campgrounds to meet standards.

Replace Redman East shower building.

Replace Redman East and West playgrounds.

Replace two restrooms in Redman East with mini showers.

Remove campground dump station.

Construct multi-use trail access parking area in location of old dump station.

R-2 Rockwood Point Recreation Area (66 acres) (Plates 13, 14)

Rockwood Point Recreation Area consists of three separate locations, Rockwood Point, Rockwood Landing and Totten's Lakeside Resort. Rockwood Point facilities include a two-lane boat launch ramp, a courtesy loading dock, a bulletin board, a swimming beach with an accessible walkway, a waterborne restroom, picnic sites and parking.

Rockwood Landing includes a one-lane boat launch ramp, hunting/fishing access and parking.

Totten's Lakeside Resort concession holds a 29.69 acre commercial lease for a full service marina which includes gas sales, boat rentals, bait/tackle sales and small grocery sales. The concessionaire also provides cabin facilities and a swimming pool on adjacent private property. The developments on the public and private land complement each other to create a resort-type area.

Existing Facilities:

DAY USE		TOTTEN'S LAKESIDE RESORT	
Boat Ramp (Lanes)	2(3)	Boat Ramp (Lanes)	1(1)
Bulletin Board	1 Loaner Life Jacket	Boat Slips	140
Courtesy Dock	1	Full Service Marina	1
Fountain/ Hydrant	1		
Lift Station	1		
Picnic Site	2		
Restroom	1W		
Swimming Beach with Accessible Walkway	1		

W – Waterborne

Proposed Actions:

Construct boat mooring area at Rockwood Beach.

Develop trails to access the shoreline at Rockwood Landing and Rockwood Point.

Enlarge boat ramp parking at Rockwood Landing and Rockwood Point.

Raise existing gravel lot at Totten's Lakeside Resort to elevation 370 Feet.

Widen paved access road to Totten's Lakeside Resort to 18 feet to accommodate two-way traffic.

Add 22 boat slips to Totten's Lakeside Resort.

R-3 Baker Lodge Recreation Area (82 acres) (Plate 15)

Baker Lodge Recreation Area is located at the southern end of the lake on Moore's Point. The area is leased to Greater St. Louis Area Council, No. 312, of the Boy Scouts of America for development of a Boy Scout Camp. This area is closed to hunting/trapping for the safety of the camp users.

Existing Facilities:

BAKER LODGE	
Bulletin Board	1
Fountain/ Hydrant	1
Lodge (Baker)	1
Well	1

Proposed Actions:

None proposed at this time.

R-4 Lake Wappapello State Park (1,854 acres) (Plate 16)

A lease is issued to the MDNR Division of State Parks comprising 1,854 acres. This area features diversified developments including two separate campgrounds with 4 basic sites and 72 electric sites, two showerhouse/laundries, two trailer dump stations, two vault restrooms, a playground and a one-lane boat launching ramp for campers. Day-use facilities include 46 picnic sites, two picnic shelters, three water-borne restrooms, three vault restrooms, a two-lane boat launching ramp with courtesy dock, a one-lane boat launching ramp, two playgrounds, an amphitheater, and a swimming beach. Eight housekeeping cabins are available for rent along with 4 camper cabins. In addition, the state manages 21 miles of hiking trail, 15 of which are open to backpacking, equestrian, and mountain bike usage. Fourteen fountain/hydrants and eight bulletin boards are located in the recreation area. Support facilities include two service buildings, a storage shed, one residence, one administrative office, retail store for the concessionaire, a water well and tower, and four sewage treatment facilities. One inholding, Lake Beach (0.28 acre) is located within this area. This multipurpose

park is further described in Appendix I, Missouri Department of Natural Resources Leased Land.

Another part of the Lake Beach Inholding (2.92 acres) was purchased in March 2017. Allison Cemetery is a Corps owned cemetery located in this area.

Existing Facilities:

DAY USE		CAMPGROUND		INHOLDING		OPERATIONAL	
Amphitheater	1	Boat Ramp (Lanes)	1(1)	Lake Beach	.28 acre	Administrative Office	1
Boat Ramp (Lanes)	2(3)	Bulletin Board	2			Concessionaire Store	1
Bulletin Board	6	Cabins (Units)	12(12)			Service Building	2
Courtesy Dock	1	Campsites	72E 4P			Storage Shed	1
Fountain/ Hydrant	8	Fountain/ Hydrant	6			Superintendent Residence	1
Lift Station	2	Laundry	2			Wastewater Treatment Facility	4
Picnic Shelter	2	Lift Station	2			Water Well and Tower	1
Picnic Site	46	Playground	1				
Playground	2	Restroom	2V				
Restroom	3W 3V	Showerhouse	2				
Swimming Beach	1	Trailer Dump Station	2				
Trail (Miles)	5(21)						

E – Electric, P – Primitive, V – Vault, W – Waterborne

Proposed Actions:

Purchase of inholdings from willing sellers, as discussed in Chapter 6.

Classify 2.92 acres of the 3.2 acre Lake Beach inholding purchased in 2017 as High Density Recreation. A .28 acre parcel will remain as an inholding.

As furnished by the State Park Superintendent, the following actions are proposed:
Remodel cabins 1 -7 on a cyclical basis.

Work with Concession Operations to install a floating dock at the Marina Road.

Replace three vault restrooms with prefabricated concrete buildings.

Replace Asher Creek Showerhouse.

Replace existing water tower and system.

Install additional courtesy docks at Allison Point and Asher Creek Campground.

Construct a fish cleaning station at the Marina Boat Ramp.

R-5 Chaonia Landing Recreation Area (29 acres) (Plate 17)

This popular recreation area is located at the center of the Wappapello Lake Project and provides access to both ends of the lake. This access is used extensively for hunting and fishing in the fall, winter and spring months due to the close proximity of the river channel. The area includes both a Corps development and a commercial concession lease. Twenty-four acres of the area are leased as a commercial concession development for a full service marina and resort.

Existing Facilities:

DAY USE		CHAONIA LANDING MARINA & RESORT	
Boat Ramp (Lanes)	2(4)	Administrative Buildings	4
Bulletin Board	2	Boat Slips	56
Courtesy Dock	2	Cabins (Units)	3(8)
Showerhouse	1W	Campsites	16E
Well	1	Fountain/ Hydrant	5
		Picnic Sites	3
		Storage Area (Buildings)	1(1)
		Swimming Pool	1

E – Electric, P – Primitive, W – Waterborne

Proposed Actions:

Construct fish cleaning station in day use area.

Develop high water boat ramp.

Upgrade marina docks.

R-6 Holliday Landing Recreation Area (21 acres) (Plate 18)

The site, located at the northern end of Wappapello Lake, is accessed by State Highway F and paved Corps Road #30. This is a popular area for hunting and fishing. The abundance of public land in the area provides a diverse habitat for wildlife. The area includes both Corps facilities and a 22.78-acre commercial concession lease.

The Holliday Landing Resort & Marina offers a full service marina and store with bait/tackle and grocery sales.

A 150-foot long, Corps-maintained breakwater, with a top elevation of 375.0 Feet, protects the marina facilities from current and debris during flood conditions.

Existing Facilities:

DAY USE		HOLLIDAY LANDING RESORT & MARINA	
Boat Ramp (Lanes)	1(2)	Boat Ramp (Lanes)	1(1)
Bulletin Board	1	Boat Slips	60
		Cabins (Units)	3(6)
		Campsites	51EW
		Convenience Store	1
		Fountain/ Hydrant	51
		Horseshoe Pit	2
		Picnic Site	2
		Play Court	1
		Playground	1
		Restroom	2V
		Showerhouse	1
		Storage Building	1
		Swimming Pool	1
		Trailer Dump Station	1
		Wastewater Treatment Facility	1
		Well	1

EW – Electric/Water, V – Vault

Proposed Actions:

Construct a vault toilet in day use area.

Construct a boat mooring area.

Relocate and/or raise access road to concessionaire to minimize impacts during flooding.

Develop upper campground development plans.

Prepare master site plan for future development.

Complete construction in upper campground to include campsites, water, electric and sewer.

Build new maintenance shed/garage.

Renovate existing shed into one ADA accessible overnight lodging facility.

Construct one ADA accessible overnight lodging facility.

Update existing playground.

Update electrical service to campsites.

Replace 16 boat slips with encapsulated foam and replace 25 open slips with covered slips.

R-7 34 Bridge Recreation Area (38 acres) (Plate 19)

The recreation area is located at the northern end of the project on the St. Francis River and has direct access from State Highway 34. It is a popular day use area that provides recreational opportunities not normally associated with the lake. The St. Francis River is a typical clear, gravel bottom Ozark Stream. The area, primarily used in the summer months, provides public access for canoe and boat launching, primitive camping, swimming and other related activities. A gravel bar that runs from the bridge south along the river is available for camping. Improvements to the area include an entrance road from Highway 34, a gravel parking lot and a bulletin board.

Existing Facilities:

DAY USE	
Bulletin Board	1
Campsites	2P
Parking Lot	1

P – Primitive

Proposed Actions:

Install a vault toilet/ or waterborne restroom.

Pave upper parking lot.

R-8 North Greenville Recreation Area (55 acres) (Plate 20)

Located along the St. Francis River near the city of Greenville, this site includes one hunting/fishing access and a 12-acre site leased to the City of Greenville for Park and Recreational purposes. These accesses provide opportunities for canoe and small boat launching, bank fishing, hiking and sightseeing. They also provide access to the adjacent St. Francis East Vegetative Management Area MR-VM-6, which it divides into two sections.

Existing Facilities:

DAY USE		GREENVILLE LEASE
Parking Lot	1	See Proposed Actions

Proposed Actions:

Construct a picnic area with three group shelters and associated parking.

Construct a gazebo and a pavilion with a paved trail and footbridge connecting all facilities.

Construct a playground.

Construct restroom facilities.

Install two water fountains.

Build two gravel parking lots and expand the existing lot.

Plant trees.

Construct a soccer field, horseshoe pits and a sand volleyball court.

Improve drainage.

Construct event area with stage, seating, posts and railing with two light poles.

R-9 Greenville Recreation Area (250 acres) (Plates 21, 22)

Located one mile south of the City of Greenville, off U.S. Highway 67, this area includes both camping and day use activities. Portions of the facilities are located within the boundaries of the 137-acre Old Greenville Historic Site. Situated at the northern end of the lake, this area receives intensive use throughout the year.

Memory Lane, a one-mile historic walking trail, follows the sidewalks of the historic town of Greenville. Wayside exhibits and a gazebo tell the story of Old Greenville. The Old Greenville area was listed on the *National Register of Historic Places* in March of 1990 because of its archaeological and historic significance. Union Cemetery, located within the campground, is private property and also is listed on the *National Register of Historic Places*.

Existing Facilities:

DAY USE		CAMPGROUND		INHOLDING	
Boat Ramp (Lanes)	1(2)	Administrative Site	1	Union Cemetery	0.7 acre
Bulletin Board	1	Bulletin Board	1		
Courtesy Dock	1	Campsites	107F 3EW		
Fishing Pier	1	Fee Booth	1		
Fountain/ Hydrant	2	Fountain/ Hydrant	11		
Horseshoe Pit	2	Lift Station	33		
Lift Station	2	Play Court	1		
Picnic Shelter	1	Playground	1		
Picnic Site	13	Restroom	3W		
Play Court	3	Showerhouse	1		
Playground	1	Trailer Dump Station	1		
Restroom	1W 1V	Well	1		
Trail (Miles)	2(1)				

F – Full Hookup, EW – Electric/Water, V – Vault, W – Waterborne

Proposed Actions:

Upgrade bank fishing access in day use area.

Locate interpretive area centrally in the campground.

Stabilize eroding shoreline to protect campground and day use area.

Upgrade restroom at boat ramp to waterborne.

Remove trailer dump station in day use area.

Install pavers in overflow parking areas.

Install dusk to dawn lighting at boat ramp.

R-10 Sulphur Springs Recreation Area (6 acres) (Plate 23)

This area is used for sightseeing, fishing, camping and hunting and will continue to provide lake access and related services to the public. There is a one-lane boat ramp, one bulletin board, one vault restroom and four primitive campsites.

Existing Facilities:

DAY USE		CAMPING	
Boat Ramp (Lanes)	1(1)	Campsites	4P
Bulletin Board	1		
Restroom	1V		

P – Primitive, V – Vault

Proposed Actions:

Pave gravel area at entrance to recreation area.

Widen and pave cul-de-sac.

R-11 Lost Creek Recreation Area (17 acres) (Plate 24)

This area provides access to the Lost Creek arm of Wappapello Lake. Lost Creek Lodge, Marina & Resort is located on a 2.13-acre lease area and adjacent private property with campsites and cabins.

The major use of this area is for hunting and fishing. A one-lane boat ramp and associated parking are provided outside of the lease area.

Existing Facilities:

DAY USE		LOST CREEK LODGE, MARINA & RESORT	
Boat Ramp (Lanes)	1(1)	Boat Ramp (Lanes)	1(1)
		Boat Slips	20
		Campsites	8EW
		Fountain/ Hydrants	8

EW – Electric/Water

Proposed Actions:

None are proposed at this time.

R-12 Camp SEMO Recreation Area (175 acres) (Plate 25)

This site is managed under a lease to Camp SEMO, a not-for-profit public youth camp for the Lutheran Church Missouri District, Missouri Synod Congregations. The site functions as a youth camp providing recreational opportunities for organized youth groups.

Existing Facilities:

CAMP SEMO	
Amphitheater	1
Beach	1
Cabins	10
Campsites	4
Caretaker Residence/Administration Building	1
Dining Hall	1
Fountain/ Hydrants	8
Group Camp	1
Group Shelter	1
Play Court	1
Playground	1
Sewage Treatment Plant	1
Showerhouse	2
Trail (Miles)	1(.75)
Well	1

Proposed Actions:

Build vault restroom for use at group shelter and amphitheater areas.

R-13 Possum Creek Recreational Area (8 acres) (Plate 26)

This site offers both primitive camping and day use activities. Possum Creek is also a popular fishing area, especially bank fishing.

Existing Facilities:

DAY USE		CAMPGROUND	
Boat Ramp (Lanes)	1 (1)	Campsites	2P
Restroom	1V		

P – Primitive, V-Vault

Proposed Actions:

Enlarge the parking area by approximately 15 vehicle/trailer spaces, resolving traffic hazards due to heavy utilization of this area.

Pave parking area.

Relocate two primitive campsites.

Construct boat mooring area.

R-14 Camp Latonka Recreation Area (369 acres) (Plate 27)

The Girl Scouts of the Missouri Heartland operates a group camp under a lease agreement. The area is developed with outdoor recreational opportunities for youth groups and serves to orient them to the environment.

