

Kaw Lake Master Plan

Arkansas River Basin

Kay and Osage Counties, Oklahoma, and Cowley County,
Kansas

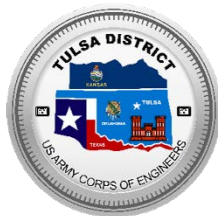
December 2025

DRAFT REPORT



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

*The Kaw Lake Master Plan was produced by
the U.S. Army Corps of Engineers
Southwestern Division Regional Planning and
Environmental Center (RPEC) for the Tulsa
District (SWT).*



EXECUTIVE SUMMARY

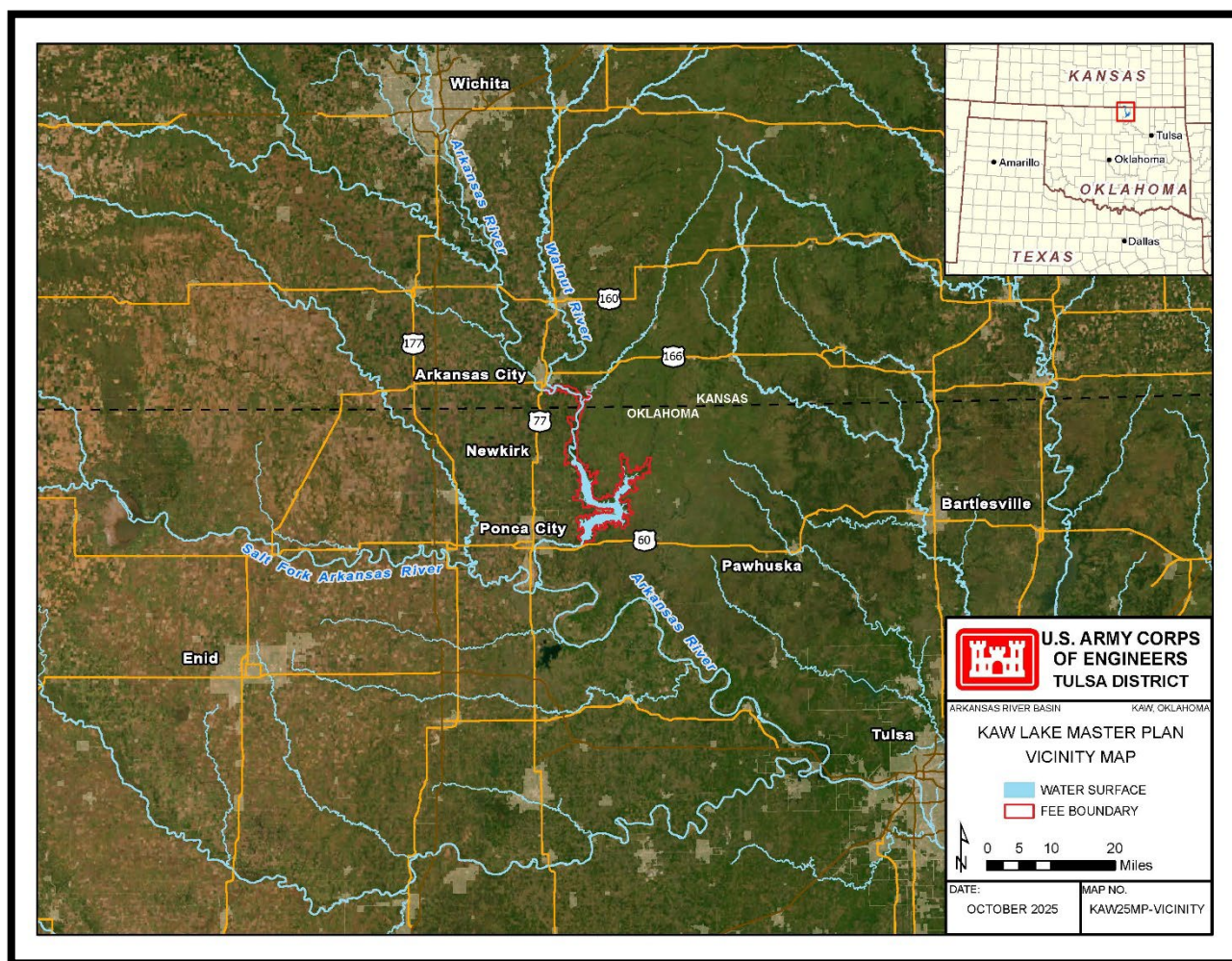
Kaw Lake Master Plan
U.S. Army Corps of Engineers
Prepared by the Southwestern Division
Regional Planning and Environmental Center (RPEC)
December 2025

ES.1 PURPOSE

The Kaw Lake Master Plan (hereafter Master Plan) is a complete revision of the 1971 *Kaw Lake Master Plan* and its supplements. The revision is a framework built collaboratively to guide appropriate stewardship of U.S. Army Corps of Engineers (USACE) administered resources at Kaw Lake over the next 25 years. The 1971 Master Plan has served well past its intended 25-year planning horizon and does not reflect the growing population around the lake, current regulations, and regional recreation needs. Kaw Lake was originally authorized in 1962 and is now operated as a multipurpose project with authorized purposes for flood control, hydropower, navigation, water supply, water quality, recreation, and fish and wildlife.

Kaw Lake is located at River Mile 653.7 on the Arkansas River, approximately 8 miles east of Ponca City. (see general location map in Figure ES.1). It is an integral component of the larger Arkansas River flood control system. In addition to the above-referenced authorized purposes, the USACE has an inherent mission for environmental stewardship of project lands as reflected in ER 1130-2-540, while working closely with stakeholders and partners to provide regionally important outdoor recreation opportunities.

The Master Plan and supporting documentation provide an inventory and analysis, goals, objectives, and recommendations for USACE lands and waters at Kaw Lake, Oklahoma, with input from the public, stakeholders, and subject matter experts. The Master Plan is primarily a land use and outdoor recreation strategic plan that does not address the specific authorized purposes of flood risk management or water supply. Although the 2016 USACE Water Control Manual for Kaw Lake addresses the *specifics* of water management, the Master Plan acknowledges that fluctuating water level for flood risk management and water supply can have a dramatic effect on outdoor recreation, especially at boat ramps, and swim beaches.



The mapping used for this Master Plan revision uses modern satellite imagery and Geographic Information System (GIS) mapping, resulting in different acreage calculations than that of the 1971 Master Plan. Using 2025 GIS measurements, Kaw Lake has a water surface of 19,427 acres at conservation pool of 1010.0 feet NGVD29 and approximately 30,484 acres of federal land lie above the conservation pool with a shoreline of approximately 161 miles at the top of the conservation pool.

ES.2 PUBLIC INPUT

To ensure a balance between operational, environmental, and recreational outcomes, USACE obtained both public and agency input toward the Master Plan. An Environmental Assessment (EA) was completed in conjunction with the Master Plan to evaluate the impacts of alternatives and can be found in Appendix B.

On 24 July 2024 a public information open house was held at Kaw Community Building to inform the public of the intent to revise the master plan. The public input period remained open for 37 days from 24 July 2024 to 30 August 2024. At the public information open house, a presentation was viewable that included the following topics:

- What is a Master Plan?
- What a Master Plan is Not
- Why Revise a Master Plan?
- Overview of the National Environmental Policy Act (NEPA) process
- Master Planning Process
- Instructions for submitting comments

During the Kaw Lake Master Plan comment period, USACE received twelve (12) comments.

ES.3 RECOMMENDATIONS

The following land and water classification revisions (detailed in Chapter 8) were a result of the inventory, analysis, synthesis of data, documents, and public and agency input. In general, all USACE land at Kaw Lake was reclassified either by a change in nomenclature required by regulation or changes needed to identify actual and projected use. Table ES.0.1 illustrates the prior and current land and water classifications, which includes decreases in Project Operations, High Density Recreation and Low Density Recreation, and new lands classified under the Environmentally Sensitive Area.

Table ES.0.1 Change from 1971 Land and Water Surface Classifications to 2025 Land and Water Surface Classification

Prior Land Classifications (1971)	Acres	Proposed Land Classifications (2025)	Acres
Project Operations (PO)	143	Project Operations (PO)	127
Environmentally Sensitive Areas (ESA)	0	Environmentally Sensitive Areas (ESA)	2,407
Operations Recreation - Intensive Use (OR/IU)	4,154	High Density Recreation (HDR)	3,022
Operations Recreation - Low Density (OR/LD)	6,261	Multiple Resource Management Lands - Low Density Recreation (LDR)	4,568
Operations Recreation - Quasi-Public	112		
State Area (SA)	11,692		
Wildlife Management - National	8,588	Wildlife Management (WM)	20,370
Wildlife Management - Recreational Lands (WMRL)	119		
TOTAL LAND ACRES	31,069	TOTAL LAND ACRES	30,494
Prior Water Surface Classifications (1971)	Acres	Proposed Water Surface Classifications (2025)	Acres
Water	18,840	Open Recreation (WS/OR)	19,192
		Restricted (WS/R)	19
		No Wake (WS/NW)	216
TOTAL WATER SURFACE ACRES	18,840	TOTAL WATER SURFACE ACRES	19,427
TOTAL FEE	49,909	TOTAL FEE	49,921

Total fee simple title acreage differences from the 1971 total to the 2025 totals are due to improvements in measurement technology, deposition/siltation, and erosion. Totals also differ due to rounding while adding parcels.

The acreages of the conservation pool and USACE land lying above the conservation pool were measured using satellite imagery and Geographical Information System (GIS) technology. The GIS software allows for more finely tuned measurements and, thus, stated acres may vary from official land acquisition records and acreage figures published in the 1971 Public Use Plan. Some changes in acreage may also be

due to erosion and siltation. A more detailed summary of changes and rationale can be found in Chapter 8.

ES.4 PLAN ORGANIZATION

Chapter 1 of the Master Plan presents an overall introduction to Kaw Lake. Chapter 2 consists of an inventory and analysis of Kaw Lake and associated land resources. Chapters 3 and 4 lay out management goals, resource objectives, and land classifications descriptions. Chapter 5 is the resource management plan that identifies how project lands will be managed for each land use classification. This includes current and projected overall park facility needs, an analysis of existing and anticipated resource use, and anticipated influences on overall project operation and management. Chapter 6 details special topics that are unique to Kaw Lake. Chapter 7 identifies the public involvement efforts and stakeholder input gathered for the development of the Master Plan, and Chapter 8 gives a summary of the proposed changes in land and water classification from the previous master plan to the present one. Finally, the appendices include information and supporting documents for this Master Plan revision, including Land Classification and Park Plate Maps (Appendix A).

An Environmental Assessment was developed in conjunction with the Master Plan, which analyzed alternative management scenarios for Kaw Lake, in accordance with federal regulations including the National Environmental Policy Act of 1969, as amended (NEPA); guidance from the Council on Environmental Quality; and USACE regulations, including 33 CFR Part 230: Procedures for Implementing NEPA. The EA is a separate document that informs this Master Plan and can be found in its entirety in Appendix B.

The EA evaluated two alternatives as follows: 1) No Action Alternative, which would continue the use of the 1970 Master Plan, and 2) Proposed Action. The EA analyzed the potential impact these alternatives would have on the natural, cultural, and human environments. The Master Plan is conceptual and broad in nature, and any action proposed in the Master Plan that would result in significant disturbance to natural resources or result in significant public interest would require additional NEPA documentation prior to the time of the proposed action.

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CHAPTER 1 – INTRODUCTION

1.1 GENERAL OVERVIEW

Kaw Lake is located at river mile (RM) 653.7 on the Arkansas River, within the Arkansas River Basin. The damsite is in both Kay and Osage County Oklahoma, 8 miles east of Ponca City, Oklahoma, with the reservoir located in Kay and Osage Counties, Oklahoma, and Cowley County, Kansas (Figure 1.1). Approximately 49,000 acres of fee simple land were acquired for the project based on a blocked perimeter fee taking line of elevation 1050.0 feet NGVD. The construction of Kaw Lake began in 1966, and the project was completed in April 1979.

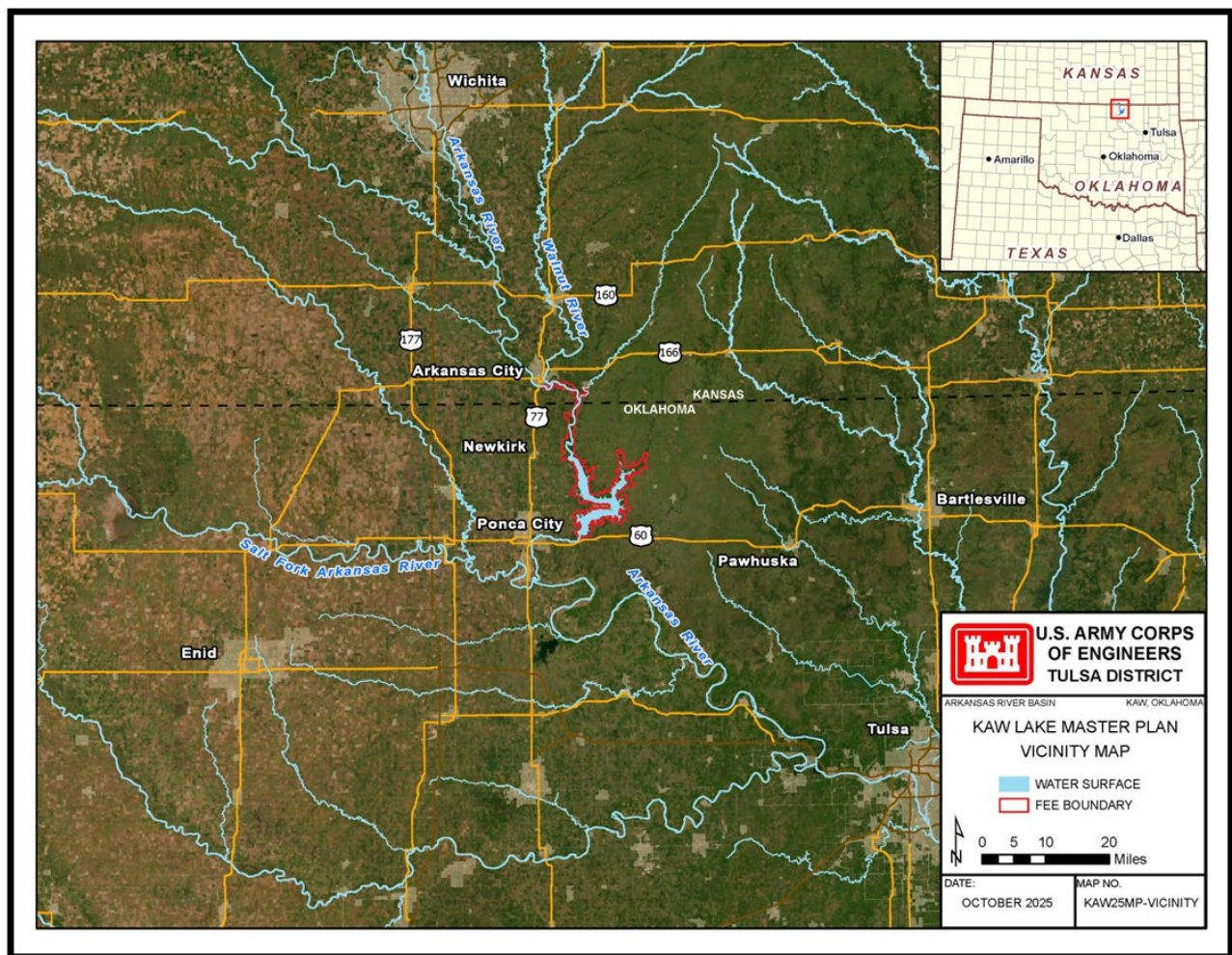


Figure 1.1 Vicinity Map of Kaw Lake

Kaw Lake is a component of the multipurpose Arkansas River Basin flood control and navigation system. Included in this system are completed projects in the Verdigris, Walnut, Canadian, North Canadian, Grand, Caney, Illinois, and Poteau River Basins.

The Arkansas River Basin is 160,640 square miles, while the drainage area upstream of Kaw Lake is 46,350 square miles. The USACE operates and maintains the dam and associated facilities and administers the Federal lands and flowage easements comprising the project through a combination of direct management and through consultation with local Tribal Nations.

The Master Plan is intended to serve as a comprehensive land and recreation management guide with an effective life of approximately 25 years. The focus of the Plan is to guide the stewardship of natural and cultural resources and make provision for outdoor recreation facilities and opportunities on federal land associated with Kaw Lake as reflected in ER 1130-2-540. The Master Plan identifies conceptual types and levels of activities, but does not include designs, project sites, or estimated costs. All actions carried out by the USACE, other agencies, and individuals granted real estate instruments to USACE lands must be consistent with the Master Plan. The Master Plan does not address the flood risk management or water supply purposes of Kaw Lake. The 1966 Kaw Lake Preliminary Master Plan was written as Design Memorandum No. 4A, the 1971 Kaw Lake Public Use Plan was written as Design Memorandum No. 4B, and last supplemented in 1987, serving well past the intended planning horizon of 25 years. In 1999, USACE discontinued use of the Design Memorandum system as a means of organizing the many phases of civil works projects, therefore, the term “Design Memorandum” is not used in the title of this Master Plan revision.

National USACE missions associated with water resource development projects may include flood risk management, water supply, water quality control, navigation, recreation, environmental stewardship and hydroelectric power generation. Most of these missions serve to protect the built environment and natural resources of a region from the climate extremes of drought and floods. This helps to create a more resilient and sustainable region for the health, welfare, and energy security of its citizens. Mitigation, while not a formal mission at USACE lakes, may be implemented to achieve the stewardship and recreation missions. Maintaining a healthy vegetative cover and including a native prairie or tree cover where ecologically appropriate on Federal lands within the constraints imposed by primary project purposes helps reduce stormwater runoff and soil erosion, mitigates air pollution, and moderate temperatures. To this end, the USACE has developed the following statements.

The USACE Sustainability Policy and Strategic Plan states:

The U.S. Army Corps of Engineers strives to protect, sustain, and improve the natural and man-made environment of our Nation, and is committed to compliance with applicable environmental and energy statutes, regulations, and Executive Orders. Sustainability is not only a natural part of the Corps' decision processes; it is part of the culture.

Sustainability is an umbrella concept that encompasses energy, climate change and the environment to ensure today's actions do not negatively impact tomorrow. The Corps of Engineers is a

steward for some of the Nation's most valuable natural resources and must ensure customers receive products and services that provide sustainable solutions that address short and long-term environmental, social, and economic considerations.

1.2 PROJECT AUTHORIZATION

Kaw Dam and Reservoir was authorized for construction by the Flood Control Act of 1962. (Public Law 87-874, 87th Congress, H.R. 13273, 23 October 1962).

1.3 PROJECT PURPOSE

Kaw Lake is a multipurpose water resource project constructed and operated by the USACE. It is a unit of the multi-purpose system which regulates for flood control, generation of hydropower, navigation, and other beneficial water uses on the Arkansas River and its tributaries. Kaw Lake has the following primary authorized purposes:

- Flood Control
- Hydropower
- Navigation
- Water Supply
- Water Quality
- Recreation
- Fish and Wildlife

In addition to these primary missions, the USACE has an inherent mission for environmental stewardship of project lands while working closely with stakeholders and partners to provide regionally important outdoor recreation opportunities. Other laws, including but not limited to Public Law 91-190, National Environmental Policy Act of 1969 (NEPA) and Public Law 86-717, Forest Cover Act, place emphasis on the environmental stewardship of Federal lands and USACE-administered Federal lands, respectively.

1.4 MASTER PLAN PURPOSE AND SCOPE

In accordance with Engineering Regulation (ER) 1130-2-550 and Engineering Pamphlet (EP) 1130-2-550, master plans are required for most USACE water resources development projects having a federally owned land base. The master plan works in tandem with the Operational Management Plan (OMP), which is the task-oriented implementation tool for the resource objectives and development needs identified in the master plan. This revision of the Master Plan is intended to bring the master plan up to date to reflect current ecological, socio-demographic, and outdoor recreation trends that are impacting the lake, as well as those anticipated to occur within the next 25 years.

The *Kaw Lake Master Plan* (hereafter Master Plan) is the strategic land use management document that guides the efficient, cost-effective, comprehensive

management, development, and use of recreation, natural resources, and cultural resources throughout the life of the Kaw Lake project. It is a vital tool for responsible stewardship and sustainability of the project's natural and cultural resources for the benefit of present and future generations. The Master Plan guides and articulates USACE responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources. It is a dynamic and flexible tool designed to address changing conditions. The Master Plan focuses on carefully crafted resource-specific goals and objectives. It ensures that equal attention is given to the economy, quality, and needs in the management of Kaw Lake resources and facilities, and that goals and objectives are accomplished at an appropriate scale.

The master planning process encompasses a series of interrelated and overlapping tasks involving the examination and analysis of past, present, and future environmental, recreational and socioeconomic conditions and trends. With a generalized conceptual framework, the process focuses on the following four primary components:

- Regional and ecosystem needs
- Project resource capabilities and suitability
- Expressed public interests that are compatible with Kaw Lake's authorized purposes
- Environmental sustainability elements

It is important to note what the Master Plan does not address. Details of design, management, administration, and implementation are not addressed here but are covered in the Kaw Lake OMP. In addition, the Master Plan does not address the specifics of regional water quality control, shoreline management (a term used to describe primarily vegetation modification or permits by neighboring landowners), or water level management, nor does it address the operation and maintenance of prime project operations facilities such as the dam embankment, gate control outlet, and spillway. Additionally, the Master Plan does not address the flood risk management, water supply, or fish and wildlife purposes of Kaw Lake with respect to management of the water level in the lake.

The previous Master Plan was sufficient for prior land use planning and management, but changes in outdoor recreation trends, regional land use, population, current legislative requirements, and USACE management policies have occurred over the past decades. Additionally, increasing fragmentation of wildlife habitat, national policies related to land management, climate change, and growing demand for recreational access and protection of natural and cultural resources are all factors affecting Kaw Lake and the region in general. In response to these escalating pressures and trends, a full revision of the 1971 Master Plan is required as set forth in this Master Plan. The Master Plan revision updates land classifications and includes new resource management goals and objectives.