Existing Facilities:

CAMP LATONKA – GIRL SCOUTS	
Administration Building	2
Amphitheater	1
Cabins	15
Courtesy Dock	1
Dining Hall	1
Fountain/ Hydrant	8
Group Camp	5
Picnic Shelter	3
Play Court	1
Restroom	12V
Showerhouse	2
Swimming Beach	1
Trail – horseback (Miles)	1(0.5)
Trail – hiking (Miles)	2(1.5)
Well	2

V – Vault

Proposed Actions:

Improve and extend existing hiking trails, adding trail markers and information stations.

Install electricity to 15 cabins.

Install two toilets and a shower in the Troop House.

Replace four tent platforms with cabin-like structures.

R-15 Peoples Creek Recreation Area (340 acres) (Plates 7, 28, 29)

A popular multipurpose area with camping and day use facilities is located on this site. The 57-site campground is split into an upper and lower area.

The area has one inholding, Ferry Point (11.75 acres), near the Camp Latonka Recreation Area, R-14. Two parcels in the Ferry Point inholding (.17 acre each) were purchased in March 2017.

Existing Facilities:

DAY USE		CAMPING		INHOLDING	
Boat Ramp (Lanes)	1(2)	Administrative Sites	1	Ferry Point	11.75 acres
Bulletin Board	1 Loaner Life Jacket	Bulletin Board	1		
Courtesy Dock	1	Campsites	19F 38EW		
Fishing Pier	1	Fee Booth	1		
Fountain/ Hydrant	1	Fountain/ Hydrant	59		
Lift Station	3	Lift Station	6		
Picnic Shelter	1	Showerhouse	2		
Picnic Site	3	Trailer Dump Station	1		
Restroom	2W				
Swimming Beach	1				
Trail (Miles)	1(1)				

EW – Electric/Water, F – Full hookup, W – Waterborne

Proposed Actions:

Add playground to lower campground.

Purchase inholdings from willing sellers as discussed in Chapter 6.

Relocate entrance road to improve visibility and reduce slope. This relocation will improve entrance safety.

Upgrade Peoples Upper Campground to new standards.

Classify two 0.17-acre inholdings purchased in 2017 as High Density Recreation, R-15.

R-16 Sundowner Recreation Area (17 acres) (Plate 29)

This major boat launching area with a marina concession facility is located near the dam. The area is often used for fishing tournaments.

The Sundowner Marina is an 8.15-acre commercial lease with a full service marina. The marina includes gas sales, boat rentals, 90 boat rental slips and bait/tackle sales. Developments on adjacent private land include small grocery sales, gas sales, above ground gas storage tanks and a watercraft sales-service facility.

A Corps maintained breakwater, with a top elevation of 367.0 Feet, helps protect the marina facilities from wind and wave action.

Existing Facilities:

DAY USE		SUNDOWNER MARINE CENTER & MARINA	
Boat Ramp (Lanes)	1(3)	Boat Slips	90
Bulletin Board	1		
Lift Station	1		
Restroom	1W		

W – Waterborne

Proposed New Actions:

Develop multi-use trail connecting Sundowner and Eagle Point Recreation Areas.

R-17 Eagle Point Recreation Area (128 acres) (Plate 30)

The recreation area is located at the north abutment of the dam and on the lands north of the spillway below the dam. A small shallow wetland created by a beaver dam has become a popular fishing area. Development at the north abutment includes dam instrumentation, piezometers and a seepage weir.

Existing Facilities:

DAY USE NORTH ABUTMENT		DAY USE BELOW DAM		OPERATIONAL	
Bulletin Board	1	Bulletin Board	1	Wastewater Treatment Facility	1
Fountain/ Hydrant	1	Restroom	1W		
Horseshoe Pits	2	Fountain/ Hydrant	1		
Lift Station	2				
Picnic Shelter	1				
Picnic Site	10				
Play Court	1				
Playground	1				
Restroom	1W				

W – Waterborne

Proposed Actions:

Remove north entrance to Eagle Point Recreation Area and create cul-de-sac. Pedestrian and vehicle conflicts exist during times of heavy visitation. With two entrances/exits to the area, many vehicles use this as a through road. Removal will reduce user conflicts, create a safer recreation experience and allow for better vehicle control. Parking area will remain for multi-use trail access.

Remove ball diamond.

Develop archery trail and range.

Raise road to elevation above water flow during times water overflows Auxiliary Spillway.

Develop multi-use trail connecting Sundowner Recreation Area and Eagle Point Recreation Area.

Develop multi-use trail from Eagle Point Recreation Area to the Visitor Center.

Construct accessible walkway to allow access to the St. Francis River.

Develop trail for better access to the shoreline.

R-18 Spillway Recreation Area (15 acres) (Plate 31)

This day use area consists of lands south of the spillway. The area has a one-lane boat ramp, one bulletin board, one fountain/hydrant, two horseshoe pits, one lift station, two picnic shelters, eight picnic sites, two play courts, one playground, two waterborne restrooms and one .5 acre multi-use trail.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Bulletin Board	1
Fountain/ Hydrant	1
Horseshoe Pits	2
Lift Station	1
Picnic Shelter	2
Picnic Site	8
Play Court	2
Playground	1
Restroom	2W
Multi-use Trail (Miles)	1(.5)

W – Waterborne

Proposed Actions:

Construct accessible walkway to allow access to the St. Francis River.

Improve access to boat ramp and pave lower parking lot.

Explore moving Administrative Offices to the Spillway.

c. Multiple Resource Management Lands

The following areas have been classified as Multiple Resource Management Lands with three sub categories listed below:

MR-LD – Multiple Resource Management Area, Recreation – Low Density

MR-WM – Multiple Resource Management Area, Wildlife Management

MR-VM – Multiple Resource Management Area, Vegetative Management

These areas are depicted on Plates 5 *Land Classification Map* and Plate 8 *Multiple Resource Management Lands*, of this master plan.

TABLE 21
MULTIPLE RESOURCE MANAGEMENT LANDS

AREA NAME	AREA NO.	ACRES	PLATE NO.
Two Islands MRMA	MR-LD-1	67	5, 8
Snow Creek MRMA	MR-LD-2	6	5, 8, 17
Otter Creek MRMA	MR-LD-3	24	5, 8
Strickland Point MRMA	MR-LD-4	12	5, 8
Cozort Point MRMA	MR-LD-5	17	5, 8
Caldwell Creek MRMA	MR-LD-6	34	5, 8
Carlton Place MRMA	MR-LD-7	8	5, 8
Blue Springs MRMA	MR-LD-8	17	5, 8
Page Branch MRMA	MR-LD-9	18	5, 8
Perkins Branch MRMA	MR-LD-10	5	5, 8
Walnut Cove MRMA	MR-LD-11	18	5, 8
Paradise Point MRMA	MR-LD-12	9	5, 8
Lost Creek Point MRMA	MR-LD-13	11	5, 8
Lost Creek Landing MRMA	MR-LD-14	30	5, 8
Lost Creek Pond MRMA	MR-LD-15	272	5, 8
Pisos Point MRMA	MR-LD-16	6	5, 8
Chollo Holly WMA	MR-WM-1	1,880	5, 8
University of Missouri Forest Resource Area MRMA	MR-VM-1	817	5, 8
Asher/Bluewater Creek MRMA	MR-VM-2	1,008	5, 8
Otter Creek MRMA	MR-VM-3	6,524	5, 8
Pleasant Valley MRMA	MR-VM-4	2,054	5, 8
St. Francis West MRMA	MR-VM-5	4,818	5, 8
St. Francis East MRMA	MR-VM-6	2,763	5, 8
Johnson Tract MRMA	MR-VM-7	952	5, 8
Happy Hollow MRMA	MR-VM-8	643	5, 8
Blue Springs MRMA	MR-VM-9	3,018	5, 8
Lost Creek MRMA	MR-VM-10	5,213	5, 8
Total Acres		30,244	

(1) Low Density Recreation Areas**MR-LD-1 Two Islands MRMA (67 acres) (Plates 5, 8)**

This area is comprised of two islands located in the southern portion of the main lake. The access to the area can be gained by boat only. Six primitive campsites, with grill and table, are located on the islands. These sites are very popular and also receive use for picnicking, sunbathing and sightseeing. The islands are primarily forested with oak/hickory on the ridges and bottomland species near the water. The northern most island contains a 20-acre inholding, which has created management problems for both the landowner and the Corps.

Existing Facilities:

CAMPING		INHOLDING	
Campsites	6P	Duncan	20 acres

P – Primitive

Proposed Actions:

Purchase inholding from willing sellers, as discussed Chapter 6.

MR-LD-2 Snow Creek MRMA (6 acres) (Plates 5, 8, 17)

This area is located on the east side of Chaonia Landing, and offers several primitive camping sites and an ADA accessible fishing pier. A spur of the Lake Wappapello State Park Trail that is maintained by the State Park under a license agreement ends in this area.

Existing Facilities:

DAY USE	
Campsites	9P
Fishing Pier	1
Fountain/ Hydrant	1

P – Primitive

Proposed Actions:

None proposed at this time.

MR-LD-3 Otter Creek MRMA (24 acres) (Plates 5, 8)

This area is located on the tributary Otter Creek on the west side of the Wappapello Lake Project at the end of County Road 549. It provides access for fishing, hunting and a variety of other day use activities to remote portions of the lake project. A residential

subdivision is located directly to the south on private property. This area has a one-lane boat ramp and two-tier parking lot designed for high lake levels.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Parking Lot	1

Proposed Actions:

None proposed at this time.

MR-LD-4 Strickland Point MRMA (12 acres) (Plate 5, 8)

This area is located at the end of PP Hwy on the south side of the Otter Creek Cove portion of Wappapello Lake. This area provides access for fishing, hunting and a variety of other day use activities. The area has a one-lane boat ramp and parking lot. A residential subdivision is located directly south of the access.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Parking Lot	1

Proposed Actions:

None proposed at this time.

MR-LD-5 Cozort Point MRMA (17 acres) (Plates 5, 8)

This area is located at the end of County Road 546 and resides on the northeast side of Otter Creek Cove. The Cozort Point inholding is located directly to the north. Three private boat docks and three community boat docks are located near this area. Lake access is provided by a one-lane boat ramp.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Parking Lot	1

Proposed Actions:

None proposed at this time.

MR-LD-6 Caldwell Creek MRMA (34 acres) (Plates 5, 8)

Hunting and fishing are traditional uses of this area. Access is provided by one hunting/fishing lot on Caldwell Creek which provides bank fishing opportunities. The habitat includes various stages of bottomland succession with stands of upland forest scattered throughout the area.

Existing Facilities:

Day Use	
Parking Lot	1

Proposed Actions:

None proposed at this time.

MR-LD-7 Carlton Place MRMA (8 acres) (Plates 5, 8)

The area is located on the west side of the St. Francis River and is accessed from FF Hwy. This area is a hub for the Ozark Trail and it provides horse trailer parking with pickets, primitive camping and a one-lane boat ramp.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Camping	2P
Parking Lot	1

P – Primitive

Proposed Actions:

None proposed at this time.

MR-LD-8 Blue Springs MRMA (17 acres) (Plates 5, 8)

This low density recreation area is located on the east side of Wappapello Lake at the end of County Road 531. The area features a one-lane boat ramp with associated parking lot and two primitive campsites. The area is surrounded by large tracts of oak/hickory forest and intermixed open lands which provides a variety of outdoor activities while additionally giving direct boating access for on water activities.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Camping	2P
Parking Lot	2

P – Primitive

Proposed Actions:

None proposed at this time.

MR-LD- 9 Page Branch MRMA (18 acres) (Plates 5, 8)

This low density recreation area is located on the east side of Wappapello Lake at the end of Corps Road 21, which is accessed from BB Hwy. This area features a one-lane boat ramp and associated parking lot, which allows primitive camping. The area traditionally provides access for fishing, hunting and a variety of other day use activities.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Camping	P
Parking Lot	2

P – Primitive

Proposed Actions:

None proposed at this time.

MR-LD-10 Perkins Branch MRMA (5 acres) (Plates 5, 8)

This low density recreation area is located on the east side of Wappapello Lake at the end of Corps Road 13, which is accessed at the end of BB Hwy. The area features a one-lane boat ramp with an associated parking lot and allows primitive camping. This area traditionally provides access for fishing, hunting and a variety of other day use activities.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Camping	P
Parking Lot	1

P – Primitive

Proposed Actions:

None proposed at this time.

MR-LD-11 Walnut Cove MRMA (18 acres) (Plates 5, 8)

Located halfway up the lake on the east side, this area provides a one-lane boat launching ramp west of a small private subdivision. The area also provides excellent hunting and fishing opportunities. Upland forests provide quality habitat for deer, turkey and squirrels while bottomland areas offer suitable habitat for waterfowl.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Parking Lot	1

Proposed Actions:

None proposed at this time.

MR-LD-12 Paradise Point MRMA (9 acres) (Plates 5, 8)

This area is located at the end of County Road 527A. It has a one-lane boat ramp and associated parking lot that is primarily used for fishing access. The surrounding old growth oak/hickory hillsides offer several types of hunting and recreating activities. A small residential community is located directly to the north. Additionally, flowage easement has been obtained, surveyed and marked on neighboring private land.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Parking Lot	1

Proposed Actions:

None proposed at this time.

MR-LD-13 Lost Creek Point MRMA (11 acres) (Plates 5, 8)

This area is located off County Road 527 at the end of Corps Road 11 and neighbors Paradise Point to the east being separated by one hillside. It features a one-lane boat ramp and parking lot and allows primitive camping. Its remote location not only offers lake access, but a multitude of other outdoor recreational activities.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Camping	P
Parking Lot	1

P – Primitive

Proposed Actions:

None proposed at this time.

MR-LD-14 Lost Creek Landing MRMA (30 acres) (Plates 5, 8)

This area provides fishing, hunting and a variety of other day use activities. A portion of this area also serves as a waterfowl refuge and is closed year round to any form of waterfowl hunting. The boat ramp is closed to boat traffic during the zoned duck hunting seasons to provide necessary waterfowl resting areas. The relocation of the waterfowl refuge boundary is addressed in the Shoreline Management Plan and also covers a portion in Lost Creek MR-VM-10. Located within this area are a one-lane boat ramp and primitive camping.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Camping	2P
Parking Lot	1

P – Primitive

Proposed Actions:

None proposed at this time.

MR-LD-15 Lost Creek Pond MRMA (272 acres) (Plates 5, 8)

This area is located on the east side of Wappapello Lake near Shook, Missouri. Lake access is provided at the East Fork of Lost Creek tributary entrance by a one-lane Corps maintained public boat ramp. This ramp provides direct access to Lost Creek Cove and the East Fork of Lost Creek. The boat ramp is closed to boat traffic during the zoned duck hunting seasons to provide necessary waterfowl resting areas. The area has a mile long National Recreation Trail with an overlook into the waterfowl refuge and additional ¼ mile wildlife loop that traverses Lost Creek Pond levee. Lost Creek Pond is a 2.5 acre pond managed for wildlife viewing and public access fishing.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Parking Lot	2
Trail (Miles)	1(1.25)

Proposed Actions:

None proposed at this time.

MR-LD-16 Pisos Point MRMA (6 acres) (Plates 5, 8)

The area, located on the east side of the lake, serves as a buffer zone between Camp SEMO Recreation Area, Possum Creek Recreation Area and Camp Latonka Recreation Area. The shoreline is indented by several coves with the ridges primarily forested with oak-hickory. A residential subdivision is located directly to the east of this area on private property.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Parking Lot	2

Proposed Actions:

None proposed at this time.

(2) Wildlife Management Areas

MR-WM-1 Chollo Holly Wildlife Management Area (1,880 acres) (Plates 5, 8)

This area is licensed to the MDC as the Chollo Holly Conservation Area, for fish and wildlife management purposes. Six parking areas provide public access. A mixed bottomland hardwood forest comprises the largest habitat type in this area. Upland forest and old field habitats account for approximately two-thirds of the habitat with cropland, savanna/glades and water composing another one-third. The major emphasis of management on Chollo Holly is to improve wildlife habitat. This is accomplished by providing a stable food source utilizing leave crops, establishing field borders, planting cover strips to break up large fields, silvicultural treatments and establishing permanent vegetation where needed. Habitats are manipulated mechanically, with prescribed fire and the use of approved herbicides to improve existing wildlife habitat and remove undesirable vegetation. Other management objectives are to increase diversity of forestland, implement soil conservation practices to control soil erosion and maintain water quality and to protect and enhance the habitat of any rare, threatened or endangered species. A nature trail and 3.5 miles of the Ozark Trail traverse the area.

Existing Facilities:

DAY USE	
Boat Ramp (Lanes)	1(1)
Parking Lot	6
Trail (Miles)	2(4)

Proposed Actions:

None are proposed at this time.

(3) Vegetative Management Areas**MR-VM-1 Gum Spring Hollow (817 acres) (Plates 5, 8)**

This 817-acre area, formerly known as University of Missouri Forest Resources Area, is split into two tracts. The larger westerly tract contains pre-dominantly mature oak/hickory forest that serves as a wooded buffer between the Baker Lodge Lease Area and Lake Wappapello State Park. Two 39.25-acre USFS inholdings are located within this area along with an additional 80-acre tract bordering the east side. See Chapter 6 for further description of proposed transfer of management of these inholdings from the Forest Service to the Corps of Engineers.

Hall Hollow is a cove of the lake that enters the western tract and is used as a floating duck blind storage cove. The smaller easterly tract of this vegetative area runs along the Rockwood Point peninsula, it is pre-dominantly wooded with oak/hickory and acts as a buffer between several private properties and Wappapello Lake.

Existing Facilities:

INHOLDING	
USFS	39.25 acres
USFS	40 acres
USFS	80 acres

Proposed Actions:

Transfer management of three parcels from the US Forest Service to the Corps for greater efficiency (39.25 acres, 40 acres and 80 acres).

Classify Multiple Resource Vegetative Management, VM-1.

MR-VM-2 Asher/Bluewater Creek (1,008 acres) (Plates 5, 8)

This vegetative management area contains a cross section of habitat communities. The uplands are oak-hickory forests that gently slope into the bottoms of Asher and Bluewater Creeks. These bottoms are composed of fields in various stages of succession. Old field and warm season grass fields are prevalent and interspersed with wildlife buffer zones and supplemental food plots. Prescribed burning and silvicultural treatments are used to improve habitat conditions. This offers a mosaic of vegetation types to support a variety of flora and fauna. A Corps maintained parking area and roadway provide public access to the area. There is one 21-acre inholding in this area. Five adjacent parcels were purchased to mitigate flood concerns or access. Those parcels are Summers (35 acres), Bailey (2 acres), Hart (0.413 acre), Seaman (0.45 acre) and Hunt (0.675 acre).

Horseback riding and hunting are popular uses. The Lake Wappapello State Park and the University State Forest border the area with a section of the Lake Wappapello State Park license backpack trail crossing through the area.

Existing Facilities:

DAY USE		INHOLDING	
Parking Lot	1		21 acres
Trail (Miles)	2(3)		

Proposed Actions:

Purchase inholdings from willing sellers as discussed in Chapter 6.

Classify 38.5 acres of adjacent lands purchased to mitigate flood concerns or access Multiple Resource Vegetative Management, VM-2.

MR-VM-3 Otter Creek (6,524 acres) (Plates 5, 8)

The area, formerly known as Ojibway, varies from heavily forested bottomlands scattered with brushy draws to high-forested bluffs. Otter Creek is a water source that meanders along the southern edge of this vegetative management area. Public access to the area is by service roads maintained by the USFS on the Mark Twain National Forest. Interior access is by walk-in only. This area serves as a buffer to the Hawes Bluff Environmentally Sensitive Area.

MDNR maintains a backpack/hiking, mountain bike and equestrian trail under a license agreement through this area. In addition, 12.5 miles of the Ozark Trail, a National Recreation Trail, crosses the area. Primitive camping is permitted within 300 feet of the trail in this area.

The area provides fishing, hunting and a variety of other day use activities. It contains five accesses for hunting and fishing. Located on the Otter Creek arm of Wappapello Lake, this area provides a mixture of fields, bottomland timber and oak-hickory forest, making it ideal for all types of hunting.

The Corps currently manages two parcels (40 acres and 80 acres) that potentially may be transferred to Forest Service management. At the same time, one 40-acre Forest Service parcel may be transferred to the Corps. See Chapter 6 for further description of proposed transfer of management of these inholdings.

Multiple inholdings are found in the Otter Creek area. The Cozort Point inholding is also located within VM-3 and includes three private boat docks and three community boat docks. See chart below for details.

This management area has a 60-acre wetland that is proposed to be used as a refuge and interpretive area. This wetland consist of two pools where water level management is manipulated by control structures and one pool that was created to mimic natural flooding and drying. This wetland, due to its creative features and diverse water management, houses a variety of plant and animal species.

Existing Facilities:

DAY USE		INHOLDING	
Camping	P	Bethel Cemetery	3.78 acres
Parking Lot	7	Cozort Point and Boat Docks	127 acres, 6 docks (3 private, 3 common)
Trail (Miles)	4(16.2)	Estes Cemetery	0.9 acre
		Lilly Hollow	2.0 acres
		Mine	4.1 acres
		New Liberty Church & Cemetery	1.05 acres
		Private Subdivision	126.82 acres
		Rucker Schoolhouse	1.75 acres
		Smoot Hollow	40.36 acres
		Snow Creek	1.5 acres
		USFS	40 acres
		Woolard Cemetery	0.9 acre

P – Primitive

Proposed Actions:

Purchase inholdings from willing sellers, as discussed in Chapter 6.

Transfer management of 120 acres in two parcels from the Corps to the Forest Service for greater efficiency for both agencies.

Transfer management of 40 acres from the Forest Service to the Corps for greater efficiency for both agencies. Classify this acreage as Multiple Resource Vegetative Management, VM-3.

Designate current wetland area as a waterfowl refuge.

Construct trail and ADA viewing blind to waterfowl refuge.

MR-VM-4 Pleasant Valley (2,054 acres) (Plates 5, 8)

The Ozark Trail, a trail extending through the state that was developed in cooperation with the MDC and the USFS, traverses this area. Three Corps parking areas provide public access. Two cemetery inholdings, A.E. Jones Cemetery (0.115 acres) and Pleasant Valley (0.8 acres) are found within this area. Wight, Kite and Garrison cemeteries are Corps owned. The Civil War Veteran's Grave Memorial is also located in the area. The memorial consists of a lone pine tree, a sidewalk, bulletin boards, a

flagpole, a light and a memorial plaque for an unknown soldier who died during the Civil War. These improvements were made and maintained by the local community, the Wappapello Eagles, Piedmont Eagles, Wayne County Eagles, VFW Post #3416 and the American Legion Post #281 under a special use permit.

Upland forest is the predominant habitat and managed by silvicultural treatments. Bottomland sites are managed with prescribed burning, agricultural leasing and supplemental food plots.

This management area has a 20-acre wetland that is intensively managed as a moist soil impoundment. Water levels are manipulated through a control structure and plant communities are managed through rotational disking and rotational cereal grain plantings.

The Forest Service currently manages 122 acres in four parcels that potentially may be transferred to Corps management. See Chapter 6 for further description of proposed transfer of management of these inholdings.

Existing Facilities:

DAY USE		INHOLDING	
Parking Lot	4	A. E. Jones Cemetery	0.115 acre
Ozark Trail (Miles)	1(3.7)	Pleasant Valley Cemetery	0.8 acre
		USFS	40 acres
		USFS	20 acres
		USFS	22 acres
		USFS	40 acres

Proposed Actions:

Purchase inholdings from willing sellers, as discussed in Chapter 6.

Transfer management of 122 acres in four parcels from the Forest Service to the Corps for greater efficiency, classify MRMA-VM.

MR-VM-5 St. Francis West (4,818 acres) (Plates 5, 8)

Nine Corps parking areas and a boat ramp provide public access throughout the area. The landscape typifies various stages of early bottomland succession associated with creek and riverine habitats. Stands of upland forest are scattered throughout the area. Agricultural leasing is a major management tool, which provides a supplemental food source for various wildlife species that inhabit the area and maintains open space and scenic value. Silvicultural treatments are also used to improve habitat conditions. Prescribed burning plays a major role in succession control and warm season grass management. Part of the Ozark Trail runs through this area. Agricultural leasing is a

major management tool and provides a supplemental food source. Succession control via haying provides habitat for various animal species that inhabit the area.

There are two inholdings Moon (3.244 acres) and Hickson Cemetery (0.3 acres). Five Corps owned cemeteries A. L. Holmes (Meadors) (0.299 acres), Old Rubottom (0.32 acres), New Rubottom (0.51 acres), Campbell, Washington and Bollinger (Dalton-White) (.25 acres) are also found within the area. Campbell and Washington Cemeteries are very small with one and two headstones respectively. Highway FF subordination included the purchase of 240 acres of land, which avoided the necessity of having to raise the road to allow landowners access during times of high water.

Existing Facilities:

DAY USE		INHOLDING	
Parking Lot	9	Hixson Cemetery	0.3 acre
Ozark Trail (Miles)	1 (13.7)	Moon	3.244 acres

Proposed Actions:

Purchase inholdings from willing sellers, as discussed in Chapter 6.

Classify 240 acres purchased as part of FF Highway subordination as Multiple Resource Vegetative Management, VM-5.

MR-VM-6 St. Francis East (2,763 acres) (Plates 5, 8)

This area is very similar in habitat and topography to the St. Francis West Vegetative Management Area. Eight Corps parking areas provide public access. The landscape typifies various stages of early bottomland succession associated with creek and riverine habitats. Old field growth and warm season grass plantings are maintained with prescribed burning. Forest lands are managed with different silvicultural treatments to provide diversity. Agricultural leasing is a major management tool and provides a supplemental food source. Succession control via haying provides habitat for various animal species that inhabit the area. The Military Road Moist Soil Unit utilizes a St. Francis River overflow channel to trap and hold water. This 11-acre unit is managed to promote desirable vegetation, invertebrate populations and amphibian habitat. The area is used extensively by waterfowl, shorebirds, mammals and a wide array of frogs and songbirds. Five inholdings, which include the Bennett (.037 acres) and Hannapel (0.18 acres) Cemeteries, the New Prospect Church and Cemetery (5.84 acres) and the Cowshed (2.084 acres) and CoStephens inholdings (1.15 acres), are within the area.

Existing Facilities:

DAY USE		INHOLDING	
Parking Lot	8	Bennett Cemetery	0.037 acre
		CoStephens	1.15 acres
		Cowshed	2.084 acres
		Hannapel Cemetery	0.18 acre
		New Prospect	5.84 acres

Proposed Actions:

Purchase inholdings from willing sellers, as discussed in Chapter 6.

MR-VM-7 Johnson Tract (952 acres) (Plates 5, 8)

This area adjoins the Johnson Tract Environmentally Sensitive Area. Public access is via one Corps parking area and three Wayne County roads. The area is predominantly fields with early succession bottomland forest. The extreme northeast section of Johnson Tract (formerly known as Laconia) contains an oak-hickory upland forest. Holliday Creek is the major interior water source. These habitats are managed by plantings, prescribed burns and silvicultural techniques. Adjacent to the St. Francis River, is a 7-acre moist soil unit. Water levels are controlled with a stop-log structure and managed to promote desirable vegetation, invertebrate populations and amphibian habitat. Lands adjacent to the moist soil unit contain ephemeral ponds and supplemental food plots. The area is used extensively by waterfowl, shorebirds, mammals and a wide array of frogs and songbirds. An interpretive display, located on a spur trail off the Johnson Tract trail, explains the importance of managing and preserving wetlands.

This management area has a 50-acre wetland that is intensively managed as a moist soil impoundment. Water levels are manipulated through a control structure and plant communities are managed through rotational disking and rotational cereal grain plantings.

Existing Facilities:

DAY USE	
Parking Lot	1

Proposed Actions:

None are proposed at this time.

MR-VM-8 Happy Hollow (643 acres) (Plates 5, 8)

This area adjoins the Sulphur Springs Recreation Area and the Kime Historic Area. Six Corps parking areas provide public access. This area is comprised of several habitat types that promote a diversity of wildlife. Habitats include upland oak-hickory forests,

bottomlands in various successional stages, native warm season grasses and supplemental food plot areas for wildlife. Habitat is manipulated through various activities such as prescribed burning, wildlife plantings, succession control and forestry management techniques. This area is used for hunting and fishing and provides extensive recreational opportunities. Two borrow areas, where fill was excavated for the raising of Hwy D and BB, provide a wetland area and a small pond for fishing opportunities.

Two Corps-owned cemeteries totaling 1.2 acres, Twidwell and Oak Grove Cemeteries, are located in this area.

Existing Facilities:

DAY USE	
Parking Lot	6

Proposed Actions:

None are proposed at this time.

MR-VM-9 Blue Springs (3,018 acres) (Plates 5, 8)

The area is heavily used for hunting and fishing. Eleven Corps parking areas and five one-lane boat ramps provide public access to the area. Habitat is almost equally divided between upland forest and bottomland early succession and is manipulated through prescribed burning, planting supplemental food sources, silvicultural treatments and bushhogging. On the north end of the area is Davidson's Blue Spring, which pumps out approximately 31.7 million gallons of water per day. The site is popular for fishing. The MRTC pipeline crosses a portion of this area.

Three inholdings: Walnut Cove (11.352 acres), Paradise Point (18.77 acres) and Craft Subdivision (18.062 acres) are within the area. Kirkpatrick Cemetery (1.04 acres) is a Corps owned cemetery containing graves dating back to the 1800s.