1.5 BRIEF WATERSHED AND PROJECT DESCRIPTION

Kaw Lake is located at river mile 653.7 on the Arkansas River, approximately 8 miles east of Ponca City, in Kay and Osage Counties, Oklahoma and Cowley County, Kansas.

Kaw Dam consists of a rolled earth-filled structure with a maximum height of approximately 125 feet above the streambed and a total length of 9,466 feet including the spillway. The top of the dam, elevation 1056.5, is 32 feet wide, with a 24-foot double bituminous surface roadway. Along the portion of the embankment covering the main channel exclusive to the spillway area, a cutoff trench is excavated to the top of rock. A partial cutoff trench extending 5 feet into an existing layer of lean clay is excavated under the remainder of the embankment. The upstream slopes of the embankment are protected by dumped riprap on backing material while downstream slopes are seeded to grass.

The gate-controlled concrete valley spillway is an ogee weir and includes a stilling basin and outlet works. Total length of the spillway, excluding the non-overflow sections, is 400 feet, with flow over the spillway controlled by eight 50- by 47-foot tainter gates. The spillway structure is located in the right abutment and has a design capacity of 653,000 cfs. Low-flow facilities consist of two 5-foot 8-inch by 10-foot sluice gates located through two intermediate piers with a design capacity of approximately 8,000 cfs. A 48-inch-diameter water supply pipe is located in the right non-overflow. Channel capacity at the dam is about 60,000 cfs.

Kaw Lake is a component of the multi-purpose Arkansas River Basin flood control and navigation system. Included in this system are completed projects in the Verdigris, Walnut, Canadian, North Canadian, Grand, Caney, Illinois, and Poteau River Basins. The Arkansas River system is operated for the control of floods, navigation, and other beneficial uses.

1.6 DESCRIPTION OF RESERVOIR

Based on the 2025 GIS data maintained by the Tulsa District, Kaw Lake covers approximately 19,427 surface acres of water when at the top of conservation pool (1010.0 NGVD29). The top of the flood control pool is elevation 1044.5 feet NGVD29. At the conservation pool, the lake was designed to accommodate 362,511 acre-feet and the shoreline measures 161.37 miles.

1.7 PROJECT ACCESS

Kaw Lake is easily accessed by Oklahoma Hwy-11 which crosses the lake west to east. SH-11 intersects with US Highway 77 to the west of Kaw Lake and SH-18 to the east.

1.8 PRIOR DESIGN MEMORANDA AND PLANNING REPORTS

Design Memorandums (DM) and planning reports approve and set forth design and development plans for all aspects of the project including the prime flood risk management facilities, real estate acquisition, road and utility relocations, reservoir clearing, and the master plan for recreation development and land management. The *Master Plan, Kaw Lake, Arkansas River, Oklahoma*, dated April 1971 and its supplements, presents a program for development and management of the Kaw Lake area for recreation and other land and water uses. The following are DM's for Kaw Lake:

- DM No. 1, Hydrology, dated February 1965.
- DM No. 2, Hydroelectric Power Capability, dated Sep 1967
- DM No. 3, General Design, dated September 1965.
- DM No. 4a, Preliminary Master Plan, dated November 1970.
- DM No. 4a, Supplement No. 1, dated November 1970.
- DM No. 4b, Master Plan, dated April 1971.
- DM No. 4b, Supplement No. 2, dated August 1975.
- DM No. 4b, Supplement No. 3, dated July 1976.
- DM No. 4b, Supplement No. 4, dated July 1977.
- DM No. 4b, Supplement No. 5, dated February 1982.
- DM No. 4b, Supplement No. 6, dated November 1984.
- DM No. 4b, Supplement No. 7, dated December 1987.
- DM No. 5-1, Real Estate – Dam Site and Access Roads, dated February 1966.
- DM No. 5-4, Real Estate – Reservoir Area, dated October 1966.
- DM No. 6, Construction Materials (Concrete Aggregates), dated November 1966.
- DM No. 7, Embankment, Diversion Channel, and Spillway Excavation, dated December 1966.
- DM No. 8, Spillway, dated July 1968.
- DM No. 9, Relocation of Atchison, Topeka and Santa Fe Railway Facilities, dated October 1968.
- DM No. 10, Relocation of Kaw City Municipal Facilities, dated June 1967.
- DM No. 11, Relocation of Kay County Roads, June 1967.
- DM No. 12, Project Buildings, Overlook, and Access Roads, dated October 1965.
- DM No. 13, Relocation of Kaw City School, dated December 1970.
- DM No. 15, Relocation of Oklahoma Highway 119, dated November 1966.
- DM No. 16, Sedimentation and Degradation Ranges, dated October 1966.
- DM No. 17, Relocation of Ponca City Powerlines, dated April 1968.
- DM No. 18 (Rev.), Relocation of Southwestern Bell Telephone Company Facilities, dated October 1967.
- DM No. 19, Relocation of Kay County Electric Cooperative Facilities, dated April 1968.
- DM No. 21, Relocation of General Telephone Company Facilities, dated August 1968.

- DM No. 26 (Rev.), Relocation of Newkirk Municipal Facilities, dated December 1970.
- DM No. 27, Relocation of Public Service Company Facilities, dated June 1969.
- DM No. 29, Relocation of Cities Service Gas Company Facilities, November 1969.
- DM No. 30, Relocation of Sumner-Cowley Electric Company Facilities, dated July 1970.
- DM No. 31, Relocation of Oklahoma Natural Gas Company Facilities, July 1969.
- DM No. Ltr Report, Real Estate – Right Access Road, Project Building and Overlook Shelter, dated September 1965.
- DM No. Report, Real Estate for Relocation of Oklahoma Highway 119, dated June 1967.

1.9 PUBLIC LAWS

The following Public Laws (PL) are applicable to Kaw Lake. Additional information on Federal Statutes applicable to Kaw can be found in the Environmental Assessment for the Kaw Lake Master Plan revision in Appendix B of this Plan.

- Flood Control Act of 1944, Section 4 PL 78-534 of this act as last amended in 1962 by Section 207 of Public Law 87-874 authorizes the USACE to construct, maintain, and operate public parks and recreational facilities in reservoir areas and to grant leases and licenses for lands, including facilities, preferably to federal, state or local governmental agencies. This law also authorized the creation of the Southwestern Power Administration (SWPA), then within the Dept. of the Interior and now within the Dept. of Energy, as the agency responsible for marketing and delivering the power generated at federal reservoir projects.
- River and Harbor Act of 1946, PL 79-525. This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Flood Control Act of 1946, PL 79-526. This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes. This law amends PL 78-534 to include authority to grant leases to non-profit organizations at recreational facilities in reservoir areas at reduced or nominal fees.
- Flood Control Act of 1954, PL 83-780. This act authorizes the construction, maintenance, and operation of public park and recreational facilities in reservoir areas under the control of the Department of the Army and authorizes the Secretary of the Army to grant leases of lands in reservoir areas deemed to be in the public interest.
- Fish and Wildlife Coordination Act 1958, PL 85-624. This act as amended in 1965 sets down the general policy that fish and wildlife conservation

shall receive equal consideration with other project purposes and be coordinated with other features of water resource development programs. Opportunities for improving fish and wildlife resources and adverse effects on these resources shall be examined along with other purposes which might be served by water resources development.

- Flood Control Act of 1962, PL 87-874. This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes including the construction of Kaw Lake.
- Historic Preservation Act of 1966, PL 89-665. This act provides for: (1) an expanded National Register of significant sites and objects; (2) matching grants to states undertaking historic and archeological resource inventories; and (3) a program of grants-in aid to the National Trust for Historic Preservation; and (4) the establishment of an Advisory Council on Historic Preservation. Section 106 requires that the President's Advisory Council on Historic Preservation have an opportunity to comment on any undertaking which adversely affects properties listed, nominated, or considered important enough to be included on the National Register of Historic Places.
- River and Harbor and Flood Control Act of 1968, PL 90-483. Mitigation of Shore Damages. Section 210 restricted collection of entrance fee at USACE lakes and reservoirs to users of highly developed facilities requiring continuous presence of personnel.
- National Environmental Policy Act of 1969 (NEPA), PL 91-190. NEPA declared it a national policy to encourage productive and enjoyable harmony between man and his environment, and for other purposes. Specifically, it declared a "continuing policy of the Federal Government... to use all practicable means and measures...to foster and promote the general welfare, to create conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." Section 102 authorized and directed that, to the fullest extent possible, the policies, regulations, and public law of the United States shall be interpreted and administered in accordance with the policies of the Act.
- River and Harbor and Flood Control Act of 1970, PL 91-611. Section 234 provides that persons designated by the Chief of Engineers shall have authority to issue a citation for violations of regulations and rules of the Secretary of the Army, published in the Code of Federal Regulations.
- The Water Resources Development Act (WRDA) 1986, PL 99-662. This act provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure and establishes new requirements for cost sharing.

- WRDA 1996, PL 104-303. Authorizes recreation and fish and wildlife mitigation as purposes of a project, to the extent that the additional purposes do not adversely affect flood control, power generation, or other authorized purposes of a project.

1.10 PERTINENT PROJECT INFORMATION

Pertinent information regarding operational pool elevations and existing reservoir storage capacity at Kaw Lake is based on 2020 sedimentation survey (NGVD 29) and is listed in Table 1.1.

Table 1.1 Kaw Lake Pertinent Data (2020 Sedimentation Survey (NGVD29))

Feature	Elevation (NGVD29 feet)	Area (acres)	Capacity (acre-feet)	Equivalent Runoff ⁽¹⁾ (inches)
Top of Dam	1056.5	-	-	-
Top of Surcharge Pool	1047.5	39,792	1,336,845	3.77
Top of Flood Control Pool	1044.5	37,363	1,221,103	3.44
Flood Control Storage	1010.0-1044.5	-	877,059	2.47
Top of Conservation Pool	1010.0	14,258	344,044	0.97
Conservation Storage ⁽²⁾	978.0-1010.0	-	280,323	0.79
Spillway Crest	997.5	9,628	198,851	0.56
Top of Inactive Pool	978.0	4,710	63,721	0.18

⁽¹⁾Contributing drainage area above the dam site is 6,652 square miles. The spillway design drainage area is 8,975 square miles. The total drainage area is 46,530 square miles.

⁽²⁾ Water supply is 84.335% and water quality is 15.665% of the conservation pool. After sedimentation, there is 171,200 acre-feet of water supply storage.

CHAPTER 2 – PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT PHYSIOGRAPHIC SETTING

2.1 ECOREGION OVERVIEW

Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. The Environmental Protection Agency (EPA) has developed a series of maps that categorizes these regions across the United States. Levels I and II divide the North American continent into 15 and 52 regions, respectively, while Level III ecoregions represent a subdivision of those into 104 unique regions and Level IV a finer sub-classification of those. Kaw Lake and its watershed are located in the Level III Central Great Plains and Flint Hills ecoregions as illustrated in Figure 2.1 (EPA 2021).

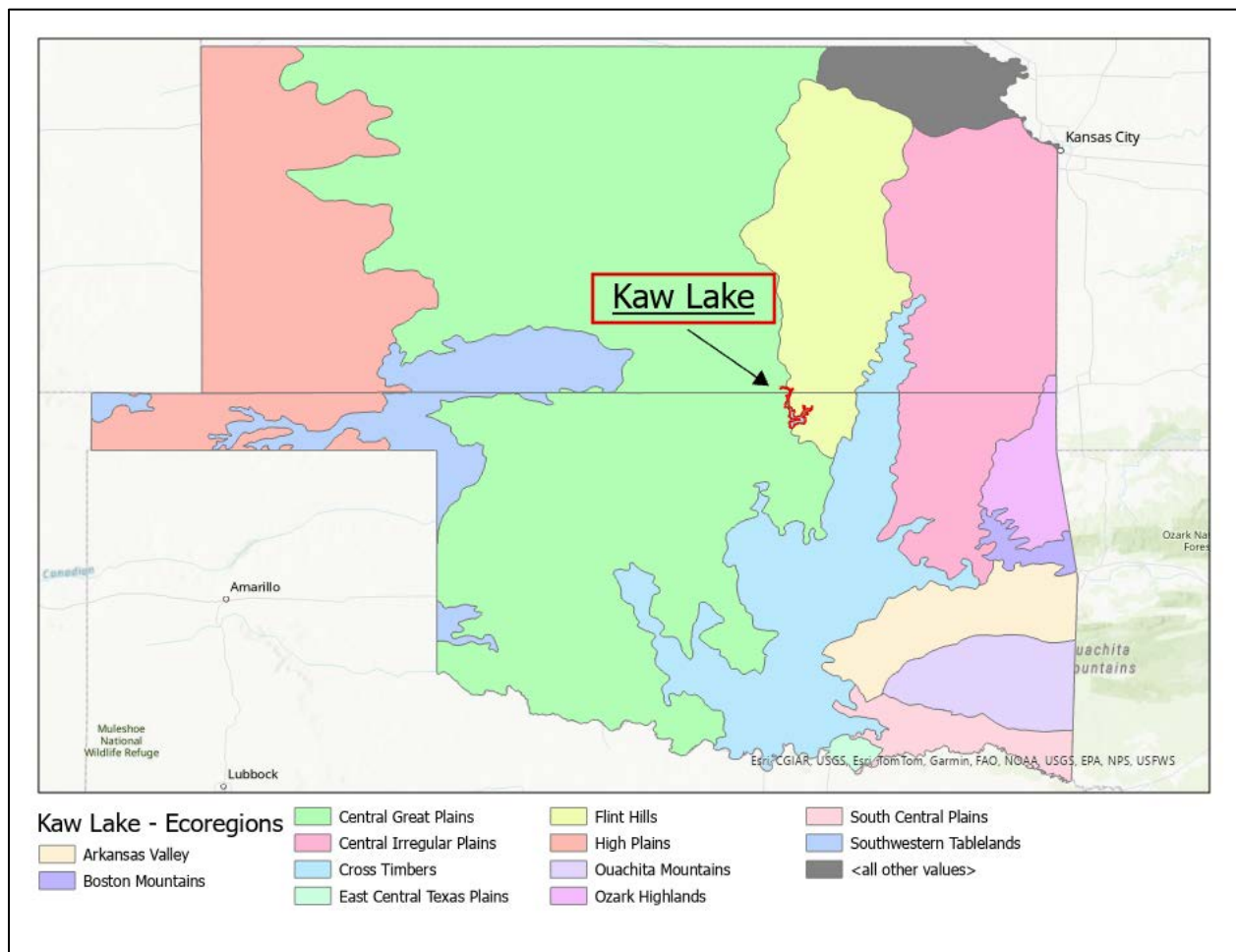


Figure 2.1 Kaw Lake within Oklahoma and Kansas Ecoregions (Source: EPA 2021)

The Great Plains ecoregion was once a transitional, mostly mixed-grass prairie, with some scattered low trees and shrubs in the south, much of this ecological region is now cropland. Little bluestem, big bluestem, sideoats grama, blue grama, Indiangrass, Sand bluestem, sand dropseed was typical. What prairies exist are typically confined to managed lands like parks and wildlife management areas, as areas outside of those units had typically evolved into cropland.

The Flint Hills ecoregion contained thin, cherty, limestone-derived soils that are not suitable for crop agriculture. The native prairie of the Flint Hills ecoregion is big bluestem, Indiangrass, and switchgrass. Dry upland forest is dominated by blackjack and post oak while bottomland forest contains cottonwoods, hackberries, elms, and oaks.

2.2 CLIMATE

Kaw Lake lies in the northern part of the state of Oklahoma. The region is characterized by moderate winters and long, humid summers with high temperatures. Rainfall usually occurs as high intensity, local thunderstorms occurring primarily in the late spring and early fall months. These storms are frequently accompanied by high winds, hail, and occasional tornadoes. The mean annual temperature in nearby Tulsa, Oklahoma (the nearest NOAA weather station) is about 61.3 degrees Fahrenheit (°F) (NOAA, 2021A). January, the coldest month, has an average temperature of 38.5°F and average minimum daily temperature of about 28°F. July has the highest average daily temperature of 83.4°F, and July has the highest average maximum daily temperature of 93.6°F (NOAA, 2020). The average length of the growing season is 192 days in Osage County and 199 in Kay County (Oklahoma Climatological Survey, 2025). Kaw Lake lies within the USDA Plant Hardiness Zone 7A, which is determined by the winter extreme low temperatures, with 7b having normal winter lows between 5°F and 10°F (USDA, 2021).

The normal annual precipitation is approximately 40.25 inches in Osage County and 38.82 in Kay County with greater precipitation during spring and less precipitation during winter (Oklahoma Climatological Survey, 2025). The highest annual precipitation in Osage County recorded was in 1985 at 66.0 inches and for Kay County in 1986 at 59.62 inches, whereas the lowest annual precipitation recorded in Osage County was in 1956, at 16.81 inches and for Kay County in 2006 at 14.0 inches (Oklahoma Climatological Survey, 2025). The average monthly climate data is presented in Figure 2.2, which includes the average precipitation each month and the average minimum, maximum, and daily average for each month. Ponca City, Oklahoma's monthly climate normal was used to show average minimum, maximum, and daily average for each month. Ponca City, Oklahoma is west from Kaw Lake about 8 miles.

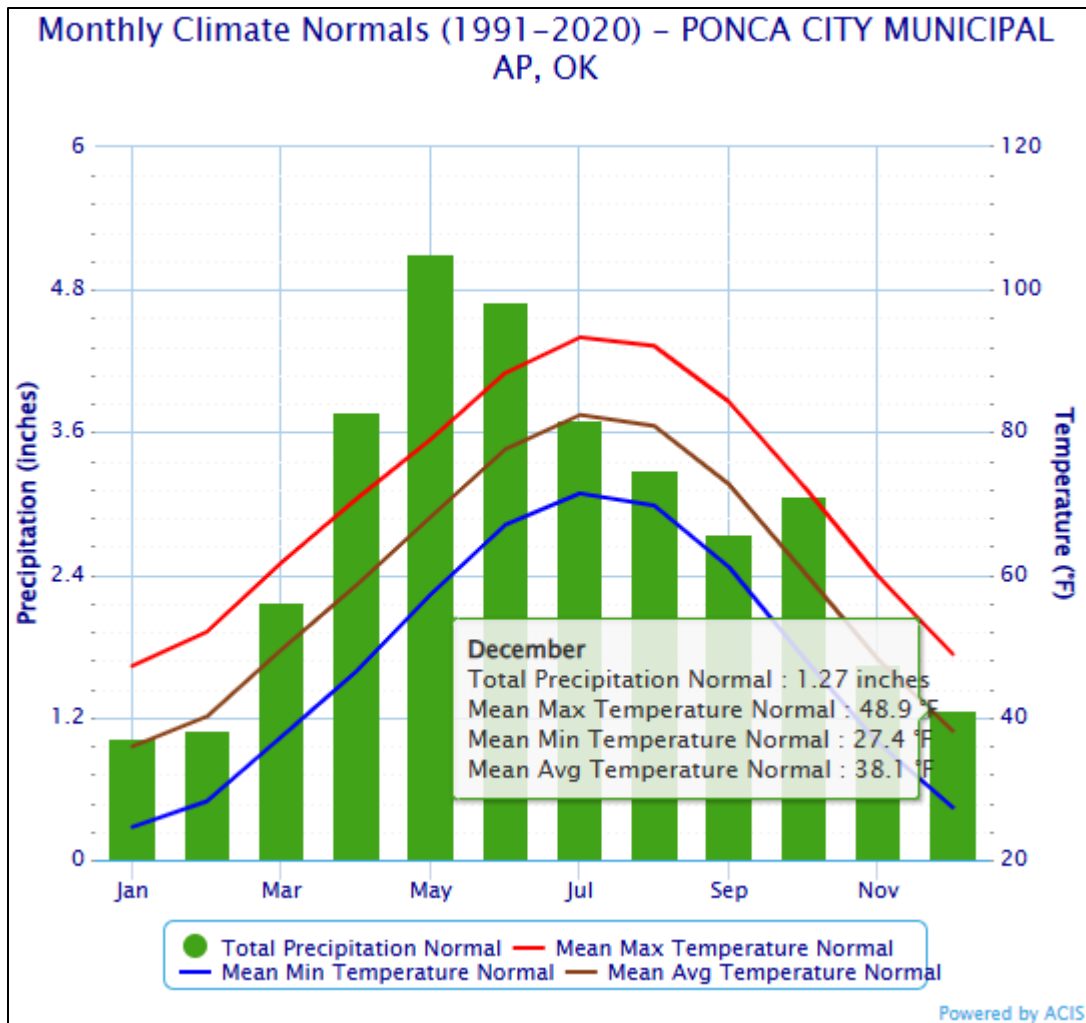


Figure 2.2 Average Monthly Ponca City, Oklahoma, 1991 – 2020 (Source: NOAA, 2023)

2.3 AIR QUALITY

The U.S. Environmental Protection Agency (EPA) established nationwide air quality standards to protect public health and welfare in 1971. The Air Quality Division of the Oklahoma Department of Environmental Quality (DEQ) has adopted the National Ambient Air Quality Standards (NAAQS) as the state's air quality criteria. NAAQS standards specify maximum permissible short- and long-term concentrations of various air contaminants including primary and secondary standards for six criteria pollutants: Ozone (O₃), Carbon Monoxide (CO), Sulfur Dioxide (SO₂), Nitrogen Oxides (NO_x), particulate matter (PM₁₀ and PM_{2.5}), and Lead (Pb). If the concentrations of one or more criteria pollutants in a geographic area is found to exceed the regulated "threshold" level for one or more of the NAAQS, the area may be classified as a non-attainment area. Areas with concentrations that are below the established NAAQS levels are considered either attainment or unclassifiable area. There are currently no non-attainment areas for any monitored pollutants in the State of Oklahoma including the counties around Kaw Lake (DEQ, 2022).