This management area has a wetland complex that is collectively 85 acres. Forty-eight acres are located at Holiday Landing Bridge Site and 37 acres are located at Blue Springs. Water levels are manipulated through a control structure and plant communities are managed through rotational disking and rotational cereal grain plantings.

Existing Facilities:

DAY USE		INHOLDING		OTHER	
Boat Ramp (Lanes)	5(5)	Craft Subdivision	18.062 acres	MRTC Pipeline	1
Parking Lot	11	Paradise Point	18.77 acres		
		Walnut Cove	11.352 acres		

P – Primitive

Proposed Actions:

Address road flooding issues on Corps Road 13 in Perkins Branch area.

Purchase inholdings from willing sellers, as discussed in Chapter 6.

Reclassify the 60-acre Poole Lodge Recreation Area from High Density Recreation to Multiple Resource Vegetative Management, VM-9.

MR-VM-10 Lost Creek (5,213) (Plates 5, 8)

Portions of this area serve as the Lost Creek Waterfowl Refuge, closed to vehicles, boat traffic and firearms hunting during the duck season. Walk-in access and bow hunting are allowed. Seven Corps parking areas and several Wayne County roads provide public access to this heavily used area. Six inholdings, which include the Lost Creek (179.32 acres), Taner (40 acres), Wilkison (0.185 acre), Lone Star Ridge (39.47 acres and Pisos Point (4.7 acres) inholdings and Shiloh Cemetery (1.84 acres), are within the boundaries of this area. Jones Cemetery is also in this area and is maintained under a volunteer agreement with the Jones Cemetery Group.

The East and West Forks of Lost Creek, Hickory Flats Creek and Little Creek are the interior water sources. Habitat is manipulated through prescribed burning, silvicultural treatments, planting supplemental food sources and bushhogging. The area serves as a buffer for the Deep Muck Fens Environmentally Sensitive Area. Ten acres of private land was purchased as part of the D5 Road Project. This property, along with other properties, will be used to raise the road and also provided additional buffer to the adjacent ESA.

The Lost Creek Nature Trail, a one-mile loop, is part of the National Recreation Trail System and is part of the Watchable Wildlife program as a wildlife viewing area. A two-acre pond within the trail system has been stocked with largemouth bass, bluegill and catfish. A moist soil unit is located near the Warner Davis access.

Twenty-eight acres of mitigation lands were purchased for the Corps by M&A Power in exchange for the right to place a power line across Corps lands. The land purchased floods during times of high water, eliminating the need for a flowage easement.

Ten acres of land were purchased adjacent to a road raise project for the purpose of the project and to protect ES-E-3.

Existing Facilities:

DAY USE		INHOLDING	
Parking Lot	7	Lone Star Ridge	39.47 acres
Trail (Miles)	1(1)	Lost Creek	179.32 acres
		Pisos Point	4.7 acres
		Shiloh Cemetery	1.84 acres
		Taner	40 acres
		Wilkison	0.185 acre

Proposed Actions:

Purchase inholdings from willing sellers, as discussed in Chapter 6.

Classify 28 acres of mitigation lands as Multiple Resource Vegetative Management, VM-10.

Classify 10 acres land purchased adjacent to a road raise project and to protect ES-E-3 as Multiple Resource Vegetative Management, VM-10.

d. Environmentally Sensitive Areas

Historic, cultural or biological significant lands are classified separately as Environmentally Sensitive. The following areas with two sub categories are listed below:

ES-E: Environmentally Sensitive Area – Ecological

ES-C: Environmentally Sensitive Area – Cultural

These areas are depicted on Plate 5 *Land Classification Map* and Plate 9 *Environmentally Sensitive Lands*, of this plan.

TABLE 22
ENVIRONMENTALLY SENSITIVE AREAS

AREA NAME	AREA NO.	ACRES	PLATE NO.
Hawes Bluff	ES-E-1	54	9
Johnson Tract	ES-E-2	1,617	9, 23
Deep Muck Fens	ES-E-3	18	9
Chaonia	ES-C-1	89	9
Taskee	ES-C-2	32	9
Old Greenville	ES-C-3	96	9
Kime	ES-C-4	95	9
Total Acres		2,001	

ES-E-1 Hawes Bluff (54 acres) (Plate 9)

This area has been identified because of its unique high limestone bluffs that are relatively unusual for this physiographic region. No roads or other developments exist on the area. Access is best achieved by boat, which contributes to the area's limited human impacts. The state-endangered Little Leafed Alum Root, *Heuchera parviflora* var. *parviflora* was last observed in 1981 and is listed in the Missouri Natural Heritage Database. An updated floral and faunal inventory will be conducted if budget allows to determine its continued existence and the presence of any other rare, threatened or endangered species.

Proposed Actions:

None proposed at this time.

ES-E-2 Johnson Tract (1,617 acres) (Plates 9, 23)

This area features rugged hills cut by deep valleys. The majority of the area is covered with mature mixed hardwood and pine forests. A remnant dolomite glade exists on the topographical feature known as Cedar Bluff, and is being restored to pre-settlement

conditions through prescribed burning. This interesting and biologically diverse area supports 602 taxa of vascular plants. A five-mile loop backpack trail provides interior access. Two Corps maintained parking areas provide public access. The area contains a private inholding (Jones 9.5 acres) and Corps owned Brown Cemetery.

Existing Facilities:

DAY USE		INHOLDING	
Campsites	2P	Jones	9.5 acres
Parking Lot	2		
Trail (Miles)	1(5)		

P – Primitive

Proposed Actions:

Purchase inholding from willing sellers, as discussed in Chapter 6.

Remove two primitive campsites.

ES-E-3 Deep Muck Fens (18 acres) (Plate 9)

This area contains the Hattie's Ford Fens. These fens are one of only eight deep muck fen complexes in Missouri. Fens are wetlands supplied with a constant source of minerotrophic phreatic water. These deep muck fens are characterized by organic soils with a component of mucky sedge peat, with soil depths typically exceeding 40 inches. Vegetative sampling and inventory work conducted by The Nature Conservancy documented that the Hattie's Ford Fen system is markedly different in vegetational composition from other deep muck fens and represents a unique expression of this natural community.

The Hattie's Ford Fens has the potential to harbor several state rare or endangered species including the four-toed salamander, (*Hemidactylium scutatum*), Canada Rush, (*Juncus canadensis var canadensis* and Loesel's Twayblade Orchid, (*Liparis loeseli*)i. A 1994 invertebrate census turned up the rare toothpick grasshopper. This species is restricted to undisturbed high-quality natural areas and their presence is an indicator of the fens' overall health.

A Corps maintained road and parking area provides public access.

Existing Facilities:

DAY USE	
Parking Lot	1

Proposed Actions:

None proposed at this time.

ES-C-1 Chaonia Historic Area (89 acres) (Plate 9)

To secure a railroad, a local resident donated 45 acres for the construction of a village named Wellsdale. The railroad was routed through in 1888 and the town was renamed Chaonia. By 1899, the village consisted of a railroad station and sawmill. The Chaonia Ferry became very influential in the growth of Chaonia because a large, prosperous agricultural community was across the St. Francis River on Lost Creek. This community depended on the ferry for access to the railroad. The crossing was so greatly needed that a steel bridge was eventually constructed. Chaonia grew to consist of several stores, churches, a bank and numerous residences.

There is still evidence of the old railroad system within the Chaonia Historic Area. The town was removed because it was in the Wappapello Lake flood zone.

Proposed Actions:

Evaluate the site as part of a comprehensive cultural resource survey to determine its eligibility for nomination to the *National Register of Historic Places* and protection as required by law.

Increase public awareness and interpretation of the site.

ES-C-2 Taskee Historic Area (32 acres) (Plate 9)

This area is set aside because of its significance as a railroad center during the 1800s. It is the site of the first known railroad station within the Project area and served as a center for commerce and travel. The town was also removed because it was in the flood zone. Several foundations are still located within the area.

Proposed Actions:

Evaluate the site as part of a comprehensive cultural resource survey to determine its eligibility for nomination to the *National Register of Historic Places* and protected as required by law.

Increase public awareness and interpretation of the site.

ES-C-3 Old Greenville Historic Area (96 acres) (Plate 9)

Greenville was the chief village in the county and the original roads in the county radiated from it. Because it was within the flood zone of Wappapello Lake, the town moved north to higher ground. The village streets, building foundations, steps to the courthouse and the cemetery are included in the Old Greenville National Register Site. Of this area, 47 acres are located within the Greenville Recreation Area and are

classified as recreation lands. The remaining acres are located north of the recreation area and are classified as environmentally sensitive.

Old Greenville and three private cemeteries were placed on the *National Register of Historic Places* in March of 1990 and are protected as required by the National Historic Preservation Act of 1966. Two of the cemeteries are inholdings (Union and Wight) with the third being adjacent to public land (Hickman). In cooperation with the Wayne County Historical Society, the Corps developed and maintains a walking trail, known as Memory Lane, through the remaining sidewalks and foundations of the old town. Interpretive markers depicting each site allow visitors to go back in time to see the town as it was during its height of prosperity. A gazebo is also in place and traces the history of the town's development and the important role it played as the county seat of Wayne County.

Existing Facilities:

DAY USE	
Trail (Miles)	1(1)

Proposed Actions:

None proposed at this time.

ES-C-4 Kime Historic Area (95 acres) (Plate 9)

Kime, which grew around a spring, is now gone due to its location within Wappapello Lake's flood zone. Building foundations and a cemetery still remain within the area. The site recognized by its significance as a community center dating back to the turn of the century.

Proposed Actions:

Evaluate the site as part of a comprehensive cultural resource survey to determine its eligibility for nomination to the *National Register of Historic Places* and protected as required by law.

Increase public awareness and interpretation of the site.

WAPPAPELLO LAKE MASTER PLAN

ST. FRANCIS RIVER WATERSHED WAPPAPELLO MISSOURI

CHAPTER 6 – SPECIAL TOPICS/ISSUES/ CONSIDERATIONS

Wappapello Lake is unique in the St. Louis District in several ways:

- a. The St. Francis Watershed runs through two Corps Districts, making water management coordination very important.
- b. Lands purchased were entirely allocated for operations. Lands were purchased in whole tracts, which resulted in inholdings around the lake where landowners in many cases could only access their property by crossing Corps lands.

The following presents special topics/issues/considerations that may affect the smooth operation of the lake.

6.1 PARTNERING

Federal reservoirs provide an important recreation resource in the United States. Facilities for support of recreation are expensive to build and operate. Federal involvement is presently limited to provide minimum facilities to meet health and safety requirements of the visiting public. A Federal investment of 50 percent of costs is available if non-federal participating agencies provide 50 percent and operate and maintain the facilities. Marinas are the best known non-federally supplied public recreation service at Corps reservoirs. Scarce funds and other priorities have limited non-federal participation in recreation at federal reservoirs. Corps regulations allow non-federal partners greater opportunities to participate in the operation and management of recreation facilities and environmental stewardship.

The Wappapello Lake Project continues to seek new partnerships and strengthen existing ones as a means to accomplish project initiatives. These partnerships will be created and improved through current authorized partnership methods.

6.2 COOPERATING ASSOCIATIONS

Cooperating associations are used to accomplish such broad goals as natural resource management, interpretation and visitor service activities on civil works water resource

projects, fee-owned lands and other areas for which the Corps has administrative and management responsibilities. Associations aid the Corps through a variety of activities, which may include the following:

- a. Supporting special events; interpretive, educational or scientific activities; exhibits and programs; including presentations and demonstrations that further public understanding and appreciation of the mission of the Corps or a particular water resource development project.
- b. Supporting natural resource management or public programs at or near Corps projects through conservation and educational activities and special events; and also by providing scientific, logistical, maintenance and other support.
- c. Acquiring display materials, historical objects, equipment, supplies, materials, goods or other items or services appropriate for management, operation, interpretive, educational and visitor service functions.
- d. Providing services to visitors through the sale, production, publication and/or distribution of appropriate interpretive and educational items, such as publications, maps, visual aids, audio tapes, pamphlets, handicrafts and other objects directly related to the recreation, scientific, interpretive and educational goals and mission of a project, a group of projects and/or the Corps as a whole.
- e. Acting as a principal distribution medium for those educational and scientific publications of the government and trade that relate to the Corps and/or project mission, mandate or management efforts and provide the public with inexpensive and technically accurate materials.

The Corps of Engineers signed a cooperative agreement with Wappapello Lake Area Association, a non-profit 501(c)(3), in October 2015. The Association offers services and resources in support of the Corps' mission, the project and the natural resource management program.

6.3 INHOLDINGS

Numerous tracts of private land that were not purchased when the project was authorized are interspersed within the Wappapello Lake Project boundaries. These areas present several problems, such as inundation from the lake, access via easements for roads and utilities and environmental problems such as habitat degradation and fragmentation. Purchasing these lands will prevent future claims due to flooding and property damage. The acquisition cost of purchasing these areas to prevent future development by private interests may be substantially lower than the cost of paying for re-occurring flood damages, maintaining boundary lines around the properties, encroachment issues, access issues and degraded habitat including runoff.

Land donations and purchase for mitigation are potential methods for obtaining these areas. Mitigation from efforts, such as new easements for power lines and widening of existing major highways, could be used to permit the project to have a “no net loss” of habitat. Donations, mitigation and acquisition of these areas will be accomplished through purchases from willing sellers.

Real Estate Design Memorandum (REDM) #5, signed in October 2015 addressed the purchase of 81 inholdings. An Environmental Assessment was prepared for these acquisitions and the FONSI was signed on 15 July 2016 by St. Louis District Commander COL Anthony P. Mitchell. To date, 7 lots totaling approximately 41 acres, have been procured. Continued purchase of inholdings must be elevated and become a priority. Delay allows time for development making inholdings more expensive and could worsen relations with adjacent landowners and those from whom the Corps is attempting to purchase lands.

The US Forest Service owns and manages several inholding parcels. Negotiating a property management transfer would benefit both organizations by reducing boundary line maintenance, reducing road maintenance, protecting habitat and securing Corps managed shoreline. This management transfer would involve multiple parcels across the lake and reduce costs for both agencies. A Supplemental Environmental Assessment and FONSI regarding these parcels was signed in April 2018.

6.4 RELOCATION OF STATE HIGHWAYS AND WAYNE COUNTY ROADS

Real Estate Design Memorandum #1, approved December 1997, presented the plan for remedial action for State of Missouri highways and Wayne County roads adversely flooded by operation of the Wappapello Lake Project.