2.4 GEOLOGY, TOPOGRAPHY AND SOILS

2.4.1 Geology

Kaw Lake is located in northern Oklahoma and is connected to the Arkansas River. The Arkansas river flows through Kaw Lake and eventually empties into the Mississippi River. Rocks that are exposed in the shallow subsurface in the region are sedimentary in type and Permian in age. Consisting of several thousand feet of red-brown shales and sandstones with thin but conspicuous layers of resistant gypsum and dolomite (Kaw Lake, Arkansas River WCM, revised 2016) Old episodes of Paleozoic platform sediment.

The project area contains Permian-age Cedar Hill Sandstone, Salt Plains Formation, Kingman Formation Fairmount Shale, Gerber Sandstone, and Wellington Formation (USGS 1963). Other formations are also present near the Kaw Lake area, such as the Pennsylvania-age Oscar Group, Pleistocene-age Terrace Deposits near Enid, above the Salt Fork of the Arkansas River, above Kaw Lake, and Holocene-age Alluvium at Red Rock Creek, the Salt Fork of the Arkansas River, and the Arkansas River.

Soil studies of north-central Oklahoma suggest that the region has been prone to significant erosional episodes from the years 1050–650 Before Present (BP). Prior to 1050 BP, the region was known to have a fairly stable environmental setting. During this period of stability, a very distinctive soil called the Copan paleosol developed in open, grassy settings of that time. After 1050 BP and until 650 BP, evidence shows that the Copan paleosol was buried by numerous flood events marking the region with less environmental stability (Bell 1984). Due to these erosional episodes, much of the archeology in the region may have been significantly impacted, potentially leaving archeological site integrity and the probability of encountering intact archeological deposits very low.

2.4.2 Topography

The terrain of the Arkansas River drainage basin varies from rolling to hilly and is characterized by sandstone hills, streams, and valleys with broad alluvial plains. Gently sloping hills with relief of 300 to 500 ft, found among the lowlands, make up most of the area. Elevation ranges from 985 to 1,970 ft. Throughout Kansas and part of Oklahoma the course of the river is crooked and meandering and is subject to frequent changes. From its confluence with Verdigris River near Muskogee, Oklahoma, to the Mississippi river, the Arkansas River's course has been stabilized and controlled to facilitate commercial navigation. Land use consists of crop production, ranching, and oil and gas production.

2.4.3 Soils

The Natural Resources Conservation Service NRCS Web Soil Survey (NRCS 2022) reports 59 soil types occurring within Kaw Lake project lands. Table 2.1 lists the

acreage and farmland status associated with each soil and surface type in the detention area while Figure 2.3 shows the location of the soils.

The main soil series within Kaw Lake Project Lands is the Shilder-Westsum complex, 5 to 20 percent slopes. Of the 70 soil types at Kaw Lake, this soil association makes up 2,726.50 acres of soil found and is not a prime farmland soil. The Shilder series consists of very shallow and shallow, well drained, moderately permeable upland soils that formed in weathered material from limestone and chert of Permian and Pennsylvanian age (Soil Series, 2005).

Table 2.1 Acres of Surface Soil Types within Kaw Lake Project Lands

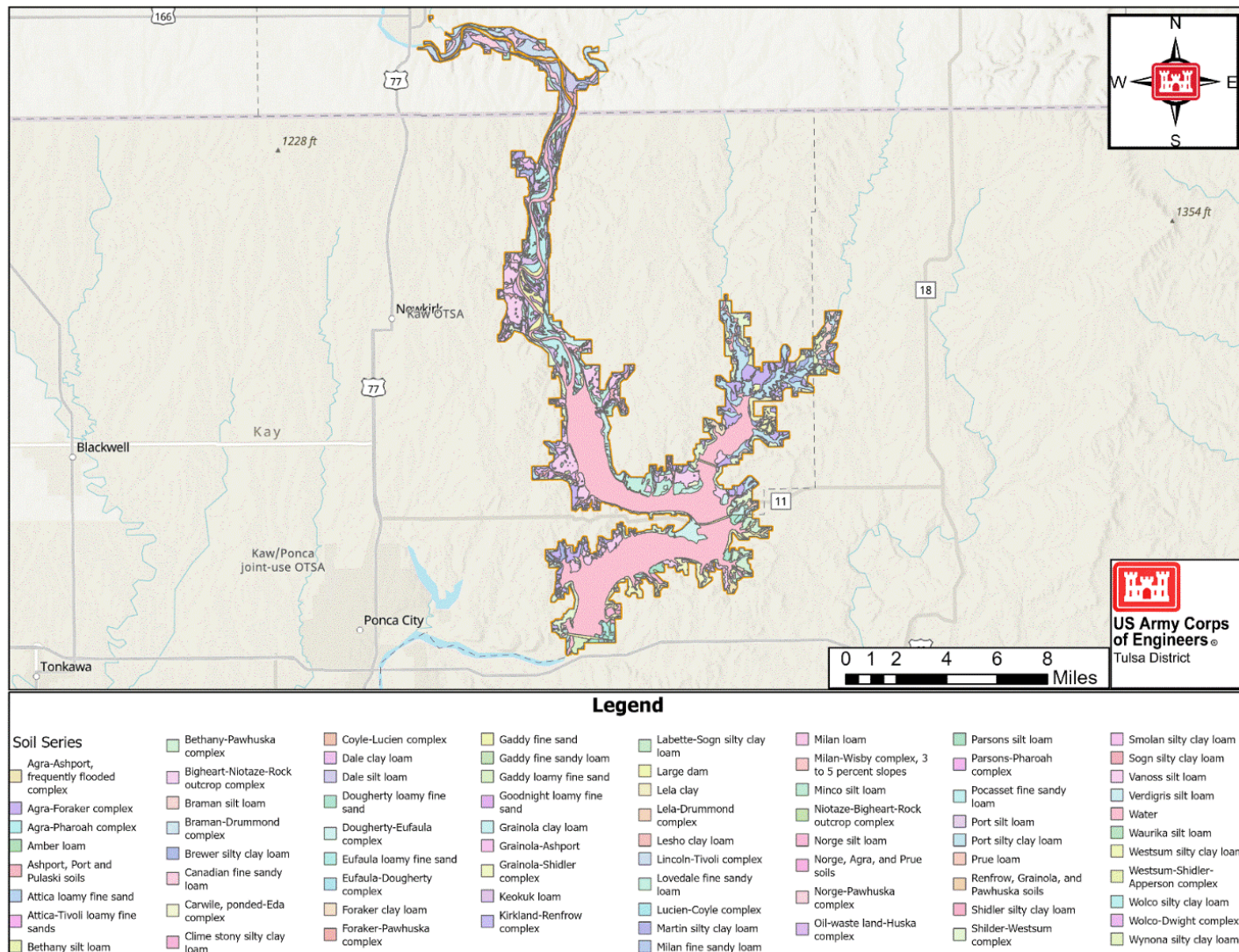
Map Unit Name	Number of Acres	Farmland Status
Water	11,737.90	Not Prime Farmland
Water	4,768.10	Not Prime Farmland
Shilder-Westsum complex, 5 to 20 percent slopes	2,726.50	Not Prime Farmland
Port silty clay loam, 0 to 1 percent slopes, occasionally flooded	2,485.90	Prime Farmland
Pocasset fine sandy loam, 0 to 1 percent slopes, occasionally flooded	2,066.90	Prime Farmland
Agra-Foraker complex, 3 to 5 percent slopes	1,326.80	Prime Farmland
Vanoss silt loam, 1 to 3 percent slopes	1,353.70	Prime Farmland
Ashport, Port and Pulaski soils, 0 to 1 percent slopes, frequently flooded	1,259.90	Not Prime Farmland
Vanoss silt loam, 0 to 1 percent slopes	1,151.20	Prime Farmland
Keokuk loam, 0 to 1 percent slopes, occasionally flooded	1,043.10	Prime Farmland
Lincoln-Tivoli complex, 0 to 10 percent slopes	1,027.00	Not Prime farmland
Grainola-Shidler complex, 12 to 25 percent slopes	989.5	Not Prime Farmland
Dale silt loam, rarely flooded	822.1	Prime farmland
Dale clay loam, 0 to 1 percent slopes, rarely flooded	792.9	Prime Farmland
Dougherty-Eufaula complex, 3 to 8 percent slopes	780.8	Not Prime Farmland
Agra-Foraker complex, 1 to 3 percent slopes	667.6	Prime Farmland
Agra-Foraker complex, 3 to 5 percent slopes, moderately eroded	709.2	Not Prime Farmland
Lovedale fine sandy loam, 3 to 5 percent slopes	641.4	Prime Farmland
Bethany-Pawhuska complex, 1 to 5 percent slopes	579.3	Prime Farmland
Foraker clay loam, 5 to 8 percent slopes	581.8	Not Prime Farmland
Vanoss silt loam, 3 to 5 percent slopes	612.9	Prime Farmland
Canadian fine sandy loam, rarely flooded	541.9	Prime farmland

Map Unit Name	Number of Acres	Farmland Status
Gaddy fine sand, 0 to 1 percent slopes, frequently flooded	557	Not Prime Farmland
Goodnight loamy fine sand, 5 to 15 percent slopes	561.3	Not Prime Farmland
Minco silt loam, 8 to 20 percent slopes	556.8	Not Prime Farmland
Vanoss silt loam, 5 to 8 percent slopes	518.6	Not Prime Farmland
Brewer silty clay loam, 0 to 1 percent slopes, rarely flooded	488.1	Prime Farmland
Dougherty-Eufaula complex, 0 to 3 percent slopes	504.9	Not Prime Farmland
Braman silt loam, 0 to 1 percent slopes, rarely flooded	383.3	Prime Farmland
Grainola-Ashport, frequently flooded, complex, 0 to 12 percent slopes	383.1	Not Prime Farmland
Verdigris silt loam, 0 to 1 percent slopes, occasionally flooded	385.4	Prime farmland
Agra-Ashport, frequently flooded complex, 0 to 12 percent slopes	321.9	Prime Farmland
Grainola-Shidler complex, 12 to 25 percent slopes	347	Not Prime Farmland
Lovedale fine sandy loam, 1 to 3 percent slopes	321.7	Prime Farmland
Dale silt loam, 0 to 1 percent slopes, rarely flooded	299.3	Prime Farmland
Water	313.9	Not Prime farmland
Westsum silty clay loam, 3 to 5 percent slopes	294.9	Prime Farmland
Bigheart-Niotaze-Rock outcrop complex, 1 to 8 percent slopes	246.4	Not Prime Farmland
Verdigris silt loam, 0 to 1 percent slopes, frequently flooded	248.2	Not Prime Farmland
Dougherty loamy fine sand, 3 to 8 percent slopes	220.1	Prime Farmland
Eufaula loamy fine sand, 3 to 15 percent slopes	189.9	Not Prime Farmland
Norge silt loam, 3 to 5 percent slopes	182	Prime Farmland
Wynona silty clay loam, 0 to 1 percent slopes, occasionally flooded	173.2	Not Prime Farmland
Dougherty loamy fine sand, 0 to 3 percent slopes	150.7	Prime Farmland
Milan loam, 3 to 5 percent slopes	139.1	Prime Farmland
Westsum silty clay loam, 1 to 3 percent slopes	164.3	Prime Farmland
Bethany silt loam, 3 to 5 percent slopes	109.2	Prime Farmland
Brewer silty clay loam, rarely flooded	86.1	Prime farmland
Clime stony silty clay loam, 15 to 30 percent slopes	115.5	Importance
Gaddy loamy fine sand, 0 to 1 percent slopes, occasionally flooded	109.8	Not Prime Farmland
Large dam	77	Not Prime Farmland
Large dam	98.4	Not Prime Farmland
Lela clay, 0 to 1 percent slopes, occasionally flooded	116.6	Prime Farmland

Map Unit Name	Number of Acres	Farmland Status
Lesho clay loam, occasionally flooded	90.8	Prime farmland
Lovedale fine sandy loam, 5 to 8 percent slopes	122.4	Prime Farmland
Minco silt loam, 3 to 7 percent slopes	86.1	Prime farmland
Minco silt loam, 7 to 15 percent slopes	113.1	Not Prime farmland
Norge silt loam, 1 to 3 percent slopes	87.2	Prime Farmland
Renfrow, Grainola, and Pawhuska soils, 3 to 8 percent slopes, severely eroded	91	Not Prime Farmland
Shidler silty clay loam, 1 to 3 percent slopes	86.2	Not Prime Farmland
Vanoss silt loam, 1 to 3 percent slopes	92.2	Prime farmland
Westsum silty clay loam, 3 to 5 percent slopes, eroded	79.7	Not Prime Farmland
Bethany silt loam, 1 to 3 percent slopes	31.1	Prime Farmland
Braman-Drummond complex, 0 to 1 percent slopes, rarely flooded	71.5	Not Prime Farmland
Carwile, ponded-Eda complex, 0 to 3 percent slopes	44.7	Not Prime Farmland
Eufaula-Dougherty complex, 0 to 3 percent slopes	56	Not Prime Farmland
Foraker-Pawhuska complex, 3 to 5 percent slopes, eroded	25.9	Not Prime Farmland
Gaddy loamy fine sand, 0 to 1 percent slopes, frequently flooded	51.4	Not Prime Farmland
Grainola clay loam, 3 to 5 percent slopes	30	Not Prime Farmland
Lela-Drummond complex, 0 to 1 percent slopes, occasionally flooded	31.2	Prime Farmland
Lovedale fine sandy loam, 3 to 5 percent slopes, severely eroded	43.5	Not Prime Farmland
Lucien-Coyle complex, 3 to 8 percent slopes	36.1	Not Prime Farmland
Milan loam, 1 to 3 percent slopes	57.9	Prime Farmland
Niotaze-Bigheart-Rock outcrop complex, 15 to 25 percent slopes, extremely stony	40	Not Prime Farmland
Norge silt loam, 5 to 8 percent slopes	36.4	Not Prime Farmland
Oil-waste land-Huska complex, 1 to 8 percent slopes	31.1	Not Prime Farmland
Parsons-Pharoah complex, 0 to 3 percent slopes	54.3	Prime Farmland
Port silt loam, 0 to 1 percent slopes, occasionally flooded	25.6	Prime Farmland
Shidler silty clay loam, 1 to 5 percent slopes	47.1	Not Prime Farmland
Vanoss silt loam, 0 to 1 percent slopes	26.1	Prime farmland
Waurika silt loam, 0 to 1 percent slopes, occasionally ponded	42.1	Not Prime Farmland
Wolco-Dwight complex, 0 to 3 percent slopes	25.4	Not Prime Farmland
Agra-Foraker complex, 1 to 3 percent slopes	0.6	Prime Farmland
Agra-Foraker complex, 3 to 5 percent slopes	10.1	Prime Farmland

Map Unit Name	Number of Acres	Farmland Status
Agra-Pharoah complex, 1 to 5 percent slopes	2.3	Prime Farmland
Amber loam, 5 to 8 percent slopes, rarely flooded	15.9	Not Prime Farmland
Ashport, Port and Pulaski soils, 0 to 1 percent slopes, frequently flooded	0.6	Not Prime Farmland
Attica loamy fine sand, 3 to 6 percent slopes	5.4	Prime farmland
Attica-Tivoli loamy fine sands, 3 to 15 percent slopes	23.8	Importance
Bethany silt loam, 0 to 1 percent slopes	19	Prime Farmland
Braman silt loam, 1 to 3 percent slopes, rarely flooded	23.8	Prime Farmland
Coyle-Lucien complex, 3 to 12 percent slopes	6.5	Not Prime Farmland
Foraker clay loam, 5 to 8 percent slopes	1	Not Prime Farmland
Gaddy fine sandy loam, 0 to 1 percent slopes, occasionally flooded	13.3	Not Prime Farmland
Gaddy loamy fine sand, 0 to 1 percent slopes, occasionally flooded	6.2	Not Prime Farmland
Kirkland-Renfrow complex, 3 to 5 percent slopes, eroded	5.9	Not Prime Farmland
Labette-Sogn silty clay loam, 0 to 8 percent slopes	0.7	Importance
Martin silty clay loam, 3 to 7 percent slopes	0.2	Prime farmland
Milan fine sandy loam, 1 to 6 percent slopes	15.5	Prime farmland
Milan loam, 3 to 5 percent slopes, eroded	4	Not Prime Farmland
Milan-Wisby complex, 3 to 5 percent slopes	0.9	Prime Farmland
Minco silt loam, 5 to 8 percent slopes	0.2	Not Prime Farmland
Norge silt loam, 3 to 5 percent slopes, eroded	4.9	Not Prime Farmland
Norge, Agra, and Prue soils, 3 to 8 percent slopes, gullied	18.3	Not Prime Farmland
Norge-Pawhuska complex, 1 to 5 percent slopes	18.8	Not Prime Farmland
Parsons silt loam, 0 to 1 percent slopes	4.5	Prime Farmland
Parsons silt loam, 1 to 3 percent slopes	8.3	Prime Farmland
Prue loam, 3 to 5 percent slopes	7.9	Prime Farmland
Smolan silty clay loam, 3 to 7 percent slopes	1	Prime farmland
Sogn silty clay loam, 0 to 10 percent slopes	7.2	Importance
Vanoss silt loam, 3 to 7 percent slopes	17.3	Prime farmland
Verdigris silt loam, 0 to 1 percent slopes, occasionally flooded	13.6	Prime Farmland
Westsum silty clay loam, 3 to 5 percent slopes	16.3	Prime Farmland
Westsum-Shidler-Apperson complex, 3 to 12 percent slopes	13.4	Not Prime Farmland
Wolco silty clay loam, 1 to 3 percent slopes	11.5	Prime Farmland

Source: Soil Classes (NCRS, 2022)



2.4.4 Prime Farmland

As required by Section 1541(b) of the Farmland Protection Policy Act (FPPA) of 1980 and 1995, 7 U.S.C. 4202(b), federal and state agencies, as well as projects funded with federal funds, are required to (a) use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland, (b) consider alternative actions, as appropriate, that could lessen adverse effects, and (c) ensure that their programs, to the extent practicable, are compatible with state and units of local government and private programs and policies to protect farmland.

There are several soil types in the study area that are considered prime farmland soils or soils associated with farmlands of state importance. There are approximately 18,611.5 acres of prime farmland present at Kaw Lake.

2.5 WATER RESOURCES

2.5.1 Surface Water

Kaw lake is located almost entirely within the Arkansas-Keystone HUC6 Basin, with only the far northwestern tip of Kaw Lake extends into the Middle Arkansas HUC6 Basin. Kaw Lake is made up of six HUC10 watersheds, Beaver Creek, Kaw Lake-Arkansas River, Charley Creek-Arkansas River, Grouse Creek, Mill Race Canal-Arkansas River, and Timber-Creek-Walnut River. The Beaver Creek watershed is located to the northeast of Kaw Lake and covers approximately 125,514 acres. The Kaw Lake-Arkansas River watershed is to the northwest of the dam and covers approximately 131,000 acres. The Grouse Creek watershed is located northeast from Kaw Lake and covers approximately 206,244 acres. The Mill Race Canal-Arkansas River watershed is northwest of Kaw Lake and covers approximately 200,469 acres. The Timber Creek-Walnut River watershed is located north of Kaw Lake and covers approximately 226,510 acres. Kaw Lake itself is dominated by acreage and drainage area by the Kaw Lake Arkansas River, Beaver Creek, and Charley Creek-Arkansas River watersheds.

The primary source of surface water at Kaw Lake is the Arkansas River, which is approximately 1,469 miles long and has a drainage area of approximately 170,000 square miles across the United States. The Arkansas River originates in the Rocky Mountains in Colorado, where it receives a majority of its source water from snowpack and rainfall in the Sawatch and Mosquito mountain ranges.

2.5.2 Wetlands

Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions, and under normal circumstances these wetlands do support this vegetation type. Defined within the Clean Water Act (CWA), wetlands are a subset of the Waters of the United States that may be subject to regulation under

Section 404 of the CWA (40 CFR 230.3). Jurisdiction for these waters is addressed with the USACE and EPA.

The National Wetlands Inventory (NWI) established by US Fish and Wildlife Service (USFWS) is used to identify wetland types in a USACE water resource project area. The NWI was used to identify and calculate wetland acreage within the fee boundary of the project, Table 2.2, and a map showing the wetlands within in Kaw using the NWI data was created in Figure 2.4.

Table 2.2 Total Acres of Wetland and Open Water at Kaw Lake from NWI Data

Wetland Types	Acres
Freshwater Emergent Wetland	989.80
Freshwater Forested/Shrub Wetland	1,770.24
Freshwater Pond	106.04
Lake	16,280.97
Riverine	6,939.67
Total Acres of Wetlands	26,016.72

*These totals are based on USFWS calculations and differ from the official or calculated acres reflected in other parts of this document.