The memorandum, prepared in compliance with Engineering Regulation ER 405-1-12 (since superseded by ER 405-1-11), served as the plan for remedial action on state highways and county roads and established the legal obligation of the federal government. It was determined that changes in the Water Control Plan for Wappapello Lake from the time of original acquisitions to the present caused the roads to be flooded at greater frequency and to a greater depth. The relocation will be accomplished by raising or moving the relevant state and county roads to meet the 100-year flood level requirements. Approximately 278 acres have been purchased as mitigation lands for road construction.

A supplement to this Memorandum was presented in 2005 to include Wayne County Roads 313 and 536.

The following projects remain:

a. State of Missouri Highway D (Site D-5)

The NEPA process is underway to complete relocation work and will proceed provided adequate funding is available.

b. Wayne County Road 313

This project is not currently funded. As funding becomes available the NEPA process and road relocation/design study will begin.

c. Wayne County Road 536

This road serves only one residence that is also an inholding. Purchasing this inholding would resolve the need to raise this road. The project is currently not funded. As funding becomes available, the NEPA process to purchase the inholding or begin the road relocation/design study.

d. Highway F at Holliday Landing

This project is not currently funded. As funding becomes available the NEPA process and road raising/design study will begin.

6.5 FLOODING OF ADJACENT LANDOWNERS

When Wappapello Lake enters flood stage, lake facilities, USFS and MDC lands, as well as private property are all impacted. Eighty-three tracts of land have been identified that would flood at 400 Feet. Currently, eleven separate flowage easements (162.7 acres of private land) are in place allowing the Corps to occasionally flood these lands.

Flooding of adjacent USFS land is permitted through an agreement from the Secretary of the Department of Agriculture to the Secretary of War on July 27, 1940. The current USFS policy of consolidating ownership can result in land exchanges with private land owners. USFS deeds for these floodable tracts do not contain perpetual rights for the government to flood these tracts in the event they are transferred to private entities. The Corps will work with the USFS to incorporate flowage easement rights into these deeds.

There are several adjacent MDC and private tracts that flood that are not covered by any type of real estate instrument that gives the government perpetual rights to inundate them with floodwaters of Wappapello Lake. Deed corrections to add flowage easements, land swaps and purchasing additional lands are options being pursued by the Corps to address this problem.

6.6 FLUCTUATION OF LAKE LEVEL

Wappapello Lake fluctuates throughout each year, depending on rainfall, runoff and water control operations. Because of the nature of the topography of the area, the lake has been known to rise and fall more than 40 feet during a flood event. Rises of 20 feet or more are not uncommon. Many of the lake's recreation areas were developed based on use at the area. As the level of the lake rises, portions of the areas are inundated, thereby restricting their use. The degree and length of restriction depends upon the severity of the flood. Annual flooding has at least some detrimental effects on recreation and area businesses at the lake. Major recreational developments must be closed, with swimming, camping and boat launching facilities often inundated. Adverse side effects also include the damage to roads, turf and trees along the shoreline, accumulation of

driftwood, reduction of visitation and loss of income to area businesses. The fish populations could be adversely affected if spawning coincides with receding high water. The inundated areas are unsightly once the water recedes, leaving behind piles of debris and driftwood. Flooding results in increased maintenance cost for repair and flood cleanup. Management practices which are planned to reduce the effects of flood on recreation activities include planting of water-tolerant grasses in low lying areas, planting bottomland hardwoods in flood prone fields and design of facilities to withstand flooding with minimal cleanup. Future construction activities will be at the highest possible elevation that is practicable.

One major concern that has been identified is the need for a high-water boat-launching ramp in the northern portion of the lake. Two boat launching ramps at the southern portion of the lake, Redman Creek and Sundowner, remain open through elevation 383 Feet and 378 Feet, respectively. The major accesses on the northern end of the lake, Chaonia Landing, Holliday Landing and Greenville, flood at 370 Feet, 369.5 Feet and 368.5 Feet, respectively. These elevations are reached almost yearly. A high water boat ramp, planned for Chaonia Landing Recreation Area, if approved through the NEPA process, will allow access to the lake during high water events.

6.7 COORDINATION WITH MEMPHIS DISTRICT

The St. Louis District assumed control of Wappapello Lake operations in 1982. The Memphis District, which previously oversaw lake operations, still manages the St. Francis River south of the dam to its mouth at Helena-West Helena, Arkansas. The split management of the St. Francis River requires more deliberate coordination efforts to ensure smooth operation.

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CHAPTER 7 – AGENCY AND PUBLIC COORDINATION

7.1 AGENCY AND PUBLIC COORDINATION

Coordinating the update of this Master Plan with agency partners and the public was very important for identifying resources and determining public needs and desires. Public and agency partners were involved and informed through informal workshops, letters, the St. Louis District web page and news releases.

Public and agency input was solicited through a variety of methods. These included:

- a. Web Page: The 2000 Wappapello Lake Master Plan was posted on the lake's website as well as the St. Louis District website. A comment form was also posted, inviting comments using the online form.
- b. News Releases: News releases announcing public workshops were mailed to local and state newspapers, television and radio stations in January 2018 in preparation for the workshop.
- c. Focus Groups: Letters were mailed to stakeholders, partners, agencies, congressional representatives and local governments inviting participation in meetings and requesting comment.
- d. Administration Office: A hard copy of the 2000 Wappapello Lake Master Plan and comment cards were available at the Administration Office to allow any visitor the opportunity to comment on the plan.

7.2 WORKSHOPS

Comments were received at public workshops held on January 17 and 18, 2018 and during a comment period following the workshops. The public was given an opportunity to ask questions and voice their concerns at all workshops, by phone, through the mail and via email. Wappapello Lake personnel provided responses to all comments.

7.3 SUMMARY OF COMMENTS RECEIVED

All comments were taken into account for inclusion in the Draft Master Plan. Since the Shoreline Management Plan was updated simultaneously, some public comments addressed that plan. Those comments are included.

Public comments covered a range of topics including:

- a. The importance of completing renovations to Old Greenville Campground.
- b. More hiking/biking/horse trails.
- c. Improved channel marking on the lake.
- d. Additional accessible facilities.
- e. Request for a dog park.
- f. Improving fish habitat

The Draft Master Plan and Environmental Assessment were made available for 30-day review and comment in August 2019. The public again was given the opportunity to review the plan and comment on proposed changes.

Copies of letters, news releases, public comments and responses are posted in Appendix B, Agency and Public Coordination.

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CHAPTER 8 – SUMMARY OF RECOMMENDATIONS

Wappapello Lake has become an important regional destination, impacting the local economy. This master plan presents an analysis of land use, economic and population changes over the last 19 years and offers recommendations for Wappapello Lake to proceed in an orderly, environmentally sustainable plan for development. It does not address water control, dam operations or water quality. It does not address shoreline management specifically, but merely addresses shoreline management as it relates to future development.

Environmental compliance reviews under NEPA have not been conducted on many new proposed actions. As funding becomes available for a proposed action, an environmental compliance review will be initiated prior to any decisions or commitment of resources being made.

8.1 LAND CLASSIFICATION CHANGES

The following land classification changes to the Master Plan as shown on Plate 32 are:

- a. Propose to reclassify 60 acres of the former Poole Lodge Recreation Area from High Density Recreation to Multiple Resource Management Area, Vegetative Management. This area was formerly leased to the Greater St. Louis Area Council No. 312, of the Boy Scouts of America. All facilities have been removed.
- b. Propose to classify former inholdings as described in Chapter 5 and as purchased by the Corps of Engineers, to MRMA Vegetative Management.
- c. Propose to classify former inholdings as described in Chapter 5 and as purchased by the Corps of Engineers, to High Density Recreation.
- d. Propose to classify lands purchased as mitigation for road construction to MRMA Vegetative Management.

8.2 INHOLDINGS

Real Estate Design Memorandum #5, signed in October 2015, addressed the purchase of 81 inholdings. An Environmental Assessment was prepared for these acquisitions and a FONSI was signed on 15 July 2016 by St. Louis District Commander COL Anthony P. Mitchell. To date, seven lots have been purchased. Completion of these purchases will allow for more efficient management of Corps lands.

A Supplemental Environmental Assessment was prepared for the interagency transfer of lands between the Corps and the Forest Service and a FONSI was signed 20 April 2018 by St. Louis District Commander COL Bryan K. Sizemore.

Recommend coordination between Wappapello Lake and Real Estate Division staff to continue purchase of inholdings from willing sellers and complete interagency land transfer between the Corps and the Forest Service.

8.3 FACILITY IMPROVEMENTS

There are currently no high water boat ramps on the lake, which limits visitor use during high water events. Recommend investigating the construction of a high water boat ramp at Chaonia Landing Recreation Area.

Also, recommend proposal to upgrade facilities around the lake to meet current standards.

8.4 ROAD UPGRADES

During high water events, residents and visitors have limited access to lake facilities and personal property. Roads that currently flood at higher lake elevations will be proposed to be altered to provide continued access.

Recommend coordination with MoDOT and Wayne County to ensure access to private property where possible on a case-by-case basis following NEPA guidelines and as funding becomes available.

8.5 FLOODING ADJACENT LANDOWNERS

Wappapello Lake occasionally floods some private and MDC lands, although there is no instrument in place to cover the right of the government to flood. In addition, the agreement with USFS to flood currently will not transfer to private entities in the event lands are sold. Only eleven separate flowage easements are in place to allow the Corps to occasionally flood.

Recommend negotiating with landowners for land swap, purchase of additional lands, deed correction to include easements to address flooding issue, on a case-by-case basis following all NEPA guidelines.

8.6 TABLE OF PROPOSED ACTIONS

Table 22 shows a consolidated list of all proposed actions described in the text of this master plan.

TABLE 23
PROPOSED ACTIONS

ACTION ITEM #	PROPOSED ACTION	LOCATION	TYPE OF ACTION *(R,N,F,PA)	PAGE	PLATE #	MP AREA #
1	Develop multi-use trail across Main Dam	Main Dam, Administrative	PA	68	11, 30	OP-1
2	Redesign and reconfigure Storage Area, Maintenance Compound and Administrative Offices	Main Dam, Administrative	PA	68	12, 31	OP-1
3	Renovate and upgrade wastewater treatment facility	Main Dam, Administrative	R	68	30	OP-1
4	Develop multi-use trail across Dike 1	Dikes 1 & 2	PA	68	29	OP-2
5	Replace Redman West Campground shower building	Redman Creek	R	70	12	R-1
6	Upgrade Redman West and East Campgrounds to meet standards.	Redman Creek	N	70	12	R-1
7	Replace Redman East Campground shower building.	Redman Creek	R	70	12	R-1
8	Replace Redman East and West playgrounds	Redman Creek	PA	70	12	R-1
9	Replace two restrooms with mini showers	Redman Creek	N	70	12	R-1
10	Remove campground dump station	Redman Creek	N	70	12	R-1
11	Construct multi-use trail access parking area in location of old dump station	Redman Creek	N	70	12	R-1
12	Remove tennis courts	Redman Creek	N	70	11	R-1
13	Replace basketball and tennis courts with a multiuse covered ball court area that can function as a covered event area	Redman Creek	R	70	11	R-1
14	Construct multi-use trail from Redman Creek across dam to Eagle Point	Redman Creek	N	70	11, 30	R-1
15	Improve parking area near event area.	Redman Creek	N	70	11	R-1
16	Upgrade restroom adjacent to event area	Redman Creek	PA	70	11	R-1
17	Replace and relocate existing playground in day use area	Redman Creek	R	70	11	R-1

ACTION ITEM #	PROPOSED ACTION	LOCATION	TYPE OF ACTION *(R,N,F,PA)	PAGE	PLATE #	MP AREA #
18	Develop trails to access the shoreline at Rockwood Landing and Rockwood Point	Rockwood Point	N	72	13	R-2
19	Construct boat mooring area at Rockwood Beach	Rockwood Point	N	72	13	R-2
20	Enlarge boat ramp parking at Rockwood Landing and Rockwood Point	Rockwood Point	N	72	13	R-2
21	*Raise existing gravel lot to elevation 370 Feet	Rockwood Point	PA	72	14	R-2
22	*Widen paved access road to 18 feet to accommodate two-way traffic	Rockwood Point	PA	72	14	R-2
23	*Add 22 boat slips	Rockwood Point	PA	72	14	R-2
24	Purchase inholdings from willing sellers	Lake Wappapello State Park	PA	73	16	R-4
25	Classify 2.92-acre former Lake Beach inholding as High Density Recreation, R-4	Lake Wappapello State Park	N	73	16, 32	R-4
26	**Replace Ridge Campground vault restroom with CXT building	Lake Wappapello State Park	R	73	16	R-4
27	**Replace Asher Creek vault restroom with CXT building	Lake Wappapello State Park	R	73	16	R-4
28	**Replace existing water tower and system.	Lake Wappapello State Park	R	73	16	R-4
29	**Replace Asher Creek showerhouse	Lake Wappapello State Park	PA	73	16	R-4
30	**Remodel cabins 1-7 on a cyclical basis	Lake Wappapello State Park	N	73	16	R-4
31	**Work with Concession Operations to install a floating dock at the Marina Road.	Lake Wappapello State Park	N	73	16	R-4
32	**Replace Allison Day Use Area vault restroom with CXT building.	Lake Wappapello State Park	PA	73	16	R-4
33	**Install additional courtesy docks at Allison Point and Asher Creek Campground.	Lake Wappapello State Park	N	73	16	R-4
34	Replace one-lane boat ramp with two-lane ramp and associated parking	Lake Wappapello State Park	PA	73	16	R-4
35	**Construct fish cleaning station at the Marina Boat Ramp.	Lake Wappapello State Park	N	73	16	R-4
36	Construct fish cleaning station	Chaonia Landing	N	75	17	R-5
37	Develop high water boat ramp	Chaonia Landing	N	75	17	R-5
38	***Upgrade marina docks	Chaonia Landing	R	75	17	R-5
39	Construct a vault toilet	Holliday Landing	N	75	18	R-6
40	Construct a boat mooring area	Holliday Landing	N	75	18	R-6

ACTION ITEM #	PROPOSED ACTION	LOCATION	TYPE OF ACTION *(R,N,F,PA)	PAGE	PLATE #	MP AREA #
41	Relocate or raise access road to concessionaire to minimize flooding	Holliday Landing	PA	75	18	R-6
42	****Develop upper campground development plans	Holliday Landing	N	75	18	R-6
43	****Prepare master site plan for future development	Holliday Landing	N	75	18	R-6
44	****Complete construction in upper campground to include campsites, water, electric and sewer	Holliday Landing	N	75	18	R-6
45	****Build new maintenance shed/garage	Holliday Landing	N	75	18	R-6
46	****Renovate existing shed into one ADA accessible overnight lodging facility	Holliday Landing	R	75	18	R-6
47	****Construct one ADA accessible overnight lodging facility	Holliday Landing	N	75	18	R-6
126	****Update existing playground	Holliday Landing	N	75	18	R-6
48	****Update electrical service to campsites	Holliday Landing	N	75	18	R-6
49	****Replace 16 slips with encapsulated foam and replace 25 open slips with covered slips	Holliday Landing	N	75	18	R-6
50	Install a vault toilet/ or waterborne restroom	34 Bridge Recreation Area	PA	77	19	R-7
51	Pave upper parking lot	34 Bridge	R	77	19	R-7
52	****Construct a picnic area with three group shelters and associated parking	North Greenville	N	77	20	R-8
53	****Construct a gazebo and a pavilion with a paved trail and footbridge connecting all facilities	North Greenville	N	77	20	R-8
54	****Construct playground	North Greenville	N	77	20	R-8
55	****Construct restroom facilities	North Greenville	N	77	20	R-8
56	****Install two water fountains	North Greenville	N	77	20	R-8
57	****Build two gravel parking lots and expand a third	North Greenville	N	77	20	R-8
58	****Plant trees	North Greenville	N	77	20	R-8
59	****Construct a soccer field, horseshoe pits	North Greenville	N	77	20	R-8
60	****Improve drainage	North Greenville	N	77	20	R-8
61	****Build sand volleyball court	North Greenville	N	77	20	R-8
62	****Construct event area with stage, seating, posts and railing, two light poles	North Greenville	N	77	20	R-8
63	Upgrade bank fishing access	Greenville	PA	78	22	R-9
64	Locate interpretive area centrally in the campground	Greenville	N	78	21	R-9

ACTION ITEM #	PROPOSED ACTION	LOCATION	TYPE OF ACTION *(R,N,F,PA)	PAGE	PLATE #	MP AREA #
65	Stabilize eroding shoreline to protect campground and day use	Greenville	PA	78	21, 22	R-9
66	Upgrade restroom at boat ramp to waterborne	Greenville	PA	78	22	R-9
67	Remove trailer dump station in day use area	Greenville	N	78	22	R-9
68	Install pavers in overflow parking areas	Greenville	N	78	21, 22	R-9
69	Install dusk to dawn light at boat ramp	Greenville	N	78	22	R-9
70	Pave gravel area at entrance to area	Sulphur Springs	N	79	23	R-10
71	Widen and pave cul-de-sac	Sulphur Springs	N	79	23	R-10
72	*****Build vault restroom for use at pavilion and chapel areas	Camp SEMO	PA	80	25	R-12
73	Enlarge parking area by approximately 15 vehicular/trailer spaces	Possum Creek	PA	81	26	R-13
74	Pave parking area	Possum Creek	R	81	26	R-13
75	Relocate two primitive campsites	Possum Creek	PA	81	26	R-13
76	Develop boat mooring area	Possum Creek	N	81	26	R-13
77	*****Improve existing hiking trails and possibly extend them adding trail markers and information stations.	Camp Latonka	PA	82	27	R-14
78	*****Install electricity to 15 cabins	Camp Latonka	PA	82	27	R-14
79	*****Install two toilets and a shower in the Troop House	Camp Latonka	PA	82	27	R-14
80	*****Replace four tent platforms with cabin-like structures	Camp Latonka	N	82	27	R-14
81	Add playground to lower campground	Peoples Creek	PA	82	28	R-15
82	Purchase inholdings from willing sellers	Peoples Creek	PA	82	28	R-15
83	Relocate entrance road to the north to improve visibility and reduce slope.	Peoples Creek	PA	82	28, 29	R-15
84	Classify two 0.17-acre former inholdings at Ferry Point as High Density Recreation, R-15	Peoples Creek	N	82	28, 32	R-15
85	Upgrade Peoples Upper Campground to new standards	Peoples Creek	N	82	29	R-15
86	Develop multi-use trail connecting Sundowner and Eagle Point	Sundowner	N	83	29	R-16
87	Remove north entrance and redesign area for safety and more efficient configuration	Eagle Point	PA	84	30	R-17
88	Remove ball diamond	Eagle Point	PA	84	30	R-17
89	Develop archery trail and range	Eagle Point	N	84	30	R-17

ACTION ITEM #	PROPOSED ACTION	LOCATION	TYPE OF ACTION *(R,N,F,PA)	PAGE	PLATE #	MP AREA #
90	Raise road to elevation above water flow during time water overflows Auxiliary Spillway	Eagle Point	N	84	30	R-17
91	Develop multi-use trail connecting Eagle Point to Sundowner	Eagle Point	N	84	30	R-17
92	Develop multiuse trail from Eagle Point to Visitor Center	Eagle Point	N	84	30	R-17
93	Construct accessible walkway to allow access to the St. Francis River	Eagle Point	PA	84	30, 31	R-17
94	Develop trail for better access to the shoreline	Eagle Point	N	84	30, 31	R-17
95	Construct accessible walkway to allow access to the St. Francis River	Spillway	PA	85	31	R-18
96	Improve access to boat ramp and pave lower parking lot	Spillway	N	85	31	R-18
97	Explore moving Administrative Offices to Spillway	Spillway	N	85	31	R-18
98	Purchase inholdings from will sellers	Two Islands MRMA	PA	87	8	MR-LD-1
99	Transfer management of 159.25 acres of Forest Service lands to the Corps, classify MRMA-VM	Gum Spring Hollow	N	95	8	MR-VM-1
100	Purchase inholdings from willing sellers	Asher/Bluewater Creek	PA	95	8	MR-VM-2
101	Classify 38.5 acres of adjacent lands purchased to mitigate flood concerns or access as MRMA-VM	Asher/Bluewater Creek	N	95	8, 32	MR-VM-2
102	Purchase inholdings from willing sellers	Otter Creek	PA	96	8	MR-VM-3
103	Transfer management of 120 acres from the Corps to the Forest Service	Otter Creek	N	96	8	MR-VM-3
104	Transfer management of 40 acres from the Forest Service to the Corps, classify MRMA-VM	Otter Creek	N	96	8	MR-VM-3
127	Designate current wetland area as a waterfowl refuge	Otter Creek	N	96	8, 18	MR-VM-3
105	Construct trail and ADA viewing blind to waterfowl refuge	Otter Creek	N	96	8, 18	MR-VM-3
106	Purchase inholdings from willing sellers	Pleasant Valley	PA	97	8	MR-VM-4
107	Transfer management of 122 acres from the Forest Service to the Corps, classify MRMA-VM	Pleasant Valley	N	97	8	MR-VM-4
108	Purchase inholdings from willing sellers	St. Francis West	PA	98	8	MR-VM-5

ACTION ITEM #	PROPOSED ACTION	LOCATION	TYPE OF ACTION *(R,N,F,PA)	PAGE	PLATE #	MP AREA #
109	Classify 240 acres purchased as part of FF Highway subordination which avoids raising road as Multiple Resource Vegetative Management, VM-5	St. Francis West	PA	98	8, 32	MR-VM-5
110	Purchase inholdings from willing sellers	St. Francis East	PA	99	8	MR-VM-6
111	Reclassify the 60-acre Poole Lodge Recreation Area from High Density Recreation to Multiple Resource Vegetative Management, MR-VM-9	Blue Springs	N	101	8, 32	MR-VM-9
112	Address road flooding issues on Corps Road 13 in Perkins Branch area.	Blue Springs	PA	101	8	MR-VM-9
113	Purchase inholdings from willing sellers	Blue Springs	PA	101	8	MR-VM-9
114	Purchase inholdings from willing sellers	Lost Creek	PA	102	8	MR-VM-10
115	Classify 28 acres of mitigation lands Multiple Resource Vegetative Management, VM-10.	Lost Creek	N	102	8, 32	MR-VM-10
116	Classify 10 acres land purchased adjacent to a road raise project and to protect ES-E-3 as Multiple Resource Vegetative Management, VM-10.	Lost Creek	N	102	8, 32	MR-VM-10
117	Purchase inholding from willing sellers	Johnson Tract	PA	104	9	ES-E-2
118	Remove 2 primitive campsites	Johnson Tract	N	104	9	ES-E-2
119	Evaluate the site as part of a comprehensive cultural resource survey to determine its eligibility for nomination to the <i>National Register of Historic Places</i> and protection as required by law.	Chaonia Historic Area	PA	106	9	ES-C-1
128	Increase public awareness and interpretation of the site.	Chaonia Historic Area	PA	106	9	ES-C-1
120	Evaluate the site as part of a comprehensive cultural resource survey to determine its eligibility for nomination to the <i>National Register of Historic Places</i> and protection as required by law.	Taskee Historic Area	PA	106	9	ES-C-2
129	Increase public awareness and interpretation of the site.	Taskee Historic Area	PA	106	9	ES-C-2
121	Evaluate the site as part of a comprehensive cultural resource survey to determine its eligibility for nomination to the <i>National Register of Historic Places</i> and protection as required by law.	Kime Historic Area	PA	107	9	ES-C-4

ACTION ITEM #	PROPOSED ACTION	LOCATION	TYPE OF ACTION *(R,N,F,PA)	PAGE	PLATE #	MP AREA #
130	Increase public awareness and interpretation of the site.	Kime Historic Area	PA	107	9	ES-C-4
122	State of Missouri Highway D (Site D-5) - The NEPA process is underway to complete relocation work and will proceed provided adequate funding is available.	Hattie's Ford	PA	110	8, 9	MR-VM-10 ES-E-3
123	Wayne County Road 313	Access across Ring's Creek	PA	110	8	MR-VM-5
124	Wayne County Road 536	Access to Johnson Tract	PA	110	8, 9	MR-VM-7 ES-E-2
125	Highway F at Holliday Landing	Holliday Landing	PA	110	8	MR-VM-3 MR-VM-4

*(Replacement/New/Future/Previously Approved)

***Totten's Lakeside Resort proposed actions**

****Lake Wappapello State Park proposed actions**

***** Chaonia Landing Resort & Marina proposed actions**

****** Holliday Landing Marina proposed actions**

*******North Greenville proposed actions**

*******Camp SEMO proposed actions**

*******Camp Latonka Girl Scouts proposed actions**

8.7 SUMMARY

Wappapello Lake, an important asset to the Southeast Missouri Region, continues to be a magnet for outdoor enthusiasts. Although there are some competing recreational opportunities in the area, the lake offers activities not found elsewhere. Other opportunities complement those of surrounding public and private entities.

This Master Plan presents an analysis of past land use and population changes as well as projected development for Wappapello Lake for the next 10 years. The plan considers proposals to accommodate public access and their impact on the resource.

A fully implemented Master Plan will provide for the protection of the resource while allowing organized development.

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CHAPTER 9 – BIBLIOGRAPHY

This report has been prepared in accordance with guidance contained in the following:

- ER 200-2-3 Environmental Compliance Policies (29 Oct 2010)
- EP 200-2-3 Environmental Compliance Guidance and Procedures (15 Dec 2001)
- ER 405-1-11 Real Estate Acquisition (28 Nov 2014)
- ER 405-1-12, Chapter 8 (Real Property Management) (chg. 30, 30 Sep 1994)
- ER 1105-2-100 Planning Guidance Notebook (22 Apr 2000)
- EM 1110-1-400 Recreation Planning and Design Criteria (1 Nov 2004)
- ER 1110-2-400 Design of Recreation Sites, Areas, and Facilities (31 May 1988)
- ER 1120-2-404 Investigation, Planning and Development of Water Resources - Federal Participation in Recreational Development (1970)
(This ER no longer exists)
- ER 1130-2-406 Shoreline Management at Civil Works Projects (original 31 Oct 1990, chg. 2, 28 May 1999)
- ER 1130-2-500 Partners and Support (Work Management Policies) (original 27 Dec 1996, chg. 3, 1 Jun 2006)
- ER 1130-2-540 Environmental Stewardship Operations and Maintenance Policies (original 15 Nov 1996, chg. 3, 11 Aug 2008)
- EP 1130-2-540 Environmental Stewardship Operations and Maintenance Guidance and Procedures (original 15 Nov 1996, chg. 3, 11 Aug 2008)
- ER 1130-2-550 Recreation Operations and Maintenance Policies (original 11 Nov 1996, chg. 7, 30 Jan 2013)
- EP 1130-2-550 Recreation Operations and Maintenance Guidance and Procedures (original 15 Nov 1996, chg. 5, 30 Jan 2013)
- ER 1165-2-400 Water Resource Policies and Authorities, Recreation Planning, Development, and Management Policies (31 May 1988)
- Wappapello Lake Water Control Manual – (February 9, 2016)

Draft Environmental Impact Statement - Route 67 Corridor Project, Madison, Wayne and Butler Counties, Missouri, Appendix C – Results of Archeological Investigations at Old Greenville, Prepared by Missouri Department of Transportation

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WAPPAELLO LAKE MASTER PLAN

ST. FRANCIS RIVER WATERSHED WAPPAELLO MISSOURI

APPENDIX A – ENVIRONMENTAL ASSESSMENT

WAPPAPELLO LAKE MASTER PLAN

ST. FRANCIS RIVER WATERSHED WAPPAPELLO MISSOURI

APPENDIX B – AGENCY AND PUBLIC COORDINATION

The following pages identify partner and stakeholder letters, news releases and public comments on the Master Plan. All comments have been addressed.