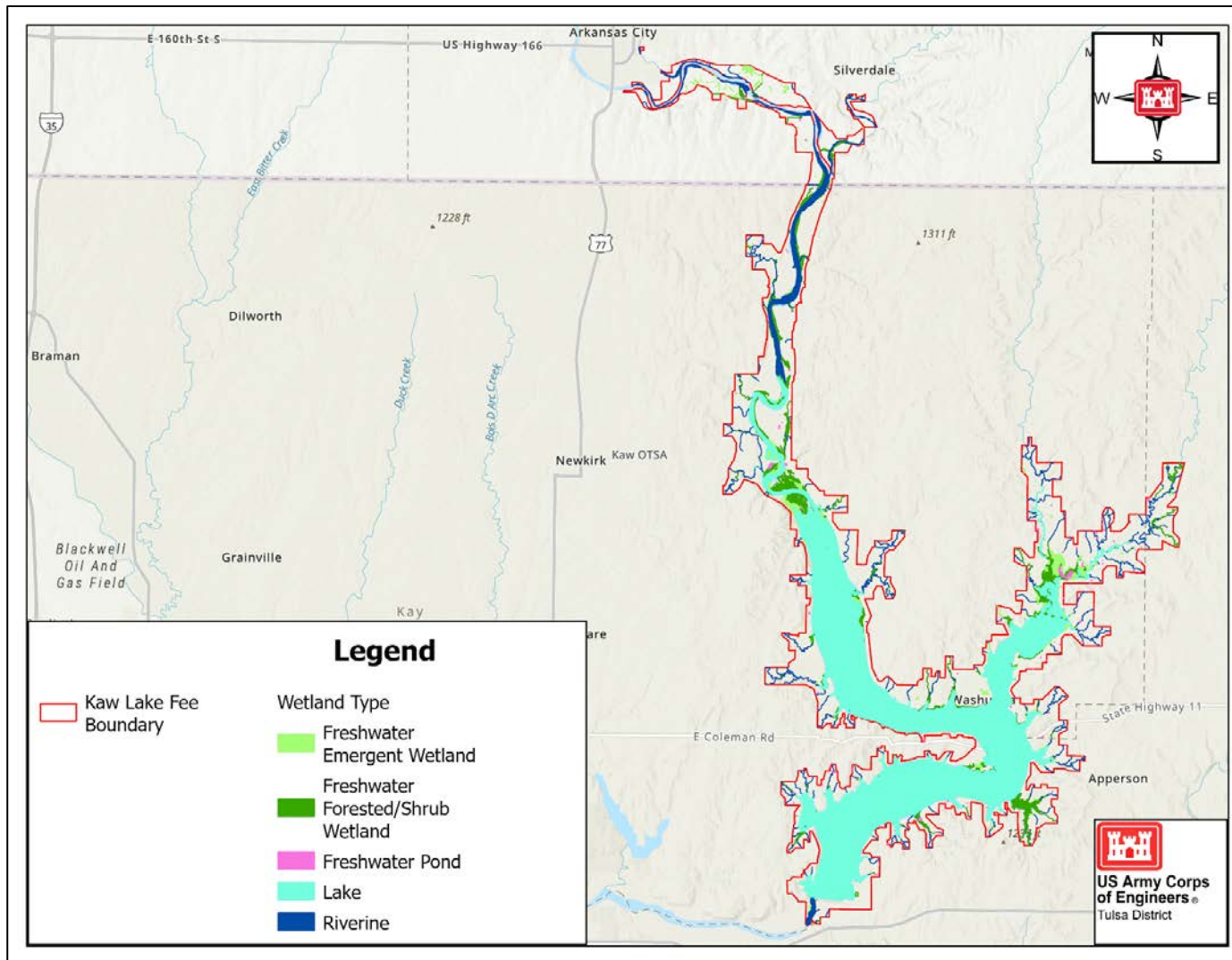


Figure 2.4 Kaw Lake Wetlands Map (USFWS, 2025I)

2.5.3 Groundwater

The High Plains aquifer is located northwest of Kaw lake and consists of late Tertiary or Quaternary age geologic units and Permian to Tertiary age bedrock units. The High Plains aquifer is one of the largest in the world and about 27% of the irrigated land in the United States overlies the aquifer, which yields about 30% of the nation's groundwater used for irrigation of crops including wheat, corn, sorghum, cotton and alfalfa. Over time the aquifer has been impacted by human activities causing withdrawals from the aquifer to exceed recharge, resulting in declines in the groundwater level.

The Vamoosa-Ada aquifer is located east of Kaw lake, consisting of the Vamoosa Formation and the overlying Ada Group of Pennsylvanian age. The rocks in the aquifer were deposited nearshore ranging from marine on the west to nonmarine on the east. The aquifer is a sequence of fine- to very fine-grained sandstone, siltstone, shale, and conglomerate, with interbedded very thin limestone.

2.5.4 Hydrology

Surface waters are categorized by hydrologic units. Hydrologic units are classified by the United States Geologic Survey (USGS) using a Hydrologic Units Code (HUC) system. The units are classified from largest HUC with a two-digit region (i.e., the Arkansas-White-Red Region), encompassing the largest area, to a twelve-digit sub-watershed HUC. Kaw Lake is classified by sub-watersheds as follows:

- 11 (HUC 2: Region) – Arkansas-White-Red Region
- 1106 (HUC 4: Sub-region) – Arkansas-Keystone
- 110600 (HUC 6: Basin) – Arkansas-Keystone
- 11060001 (HUC 8: Sub Basin) – Kaw Lake
- 1106000103 (HUC 10: Watershed) – Beaver Creek
- 1110000104 (HUC 10: Watershed) – Kaw Lake-Arkansas River
- 1110000105 (HUC 10: Watershed) – Charley Creek-Arkansas River
- 110600010404 (HUC 12: Sub-watershed) – Bear Creek-Arkansas River
- 110600010302 (HUC 12: Sub-watershed) – Lower Little Beaver Creek
- 110600010305 (HUC 12: Sub-watershed) – Middle Beaver Creek
- 110600010306 (HUC 12: Sub-watershed) – Lower Beaver Creek
- 110600010501 (HUC 12: Sub-watershed) – Kaw Lake-Arkansas River

Most major storms in the Kaw Lake drainage basin have occurred in April through June or September through November. Three types of storms produce precipitation over the basin: (1) thunderstorms, (2) frontal storms, and (3) remnants of hurricanes. The flood of April 28th through June 30, 2019 had an approximate runoff of 14.31 inches.

The Kaw Lake dam is located on the Arkansas River at river mile 653.7, about eight miles east of Ponca City. The top of conservation for Kaw Lake on average is 1010.0 ft (NGVD 29) as of 2020. The total drainage area of the dam is ~48,300 square

miles' however, the contributing area is ~38,771 square miles and during the summer months the reservoir release is 40 cubic feet per second for downstream dissolved oxygen.

2.5.5 Water Quality

Designated beneficial uses of the impoundment created by Kaw Lake include Public and Private Water Supply, Fish and Wildlife Propagation as a Warm Water Aquatic Community, Agriculture, Primary Body Contact Recreation, and Aesthetics. Based on the 2022 Integrated Water Quality Assessment prepared by the Oklahoma Department of Environmental Quality (ODEQ), Kaw Lake is listed as impaired by turbidity affecting Fish and Wildlife Propagation as a Warm Water Aquatic Community (USACE, 2021).

USACE conducted water quality sampling at Kaw Lake, OK in 1996 and 2008. Both efforts indicated concerns with respect to high nutrient concentrations, elevated trace metal concentrations, and reduced water clarity. The 2008 effort noted detectable mercury concentrations in 45% of samples analyzed. Physical and chemical water quality data were collected monthly by USACE from six in-lake sites and the stilling basin at Kaw Lake beginning 12 April and ending 14 September 2021 to define existing limnological conditions, provide a basis for future water quality investigations and to support operational and environmental missions for Tulsa District.

2.6 HAZARDOUS MATERIALS AND SOLID WASTE

There are no HTRW (Hazardous, Toxic, and Radioactive Waste) sites at Kaw Lake, however there are two areas outside of the Kaw Lake boundary that are identified in the EPA Cleanups. Burgert Property is ready for anticipated use and Kaw City Proposed Park where cleanup is currently in the assessment phase.

2.7 HEALTH AND SAFETY

Kaw Lake's authorized purposes include flood control, hydropower, navigation, water supply, water quality, recreation, and fish and wildlife. Compatible uses incorporated in project operation management plans include conservation and fish and wildlife habitat management components. The USACE, with some assistance from the Oklahoma Highway Patrol, and Oklahoma Department of Wildlife Conservation (ODWC) has established public outreach programs to educate the public on water safety and conservation of natural resources. In addition to the water safety outreach programs, the project has established recreation management practices to protect the public. These include safe boating and swimming regulations, and speed limit and pedestrian signs for park roads. Kaw Lake also has solid waste management plans in place for camping and day use areas that are maintained by the USACE.

2.8 ECOREGION AND NATURAL RESOURCE ANALYSIS

2.8.1 Natural Resources

Kaw Lake lies within the Central Great Plains – Prairie Tableland ecoregion (Level III) and Flint Hills ecoregion (Level III). The ecoregion contains thin, cherty, limestone-derived soils which doesn't make it optimal for crop agriculture. Bands of hills run from northeastern Kansas to northeastern Oklahoma. Due to the soils not being suitable for crop agriculture, most of Flint Hills are native prairie. Some of the native grasses in the Flint Hills ecoregion are big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum* L.) (Noss, 2024). Dry upland forest is dominated by both blackjack and post oak, bottomland forest contains cottonwoods, hackberries, elms, and oaks. Common shrubs in this region are persimmons, sumacs, and small oaks. Thickets of grapevine, poison ivy and greenbrier can be found as well (ODWC, 2016, 27-28).

The Central Great Plains – Prairie Tableland ecoregion extends from Nebraska to central Texas, passing through the western half of Oklahoma. Grasslands cover most of the ecoregion with woodlands are along the ravines and streams. The native grassland species in the Central Great Plains are little bluestem (*Schizachyrium scoparium*), big bluestem, and several other short grass species (ODWC, 2016, 28-29).

Riparian/Bottomland Hardwood Forest – Riparian/Bottomland hardwoods are found along rivers and streams, mostly in broad floodplains. They are commonly found in areas where the rivers or streams are flooding beyond their channel confines. Common species found in riparian/bottomland hardwood forest can be made up of different Gum (*Nyssa* sp.), Oak (*Quercus* sp.), and Bald Cypress (*Taxodium distichum*). This habitat type acts as a natural buffer between uplands and adjacent water bodies, acting as natural filters of nonpoint source pollutants.

This region, like so many other ecological regions in Oklahoma, has undergone significant changes in the past 150 years. Although habitat for wildlife is present throughout the ecological regions as a whole, populations vary considerably within sub-regions. The diversity and configuration of the plant communities on the landscape influence wildlife populations. Other factors include fragmentation of once continuous habitat into smaller land holdings; competition for food and cover with livestock; conversion of woodland habitat to improved pastures, or urban and rural developments; and lack of proper wildlife and habitat management.

2.8.2 Vegetation Resources

The Texas Parks and Wildlife Division (TPWD) Wildlife Habitat Assessment Protocol (WHAP) was used to assist in the preparation of the Master Plan. The WHAP assessment was developed to allow a qualitative, holistic evaluation of wildlife habitat for particular tracts of land and measures key components that contribute to the ecological condition of the evaluated point and resulting overall suitability for wildlife.

The assessment was conducted June 15-16, 2024, at Kaw Lake by an interdisciplinary USACE team consisting of USACE biologists and Park Rangers. Sixty-five WHAP survey point locations were selected and surveyed based on areas believed or known to have representative habitat types and features based on aerial imagery from existing GIS data as well as from local knowledge of the area. The purpose of the survey was to quickly assess wildlife habitat quality within the USACE Kaw Lake fee-owned property. The highest score a site can receive is 1.00 while the lowest is 0.03, while a score of 0 represents a site skipped and not incorporated into the report calculations. The scores are not species dependent but rather diversity dependent. The data gathered from this survey helped to quantifiably describe the general habitat characteristics and identify unique/high quality areas found within USACE Kaw Lake Fee Boundary. This data helped with revising the land classification based on what areas needed the most protection. Three major habitat types were selected and assessed at Kaw Lake and include riparian/bottomland hardwood forests (BHF), grasslands, and upland forests.

The two most abundant habitat types surveyed for the WHAP were upland forests and riparian/bottomland hardwood forest. To evaluate all habitat types on an even scoring basis, upland forest and grassland scores were normalized by dividing their original scores by the maximum possible score for their respective habitat types. These habitat types had the highest average scores, with average total scores within 1 point of each other. This reflects how normalizing efforts on the data has helped to evaluate sites on an even scoring basis. The WHAP assessment report can be found in Appendix C of this Master Plan.

Table 2.3 shows acres that were calculated from the USGS National Land Cover Database to show ecological habitat types present in the Kaw Lake fee boundary area and Figure 2.5 shows the map created from the USGS National Land Cover Database.

Table 2.3 Total Acres of Habitat Types at Kaw Lake

Ecological Habitat Types	Acres
Barren land	244.09
Cultivated Crops	3,490.38
Deciduous Forest	5,836.43
Developed, High Intensity	24.48
Developed, Low Intensity	298.24
Developed, Medium Intensity	97.17
Developed, Open Space	611.89
Evergreen Forest	20.38

Ecological Habitat Types	Acres
Hay/Pasture	789.13
Herbaceous	7,512.36
Mixed Forest	76.83
Shrub/Scrub	158.37
Total Acres	19,159.75

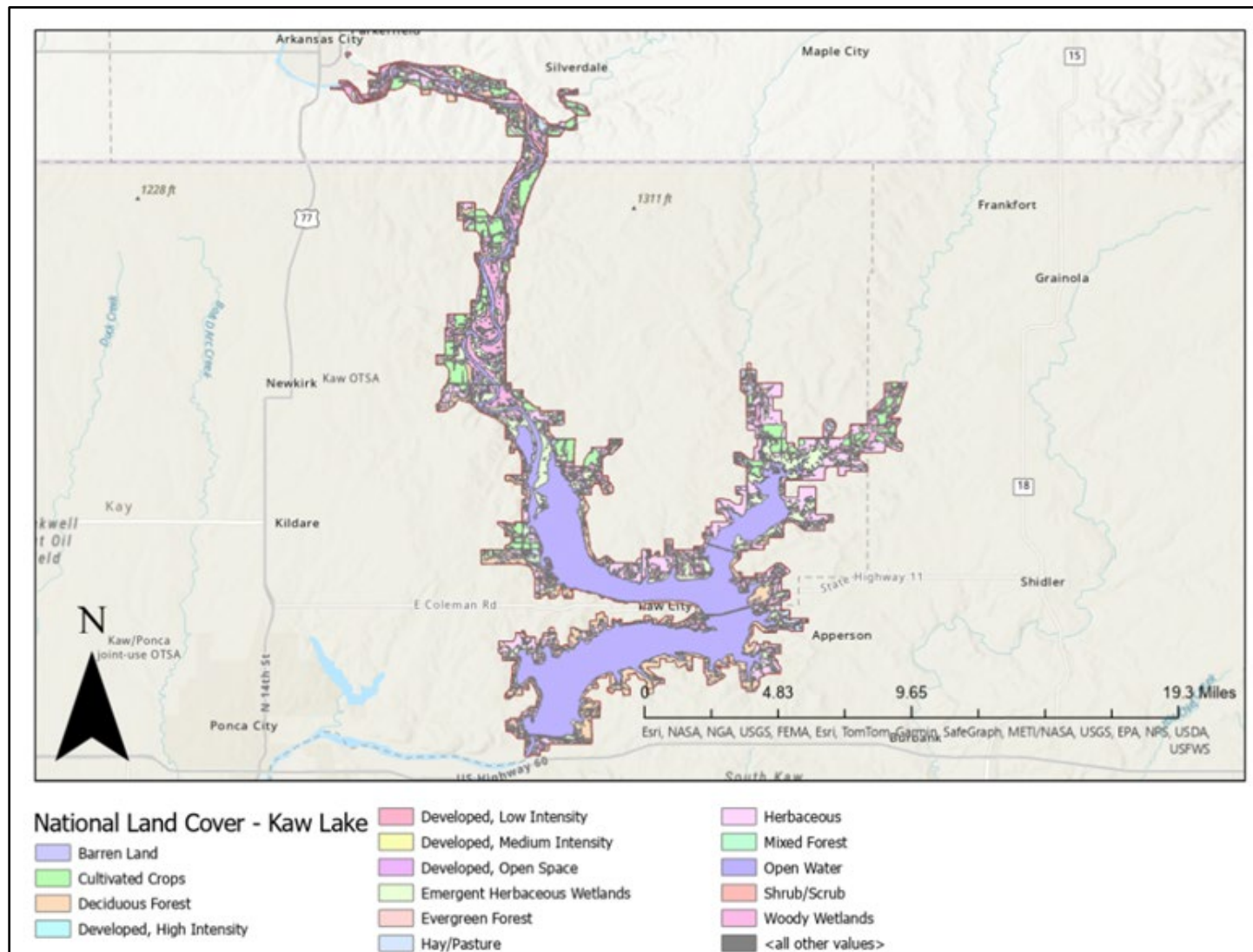


Figure 2.5 Ecological Habitat Types at Kaw Lake

2.8.3 Fisheries and Wildlife Resources

Kaw Lake provides an improved fishery over the natural river, allowing some species of sport fish to flourish in contrast to previous natural river conditions. Major species that are present in the lake include: walleye (*Sander vitreus*), black crappie (*Pomoxis nigromaculatus*), white crappie (*Pomoxis annularis*), channel catfish (*Ictalurus punctatus*), blue catfish (*Ictalurus furcatus*), flathead catfish (*Pylodictis olivaris*), largemouth bass (*Micropterus salmoides*), white bass (*Morone chrysops*), striped bass (*Morone saxatilis*), bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), common carp (*Cyprinus carpio*), buffalo (*Ictiobus cyprinellus*), and freshwater drum (*Aplodinotus grunniens*).

Common wildlife species at Kaw Lake include whitetail deer (*Odocoileus virginianus*), bobwhite quail (*Colinus virginianus ridgwayi*), mourning dove (*Zenaida macroura*), cottontail rabbit (*Sylvagus floridanus*), wild turkey (*Meleagris gallopavo*), fox squirrel (*Sciurus niger*), feral hogs (*Sus scrofa*), coyote (*Canis latrans*), black-tailed prairie dog (*Cynomys ludovicianus*), osprey (*Pandion haliaetus*), bald eagle (*Haliaeetus leucocephalus*), striped skunks (*Mephitis mephitis*), red-eared slider (*Trachemys scripta elegans*), five-lined skinks (*Plestiodon fasciatus*), scissor-tailed fly catchers (*Tyrannus forficatus*), and painted buntings (*Passerina ciris*). Migratory waterfowl common to Kaw Lake include Canada Geese (*Branta canadensis*), snow geese (*Anser caerulescens*), white-fronted geese (*Anser albifrons*) and numerous species of ducks.

2.8.4 Threatened and Endangered Species

The Endangered Species Act was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. USFWS is the primary agency responsible for implementing the Endangered Species Act and is responsible for birds and other terrestrial and freshwater species. USFWS responsibilities under the Endangered Species Act include (1) the identification of threatened and endangered species; (2) the identification of critical habitats for listed species; (3) implementation of research and recovery efforts for these species; and (4) consultation with other Federal agencies concerning measures to avoid harm to listed species.

An endangered species is officially recognized by USFWS as being in danger of extinction throughout all or a significant portion of its range. A threatened species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are any species of fish, wildlife, or plant that is proposed in the Federal Register to be listed under Section 4 of the Endangered Species Act. Species may be considered eligible for listing as endangered or threatened when any of the five following criteria occur: (1) current/imminent destruction, modification, or curtailment of their habitat or range; (2) overuse of the species for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; and (5) other natural or human-induced factors affecting their continued existence.

In addition, USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which USFWS has sufficient information to support proposals to list as endangered or threatened under the Endangered Species Act; however, proposed rules have not yet been issued because such actions are precluded at present by other listing activity. Although not afforded protection by the Endangered Species Act, candidate species may be protected under other federal or state laws.

By protecting a specific species, the USFWS may list them as endangered, threatened, listed, migratory, and or protected. A species can have more than one protection measure with the exclusion of endangered, threatened, and listed. A species cannot be both endangered and threatened; however, a species can be endangered, migratory and protected.

- Endangered is officially recognized by USFWS as being in danger of extinction throughout all or a significant portion of its range. Under this protection measure, a species cannot be taken, essential habitat cannot be altered and destroyed, nor transported without a permit. Take means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct” (USFWS, 2020B).
- Threatened means any species recognized by the USFWS as being likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Under this protection measure, a species cannot be taken, essential habitat cannot be altered and destroyed, nor transported without a permit.
- Proposed species are those that have been determined to be in danger of extinction throughout all or a significant portion of its range, and the USFWS has proposed a draft rule to list it as either endangered or threatened in the Federal Register to be listed under Section 4 of the ESA.
- Candidate is a species for which the USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions.
- Critical habitat is that which is essential to the conservation of a particular species.
- Protected means that there are other Federal laws and regulations protecting the species than the Endangered Species Act. Examples include Bald and Golden Eagle Protection Act, Lacey Act, and Migratory Bird Treaty Act. Just because a species is listed as migratory doesn't automatically qualify it as protected; it must be protected by more than one law.
- Migratory means it applies specifically to migratory birds. The law that governs these species is the Migratory Bird Treaty Act. The USFWS may list a species under “Similarity of Appearance (Threatened)” because of

the species' similarity of appearance to another species that is currently listed as threatened. Under this classification these species will not have to go through Section 7 Consultation of the Endangered Species Act because they are not biologically endangered. However, under this listing category, the species may be protected by Section 9 of the Endangered Species Action, which primarily prohibits the "taking" of endangered species of fish and wildlife.

The USFWS's Information for Planning and Consultation (IPaC) database (USFWS, 2025) lists the threatened and endangered species, and trust resources that may occur within the Kaw Lake Federal Fee Boundary (see USFWS Species List and the IPaC Report in Appendix C). Based on the IPaC report, there are 6 federally listed, proposed, or candidate species that could be found within Kaw Lake (USFWS, 2025A). A list of these species is presented in Table 2.4. There is no Critical Habitat designated within or near Kaw Lake.

Table 2.4 Federally Listed Threatened & Endangered Species with Potential to Occur at Kaw Lake

Common Name	Scientific Name	Federal Status	State Status
Piping Plover	<i>Charadrius melodus</i>	Threatened	Not Listed
Rufa Red Knot	<i>Caildrius canutus rufa</i>	Threatened	Not Listed
Alligator Snapping Turtle	<i>Macrochelys temminckii</i>	Proposed Threatened	Not Listed
Peppered Chub	<i>Marchybopsis tetranema</i>	Endangered	Not Listed
American Burying Beetle	<i>Nicrophorus americanus</i>	Threatened	Not Listed
Monarch Butterfly	<i>Danaus plexippus</i>	Proposed Threatened	Not Listed
Western Regal Fritillary	<i>Argynnis idalia occidentalis</i>	Proposed Threatened	Not Listed

The piping plover is a shorebird listed as endangered in the watershed of the Great Lakes of North America and threatened in the remainder of its range, which includes the Northern Great Plains, the Atlantic Coast, the Gulf Coast, the Bahama Islands, and the West Indies (USFWS, 1996). The Northern Great Plains population of piping plover spends up to 10 months a year on its wintering ground along the Gulf Coast and arrives on prairie breeding grounds in early May. During migration periods, they use large rivers, reservoir beaches, mudflats, and alkali flats (NatureServe, 2025B). They feed on a variety of aquatic and terrestrial invertebrates. The sandy beaches within the study area could provide suitable habitat during the plovers' spring and fall migrations. Despite the availability of habitat and the location of the lake within

the species known migratory route the occurrence of the species within the project area is considered to be rare due to the lack of recent sightings (USFWS, 2025D).

The Rufa red knot is a migratory shorebird listed as threatened wherever found (USFWS, 2025E). Although sightings are rare, the project area is listed as a location where the red knot is “known or believed to occur” and is located within the probable migratory path, between breeding in the Arctic tundra and winter habitats in the southern U.S. and Central and South America. Red knots forage along sandy beaches and mud flats, and this species may use the study area for temporary stopover and foraging (NatureServe, 2025C). The bare sandy shoreline along Kaw Lake could provide suitable habitat during the red knot’s spring and fall migrations. Although there is available habitat and the project area is within its known range, the species is considered rare at Kaw Lake due to lack of recent sightings.

The Alligator Snapping Turtle is the largest freshwater turtle in the United States and is a proposed threatened species. The species inhabits along the bottom of waterways in the Midwest, Southeast, and some parts of the Southwest. The snapping turtle’s preferred habitats are large rivers, streams, canals, lakes, and swamps, while the favored features are high canopy forest areas and structures that include tree root masses, stumps, and submerged trees. In the winter, the species prefers shallow areas while in the summer the species prefers deeper areas. The oldest snapping turtle documented in captivity was 80 years old and a mature female produces only one clutch each year, ranging from eight to 52 eggs. Hatchings can be found in shallow water with an abundant canopy and vegetation (USFWS, 2025A).

The Peppered Chub, an endangered species, is a small minnow that historically ranges in Colorado, Kansas, New Mexico, Oklahoma, and Texas. The species lives in large, plain streams and medium to large streams. The species prefers flowing water over coarse sand and fine gravel substrates in streams, the species occupies intermittent streams that may dry to salt-encrusted pools. Spawning season occurs from May to August and it is reported that the species spawns under both high and low flows, as well as in pools (USFWS, 2025H).

The American burying beetle, a threatened species, is the largest carrion beetle in North America and can reach up to 1.0 to 1.8 inches in length. The species is believed to burry themselves under vegetation litter and/or soil. The species lives in a wide range of habitats, wet meadows, partially forested loess canyons, oak-hickory forests, shrub land, and grasslands, lightly grazed pasture, riparian zones, coniferous forest and deciduous forest with open understory (USFWS, 2025B).

The Monarch butterfly is listed as a proposed threatened species wherever it is found (USFWS, 2025C). It is an orange butterfly with black stripes and white dots on its wings, whose span can be up to 10 cm (NatureServe, 2025A). Its breeding habitat consists primarily of milkweed species (*Asclepias* spp.), which larvae feed exclusively. When it is in North America and is migrating, the species can be found pretty much wherever blooming flowers are. Kaw Lake and its federal fee boundary does contain an abundance of blooming flowers and milkweed; this along with numerous recent

sightings confirms that this species is common within the area when the species is migrating and during breeding season.

The Western Regal Fritillary is listed as a proposed threatened species. This species of brush-footed butterflies displays large, orange and black wings. They can be found in tall-grass prairies and other open and sunny locations like damp meadows, marshes, wet fields, and mountain pastures (USWFS, 2025G).

2.8.5 Oklahoma Natural Heritage Inventory

The Oklahoma Natural Heritage Inventory (ONHI), administered by the University of Oklahoma (OU) (2022), manages and disseminates occurrence of information on rare species, native plant communities, and animal aggregations in Oklahoma to help guide project planning efforts. An official request via email was made requesting this information for the Kaw Lake project area. In the inventory given to USACE, ONHI indicates that there are no federally endangered, threatened, and protected species that are known to occur within the vicinity Kaw Lake Federal Fee Boundary. (ONHI, 2022).

The species identified as Threatened, Endangered or Candidate Species by ODWC that are not federally listed, as well as a list of Species of Greatest Conservation Need (SGCN) for the Ouachita Mountains, Arkansas River Valley and West Gulf Coastal Plain Region (ODWC, 2016), are included in Appendix C.

2.8.6 Invasive Species

An invasive species is defined as a plant or animal that is non-native (or native nuisance) to an ecosystem and whose introduction causes, or is likely to cause, economic and/or environmental harm, or harm to human health. Invasive species can thrive in areas beyond their normal range of dispersal. These species are characteristically adaptable, aggressive, and have high reproductive capacity. Their vigor, along with a lack of natural enemies or controls, often leads to outbreak populations with some level of negative effects on native plants, animals, and ecosystem functions and are often associated with disturbed ecosystems and human activities.

Table 2.5 lists many of the invasive and noxious native species found at Kaw Lake (USACE, 2016A). Other species are currently being researched for their invasive characteristics.

Table 2.5 Invasive and Noxious Native Species Found at Kaw Lake

Common Name	Scientific Name	Native/Non-native
Birds		
Black Vulture	<i>Coragyps atratus</i>	Native
Cowbirds	<i>Molothrus ater</i>	Native
Mammals		
Wild Boar	<i>Sus scrofa</i>	Non-native
Insects		
Red Imported Fire Ant	<i>Solenopsis invicta</i>	Non-native
Plants		
Johnson Grass	<i>Sorghum halepense</i>	Non-native
Multiflora Rose	<i>Rosa multiflora</i>	Non-native
Musk Thistle	<i>Carduus nutans</i>	Non-native
Common Reed	<i>Phragmites australis</i>	Non-native
Sericea Lespedeza	<i>Lespedeza cuneata</i>	Non-native
Common Cocklebur	<i>Xanthium strumarium</i>	Native
Eastern Redcedar	<i>Juniperus virginiana</i>	Native
Amphibians		
None	None	None
Mollusks		
Zebra Mussel	<i>Dreissena polymorphs</i>	Non-native
Fish		
None	None	None

Because of the lake's relative isolation from metropolitan areas, it does not have as many invasive species compared to those within or directly adjacent to major metropolitan areas. The remoteness protects the lake from the inadvertent release and spread of common landscape plants that could become aggressive colonizers from nearby residential developments.

2.9 AESTHETIC RESOURCES

Kaw Lake includes many acres of scenic shorelines, lake views, and wildlife viewing areas providing high visual and scenic qualities. Some areas are admired for their scenic attractiveness (intrinsic scenic beauty that evokes a positive response), scenic integrity (wholeness of landscape character), and landscape visibility (how many people view the landscape and for what reasons and how long). Some areas have been designated as Wildlife Management or Environmentally Sensitive Areas to preserve

specific animal, plant, or environmental features that also add to the scenic qualities at the lake. Nearby parks have been designed to access the lake, allow access to hiking trails, and take advantage of scenic qualities at the lake and surrounding areas.

Adjacent landowners are informed that removing trees from USACE property to obtain a view of the lake not only destroys wildlife habitat but also lowers the scenic quality of the shoreline when viewed by the general public from the water surface. Furthermore, unauthorized removal of trees and other vegetation from USACE property could result in fines. Additionally, reasonable measures must be taken to ensure that damage to the natural landscape from invasive species and catastrophic wildfire are minimized. Vegetative management, debris removal, and other shoreline issues are managed by the USACE Kaw Lake Office.

2.10 CULTURAL RESOURCES

Cultural resources preservation and management is an equal and integral part of all resource management at USACE-administered operational projects. The term “cultural resources” is a broad term that includes but is not limited to historic and prehistoric archaeological sites, deposits, and features; burials and cemeteries; historic and prehistoric districts comprised of groups of structures or sites; cultural landscapes; built environment resources such as buildings, structures (such as bridges), and objects; Traditional Cultural Properties (TCP) and sacred sites. These property types may be listed on the National Register of Historic Places (NRHP) if they meet the criteria specified by 36 CFR 60.4 as authorized by the NHPA, reflecting significance in architecture, history, archaeology, engineering, and culture. Cultural resources that are identified as eligible for listing in the NRHP are referred to as “historic properties,” regardless of category. A TCP is a property that is eligible for inclusion in the NRHP based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community. Ceremonies, hunting practices, plant-gathering, and social practices which are part of a culture’s traditional lifeways, are also cultural resources.

Stewardship of cultural resources on USACE Civil Works water resources projects is an important part of the overall Federal responsibility. Numerous laws pertaining to identification, evaluation, and protection of cultural resources, Native American Indian rights, curation and collections management, and the protection of resources from looting and vandalism establish the importance of cultural resources to our Nation’s heritage. With the passage of these laws, the historical intent of Congress has been to ensure that the Federal government protects cultural resources. Guidance is derived from several cultural resources laws and regulations, including but not limited to Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966 (as amended); Archaeological Resources Protection Act (ARPA) of 1979; Native American Graves Protection and Repatriation Act (NAGPRA); and 36 CFR Part 79, Curation of Federally Owned and Administered Archeological Collections. Implementing regulations for Section 106 of the NHPA and NAGPRA are 36 CFR Part 800 and 43 CFR Part 10, respectively. All cultural resources laws and regulations should be addressed under the requirements of the National Environmental Policy Act (NEPA) of 1969 (as amended),

as applicable. USACE summarizes the guidance provided in these laws in ER and EP 1130-2-540.

2.10.1 Cultural History Sequence

Six broad cultural divisions are applicable to a discussion of the culture history of the Kaw Lake region: Paleoindian, Archaic, Woodland, Mississippian/Plains Village, Protohistoric, and Historic. These general adaptation types are adopted in this Master Plan to characterize prehistoric cultural traditions, within the following regional chronology:

Paleoindian: 30,000 to 7000 BC

Archaic: 7000 BC to 1 AD

Woodland: AD 1 to 1000

Mississippian/Plains Village: AD 1000 to 1500

Protohistoric (Contact Period): AD 1500 to 1830

Historic: AD 1830 to present

Paleoindian Period

While it is becoming increasingly evident that humans arrived in the Americas as early as 30,000 years ago, the Paleoindian Period is broadly accepted as spanning the end of the Pleistocene into the Early Holocene. The Clovis complex (9500–8900 BP) is the earliest well-substantiated archaeological period in the Central Plains. Paleoindian sites are usually identified by the presence of the remains of extinct Pleistocene megafauna and signature stone tools. The most visible tools are projectile points, which are used to reference different archaeological complexes. Point types include unnotched lanceolate projectile points, fluted (Clovis and Folsom), and unfluted (Allen-Frederick, Agate Basin, Hell Gap, Meserve, Plainview, Cody, Dalton, Plano, and undesignated "Late Paleoindian"). Long characterized as specialized big-game hunters, it has now been demonstrated that the archaeological complexes of the Paleoindian Period represent diversified economies of small bands of hunters and gatherers. Some groups were more reliant on megafauna than others, and some hunted megafauna during specific seasons (Blackmar and Hofman 2006). The Dalton Complex is well represented in eastern Oklahoma, spanning the period from the end of the Paleoindian Period into the Early Archaic (Ballenger 2001; Blackmar and Hofman 2006; Meltzer 2009).

In Oklahoma, the earliest proven evidence of human occupation occurs at sites such as the Domebo site, a Clovis-era mammoth kill site in Caddo County, and Jakes Bluff, a bison kill site in Harper County (Gilbert 2000). Isolated Paleoindian points have

typically been found on the surface, and these points are most often collected, resulting in the loss of archaeological context. For these reasons, a limited number of Paleoindian sites have been recorded in the project area, though sites with both Paleoindian and Archaic deposits are better represented. The small number of sites from this period is much more a product of archaeological visibility than an actual representation of prehistoric populations and patterns of land use (Blackmar and Hofman 2006). In eastern Oklahoma, sites such as the Packard site in Mayes County, the Quince Site in Atoka County, and the Billy Ross site in Haskell County include large quantities of local chert, which may indicate that later Paleoindian peoples were less nomadic than earlier Paleoindians (Brooks 2021; Hawkins 2011).

Archaic Period

During the Archaic Period, an increase in seasonal variability of resources and increasing populations resulted in changing settlement and subsistence patterns (Gilbert 2000). Repeated occupation of sites, often on a seasonal basis, and features such as rock-lined hearths, roasting pits, and grinding tools reflect intensive plant processing and the cyclical exploitation of resources (Brogan 1981; Sabo and Early 1990; Brooks 2021). Increasing diversity of stone tools through time reflects the increasing variability of faunal and floral resources and the diversity of activities taking place at habitation sites (Thies and Witty 1992). Projectile points from the Middle and Late Archaic are stylistically quite different (typically notched and stemmed) from those of the Paleoindian Period. Archaic assemblages include a variety of large dart points, knives, drills, axes, gouges, scrapers, and grinding implements (such as manos and metates). The Archaic Period is traditionally divided into Early, Middle, and Late Periods, the overall extent of which was approximately 7000 BC to 1 AD.

The Calf Creek Culture was prominent in Oklahoma during the Archaic Period between 7,000 and 4,000 years ago. This group adapted to a long drought period by living in highly mobile bands, hunting bison, and supplementing their diet with edible starchy plant seeds that were more readily available in the dry climate. Calf Creek is distinguished by finely made large spear points with deep notches on the base. Archaeologists believe there were four groups located in the east central, north central, south central, and western areas of the state based on their reliance on local flint found in the four areas (Gilbert 2000).

Prominent Calf Creek sites in Oklahoma include Primrose and Stillman Pit sites in Murray County, the Kubik site in Kay County, the Arrowhead Ditch site in Muskogee County, and the Anthony site in Caddo County. The Anthony site is unique in that it exhibits artifacts from all four Calf Creek groups and was likely a gathering place for the people as a whole (Gilbert 2000). Other Archaic sites in Oklahoma include the Pumpkin Creek site in Love County, the Lawrence site in Nowata County, and the Gore Pit site in Comanche County. The Lawrence site is near the project area and known for its burned rock cooking pit concentrations (Hawkins 2011). Archaic sites further north along the Kiamichi River than the project area indicate people depended heavily on riverine resources, though sites closer to the Red River demonstrate less cultural diversity (Brooks 2021).

Woodland

The Woodland Period in Oklahoma can be defined as one of technological innovation, with ceramics, the bow and arrow, gradual intensification of horticulture, and concomitant social changes differentiating this time period from more residentially mobile hunting and gathering populations of earlier times. As people began domesticating plants during this period, populations became more sedentary in order to cultivate and harvest crops. In North America, sunflower, native squash, may grass, marsh elder, goosefoot, and pigweed were first domesticated, while South American crops such as corn, beans, squash, and chiles were imported through trade later. Bone tools from bison were commonly used in agricultural practices. People lived in small, seasonal villages with houses made of pole frameworks with grass thatch or cane matting to form walls and circular hearths (Gilbert 2000).

The appearance in the archaeological record of small corner-notched projectile points indicates that the bow and arrow was in use. The presence of ceramic sherds indicates that ceramic use in the form of pottery for storage and cooking had become widespread. Projectile points from this period include, in addition to the small corner-notched points, large contracting stem points and corner-notched projectile points in a variety of styles, indicating continued use of the atlatl and darts, as well as spears likely employed for symbolic political or religious effect (Logan 2006; Hawkins 2011; Gilbert 2000; Brooks 2021).

Woodland Period sites in Oklahoma continued to follow a north-south, east-west distinction. In eastern Oklahoma north of the Arkansas River, the Cooper Culture has been defined in Delaware and Mayes counties. These archaeological assemblages are similar to groups living near Kansas City, including spearpoints, ceramics, clay figurines, and the use of rock shelters as seasonal camps. South of the Arkansas River but north of the Ouachita Mountains, the Fourche Maline Culture is prominent and exhibited by the McCutchan-McLaughlin site in Latimer County. In western Oklahoma, people continued a nomadic bison-hunting lifestyle and were slow to adopt the bow and arrow. The Certain Bison Kill site in Beckham County represents this, though sites such as the Swift Horse site in Roger Mills County demonstrate more adaptation of plant subsistence and bow and arrow use (Hawkins 2011; Brooks 2021).

Mississippian/Plains Village

From 1000 to 1500 AD, two main cultures were present in Oklahoma: the Mississippian to the east and the Plains Village to the north and west. Although in other regions either the Mississippian or the Plains Village are considered unique cultures and time periods in prehistoric chronology, Oklahoma presents a crossroads where the cultures coexisted in the area around the same time. Both cultures became more reliant upon cultivating crops, and large villages soon became common. Both cultures also began creating more pottery forms and styles, including bowls, jars, plates, bottles, and effigies with a wide variety of surface treatments. Ornamentation made from copper, marine shell, animal bone, a variety of minerals, and textiles was widely used as well (Hawkins 2011; Brooks 2021).

The Mississippian culture in Oklahoma, also known as the Caddoan culture, is the western-most representation of a mound-building culture that dominated the southeast during this timeframe. Early Mississippians constructed houses and temples with square or rectangular floor plans featuring center posts supporting the roofs. Later structures had only two center posts, and some were circular. Large burial mounds surrounded by smaller mounds are defining features of Mississippian culture. Burials included grave goods that became more elaborate over time. The Harlan site in Cherokee County is the earliest known center of Mississippian culture in Oklahoma. Spiro Mounds in Le Flore County is the most famous Mississippian site in Oklahoma. Consisting of at least 12 mounds covering an area of 80 acres, the site contained many well-preserved and elaborate objects that yielded a great deal of information about the Mississippian people with evidence of a sophisticated society, extensive trade networks, a highly developed religious center, and a political system that controlled the region (Gilbert 2000).

Plains Village people grew crops and hunted and gathered wild resources. Artifact assemblages contain gardening tools along with triangular arrow points for hunting. Sites from this time are often identified in lowland terraces of waterways where gardening with bone tools was viable. These villages have been found along major rivers and their tributaries, including the Arkansas, Canadian, North Canadian, Washita, and Red Rivers (Gilbert 2000). Food was stored in underground cache pits that could be 3-5 feet deep and 3-5 feet wide. Ceramics were used for cooking directly over fire both inside and out and were usually smooth, though some were cord-marked. Clay figurines have been found at Plains Village sites as well and may have been used in fertility ceremonies related to agriculture. Plains Village people typically lived in villages of 75-150 people. Houses were square or rectangular and could be over 20 feet long. Rather than mounds, Plains Village people buried their dead in nearby cemeteries (Gilbert 2000). Examples of Plains Village sites in Oklahoma include the Roy Smith Site in Beaver County, the Heerwald site in Custer County, the Arthur site in Garvin County, and the McLemore site in Washita County.

The Protohistoric (Contact) Period

The period from A.D. 1500–1830 is referred to as the Protohistoric (or Contact) Period. During this time, non-native explorers, trappers, and traders visited the region, and land claims by first the Spanish and then the French brought significant changes (Everett 2021a). This was a time of reorganization and relocation by Native peoples in response to rapid cultural change as European contacts introduced new technologies, goods traded throughout the continent, diseases that spread ahead of them, the fur trade, and the horse. The pressures of these rapid changes led to increased inter-group conflict, including conflicts over access to and control of resources. People aggregated into large villages situated along major rivers, and in the later part of the period, many of these villages were fortified (Vehik 2006). The Tribes first encountered by Europeans in Oklahoma included the Caddo and Wichita in the southern and eastern parts of the state, and the Plains Apache, Osage, Pawnee, and other more nomadic groups in the northern and western parts of the state. The project area was primarily occupied by the

Wichita and the Caddo, though the Osage were known to hunt and raid in the area (Everett 2021a).

The first Europeans documented in Oklahoma were part of a Spanish expedition led by Francisco Vazquez de Coronado in 1541. In search of gold, they erroneously believed to be in the province of Quivira, the expedition began in New Mexico and ended at a Wichita village in southern Kansas, passing through the panhandles of Texas and Oklahoma (Everett 2021a). Additional Spanish explorations in search of gold were conducted in the region throughout the early 1600s. However, the most valuable findings of these expeditions were the descriptions of the land, animals, and peoples they encountered. Spain eventually lost interest in exploring the area northeast of New Mexico and viewed it as a buffer zone between its territory and the French.

In 1682, Robert Cavelier, Sieur de la Salle, claimed the territory drained by the Mississippi as part of the French Empire in North America. By 1700, French traders were established in the region and had developed trading relationships with Wichita groups in the Arkansas Valley of northern Oklahoma and with the Osage to the east. In 1718, Jean Baptiste Benard Sieur de La Harpe led a trading expedition with the eventual goal of establishing a trading post along the Red River in present-day Texas. The party traveled through eastern Oklahoma and stopped at a Wichita village in present Tulsa County at a site known as Lasley-Vore.

The Caddoan language-speaking Wichita and Affiliated Tribes were historically known as the Wichita Proper, Waco, Taovaya, Tawakoni, and Kichai. These Tribes can be traced back at least 800 years to the Washita River culture of central and western Oklahoma. The Washita River people resided in small villages of rectangular, mud-plastered houses with small gardens nearby. Between 1350 and 1450, some Washita River people began migrating north to the Great Bend of the Arkansas River in southern Kansas. Great Bend villagers lived in large, circular grass houses, grew crops, and hunted bison and small game. The archaeological record documents significant long-distance trade with the southwest, evidenced by items such as painted and glazed pottery, turquoise beads and pendants, and shell beads distinctive to Southwest Pueblo cultures. The Wichita used horses from Spanish colonies to more effectively hunt buffalo and employed guns, metal hoes, and buckets obtained from the French in their daily lives and for trade with the Comanche. In the late 1700s, increased pressure from the Osage forced the Wichita to abandon their homes in northern Oklahoma. They moved south into southeastern Oklahoma and Texas outside the project area (Wichita and Affiliated Tribes 2021). The Wichita gradually relocated to what is now northern Texas until 1859, when their reservation was established in Indian Territory (Wichita and Affiliated Tribes 2021).

One of the most significant Wichita archaeological sites rests at within Kaw Lake on a terrace overlooking the Arkansas River, the Deer Creek village (Trabert et al. 2020). The Deer Creek Site, also known as “Ferdinandian”, was a fortified village built and occupied by Wichita bands between 1700-1755. The site served as a hub for the exchange of goods, with European items such as metal tools, glass beads, and firearms entering Wichita society. In return, Wichita supplied the French with bison products,

including hides and meat, which were highly valued in European markets. The presence of articulated horse remains suggests the adoption of European-introduced animals into Wichita society. The discovery of French trade goods, including fragments of muskets and gunflints, alongside traditional Wichita tools and ceramics, illustrates the complex cultural interplay.