Federal, State and Local Agency Contacts

NAME	TITLE	ADDRESS		
Eric Greitens	Missouri Governor	P.O. Box 720	Jefferson City	MO 65102
Asa Hutchison	Arkansas Governor	500 Woodlane St.	Little Rock	AR 72201
Honorable Claire McCaskill	US Congress	555 Independence Ave, Suite 1600	Cape Girardeau	MO 63703
Honorable Roy Blunt	US Congress	2502 Tanner Drive, Suite 208	Cape Girardeau	MO 63703
Honorable Jason Smith	US Congress	2502 Tanner Drive, Suite 205	Cape Girardeau	MO 63703
Gary Romine	MO - Senator District 3	201 W. Capitol Ave. Room 334	Jefferson City	MO 65101
Doug Libla	MO - Senator District 25	201 W. Capitol Ave. Room 226	Jefferson City	MO 65101
Wayne Wallingford	MO-Senator District 27	201 W. Capitol Ave., Rm 114B	Jefferson, City	MO 65101
Elaine Gannon	MO-State Rep District 115	201 W. Capitol Ave., Rm 203C	Jefferson City	MO 65101
Kevin Engler	MO-State Rep District 116	201 W. Capitol Ave., Rm 411-2	Jefferson City	MO 65101
Mike Henderson	Mo-State Rep District 117	201 W. Capitol Ave., Rm 115-H	Jefferson City	MO 65101
Vacant	Mo-State Rep District 144	202 W. Capitol Ave., Rm 110B	Jefferson City	MO 65101
Rick Francis	MO-State Rep District 145	203 W. Capitol Ave., Rm 115-I	Jefferson City	MO 65101
Andrew McDaniel	MO-State Rep District 150	204 W. Capitol Ave., Rm 115-E	Jefferson City	MO 65101
Vacant	MO-State Rep District 151	205 W. Capitol Ave., Rm 203-C	Jefferson City	MO 65101
Rodd Richardson	MO-State Rep District 152	206 W. Capitol Ave., Rm 308	Jefferson City	MO 65101
Steve Cookson	MO-State Rep District 153	207 W. Capitol Ave., Rm 411A	Jefferson City	MO 65101
	U.S. Fish and Wildlife Service, MWR	24279 State Highway 51	Puxico	MO 63960
U.S. Forest Service	Mark Twain National Forest	Highway 67 North	Poplar Bluff	MO 63901
Mark Dobbs	Butler County Sheriff	200 Oak St	Poplar Bluff	MO 63901
Vince Lampe	Butler County Presiding Commissioner	100 N. Main St.	Poplar Bluff	MO 63901
Don Anderson	Butler County Eastern Commissioner	100 N. Main St.	Poplar Bluff	MO 63901
Dennis LeGrand	Butler County Western Commissioner	102 N. Main St.	Poplar Bluff	MO 63901
Bob Holder	Dunklin County Sheriff	PO Box 188	Kennett	MO 63857
Don Collins	Dunklin County Presiding Commissioner	PO Box 188	Kennett	MO 63857

NAME	TITLE	ADDRESS		
Ron Huber	Dunklin County First District Commissioner	PO Box 188	Kennett	MO 63857
Patrick McHaney	Dunklin County Second District Commissioner	PO Box 188	Kennett	MO 63857
Roger Medley	Iron County Sheriff	222 S. Shepard St.	Ironton	MO 63650
Jim Scaggs	Iron County Presiding Commissioner	250 S. Main St.	Ironton	MO 63650
Dwayne Warncke	Southern Commissioner	251 S. Main St.	Ironton	MO 63650
Joshua Campbell	North Commissioner	252 S. Main St.	Ironton	MO 63650
Katy McCutcheon	Madison County Sheriff	124 N. Main St.	Fredericktown	MO 63645
Robert Mooney	Madison County Presiding Commissioner	1 Courthouse Square	Fredericktown	MO 63645
Tom Stephens	Madison County First District Commissioner	2 Courthouse Square	Fredericktown	MO 63645
Larry Kemp	Madison County Second District Commissioner	3 Courthouse Square	Fredericktown	MO 63645
Carl Hefner	Stoddard County Sheriff	PO Box 336	Bloomfield	MO 63825
Greg Mathis	Stoddard County Presiding Commissioner	PO Box 110	Bloomfield	MO 63825
Steve Jordan	Stoddard County 1 st District Commissioner	PO Box 110	Bloomfield	MO 63825
Carol Jerrell	Stoddard County 2 nd District Commissioner	PO Box 110	Bloomfield	MO 63825
Dean Finch	Wayne County Sheriff	PO Box 109	Greenville	MO 63944
Brian Polk	Wayne County Presiding Commissioner	PO Box 48	Greenville	MO 63944
Chad Henson	Wayne County Western Commissioner	PO Box 48	Greenville	MO 63944
Bill Hovis	Wayne County Eastern Commissioner	PO Box 48	Greenville	MO 63944
Carol Rainwater	Greenville Mayor	PO 427	Greenville	MO 63944
Shannon Poole	Fisk Mayor	508 Garfield St	Fisk	MO 63961
Glen Sedrick	Qulin Mayor	481 2 nd St.	Qulin	MO 63961
Kelly Korikis	Fredericktown Mayor	124 West Main	Fredericktown	MO 63645

News Release Contacts

NEWSPAPERS	
Puxico Press	Puxico, MO
Southeast Missourian	Cape Girardeau, MO
Daily American Republic	Poplar Bluff, MO
Wayne County Journal Banner	Piedmont, MO
Daily Statesman	Dexter, MO
Malden Press-Merit	Malden, MO
North Stoddard Countian	Bloomfield, MO
Stoddard County News	Dexter, MO
The Delta News Journal	Malden, MO
TELEVISION	
KFVS – 12	Cape Girardeau, MO
KAIT – 8	Jonesboro, AR
WPSD - 6	Paducah, KY
WSIL - 3	Carterville, IL
RADIO	
KAHR	Poplar Bluff, MO
KJEZ	Poplar Bluff, MO
KLID	Poplar Bluff, MO
KLUH	Poplar Bluff, MO
KMAL/KTCB	Malden, MO
KKLR	Poplar Bluff, MO
KLUE	Poplar Bluff, MO
KWOC	Poplar Bluff, MO
KZMA	Poplar Bluff, MO
KOKS	Poplar Bluff, MO
KPWB	Piedmont, MO
KTJJ	Farmington, MO
KDEX	Dexter, MO
KBOA	Kennett, MO

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Daily American Republic	ads@darnews.com
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Puxico Press	puxpress@sbcglobal.net
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River Country Outdoors	reppert@midwest.net
Sarahbeth Waller	sbwaller@outlook.com
Southeast Missourian	news@semissourian.com
Totten's Lakeside Resort	info@tottenslakesideresort.com
Wappapello Lake State Park	lake.wappapello.state.park@dnr.mo.gov
Wayne County Journal Banner	kimg@waynecojournalbanner.com

Partners

NAME		BUSINESS	ADDRESS			
Dave	Rowald	Missouri Department of Conservation	Hwy 34	Piedmont	MO	63957
Melissa	Scheperte	Missouri Department of Transportation	P.O. Box 270	Jefferson City	MO	65102
Mark	Shelton	MDOT	2675 North Main St	Sikeston	MO	63801
Dave	Wyman	MDOT	2675 North Main St	Sikeston	MO	63801
	Missouri Department of Natural Resources	Missouri State Historic Preservation Office	P.O. Box 176	Jefferson City	MO	65102
CeCe	Totten	Wappapello Lake Area Association	Route 2 Box 2656	Wappapello	MO	63966
Gerald	Sebastian	Lost Creek Lodge	1927 College St	Cape Girardeau	MO	63755
John	Totten	Totten's Resort	Route 2 Box 2656	Wappapello	MO	63966
Charlie & Dorothy	Brotherton	Sundowner Marina	Route 1 Box 2	Wappapello	MO	63966
Dallas & Stacie	Rich	Chaonia Landing Marina & Resort	Route 2 Box 114	Williamsville	MO	63967
Dennis & Christy	Rikard	Holliday Landing	HC 1 Box 46	Greenville	MO	63944
Jeff	Hand	Wappapello Lake State Park	Route 2 Box 102	Williamsville	MO	63967
Millie	Rogers	Millies Station	10064 Highway T	Wappapello	MO	63966
Larry	Neal	National Wild Turkey Federation	2780 Hwy V	Cape Girardeau	MO	63701
Sandy	Vaughn	Camp Latonka	1420 Girl Scout Way	Dexter	MO	63841
Tanya	Winters	SEMO Independent Living Center	511 Cedar St	Poplar Bluff	MO	63901
Wendall	Clinton	Mingo Job Corps	4253 State Highway T	Puxico	MO	63960
Heather	Tuggle	Water Safety Council	Black River Coliseum 301 South 5 th	Poplar Bluff	MO	63901
Melvin	Boyers	Crowley's Ridge Blackpowder Club	P.O. Box 24	Dexter	MO	63841
Tina	Bucheit	Genesis Home Health Care	305 High St	Marble Hill	MO	63764
Karen	Noble	Chaonia Volunteer Fire	HC 2 Box 112	Williamsville	MO	63967
Robert	Wake	Wake Foundation	1103 S. College St	Mountain Home	AR	72653
Dee	Keele	Wayne County Historical Society	Route 4 Box 1117	Piedmont	MO	63957
Steve	Herrington	Nature Conservancy	3110 Crape Myrtle Drive	Columbia	MO	65203
Caroline	Pufalt	Sierra Club Missouri Chapter	2818 Sutton Blvd	Maplewood	MO	63143
		Audubon Society of Missouri	2101 W Broadway PMB 122	Columbia	MO	65203-1261



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ST. LOUIS DISTRICT
WAPPAPELLO LAKE MANAGEMENT OFFICE
10992 HWY T
WAPPAPELLO, MISSOURI 63966

December 19, 2017

Wappapello Lake
Management Office

Totten's Resort and Marina
Route 1 Box 2
Wappapello, Missouri 63966

Dear Totten Family:

The St. Louis District U.S. Army Corps of Engineers is updating the Wappapello Lake Master Plan and Shoreline Management Plan. The purpose for updating these plans is to bring them into compliance with current US Army Corps of Engineers (USACE) policies and regulations, update visitor use trends and obtain public input to ensure future activities are accomplished in an environmentally sustainable manner.

The Master Plan will guide the management activities on government-owned and leased lands located at Wappapello Lake. Decisions about land use classifications at the lake may affect future management of natural resources and outdoor recreation opportunities. Input from your organization and the general public will help define the revisions to our currently outdated Master Plan. That Master Plan was last updated in May of 2000.

The Master Plan process does not address water control, water quality, or shoreline management, although the lake's Shoreline Management Plan is being revised concurrently with the Master Plan. The Shoreline Management Plan, initially approved in 1983, allows for the safe and healthful use of the shorelines by the public while maintaining environmental safe guards.

Because our organizations work so closely together, your input is extremely valuable to the update process. The Corps of Engineers will hold two public workshops at Wappapello Lake. These workshops will be open for both Master Plan and Shoreline Management Plan comments.

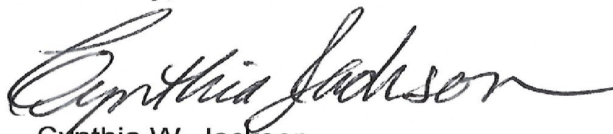
They will be held at the following times and locations:

- January 17, 2018 – 4-7 pm at the Greenville Elementary School, 195 Walnut St., Greenville, Missouri.
- January 18, 2018 – 4-7 pm at the Bill Emerson Memorial Visitor Center, Missouri State Highway T, near the Wappapello Dam.

I would like to extend a personal invitation for you and/or a representative to attend either of the Wappapello Lake workshops. Additionally, digital versions of the current Wappapello Lake Master Plan and Shoreline Management Plan can be reviewed at our website www.mvs.usace.army.mil/Missions/Recreation/Wappapello-Lake/Wappapello-Lake-Master-Plan/. Users can submit comments pertaining to both plans through this website as well.

Please feel free to contact Assistant Manager James Gracey at (573)222-8562 if you have any questions concerning the Wappapello Lake Master Plan or the Shoreline Management Plan process.

Sincerely,



Cynthia W. Jackson
Operations Manager

Wappapello Lake Area Association Facebook Page – January 17, 2018



[Wappapello Lake Area Association](#) shared [Engineers' post](#).

January 17 ·

Today (1/17) is the day for all of our Greenville community friends. The Corps is asking for your input for the Wappapello Lake Master Plan. Be thinking about services and amenities you would like to suggest. Come by Greenville Elementary today from 4-7 to leave your suggestions with the Corps.

Tomorrow (1/18) the same opportunity will be available to all of the south Wappapello area. The Corps will be taking comments at the Bill Emerson Visitor Center.

If you are a visitor, resident, business, or organization with a great idea, please present it. If you can't make the meeting but would like to leave an idea please contact the Corps office at 573-222-8562. They will have the current master plan and maps available to view. Tag any friends or leaders in your community that might have valuable input.

Thanks!



NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Contact:
James Gracey, 573-222-8562
James.W.Gracey@usace.army.mil

U.S. Army Corps of Engineers to Hold Workshops

The St. Louis District U.S. Army Corps of Engineers is currently updating the Wappapello Lake Master Plan and the Shoreline Management Plan. The purpose for updating these plans is to bring them into compliance with current US Army Corps of Engineers policies and regulations, update visitor use trends and obtain public input to ensure future activities are accomplished in an environmentally sustainable manner.

Customer input is extremely valuable to this process. The U.S. Army Corps of Engineers would like to invite the public to participate in this update process. Two workshops will be held at Wappapello Lake. Both workshops will be open for Master Plan and Shoreline Management Plan comments and will be held at the following times and locations:

- January 17, 2018 – 4-7 pm at the Greenville Elementary School, 195 Walnut St., Greenville, Missouri.
- January 18, 2018 – 4-7 pm at the Bill Emerson Memorial Visitor Center, Missouri State Highway T, near the Wappapello Dam.

Additionally, digital versions of the current Wappapello Lake Master Plan and Shoreline Management Plan can be reviewed at our website

www.mvs.usace.army.mil/Missions/Recreation/Wappapello-Lake/Wappapello-Lake-Master-Plan/.

Users can submit comments pertaining to both plans through this website. Please contact Assistant Manager James Gracey at (573) 222-8562 if you have any questions concerning the Wappapello Lake Master Plan or the Shoreline Management Plan process.

-30-

U.S. ARMY CORPS OF ENGINEERS – WAPPAPELLO LAKE
10992 Highway T, Wappapello, MO 63966
<http://www.mvs.usace.army.mil>

4/2/2018

Local News: 2018 Wappapello Lake Master Plan/Shoreline Plan Update (1/11/18) | Portageville Missourian-News

Portageville MISSOURIAN-NEWS

2018 Wappapello Lake Master Plan/Shoreline Plan Update

Thursday, January 11, 2018

The 2018 Wappapello Lake Master Plan and Shoreline Plan updates are underway. The Corps of Engineers will begin soliciting feedback from partners, stakeholders, and the public beginning in early December 2017 through February 2018. The first public workshop is scheduled for January 17, from 4 p.m. to 7 p.m. at the Greenville Elementary School followed by a second workshop on January 18, from 4 p.m. to 7 p.m. at the Bill Emerson Memorial Visitor Center in Wappapello.

All public and stakeholder input received will be compiled and considered during the development of the initial draft of the updated plans.

The draft plans will be available for public review and comment mid-Summer 2018 and the final drafts are scheduled to be completed by late-Summer 2018. The target completion date for both plans is late 2018.

As information and notices become available on the St. Louis District's Facebook page. The 2000 Wappapello Lake Master Plan along with the current Shoreline Management Plan are available for viewing.

10 Worst Car Picks Of 2017

95CARS

Top 20 Gorgeous Classic Actresses

SetViral

What "SF 2801" Means for Your Retirement

Wealthy Contrarian

21 Most Beautiful Runways in the World

Fropky

<http://www.pvmoneews.com/story/2475655.html>

1/2



US Army Corps of Engineers

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2018 Wappapello Lake Master Plan/Shoreline Plan Update

The 2018 Wappapello Lake Master Plan and Shoreline Plan updates are underway. The Corps of Engineers will begin soliciting feedback from partners, stakeholders, and the public beginning in early December 2017 through February 18, 2018. The first public workshop is scheduled for January 17, from 4 p.m. to 7 p.m. at the Greenville Elementary School followed by a second workshop on January 18, from 4 p.m. to 7 p.m. at the Bill Emerson Memorial Visitor Center in Wappapello.