The Osage were one of five immigrant Tribes of Dhegiha Siouan speakers who originated in the Ohio River area. Over time the Dhegiha Sioux diffused into different Tribes as they migrated westward, and the Osage were one of the last to split and settle in the central and western portions of Missouri around 1300 (Hunter 2013). Osage villages were physically arranged to reflect the Osage cosmos with a central street running east-west representing the path of the sun. Dwellings were rectangular long houses with domed roofs constructed of poles and woven cattail mats, bark, hides, or some combination thereof. Osages planted crops near their permanent villages, though the entire village would move onto the plains during the summer and autumn buffalo hunts and return to the permanent village locations for the remainder of the year (Bailey and Swan 2004). As the French built trade alliances with the Osage in the late 1600s and early 1700s, the Osage benefited greatly from the influx of guns and other French trade goods, as well their villages' proximity to accessible river trade routes. The Osage became the dominant Tribe in the region and began forcing the Wichita and Caddo further south. Similarly, other eastern Tribes' forced removal to traditional Osage lands in Missouri put a strain on resources available to the Tribes. In the 1790s, French trader Rene Auguste Chouteau convinced roughly one third of the Tribe to relocate to the Three Forks region of Oklahoma where the Arkansas, Verdigris, and Grand Rivers converge near Chouteau's new trading posts. Known as the Arkansas Osage, the group mainly settled at Claremore with other villages nearby.

As eastern Tribes such as the Cherokee were forced to move into Osage territory in Arkansas by the United States in the early 1800s, increased conflict between the Osage and eastern Tribes became more commonplace as the groups competed for natural resources. In an effort to stop the violence, the United States signed treaties in 1818 and 1825 with the Osage establishing their reservation in southern Kansas and forcing Osage removal. However, the last Arkansas Osage did not leave the region until 1839, when they became too overwhelmed by eastern Tribes forced into the area by the Indian Removal Act of 1830 (Bailey and Swan 2004). The first printing press in Oklahoma was established at the Union Mission in 1835, technically ending the Protohistoric era in the state (Everett 2021b).

2.10.2 Historical Period

What is now the state of Oklahoma was included in the Louisiana Purchase in 1803, becoming part of the Louisiana Territory. When Louisiana joined the Union as a state in 1812, Louisiana Territory was renamed the Missouri Territory by the U.S. Congress to avoid confusion with the new state. In the 1820s, Oklahoma was designated Indian Territory and closed to white settlement. From that time until 1890, when the Organic Act created the Oklahoma Territory and incorporated it into the United States, more than three dozen Tribes had been forced to reside there (Bolton 2021). A

portion of present-day McCurtain County was included in Miller County, Arkansas, as part of disputed territory between Mexico (present-day Texas) and the United States. The county was later abolished when Texas declared its independence from Mexico in 1836 (Rowe 2022).

The Choctaw have two creation myths that differ dramatically, but both are centered around Nanih Waiya mound located in modern-day Mississippi. When the Choctaw were first referenced in the written record in the late 1600s, they were a matrilineal community living in three geographical districts, with two social divisions and multiple clans within each division that determined social roles and hierarchy (Mould 2018). During the 1700s, their government consisted of local headmen presiding over groups of villages. It was not until the early 1800s that the Choctaw began to coalesce into one nation as a gradual response to pressure from the U.S. Government (Krauthamer 2013). The Choctaw were the first major Tribe in the southeast to be removed to modern-day Oklahoma. Removal for the Choctaw lasted over 70 years, with groups periodically being removed from their homeland until 1903. The largest group, approximately 12,000 people, made the journey first between 1830-1834 after the Treaty of Dancing Rabbit Creek was signed in 1830.

The Chickasaw homeland was located in portions of modern-day southwestern Kentucky, western Tennessee, northern Mississippi, and northwestern Alabama (Chickasaw Nation 2021). Descendants of mound-building societies, the Chickasaw were a matrilineal society that generally lived in towns containing around 200 households. Towns could move but kept the same names, spreading apart during peacetime but clustering during war. A typical town contained a log-palisaded fort, religious and council buildings, and grounds for councils, festivals, and sports. Individual households usually included a winter house that was circular, approximately twenty-five feet in diameter, and framed with pine logs and poles, with mud-plaster walls and a sunken earthen floor; one or two summer houses, which were rectangular and had two rooms, walls of loosely woven mats, and roofs of grass thatch and bark; and a storage house for crops (Newhall 2018). The Chickasaw were considered great warriors and were instrumental in fighting the French during the French and Indian War (Chickasaw Nation 2021). They were the last major Tribe in the southeast to be removed to modern-day Oklahoma and were able to negotiate favorable sales of their land in Mississippi. This allowed the Chickasaw to pay for their own removal and select favorable seasons to travel, which saved hundreds of lives.

In 1837, the Chickasaw, who had been traditional enemies of the Choctaw, signed a treaty with the Choctaw to create a Chickasaw district within the Choctaw Nation. The Chickasaw became a part of the Choctaw Nation, and the two groups negotiated with the United States together (Choctaw Nation 2021). At this time, Choctaw Nation was divided into three Choctaw districts to the east—Moshulatubbee, Apukshunnubbee, and Pushmataha—and the Chickasaw District to the west. Chickasaw and Choctaw families were free to live in any of the four districts despite their Tribal affiliation, though the bulk of Chickasaw families lived in the Chickasaw district. In 1855, the Choctaw, Chickasaw, and United States entered into a treaty that split the Tribes into two nations once again and sold Choctaw land holdings west of the

Chickasaw district to the United States, reducing the reservation from over 23.7 million acres to 6.688 million acres. During this time, the Choctaw prospered economically through small farms and large cotton plantations (Choctaw Nation March 2021 and April 2021).

Both the Chickasaw and Choctaw had participated in the southern market economy built around chattel slavery. By the time both Tribes were removed to Indian Territory, their slave-owning population reflected that of the rest of the Deep South. The upper-middle class owned anywhere from 1-15 slaves, a handful of extremely wealthy individuals owned hundreds of slaves, and the majority of Chickasaw and Choctaw citizens owned no slaves or rented enslaved labor instead (Krauthamer 2013). Their slaveholdings meant that the majority of Choctaws and Chickasaws sympathized with the South during the Civil War, and the Tribes allied with the Confederacy.

Oklahoma went through a period of instability during the Civil War. Its low population, proximity to Confederate (Texas and Arkansas) and Union (Kansas) neighbors, relatively minor tactical importance to the western campaign focused on the Mississippi River, and the Tribes' smaller militaries ensured the territory became used for troop movements to other locales and a hotspot for small raids and guerilla warfare for both sides. The Five Tribes (Cherokee, Choctaw, Chickasaw, Muscogee Creek, and Seminole) signed treaties with the Confederacy in 1861 as the Confederacy promised to respect Tribal lands and sovereignty and not abolish slavery. At this time, approximately 14 percent of Oklahoma's residents were enslaved people. The Tribes formed regiments that fought in engagements throughout the western theater, most notably at Pea Ridge, Arkansas, and Honey Springs, Oklahoma (Huston 2021). The culminative battle at Honey Springs in 1863 ensured the Union maintained control of the territory for the remainder of the war, though small Confederate raids continued. Due to constant marauding, retaliation, and split loyalties, refugee camps became common. Union loyalists were moved to Ft. Riley in Kansas and Ft. Smith in Arkansas, and Ft. Gibson was surrounded by as many as 7,000 refugees. Confederate camps along the Red River held close to 15,000 refugees (Huston 2021). After the Confederacy surrendered, the Five Tribes signed a peace treaty with the United States in 1866. The treaty gave the western half of the territory to other Tribes in Kansas, abolished slavery, granted freedmen citizenship and property rights, and opened the territory to railroads across Tribal lands (Huston 2021).

Numerous people already lived in the new "Indian Territory" including the Osage and Wichita. The Osage oral history and archaeological evidence shows they originated in the Ohio River Valley and migrated to Eastern Missouri during the Woodland Period. With the collapse of the Mississippian society, the Osage, moved to places along the Osage River and its tributaries in Missouri (Library of Congress, 2010). The Osage used modern-day Osage County, Oklahoma as part of their western territory. They used nearly permanent villages occupied by large numbers of Osages along the Arkansas River (OHS 2023b; Wilson, 1985). The Osage used a system of trails connecting their villages in Missouri to the plains region. The Osages Arkansas, Missouri, Oklahoma territories were relinquished as part of treaties between 1808 and 1825 and in return the Osage received land in Kansas. The Osage sold their land in Kansas and purchased a

portion of Cherokee land in the Indian Territory as spelled out in the Drum Treaty. By 1874 the Osage had purchased all of Osage County from the Cherokee (Wilson, 1985).

Though oil had been known in Osage County from prior to European Contact, the oil field in Osage County were first recognized as economically viable in the 1890's. By the 1920's Osage families were receiving far more money than the average American family at the time. The new wealth created by the oil fields allowed boom such as Pawhuska to expand, but also brought a criminal element to the area. The Federal Government passed a law that forced the Osage to prove their ability to manage their new found wealth or have an overseer of their funds appointed (OHS 2023b). Predictably, this led to much corruption and a conspiracy headed by William Hale to defraud and murder the Osage people to take over control of their finances took place in the early 20th century (Hunter 2013).

The Federal government forced the Kaw to sign treaties to relinquish 90% of their traditional lands. As part of the treaties the government attempted to forcibly assimilate the Kaw people. In 1846 the tribe and Federal government signed a treaty in which the Kaw sold their reservation to the government in return for money and a reservation near Council Grove, Kansas (Kaw Nation 2022). Through the Allotment Act, the Kaw reservation was diminished, but the tribe was recreated in 1959. However, the creation of Kaw Lake inundated their reservation, to prevent complete destruction the Washunga Cemetery, and the Indian Agency Building were relocated (OHS 2023a). Though the cemetery was relocated, there may still be people who did not get moved and the Kaw still consider the original location of the Washunga Cemetery as important to the tribe. Today, with a tribal membership Kaw Nation is over 3,200 people (Kaw Nation 2022).

During Reconstruction, Oklahoma struggled with lawlessness as much as, if not more than, during the Civil War. Tribal police and courts had no jurisdiction over non-Tribal citizens (Huston 2021). In the 1890s, The Dawes Commission began the process of allotment that would transition communally held Tribal lands into individually owned private property. This led to a large loss of Tribal lands, Tribal citizens who accepted allotments now becoming United States Citizens and allowed the area that had formerly been Indian Territory to become the territory of Oklahoma, which could then apply for statehood. Oklahoma achieved statehood in 1907 (Kidwell 2021).

Kaw Lake occupies parts of Kay and Osage Counties. Kay County was organized in 1893 as county "K" for the Cherokee Strip Land Run of 1893 with the town of Newkirk as its seat (Wilson 2009). Boomtowns such as Ponca City and Blackwell sprang up almost overnight in Kay County. By contrast, Osage County was organized in 1907 with Oklahoma's statehood with the town of Pawhuska as its seat. Osage County remained under the Osage Nation's control and was not opened by land runs; under the Osage Allotment Act of 1906, each tribal member received an allotment while the tribe retained communal mineral rights (Burns 2009). The prosperity of the 1910s and 1920s was followed by challenges. Kaw City, for instance, suffered a devastating flood in 1923 that washed out much of its business district and two river bridges. The Great Depression of the 1930s and workforce mobilization during World War II further thinned Kaw City's population, which declined from 1,001 in 1930 to 561 by 1950 (Lowitt 2006).

Similarly, Ponca City and other towns adjusted to post-boom conditions, even as agriculture remained a backbone of the local economy. By mid-century, Kay County's farms had consolidated, and wheat had become the dominant crop. Osage County, less densely settled by farmers, continued to rely on oil production and cattle ranching on its vast prairie.

By the 1950s, community leaders in Kay County began envisioning a dam on the Arkansas River to provide flood control, water supply, and recreation (Lowitt 2006). This initiative gained momentum with support from Oklahoma's congressional delegation, including Senator Robert S. Kerr, a champion of water resource development. In 1962 the Flood Control Act authorized construction of Kaw Lake. Construction began in June 1966 and was completed in April 1976. A powerhouse with one 20-foot-diameter penstock were incorporated into the original construction of the spillway. Construction of the generating facilities began in August 1987. Power generation began in August 1989. Additional recreational facilities were completed in 1980 with the completion of the Osage Cove Public Use Area.

Historic site types and related resources expected in the project area include homesteads and ranches, farmsteads, trails, cemeteries, wells, cisterns, privies, rock walls, foundations or foundation piers, cellar depressions, oil and gas components, railroad lines, roads, schools, dumps, and water diversion features.

2.10.3 Cultural Resources at Kaw Lake

There are approximately 236 known archaeological sites located wholly or in part on USACE fee lands associated with Kaw Lake. These include 205 precontact sites, 23 historic sites, and 8 multicomponent sites with both historic and precontact components. Of these, 2 sites have been determined eligible for the NRHP, 11 are ineligible, and 222 have not been assessed for the NRHP. One archaeological site is currently listed on the NRHP and is a National Landmark.

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

Multiple formal archaeological surveys have been completed at Kaw Lake since the 1960s in response to ongoing activities such as lake constructions, inadvertent

discoveries, and NHPA Section 106 compliance. This section includes an overview of work conducted in the area. The first archaeological investigation of the Kaw Lake project area was conducted by Don Wyckoff in 1964 as part of the University of Oklahoma Research Institute's Arkansas River Basin survey. Wyckoff's reconnaissance resulted in the identification of 101 archaeological sites within the proposed reservoir boundary, representing both precontact and historic-period occupations. These early investigations emphasized surface visibility and site distribution across terraces, floodplains, and uplands, and laid the groundwork for future mitigation and planning efforts (Wyckoff 1964).

The Deer Creek site (34KA3), is one of the most significant sites identified in the Kaw Lake area as well as the Tulsa District. Deer Creek is a protohistoric Wichita village in Kay County, Oklahoma, that was first documented in 1914 and later designated a National Historic Landmark in 1964 and listed on the National Register of Historic Places in 1966 (Wedel 1981:1–2). Initial cultural work involved surface collections and documentation of visible features such as fortification ditches and trash mounds. Scholars like Robert E. Bell offered historical interpretations of the site, drawing on ethnohistoric sources, but no formal excavations took place at that time and focus was turned to related site “Bryson-Paddock” (34KA5) (Bell 1979; McRill 1963). The Deer Creek site was acquired by the U.S. Army Corps of Engineers during the construction of Kaw Lake in the 1970s, and heavy vegetation was allowed to overgrow the area as a means of passive site protection (Trabert et al. 2020:12–13).

Between 2016 and 2020, a collaborative research team from the University of Oklahoma, Oklahoma State University, and the Oklahoma Anthropological Society, working with the Wichita and Affiliated Tribes and the U.S. Army Corps of Engineers, conducted the first formal archaeological investigations (Trabert et al. 2020). Geophysical surveys and targeted excavations revealed a semi-subterranean defensive ditch, artifact-rich trash mounds, storage pits, and a lithic cache, along with thousands of artifacts including Cowley Plain ceramics, Florence-A chert tools, faunal remains, charred plant materials, and European trade goods such as glass beads and metal implements (Odell 2002; Wedel 1981; Sudbury 1975). Deer Creek is closely related to the nearby Bryson-Paddock site (34KA5), with both interpreted as early 18th-century Wichita villages—likely occupied by different bands (Taovaya at Deer Creek and Wichita proper at Bryson-Paddock)—that formed part of a regional settlement system. Both sites were fortified and served as key nodes in Wichita-French trade networks, reflecting shared lifeways, economic strategies, and responses to regional conflict (Trabert et al. 2020; Odell 2002).

More intensive survey and excavation efforts took place in the early 1970s in anticipation of lake construction. In 1972 and 1973, the University of Oklahoma conducted pre-impoundment investigations to identify and evaluate sites that would be impacted by inundation and infrastructure development. These efforts resulted in the identification of numerous sites and led to data recovery excavations at several, including multi-component precontact sites such as 34KA5 and 34KA20. Excavations produced evidence of Archaic through Plains Village occupations, including diagnostic projectile points, ceramics, faunal remains, and features such as hearths and storage

pits (Rohrbaugh 1973, 1974). These findings contributed valuable data to regional archaeological syntheses and informed planning and mitigation strategies.

In the 1990s, additional archaeological work was conducted throughout the broader Kaw Lake region as part of flood control planning, watershed management, and cultural resources compliance. In 1991, a surface survey of 840 acres in Kay County documented five new sites and multiple isolates, including lithic scatters and a historic trash deposit (Brown 1991). In 1992, a Phase I survey in the Upper Little Arkansas River Watershed recorded 37 sites and 17 isolates, representing Late Archaic through historic period use (Witty 1992). A 1993 study combined archaeological and geomorphological investigations at three deeply stratified sites near Arkansas City, Kansas, confirming multi-component Archaic and Early Ceramic occupations and identifying intact buried deposits with high research potential (Hawley 1993). These findings helped guide compliance strategies and highlighted the importance of integrating geomorphology into archaeological investigations in the region.

In the 2000s, several small-scale archaeological surveys were conducted in and around Kaw Lake in response to proposed oil and gas development, communication infrastructure projects, and recreational improvements. In 2002, two separate investigations were completed: one by Sisson for the installation of a buried cable line for the Shidler Telephone Company, and another by Cojeen for a proposed 3D seismic survey in Township 28 North. These projects involved pedestrian survey and limited subsurface testing, with no new archaeological sites identified (Sisson 2002; Cojeen 2002). In 2007, Cojeen conducted surveys of two parcels on USACE lands at Kaw Reservoir, documenting one prehistoric isolate and noting areas of potential sensitivity (Cojeen 2007). In 2009, multiple surveys were completed in advance of oil and gas activities, including a proposed pipeline and well development by Maxim Energy and a well pad and access route for Escher Corporation. These investigations recorded several isolated finds and confirmed that previously recorded sites remained intact.

Since 2010, archaeological investigations at Kaw Lake have continued in response to development, conservation, and site preservation efforts. In 2010, surveys were conducted for oil and gas infrastructure associated with Maxim Energy, including well pads, pipelines, and access roads (Eagle Environmental 2010). In 2014, archaeological monitoring was carried out for a seismic project near Arkansas City, Kansas, with no significant cultural materials encountered (Cojeen 2014). A 2017 Phase I survey was completed for proposed headquarters expansion by the Oklahoma Department of Wildlife Conservation (Afendras 2017), followed in 2020 by a firebreak survey within the Kaw Lake Wildlife Management Area—both of which resulted in no new site discoveries (Holt 2020). In 2021, a major geoarchaeological investigation and National Register testing was conducted at site 34KA535 along Little Beaver Creek, revealing a multi-component occupation spanning 6,000 years and leading to the identification of two new deeply buried sites (Ford et al. 2021). In 2023, a Phase I survey at the North Washunga Campground was completed by USACE staff, resulting in no sites or artifacts and a recommendation of no effect to historic properties (McKinney and Martin 2023). Small surveys have been, and continue to be, conducted in and near Kaw Lake for compliance with Section 106 of the NHPA.

2.10.4 Long-term Objectives for Cultural Resources

As funding allows, the Tulsa District will plan and budget for a Historic Preservation Management Plan (HPMP) that shall be developed and incorporated into the Operational Management Plan (OMP) in accordance with EP 1130-2-540. The purpose of the HPMP is to provide a comprehensive program to direct the historic preservation activities and objectives at Kaw Lake and it will be accomplished if future funding is forthcoming. Completion of a full inventory of cultural resources at Kaw Lake is a long-term objective that is needed for compliance with Section 110 of the National Historic Preservation Act (NHPA). All currently known sites with unknown eligibility and newly recorded sites must be evaluated to determine their eligibility for the NRHP. Identification and evaluation of sites is an ongoing process at Kaw Lake. As more significant sites are identified, they could be protected through various land classifications in the future.

In accordance with Section 106 of the NHPA, any proposed activities or projects at Kaw Lake will require review by District Archaeologists to assess their potential to impact historic properties. These activities may include those described in this master plan or those that may be proposed in the future by others for leases, licenses, right-of-way easements, recreational development, construction, wildlife management, or other activities that can be considered undertakings subject to Section 106 of the NHPA. The need for cultural resource surveys to locate and evaluate historic and prehistoric resources, consultation, or other compliance activities related to Section 106 of the NHPA shall be determined and coordinated by a qualified District Archaeologist. Resources determined eligible for the NRHP must be protected from proposed project impacts, or the impacts must be mitigated in consultation with appropriate parties.

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

According to the Native American Graves Protection and Repatriation Act (NAGPRA), it is the responsibility of a federal agency to inventory human remains and associated funerary objects, as well as summarize any potential sacred objects, that existed within their archaeological collections prior to the passage of the law and, to the extent possible, identify their cultural affiliation in order to repatriate such objects to affiliated Tribes requesting their return. In addition, there are responsibilities related to the inadvertent discovery of human remains or funerary objects that occurred on federal land after the passage of the law that require a separate process of consultation, affiliation determinations, and notifications prior to repatriation. Although NAGPRA compliance has been an ongoing focus of the Tulsa District and many consultations and

repatriations have occurred over the past 25-30 years, there is still more work to be done.

In recognition of the significance of the responsibility the Tulsa District has to ensure the proper and respectful treatment of the individuals who have been - or may inadvertently be - disinterred from Tulsa District land and acknowledging the fact that this work requires more than a part-time effort to be accomplished, a new full-time position has been established to focus on the proper execution of this responsibility. The intensive process to verify existing documentation and complete any missing part of the process for all collections of human remains, funerary objects, or sacred objects subject to NAGPRA in Tulsa District archaeological collections is in progress. As a necessity, this renewed effort is starting with research and reorganization of associated records and archaeological collections to ensure the proper identification and initial inventory of all NAGPRA materials that are under the control of Tulsa District. This effort will include NAGPRA collections that have been made – or may yet be discovered - at Kaw Lake, therefore, compliance with NAGPRA is ongoing.

2.11 SOCIOECONOMICS AND DEMOGRAPHICS

2.11.1 Zone of Interest

Kaw Dam is on the border of Kay County and Osage County, Oklahoma. It is located in the upper Arkansas River about 8 miles east of Ponca City. The zone of interest for the socio-economic analysis covers a 50 mile radius to include Chautauqua County, Cowley County, and Sumner County within the state of Kansas, and Garfield County, Grant County, Kay County, Logan County, Noble County, Osage County, Pawnee County, Payne County, and Washington County within the state of Oklahoma (Table 2.6).

Table 2.6 Counties in Zone of Interest

Zone of Interest Counties
Chautauqua County, KS
Cowley County, KS
Sumner County, KS
Garfield County, OK
Grant County, OK
Kay County, OK
Logan County, OK
Noble County, OK
Osage County, OK
Pawnee County, OK
Payne County, OK
Washington County, OK

2.11.2 Population

The total population in the zone of interest in 2023 was 429,084 (Table 2.7). In Oklahoma, approximately 19% of the zone of interest's population resides in Payne County, 15% reside in Garfield County, 12% reside in Logan County, 12% reside in Washington County, 11% reside in Osage County, 10% reside in Kay County, 4% reside in Pawnee County, 3% reside in Noble County, and 1% reside in Grant County. In Kansas, approximately 8% of the zone of interest's population resides in Cowley County, 5% reside in Sumner County, and 1% reside in Chautauqua County.

Table 2.7 Population Estimates and Projections (2010, 2020, 2023)

Geographical Area	2010	2020	2023 Population Estimate	2030 Population Projection Estimates
United States	308,745,538	331,449,281	332,387,540	
Kansas	2,853,118	2,937,880	2,937,569	3,031,336
Oklahoma	3,751,351	3,959,353	3,995,260	4,094,815
Chautauqua County, KS	3,669	3,395	3,370	2,986
Cowley County, KS	36,311	34,496	34,487	33,033
Sumner County, KS	24,132	22,385	22,386	21,442
Garfield County, OK	60,580	62,846	62,322	63,096
Grant County, OK	4,527	4,169	4,137	4,387
Kay County, OK	46,562	43,700	43,731	41,769
Logan County, OK	41,848	49,555	50,905	51,989
Noble County, OK	11,561	10,924	10,909	10,929
Osage County, OK	47,472	45,818	45,963	45,931
Pawnee County, OK	16,577	15,553	15,689	15,937
Payne County, OK	77,350	81,646	82,290	86,914
Washington County, OK	50,976	52,455	52,895	52,411
Zone of Interest Total	421,565	426,942	429,084	430,824

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year (2019-2023), U.S. Census Bureau (2010), 2025 Oklahoma Department of Commerce (2020-2030), 2025 Wichita State University (2020-2030) .

From 2023 to 2050, the population in the zone of interest is expected to increase by 1.72% from 429,084 to 436,466, an average annual growth rate of 0.06%. The forecasted population of Kansas is expected to increase by 8.07%. No counties within the zone of interest are expected to grow in Kansas. Counties in Kansas forecasted to decrease in population include: Chautauqua County (-29.58%), Cowley County (-14.74%), and Sumner County (-12.04%). The forecasted population of Oklahoma is expected to increase by 9.53%. Garfield County (6.51%), Grant County (14.33%), Logan County (18.19%), Payne County (15.97%), and Washington County (2.36%) are

forecasted to increase in population. Counties in Oklahoma forecasted to decrease in population include: Kay County (-14.56%), Logan County (-6.19%), Osage County (-9.04%), and Pawnee County (-6.07%). Population for the years 2010 and 2020 are included for historical reference.

The distribution of the population by sex (Table 2.8) show approximately 50% male and 50% female. Figure 2.6 shows the population by age group for Kansas and Oklahoma, and the entire zone of interest. The zone of interest is consistent by age group when compared to the entire states.

Table 2.8 2023 Population Estimate by Gender

Geographical Area	Male	Female
United States	164,545,087	167,842,453
Kansas	1,473,655	1,463,914
Oklahoma	1,988,686	2,006,574
Chautauqua County, KS	1,794	1,576
Cowley County, KS	17,552	16,935
Sumner County, KS	11,307	11,079
Garfield County, OK	31,274	31,048
Grant County, OK	2,088	2,049
Kay County, OK	21,868	21,863
Logan County, OK	25,442	25,463
Noble County, OK	5,407	5,502
Osage County, OK	23,200	22,763
Pawnee County, OK	7,889	7,800
Payne County, OK	42,085	40,205
Washington County, OK	26,073	26,822
Zone of Interest Total	215,979	213,105

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year (2019-2023)

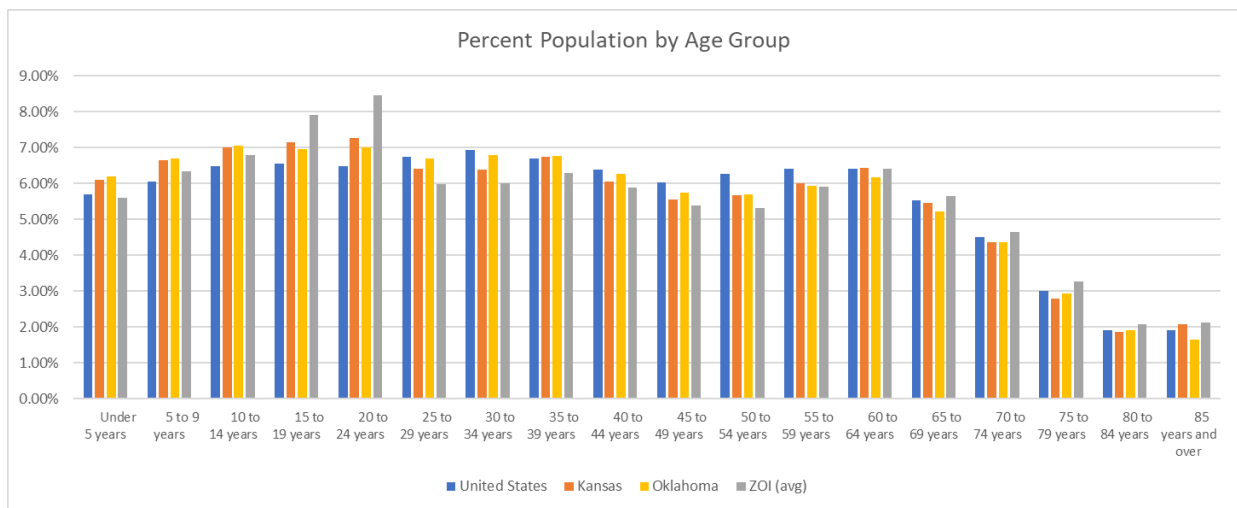


Figure 2.6 2021 Percent of Population by Age Group

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year Estimates (2019-2023)

Population by race and Hispanic Origin is displayed in Table 2.9. The zone of interest is approximately 73% White, 8.2% Hispanic or Latino, 4.9% American Indian and Alaskan Native, 1.5% Asian, 3.7% Black, 0.2% some other race, and 7.8% two or more races. The other race categories each account for less than 1%. By comparison, the population in the state of Kansas is 73% White, 13% Hispanic or Latino, 5.3% Black, 0.4% American Indian or Alaskan Native, 2.9% Asian, 0.1% Native Hawaiian/Other Pacific, 0.4% Some Other Race, and 4.3% Two or More Races. The population in the state of Oklahoma is 63% White, 12% Hispanic or Latino, 6.9% Black, 6.8% American Indian or Alaskan Native, 2.3% Asian, 0.2% Native Hawaiian/Other Pacific, 0.3% Some Other Race, and 8.5% Two or More Races.

Table 2.9 2023 Population Estimate by Race/Hispanic Origin

Area	White	Hispanic or Latino	Black	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race	Two or more races
Kansas	2,155,363	389,514	154,704	12,516	84,668	2,217	11,194	127,393
Oklahoma	2,509,923	490,797	274,899	271,284	92,345	6,313	11,236	338,463
Chautauqua County, KS	2,788	161	32	84	15	0	19	271
Cowley County, KS	26,639	4,098	763	411	642	70	49	1,815
Sumner County, KS	19,510	1,320	255	172	96	0	87	946
Garfield County, OK	44,145	9,234	1,176	859	780	2,433	9	3,686
Grant County, OK	3,560	191	85	97	8	0	7	189
Kay County, OK	31,195	3,833	868	3,422	234	20	148	4,011

Area	White	Hispanic or Latino	Black	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race	Two or more races
Logan County, OK	38,278	4,376	3,286	1,407	270	0	111	3,177
Noble County, OK	8,693	475	133	611	7	3	18	969
Osage County, OK	28,602	2,051	4,676	4,881	92	8	83	5,570
Pawnee County, OK	11,755	588	151	1,395	54	42	49	1,685
Payne County, OK	61,125	5,287	2,989	3,165	3,296	61	126	6,241
Washington County, OK	37,488	3,538	1,434	4,365	1,106	11	39	4,914
Zone of Interest	313,778	35,122	15,848	20,869	6,600	2,648	745	33,474

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year (2019-2023)

2.11.3 Education and Employment

Table 2.10 displays the highest level of education attained by the population ages 25 and over. In the zone of interest, 2.6% of the population have less than a 9th grade education; another 6.6% have between a 9th and 12th grade education; 33.6% have at least a high school diploma or equivalent; 21.4% have some college education; 9.0% have an associate degree; 17.4% have a bachelor's degree; and 9.4% have a graduate or professional degree.

In Kansas, 3.4% of the population have less than a 9th grade education; another 4.7% have between a 9th and 12th grade education; 25.6% have at least a high school diploma or equivalent; 22.1% have some college education; 9.0% have an associate degree; 22.0% have a bachelor's degree; and 13.1% have a graduate or professional degree.

In Oklahoma, 3.8% of the population have less than a 9th grade education; another 7.1% have between a 9th and 12th grade education; 30.7% have at least a high school diploma or equivalent; 22.3% have some college education; 8.3% have an associate degree; 18.1% have a bachelor's degree; and 9.7% have a graduate or professional degree.

Table 2.10 2023 Population Estimate by Highest Level of Educational Attainment, Population 25 Years of Age and Older

Area	Population 25 years and over	Less than 9th grade	9th to 12th grade, no diploma	High school graduate (includes equivalency)	Some college, no degree	Associate's degree	Bachelor's degree	Graduate or professional degree
Kansas	1,933,293	66,345	90,250	495,115	427,546	174,373	425,528	254,136
Oklahoma	2,641,325	100,466	186,612	811,387	588,667	220,400	478,236	255,557
Chautauqua County, KS	2,409	101	155	933	524	254	326	116
Cowley County, KS	22,736	619	1,294	7,043	5,422	2,843	3,518	1,997
Sumner County, KS	15,163	261	645	5,099	3,670	1,437	2,661	1,390
Garfield County, OK	40,397	1,507	3,533	14,852	8,164	3,332	6,251	2,758
Grant County, OK	2,872	113	141	1,157	514	294	478	175
Kay County, OK	28,985	565	2,180	10,254	7,100	3,517	3,746	1,623
Logan County, OK	34,264	728	2,101	10,997	7,402	2,600	7,255	3,181
Noble County, OK	7,545	251	422	2,660	1,853	829	1,066	464
Osage County, OK	32,770	802	2,622	11,900	7,021	3,380	4,776	2,269
Pawnee County, OK	10,864	364	955	4,721	2,240	811	1,331	442
Payne County, OK	44,715	1,196	1,856	12,092	8,366	3,272	9,757	8,176
Washington County, OK	35,869	644	2,410	11,920	7,422	2,548	7,284	3,641
Zone of Interest	278,589	7,151	18,314	93,628	59,698	25,117	48,449	26,232

Source: U.S. Census Bureau, 2019-2023 American Community Survey 5-Year Estimates (2023 Estimate)

Employment by sector is presented in Figure 2.7 and Table 2.11. Figure 2.7 shows that the largest percentage of the zone of interest is employed in the educational services, and health care and social assistance sector at 26.1%. Construction employs 7.0%, 11.0% of the population works in Manufacturing, 11.5% work in Retail trade, 7.3% in Professional, scientific, and management, and administrative and waste management services, 9.4% work in Arts, entertainment, and recreation, and accommodation and food services. The remainder of the employment sectors each comprise less than 6% of the zone of interest's labor force.

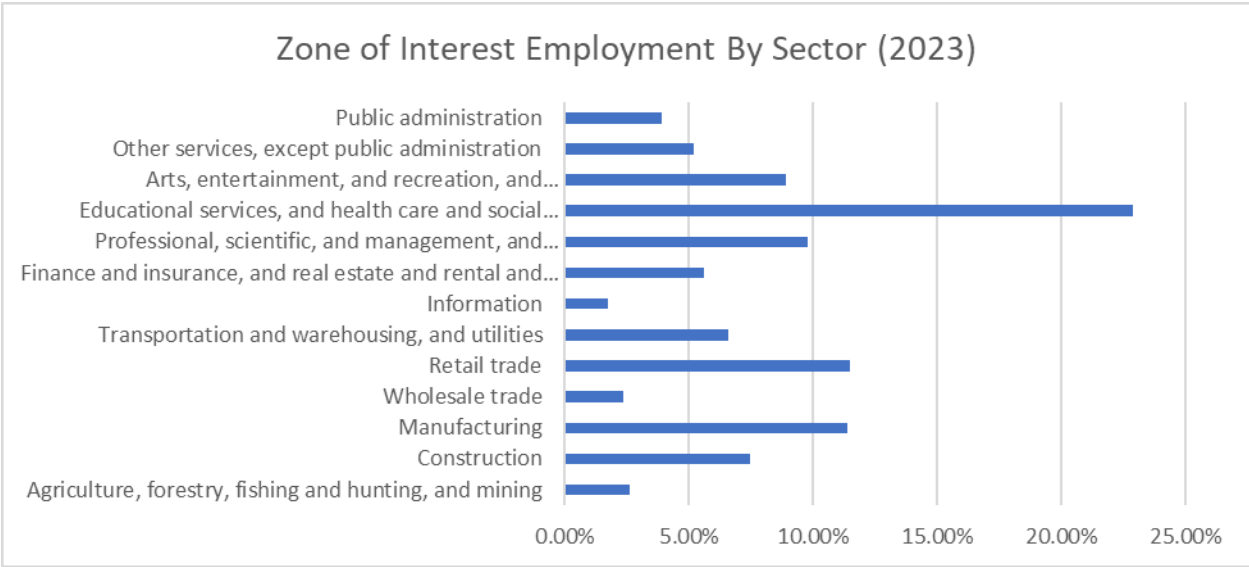


Figure 2.7 Zone of Interest Employment by Sector (2023)

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year Estimates (2019-2023)

Table 2.11 Annual Average Employment by Sector (2023)

Employment Sector	United States	Kansas	Oklahoma	Chautauqua County, KS	Cowley County, KS	Sumner County, KS	Garfield County, OK	Grant County, OK
Civilian employed population 16 years and over	159,808,535	1,454,760	1,808,400	1,363	15,226	10,000	28,340	1,731
Agriculture, forestry, fishing and hunting, and mining	2,552,148	45,519	70,517	175	660	357	1,756	215
Construction	11,064,175	92,579	130,633	92	797	675	2,069	105
Manufacturing	15,912,421	179,792	169,093	178	2,597	1,981	3,144	96
Wholesale trade	3,678,210	34,877	40,413	44	215	107	737	86
Retail trade	17,368,629	154,727	213,050	78	1,493	1,117	3,838	208
Transportation and warehousing, and utilities	9,373,191	78,346	107,007	109	953	549	1,710	157
Information	2,998,298	23,589	25,994	6	171	155	189	13
Finance and insurance, and real estate and rental and leasing	10,673,893	94,640	99,468	30	759	448	847	101
Professional, scientific, and management, and administrative and waste management services	19,763,960	145,304	165,980	37	788	666	1,799	131
Educational services, and health care and social assistance	37,381,621	361,409	416,261	516	4,237	2,433	6,149	375
Arts, entertainment, and recreation, and accommodation and food services	14,010,750	112,932	165,842	28	1,236	585	2,730	81
Other services, except public administration	7,514,289	63,842	92,278	12	621	455	1,791	40
Public administration	7,516,950	67,204	111,864	58	699	472	1,581	123

Employment Sector	Kay County, OK	Logan County, OK	Noble County, OK	Osage County, OK	Pawnee County, OK	Payne County, OK	Washington County, OK	Total ZOI
Civilian employed population 16 years and over	18,889	22,966	4,811	19,195	6,542	37,189	22,988	189,240
Agriculture, forestry, fishing and hunting, and mining	836	1,008	292	758	391	1,267	1,258	8,973
Construction	1,14	2,110	527	1,403	648	2,275	1,360	13,275
Manufacturing	2,838	1,125	868	2,108	765	2,318	2,877	20,895
Wholesale trade	293	756	252	347	89	427	363	3,716
Retail trade	2,540	2,477	334	2,333	723	3,723	2,887	21,751
Transportation and warehousing, and utilities	1,187	1,294	192	1,425	516	1,318	1,173	10,583
Information	140	195	16	361	51	555	234	2,086
Finance and insurance, and real estate and rental and leasing	649	1,087	244	901	270	1,566	1,052	7,954
Professional, scientific, and management, and administrative and waste management services	1,038	2,364	204	1,671	467	2,466	2,146	13,777
Educational services, and health care and social assistance	4,215	5,513	1,123	4,522	1,405	13,754	5,144	49,386
Arts, entertainment, and recreation, and accommodation and food services	1,888	1,965	226	1,748	448	4,631	2,208	17,774
Other services, except public administration	917	1,555	212	685	328	1,417	1,515	9,548
Public administration	1,134	1,517	321	933	441	1,472	771	9,522

Source: U.S. Census Bureau, 2019-2023 American Community Survey 5-Year Estimates (2023 Estimate)

A summary of the civilian labor force in the zone of interest is displayed in Table 2.12. In 2023, the zone of interest had an unemployment rate of 4.54%, lower than the unemployment rates of Oklahoma (4.90%) and nationwide (5.20%) and higher than the rate of Kansas (3.90%).

Table 2.12 Labor Force, Employment and Unemployment Rates, 2023 Annual Averages

Geographic Area	Civilian Labor Force	Number Employed	Number Unemployed	Unemployment Rate
United States	168,567,852	159,808,535	8,759,317	5.20%
Kansas	1,513,914	1,454,760	59,154	3.90%
Oklahoma	1,901,599	1,808,400	93,199	4.90%
Chautauqua County, KS	1,454	1,363	91	6.30%
Cowley County, KS	16,023	15,226	797	5.00%
Sumner County, KS	10,633	10,000	633	6.00%
Garfield County, OK	29,590	28,340	1,250	4.20%
Grant County, OK	1,804	1,764	73	4.00%
Kay County, OK	20,091	18,889	1,202	6.00%
Logan County, OK	23,756	22,966	790	3.30%
Noble County, OK	4,924	4,811	113	2.30%
Osage County, OK	20,286	19,195	1,091	5.40%
Pawnee County, OK	6,783	6,542	241	3.60%
Payne County, OK	38,926	37,189	1,737	4.50%
Washington County, OK	23,912	22,988	924	3.90%
Zone of Interest	198,182	189,273	8,942	4.54%

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year (2019-2023) (2023 averages)

2.11.4 Households, Income and Poverty

Table 2.13 displays the number of households and average household sizes in the state and zone of interest. There were approximately 163,561 households in the zone of interest with an average household size of 2.53.

Table 2.13 2023 Households and Household Size

Geographic Area	Total Households	Average Household Size
United States	127,482,865	2.54
Kansas	1,160,715	2.46
Oklahoma	1,542,780	2.51

Geographic Area	Total Households	Average Household Size
Chautauqua County, KS	1,315	2.50
Cowley County, KS	13,339	2.42
Sumner County, KS	8,974	2.45
Garfield County, OK	23,910	2.53
Grant County, OK	1,555	2.61
Kay County, OK	16,716	2.54
Logan County, OK	17,536	2.78
Noble County, OK	4,203	2.52
Osage County, OK	17,074	2.60
Pawnee County, OK	6,022	2.58
Payne County, OK	32,341	2.25
Washington County, OK	20,596	2.52
Zone of Interest	163,561	2.53

Source: U.S. Census Bureau, 2018-2023 American Community Survey 5-Year Estimates (2023 Estimate)

The median household income in the zone of interest ranged from \$48,937 in Payne County, OK to \$82,735 in Logan County, OK in 2023, as displayed in Table 2.14. Per capita income in the zone of interest was \$32,559 in 2023, lower than the per capita income of the state of Kansas (\$39,638), Oklahoma (\$34,859), and the United States (\$43,289).

Table 2.14 2023 Median and Per Capita Income

Geographic Area	Median Household Income (All)	Per Capita Income
United States	\$78,538	\$43,289
Kansas	72,639	39,638
Oklahoma	63,603	34,859
Chautauqua County, KS	54,592	30,782
Cowley County, KS	58,263	31,072
Sumner County, KS	60,348	32,318
Garfield County, OK	67,302	33,818
Grant County, OK	61,824	33,181
Kay County, OK	56,673	31,190
Logan County, OK	82,735	39,863
Noble County, OK	70,071	33,482
Osage County, OK	60,482	32,096
Pawnee County, OK	57,551	28,961
Payne County, OK	48,937	28,980

Geographic Area	Median Household Income (All)	Per Capita Income
Washington County, OK	61,205	34,969
Zone of Interest	61,665	32,559

Source: U.S. Census Bureau, 2019-2023 American Community Survey 5-Year Estimates (2023 Estimate)

Table 2.15 displays the percentage of persons and families whose incomes fell below the poverty level in the past twelve months as of 2023. Within the zone of interest, Payne County, OK had the greatest share of people with incomes below the poverty level at 23.9%, followed by Pawnee County, OK at 17.0%. In terms of families below the poverty level, Noble County, OK has the lowest percentage with 6.1% and Chautauqua County, KS has the highest with 13.0%.