All public and stakeholder input received will be compiled and considered during the development of the initial draft of the updated plans. The draft plans will be available for public review and comment in September 2018 and the final drafts are scheduled to be completed by November 2018. The target completion date for both plans is February 2019.

As information and notices become available they will be posted to this page. The 2000 Wappapello Lake Master Plan along with the current Shoreline Management Plan are available for view and download through the links below. Please be aware, the full version of the Master Plan document is large and may take a long time to open/download.

A Project Master Plan is defined by the U.S. Army Corps of Engineers as 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 a Corps water resources development project. In general, it defines "how" the resources will be managed for public use and resource conservation. The MPP does not address the specifics of regional water quality, shoreline management, or water level management. Additionally, the operation and management of associated prime facilities (dam, gates, powerhouses, spillways, etc.) is not included.

A Shoreline Management Plan is defined by the U.S. Army Corps of Engineers as a part of the Operational Management Plan (OMPP) for each project to develop management strategies for existing and anticipated natural resource management activities. The Shoreline Management Plan is implemented at the Project level and establishes policy and guidelines for the protection and management of the shoreline under Corps jurisdiction to promote the safe and healthful use of the shoreline by the public while maintaining environmental safeguards to ensure a quality resource. The Shoreline Management Plan consists of a map showing the shoreline allocations around the lake, related rules and regulations, a discussion of what areas are open and closed to specific activities and facilities, how to apply for permits, and other information pertinent to the Corps management of the shoreline.

Comment Card

2000 Master Plan/Shoreline Plan

[2000 Wappapello Lake Master Plan](#)
[2000 Wappapello Lake Master Plan Plates](#)
[2000 Wappapello Lake Shoreline Management Plan](#)

Contact

Address:
Wappapello Lake Project Office
10992 Highway T
Wappapello, MO 63966-9603

Phone:
Main: (573) 222-8562
24-Hour Information Hotline: (573) 222-8139
Toll-free: 877-LAKEINFO

MASTER PLAN SCHEDULE:

Jan 17, 2018 Public Meeting at Greenville Elementary School 4:00pm-7:00pm

Jan 18, 2018 Public Meeting at Bill Emerson Memorial Visitor Center 4:00pm-7:00pm

Feb 18, 2018 Public Comment Submission Period Ends

September 2018 Draft Master Plan Available for Public Comments

October 2018 Public Comment Submission Period Ends

Late November 2018 Final Draft Master Plan Completed

Late December 2018 Revised Final Draft Completed/Internal Review

February 2019 Final Wappapello Lake Master Plan Approved


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Master Plan & Shoreline Management Plan Comment Cards

The following have been grouped by Master Plan or Shoreline Management Plan. The response is placed at the end of each group.

1. Additional buoys marking the river channel would be a great help to those new to boating on Lake Wappapello.

Currently, Wappapello Lake has 35 Mid-Channel Buoys (red/white vertical striping) denoting the middle of the river channel. These 35 buoys span a total distance of approximately 8 miles, or one buoy every 0.23 miles (1,214.4 feet) on average. We have had individuals express concern over knowing which buoys are next in sequence in reference to how the buoys follow the river channel, and the proper way for a vessel to follow them. We feel that placing more buoys will only lead to more confusion in the sequence that they need to be followed.

2. Can't over emphasize the need to have all campsites at Old Greenville opened as soon as possible. All businesses and the City of Greenville are greatly affected economically by the influx of campers during the 8 to 9 months each year. The different special weekends the Corps offers during the camping season brings large crowds to the City. The City of Greenville exists solely on sales tax collected by its businesses and therefore is dependent on the large summer camping crowds.

Work continues on upgrades to Old Greenville. Because the area is listed on the National Register of Historic Places, there are more restrictions and regulations that must be followed. This slows the construction process, but will ensure the historic integrity of the area will be maintained. The public is being kept informed of progress.

3. Does the sediment in the lake reduce storage capacity at winter pool or summer?

A 2012 sedimentation study shows a 28.6% storage loss at conservation pool and a 0.5% loss in flood control pool storage. More information can be found in Chapter 2.3 of this Master Plan, Sedimentation and Shoreline Erosion.

4. Redman Creek host campers and their additions/underpinning/storage sheds are an eyesore. If they are allowed to live there year-round, they should be required to keep a neat, clean, clutter-free campsite.

This is a management issue and has been addressed.

5. #1 More biking and hiking trails

#2 Don't close areas off that are usable

#3 The permanent campers and their stuff is very unattractive in the campgrounds.

#1 – Chapter 5 addresses plans to develop trails in additional recreation areas.

#2 – The Traditional Access Plan addressed areas that were highly degraded and unsafe for public use. The plan has been 100% implemented.

#3 – This is a management problem and has been addressed.

6. Dog parks. Our resort now allows dogs and many guests ask for places to take them where they can run off leash.

Currently, there are no plans to add a dog park to any facilities. Dogs are allowed in parks in accordance with Title 36.

7. I would like to see the Corps make a horse trail from Peoples Creek Lower campground to Camp SEMO.

A horse trail, parking area and picket area is currently available to trail riders near the Ozark Trail. Lake Wappapello State Park (which connects to the University Forest Trail) has a horse trail with camping facilities. No plans are in place for an additional horse trail.

8. I would like to see the Lake Wappapello area become a destination vacation place for persons with disabilities.

This Master Plan includes proposals for replacing existing facilities with accessible facilities in Corps recreation areas as funding permits.

Concessionaires, through lease agreements with the Corps, will make improvements in accordance with their business plans and Corps regulation. These facilities are promoted through the Corps and its partners.

9. Light at boat ramp at Greenville.

A light at the Greenville boat ramp is proposed in this Master Plan.

10. I live in Park Hills, MO and fish Wapp a lot. I have several friends I work with in St. Louis that won't fish it because of the dangers of running your boat on the lake. I have always been a little nervous myself. I wish they would mark the channels better with more markers, which would make it safer for all. I don't think it would cost much to mark the channels with more markers that are easier to see. This would also benefit the lake and business for the lake with more people coming there for recreation and the confidence to move from one place to another without grounding their vessel or tearing it up.

Please see answer to Question #1.

SHORELINE MANAGEMENT PLAN

11. Allow for more private docks for adjacent landowners. The ability to keep your own watercraft within walking distance to the house would promote additional tourism and local investments. Either by changing land use designation or general shoreline permit guidelines. Other note – we appreciate the efforts of the Corps to keep all public use areas clean and well groomed.

The goals of the Shoreline Management Plan is to reduce private exclusive use of public lands. The objectives of the Shoreline Management Plan are to manage and protect the shoreline, to establish and maintain acceptable fish and wildlife habitat, aesthetic quality, and natural environmental conditions, and to promote the safe and healthful use of the lake project for recreational purposes by all the public.

Currently, there are five private docks and four community docks on Wappapello Lake. These docks were grandfathered into this plan as they existed during its conception. These docks are allowed to exist in their present location provided they meet three conditions. 1. Such property is maintained in useable and safe conditions, 2. Such property does not occasion a threat to life or property, and the holder of the permit is in substantial compliance with the existing permit.

In order to provide recreational opportunities for all users the Corps provides 26 boat ramps with 36 boat launching lanes and associated facilities such as restrooms and pavilions. With maintained lake access being so prevalent, the consideration of the environmental effects and in reducing private exclusive use of public lands no new or additional docks will be allowed.

12. I would like to see the Corps do more toward putting more hardwood structure in the lake.

Currently, the Corps partners with the Missouri Department of Conservation to manage and maintain a healthy fishery. This spring the partners refurbished 30 fish structures by placing several barge loads of cedar in the lake. Corps staff also place over 150 porcupine structures made from PVC and 25 soft waterline structures this past year. Additionally, future budget packages and agreements are in process to increase the amount of fish structure that is added to the lake.

13. I would like the marina railway on the John Dunlap property to be reinstated. It was grandfathered in but he got sick and died owing money on his contract lease. It needs to be reinstated so Cape Arrowhead a 501(c)3 not for profit can utilize the same to the boathouse located on said property.

The railway was grandfathered into the plan as it existed during its conception. The railway was allowed to exist in its present location provided they meet three conditions. 1. Such property is maintained in useable and safe conditions, 2.

Such property does not occasion a threat to life or property, and 3. The holder of the permit is in substantial compliance with the existing permit.

Due to failure to comply with these conditions and failure to meet financial responsibilities in the license agreement this license has been terminated. Many attempts have been made to get the present landowners to remove the railway from Corps lands and due to lack of response the Corps plans to remove this railway as time and budget allows.

The goals of the Shoreline Management Plan is to reduce private exclusive use of public lands. The objectives of the Shoreline Management Plan are to manage and protect the shoreline, to establish and maintain acceptable fish and wildlife habitat, aesthetic quality, and natural environmental conditions, and to promote the safe and healthful use of the lake project for recreational purposes by all public interest.

In order to provide recreational opportunities for all users the Corps provides 26 boat ramps with 36 boat launching lanes and associated facilities such as restrooms and pavilions. With maintained lake access being so prevalent, the consideration of the environmental effects and in reducing private exclusive use of public lands the railway will be removed.

14. Need courtesy/handicap dock at Pisos Point similar to the one at Redman. I am using my personal property to create a handicap resort near the recreation area and would like to have a way to get visitors to boats easily. Right now there is no way to board a boat in this area.

Pisos Point is a shallow, congested public area that is inaccessible during both high and low water events. Courtesy docks must be adjusted as water levels rise and fall. Those in remote areas are difficult to readily access for required maintenance and adjustment. The Corps has provided courtesy docks with hand rails in more easily accessible areas, Rockwood Point, Redman, Peoples Creek, Greenville and Chaonia Landing.

15. Would like to have a fishing pier constructed at Pisos also.

Pisos Point is a small, crowded area. The addition of a fishing pier could increase the congestion and create a safety hazard for visitors. There are fishing piers within a reasonable distance in other areas around the lake – Greenville, Chaonia, Redman and Peoples Creek Recreation Areas. This Master Plan also addresses the development of more bank fishing opportunities around the lake.

WAPPAPELLO LAKE MASTER PLAN

ST. FRANCIS RIVER WATERSHED WAPPAPELLO MISSOURI

APPENDIX C – PREVIOUS DESIGN MEMORANDA AND OTHER AGREEMENTS

PREVIOUSLY ISSUED PERTINENT DESIGN MEMORANDA, SUPPLEMENTS AND
OTHER AGREEMENTS

Basis for Design of Wappapello Dam and Reservoir, St. Francis River Missouri, 15 January 1937 Appendix No. 1.

Technical Memorandum No. 134-1. Final Report on Studies Conducted on the Outlet Structures for the Wappapello Dam, 31 August 1938.

St. Francis River Project, The Wappapello Dam, Analysis of Design and Appendix 1 hearings, 27 September 1938.

St. Francis River Project, The Wappapello Dam, Analysis of Design Appendix II: Report on Soil Investigations, 27 September 1938.

St. Francis River Project, The Wappapello Dam, Report on Field Compaction Tests by the Soils Laboratory, 11 October 1939.

The Master Plan, Recreational Development, Lake Wappapello, St. Francis River, Missouri, Office of the President, Mississippi River Commission, Vicksburg, Mississippi, August 1946. The original Master Plan outlined a plan for operation and development of the newly completed reservoir.

Supplement No. 1 – Rules and Regulations Governing Public Use of Reservoir Areas, Corps of Engineers, Department of the Army.

Supplement No. 2 – Operations and Maintenance Manual for Wappapello Reservoir, September 1950.

Supplement No. 3 – Reservoir Regulation Manual – Wappapello Reservoir, July 1952.

Memorandum of Agreement, dated 14 October 1957, with U.S. Forest Service for Fire Detection and Suppression.

Lease beginning 1 January 1957 with Missouri State Park Board for Development of Lake Wappapello State Park.

Master Plan for Reservoir Management, Wappapello Reservoir, St. Francis River, Missouri, Office of District Engineer, U.S. Army Engineer District, (Lower Mississippi Valley Division), Memphis, Tennessee, revised 1958.

Agricultural and Grazing Leasing Plan, Appendix B, Design Memorandum (DM) No. 22, Master Plan, 1963.

Attachment 1, DM No. 22 Master Plan – Agricultural Land Use Plan, 1963.

DM 501, Design Memorandum No. 22 Master Plan for Wappapello Reservoir issued November 1963, approved by OCE March 1964.

Supplement No. 1, Master Plan, Lake Wappapello Reservoir, St. Francis River, Missouri, April 1970 and 1st, 2nd and 3rd endorsements.

DM 502, Design Memorandum No. 25A St. Francis Preliminary Master Plan, Recreational Development, issued November 1964.

DM 503 Feature Design Memorandum No. 503, St. Francis Pumping Plant and Vicinity Recreational Development and Beautification, issued August 1968, approved by OCE November 1968.

DM 504 Updated Master Plan for Development and Management of Wappapello Lake, Missouri, September 1975.

Supplement No. 1 to DM 504 - Updated Master Plan for Development and Management of Wappapello Lake, Construction of Comfort Station and Sewage Treatment Facilities at Chaonia Landing, 4 August 1976.

Supplement No. 2 to DM 504 – Updated Master Plan, 29 July 1985.

*Supplement No. 3 to DM 504 – Traditional Access Plan, approved in 1988 and updated in November 1992. The plan proposed rehabilitation and maintenance of 56 existing public accesses to project lands and waters, closure of 71 existing public accesses, and authorization of several additional designated primitive camping areas with associated minimum health and safety facilities. The final revised plan, *Wappapello Lake Traditional Access Plan*, November 1992, provided an analysis and findings of only those accesses identified by the public for proposed changes during the review period for the Traditional Access Plan.*

Supplement No. 4 to DM 504 – Construction of Shower house at Greenville Campground, approved 13 June 1997.

Wappapello Lake Project, Relocation Design Memorandum, State Highways and Wayne County Roads, St. Francis River, Missouri, April 1996, approved 17 July 1997. This memorandum covered the relocation of State and County roads that flooded (more often) due to changes in the Water Control Plan designed to minimize downstream

flooding. Although this Design Memorandum is not a supplement to the Master Plan, the impacts of County and State highway flooding affects Wappapello Lake visitation.

DM 504 Wappapello Lake Master Plan, revised 2000.

Supplement No. 1 to DM 504 – proposes a variety of facility improvements based on the use patterns of lake visitors and recommendation of Wappapello Lake staff, approved 9 January 2007.

Supplement No. 2 to DM 504 – relocation of parking lot #9 as necessitated by the Wappapello Roads Relocation project, approved 8 March 2010.

Supplement No. 3 to DM 504 – proposed greenhouse in conjunction with interpretive trail system in the management office area as part of the June 2014 Presidential Memorandum (Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators), approved 17 July 2017.