Table 2.15 Percent of Families and People Whose Income in the Past 12 Months is Below the Poverty Level (2023)

Geographic Area	All Families	All People
United States	12.4%	8.7%
Kansas	11.5	7.7
Oklahoma	15.3	11.1
Chautauqua County, KS	16.9	13.0
Cowley County, KS	13.9	11.6
Sumner County, KS	10.8	7.6
Garfield County, OK	12.7	10.0
Grant County, OK	13.5	9.6
Kay County, OK	15.5	11.9
Logan County, OK	13.7	9.4
Noble County, OK	11.5	6.1
Osage County, OK	12.6	9.1
Pawnee County, OK	17.0	12.5
Payne County, OK	23.9	12.1
Washington County, OK	14.6	11.1
Zone of Interest	14.7	10.3

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year Estimates (2019-2023)

2.12 RECREATION FACILITIES, ACTIVITIES, NEEDS, AND TRENDS

2.12.1 Visitation Profile

Recreation areas around Kaw Lake include boat launching ramps, group camping areas, picnic and camping sites, playgrounds, a designated swim beach, hiking and equestrian trails. There are nine public use areas and two lake access points located around the lake for visitors to enjoy. Campers can select from over 300 family

campsites, many of which are equipped with water and electric hookups. Groups of all types enjoy four group camping areas, three of which are located at the Osage Cove Public Use Area, and one located at the Sarge Creek Cove Area. Ten boat launching ramps provide boaters with easy access to Kaw Lake. Once on the water, boaters can find two full-service marinas located at McFadden Cove and Pioneer Park. Swimmers are invited to enjoy a designated swimming area at Sandy Park. Kaw Lake and the Arkansas River have long been known for producing some of Oklahoma's largest catfish. Kaw Lake also offers anglers excellent opportunities to catch crappie, sand (white) bass and walleye. Hunters' skills are tested with excellent populations of whitetail deer, turkey, quail, rabbit and squirrel. During the fall waterfowl seasons Kaw Lake often attracts large numbers of migrating ducks and geese. One of Kaw Lake's most popular winter attractions is the American Bald Eagle. Traditionally, Kaw Lake has one of the state's largest populations of wintering bald eagles. Numerous sites around the lake offer visitors excellent opportunities to view our nation's symbol. Peak viewing usually occurs shortly after the first of the year and lasts through January. Hikers and horseback riders are attracted to the beautiful trails along Kaw Lakes eastern shore. The Eagle View Hiking Trail is approximately 12 miles long and runs between Osage Cove and Burbank Landing. The Five Fingers Equestrian Trail extends from Burbank Landing to the Sarge Creek Cove Public Use.

Table 2.16 provides total visitation by year for FY2019-2023. Visitation numbers are impacted by several factors including counting methodology, flooding, drought, COVID-19, and other environmental factors. Other popular activities include picnicking and walking, hiking, and jogging. Overall, visitation is trending up with 2023 reporting 467,958 visitors.

Table 2.16 Kaw Lake Total Visitation FY2020-2024

	2020	2021	2022	2023	2024
TOTAL VISITATION	561,359	438,320	382,289	467,958	410,706

Source: USACE VERS (Visitation Estimation & Reporting System, 2019-2023)

2.12.2 Recreation Areas and Facilities

Kaw Lake offers a variety of recreational opportunities. The quiet location provides a relaxing setting for camping, hunting, fishing, boating, or hiking. Table 2.17 provides a listing of areas as well as a general summary of the primary recreation facilities provided.

Table 2.17 Recreational Facilities and Operating Agencies

FACILITIES	Managing Entity	Designated Campsites	Showers	Boat Launching Ramps	Marina	Fishing Facilities	Picnic	Playground	Swimming Area	Trails
LOCATION										
Bear Creek Cove	U	E	*	*				*		
Burbank Landing	U			*						
Coon Creek	U	E	*	*		C		*		
Fisherman's Bend	U						A			
McFadden Cove	U	E		*		C	GS			
McFadden Cove Marina	O		*		*					
Osage Cove	U	E G	*	*		C D		*		B H Q
Overlook	U									
Pioneer Park	U			*		C	A GS			
Pioneer Park Marina	O				*					
Sandy Beach	U						A GS		*	
Sandy Park	U	E		*	*					
Sarge Creek	U	E G	*	*		C		*		R M
Traders Bend	U			*						
Washunga Bay	U	E	*	*						

* Exists at lake

Managing EntityO Other
U USACE**Fishing**C Courtesy Docks
D Fishing Docks
P Fishing Piers**Picnic**A Picnic Area
G Group Picnic
GS Group Picnic Shelter**Swimming**BE Beach
P Swimming Pool**Trails**B Bike Trails
Q Equestrian Trails
H Hiking Trails
I Interpretive Hiking Trails
M Multipurpose Trails**Camping**E Electric Campsites
G Group Camping

Source: USACE 2016B

2.12.3 Fishing and Hunting

Kaw Lake offers the outdoor enthusiast an abundance of fishing and hunting opportunities. The fertile waters of the Arkansas River offer excellent habitat for channel, flathead and blue catfish, crappie, sand bass, walleye and striped bass/white bass hybrids. The blue catfish fishing in Kaw Lake is some of the best in the nation. The waters below Kaw Dam provide anglers many opportunities to pursue their favorite species. The waters of the Arkansas River are home to one of the most unique fish on the planet. The paddle fish is a throwback from prehistoric days. This filter feeder grows to huge size below Kaw Dam and is a real challenge for eager anglers. Hunters take to the field in pursuit of white-tailed deer, bobwhite quail, dove, squirrel, rabbit, turkey and pheasant. Public hunting land around Kaw Lake traditionally produces one of the highest harvest rates of white-tailed deer anywhere in the State of Oklahoma. Hunting and fishing laws and regulations are enforced by game wardens in the states of Oklahoma and Kansas.

2.12.4 Camping and Picnicking

USACE manages thirteen (13) parks at Kaw Lake. Recreation areas around the lake include boat launching ramps, campgrounds, picnic areas, playgrounds, a designated swim beach, and hiking and equestrian trails. Most campsites have electrical hookups, and many have individual water hookups. If you just want to come out to Kaw Lake and spend the day, several day use sites are available. Some of the most popular day use sites are located at Sandy Beach, Kaw Lake's largest designated swimming area, at the east end of Kaw Dam. If you have a group that needs a place to go, group picnic shelters are available at McFadden Cove Day Use Area and Pioneer Park.

2.12.5 Boating

Water enthusiasts can enjoy some 17,000 acres of open water in Kaw Lake. Ten boat launching ramps provide boaters with easy access to the Lake. Boaters can find two full-service marinas located at McFadden Cove and Pioneer Park. Boating on the lake is in accordance with State boating laws and Corps of Engineers regulations. Boaters are encouraged to make safety their number one priority when they enjoy Kaw Lake. Remember, **It's The Law** - Children under 13 years of age must wear an approved PFD (personal flotation device) whenever underway on a vessel less than 26 feet in length. Always keep an eye on the weather because conditions can change rapidly. Kaw Lake can get extremely rough quickly. The best thing you can do to keep yourself safe on Kaw Lake is to wear your life jacket and make sure everyone with you does too.

2.12.6 Sightseeing

Visitors to Kaw Lake will find many sightseeing opportunities within a short driving distance from the lake. Many communities in the area have museums that are full of interesting artifacts and memorabilia that depict the rich history of the area. One

“must see” location is the Tall Grass Prairie Preserve located just east of Kaw Lake. This preserve offers visitors the opportunity to see the tall grass prairie ecosystem, complete with bison. Kaw Lake is in the transition zone where east meets west and many plant, animal and bird species from both areas can be observed. One of the most popular avian visitors is the American Bald Eagle, with Kaw Lake hosting one of the largest wintering populations of Bald Eagles throughout the State of Oklahoma.

2.12.7 Swimming

Sandy Beach is located at the east end of Kaw Dam and is part of the Sandy Park Public Use Area. This area offers an excellent sand beach and swimmers are encouraged to use this fine facility. We encourage you to use a designated swim beach but wherever you choose to swim, wear a life jacket. We hear it a lot, "I'm an excellent swimmer." Well, a lot of drowning victims were excellent swimmers. They would still be excellent swimmers if they had worn a life jacket. Kaw Lake is not a swimming pool. The lake bottom is not smooth and flat. Never dive into the water head first. You don't know what is under the water.

2.12.8 Trails

Offering beautiful scenic views of open prairie, wooded draws and bottom lands, Kaw Lake offers exception hiking. Eagle View Trail is located in Osage Cove recreational area with about 2.5 miles of maintained trails with interpretive stations and rest areas scattered along the trail. Five Fingers Trail runs south from the Sarge Creek Public Use Area and runs along the rocky hills known to locals as Snake Hill. Open prairie with wooded draws and bottom lands make hiking, equestrian riding and biking in these areas a real treat. The trails run through very remote areas so be sure to bring plenty of water with you and wear proper clothing. Users should be aware that both trails are closed during Oklahoma's deer rifle and primitive firearms seasons.

2.12.9 Commercial Concession Leases

Concessionaires provide valuable services to the public at USACE lakes across the United States. USACE makes efforts to attract concessionaires that can establish suitable, well-maintained businesses offering desirable water-related services to the general public. Hideaway Marina and Pioneer Marina serve as the only commercial concession leases at Kaw Lake.

2.12.10 Recreation Analysis – Trends and Needs

The 2023 Statewide Comprehensive Outdoor Recreation Plan (SCORP) was referred to in preparing the Plan. Preparation of the 2023 SCORP included statewide surveys, outdoor recreation enthusiasts' survey, outdoor recreation providers' survey, and observations. In addition, the SCORP assessed public preferences through cited research pertinent to the recreation needs and issues of the people of Oklahoma and those who visit the state for recreational experiences.

The 2023 SCORP references data from a survey of statewide residents with questions pertaining to reasons and barriers to participation in outdoor recreation, funding priorities, use of technology while recreating, opinions about outdoor recreation issues, and demographics. The following are a list of findings from survey of statewide residents in the SCORP:

- 621 individuals completed the survey, with 96% of the respondents being Oklahoma residents.
- Over 70% of the respondents were female.
- 46% of the respondents indicated that they participate in outdoor recreation activities a few times per week.
- The top 5 most important reasons for participation are outdoor recreation activities were: (1) for relaxation, (2) connect with nature, (3) release from work/other pressures (4) release of personal pressure and stress, and (5) staying fit.
- The top 3 highest reasons identified as barriers to outdoor recreation participation were: (1) lack of time, (2) weather limiting options, and (3) sites/areas being too crowded.
- The top 5 rated outdoor recreation activities that people participate in are hiking/walking, camping, swimming, wildlife watching and fishing.
- The top funding priorities for respondents were: (1) improve/enhance existing parks and recreation areas and facilities, (2) increase outdoor recreation opportunities for children and youth, and (3) invest in new parks and recreation areas.
- 27% of respondents said that they participate less in outdoor recreation since the COVID-19 pandemic while 31% answered that they participate more.

The SCORP and related studies document national and regional trends showing the highest demand for unpaved trails for walking and hiking with demand expected to increase in the near future. Given the outdoor recreation trends, it is evident that future recreation development at Kaw Lake should focus more on providing increased trail opportunities (of all kinds), more facilities for family and group gatherings, and more wildlife and nature-related viewing opportunities. With the popularity of hunting in Wildlife Management Areas, trails can be developed for hiking and nature viewing during non-hunting seasons and provide parking and trailheads that can be used for both types of activities. The USACE should also place a high priority on the protection and retention of large, undeveloped parcels of public land. Doing so responds to outdoor recreation needs expressed in the SCORP and related studies. These large expanses of natural habitat on public land are held in high regard by the citizens throughout the zone of interest. This Plan responds to these needs through revised land classifications, new management objectives, and conceptual management plans for each land classification.

2.13 REAL ESTATE

About 51,500 acres, including public use land, were originally purchased in fee along with the necessary flowage easements required in accordance with the land policy at that time. Currently, fee acres total 49,683.53. Land disposals include 6 acres in 1971, 139.19 acres in 1973, 23.87 acres in 1995, and 132.5 acres in 1983. There are 2,475.63 easement acres. Easement acres reflect all easements on the project and not solely flowage easements. These are the official acres from the Tulsa District Real Estate Division and may differ from those in other parts of this plan, which are for planning purposes only, due to improved measurement technology, erosion, and sedimentation.

2.13.1 Outgrants

The term “outgrant” is a broad term used by the USACE to describe a variety of real estate instruments wherein an interest in real property has been conveyed by the USACE to another party. Outgrants at Kaw Lake include leases, licenses, easements, consents, permits, and others which include the following (including consents):

- 42 Easements
- 7 Leases
- 3 License
- 2 Permits
- 8 Consents

The demand for real estate outgrants at Kaw Lake ranks fairly low among all USACE lake projects in terms of the total number and complexity. Management actions related to outgrants include routine inspections to ensure compliance with the terms of the outgrant, public safety requirements, and environmental compliance such as proper solid waste disposal and storage of pesticides. Additional actions include review of maintenance and construction proposals made by grantees. Leases are generally inspected annually for overall compliance, whereas minor outgrants are inspected approximately every five years or as needed. The management of outgrants is a major responsibility shared by the Operations and Real Estate Divisions of Tulsa District.

2.13.2 Guidelines for Property Adjacent to Public Land

It is the policy of the USACE to manage the natural, cultural, and developed resources of Kaw Lake to provide the public with safe and healthful recreational opportunities, while protecting and enhancing those resources. While private exclusive use of public land is not permitted, property owners adjacent to public lands do have all the same rights and privileges as any other citizen on government owned property. Therefore, the information contained in these policies is designed to acquaint the adjoining landowner and other interested persons with the types of property involved in the management of government land at Kaw Lake.

2.13.3 Trespass and Encroachment

Government property is monitored by USACE personnel to identify and correct instances of unauthorized use, including trespasses and encroachments. The term “trespass” includes unauthorized transient use and occupancy, such as mowing, tree cutting and removal, livestock grazing, cultivation and harvesting crops, and any other alteration to Government property done without the USACE approval. Unauthorized trespasses may result in a Title 36 citation requiring violators to appear in Federal Magistrate Court, which could subject the violator to fines or imprisonment (See 36 C.F.R. Part 327 Rules and Regulations Governing Public Use of Water Resources Development Projects Administered by the Chief of Engineers). More serious trespasses will be referred to the USACE Office of Counsel for enforcement under state and federal law, which may require restoration of the premises and collection of monetary damages.

The term “encroachment” pertains to an unauthorized structure or improvement on Government property. When encroachments are discovered, lake personnel will attempt to resolve the issue at the project level. When no resolution is reached, or where the encroachment is a permanent structure, the method of resolution will be determined by the USACE Real Estate Division, with recommendations from Operations Division and Office of Counsel. The USACE’s general policy is to require removal of encroachments, restoration of the premises, and collection of appropriate administrative costs and fair market value for the term of the unauthorized use.

Incidents of unauthorized tree removal and mowing have occurred as well as the placement of personal property items such as outdoor furniture, firewood, boats, vehicles, and structures on USACE land. Trash dumping is an especially difficult and expensive problem at many USACE lakes. Efforts are continuously underway to resolve these unauthorized acts, but the sheer volume creates a workload that is difficult to accomplish.

CHAPTER 3 – RESOURCE GOALS AND OBJECTIVES

3.1 INTRODUCTION

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

3.2 RESOURCE GOALS

The following statements, paraphrased from EP 1130-2-550, Chapter 3, express the goals for the Kaw Lake Master Plan:

GOAL A. Provide the best management practices to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.

GOAL B. Protect and manage the project’s natural and cultural resources through sustainable environmental stewardship programs.

GOAL C. Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining the project’s natural resources.

GOAL D. Recognize the project’s unique qualities, characteristics, and potentials.

GOAL E. Provide consistency and compatibility with national objectives and other State and regional goals and programs.

In addition to the above goals, USACE management activities are guided by USACE-wide Environmental Operating Principles as follows:

- Foster sustainability as a way of life throughout the organization.
- Proactively consider environmental consequences of all USACE activities and act accordingly.
- Create mutually supporting economic and environmentally sustainable solutions.
- Continue to meet our corporate responsibility and accountability under the law for activities undertaken by USACE, which may impact human and natural environments.
- Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.

- Leverage scientific, economic and social knowledge to understand the environmental context and effects of USACE actions in a collaborative manner.
- Employ an open, transparent process that respects views of individuals and groups interested in USACE activities.

3.3 RESOURCE OBJECTIVES

Resource objectives are defined as clearly written statements that respond to identified issues and that specify measurable and attainable activities for resource development and/or management of the lands and waters under the jurisdiction of the Tulsa District, Kaw Lake Project Office. The objectives stated in this Master Plan support the goals of the Master Plan, the USACE Environmental Operating Principles (EOPs), and applicable national performance measures. They are consistent with authorized project purposes, federal laws and directives, regional needs, resource capabilities, and they take public input into consideration. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in this Master Plan, as well as regional and state planning documents including:

- Oklahoma Comprehensive Wildlife Conservation Strategy
- Oklahoma Statewide Comprehensive Outdoor Recreation Plan

The objectives in this Master Plan are intended to provide project benefits, meet public needs, and foster environmental sustainability for Kaw Lake to the greatest extent possible. Tables 3.1 through 3.5 list the resource objectives for Kaw Lake. Objectives are subject to personnel and funding availability as well as recreational partners.

Table 3.1 Recreational Objectives

Recreational Objectives	Goals				
	A	B	C	D	E
Renovate existing facilities to provide a quality recreation experience for visitors while protecting natural resources for use by others. Examples include development of high impact zones at campsites, provision of universally accessible facilities, separation of day use and camping facilities, improved electrical service at campsites.	*		*		
Provide opportunities for day use activities, especially picnicking. Provide enough campsites in popular areas.	*		*		
Consider existing and future potential recreational opportunities for multiple user groups while ensuring visitor safety.	*		*	*	
Manage recreation facilities in accordance with public demand. Examples include universally accessible fishing docks, fish cleaning stations near boat ramps, playground equipment in day use and camping areas.	*		*		
Work with partners to expand existing trails and develop new ones.	*		*		*
Consider flood/conservation pool to address potential impact to recreational facilities (i.e., campsites, boat ramps, courtesy docks, etc.).	*	*	*	*	
Ensure consistency with USACE Natural Resource Management (NRM) Strategic Plan.					*
Monitor the Oklahoma SCORP to ensure that USACE is responsive to outdoor recreation trends, public needs and resource protection within a regional framework. All plans by others will be evaluated considering USACE policy and operational aspects of Kaw Lake.			*		*

* Denotes that the objective helps to meet the specified goal.

Table 3.2 Natural Resource Management Objectives

Natural Resource Management Objectives	Goals				
	A	B	C	D	E
Give priority to the preservation and improvement of wild land values in public use planning, design, development, and management activities.	*	*		*	*
Work with Tribal Nations to provide access to any culturally significant sites and natural resources.		*		*	*
Consider flood/conservation pool levels to ensure that natural resources are managed in ways that are compatible with project purposes.	*	*		*	
Actively manage and conserve fish and wildlife resources, especially threatened and endangered species and Species of Greatest Conservation Need, by implementing ecosystem management principles.	*	*		*	*
Manage high density and low-density recreations lands in ways that enhance benefits to wildlife.		*			*
Optimize resources, labor, funds, and partnerships for protection and restoration of fish and wildlife habitats.		*			*
Minimize activities which disturb the scenic beauty and aesthetics of the lake.	*	*	*	*	
Stop unauthorized uses of public lands such as off-road vehicle (ORV) use, trash dumping, unauthorized fires, fireworks, poaching, clearing of vegetation, agricultural trespass, timber theft, unauthorized trails and paths, and placement of advertising signs that create negative environmental impacts.	*	*	*	*	*
Monitor lands and waters for invasive, non-native, and aggressively spreading native species and take action to prevent and/or reduce the spread of these species.	*	*		*	*
Protect and/or restore important native habitats such as prairies, bottomland hardwoods, riparian zones, and wetlands, where they occur, or historically occurred on project lands. Special emphasis should be taken to protect and/or restore special or rare plant species. Emphasize actions that promote butterfly and /or pollinator habitat, migratory bird habitat, habitat for birds listed by USFWS as Birds of Conservation Concern, and potential habitat for American Burying Beetle.	*	*		*	*

*Denotes that the objective helps to meet the specified goal.

Table 3.3 Visitor Information, Education, and Outreach Objectives

Visitor Information, Education, and Outreach Objectives	Goals				
	A	B	C	D	E
Provide opportunities (i.e., comment cards, updates to local municipalities, web page) for communication with agencies, special interest groups, and the general public. Utilize social media to inform visitors.	*			*	*
Provide educational, interpretive, and outreach programs at the lake office and around the lake. Topics to include history, lake operations (flood risk management and water supply), water safety, recreation, cultural resources, ecology, and USACE missions.	*	*	*	*	*
Promote USACE Water Safety message.	*		*	*	*
Educate adjacent landowners on policies and permit processes to reduce encroachment actions.	*	*	*	*	*
Work with Tribal Nations to provide educational and informational opportunities to the general public.	*	*	*	*	*

*Denotes that the objective helps to meet the specified goal.

Table 3.4 General Management Objectives

General Management Objectives	Goals				
	A	B	C	D	E
Maintain the public lands boundary line to ensure it is clearly marked and recognizable in all areas to reduce habitat degradation and encroachment actions.	*	*	*	*	
Identify safety hazards or unsafe conditions; correct infractions and implement safety standards in accordance with EM 385-1-1.					*
Ensure green design, construction, and operation practices, such as the Leadership in Energy and Environmental Design (LEED) criteria for government facilities, are considered as well as applicable Executive Orders.					*
Manage non-recreation outgrants such as utility and road easements in accordance with national guidance set forth in ER and EP 1130-2-550 and applicable chapters in ER 405-1-12.	*				*
Manage project lands and recreational programs to advance broad national climate change mitigation goals, including but not limited to climate change resilience and carbon sequestration, as set forth in Executive Order 13990 and related USACE policy.					*
The USACE will continue to monitor both current and projected climate change impacts to operations and the authorized project purposes within USACE federal fee boundary and react through adaptation and resiliency projects, as funding becomes available.	*	*	*		*

*Denotes that the objective helps to meet the specified goal.

Table 3.5 Cultural Resources Management Objectives

Cultural Resources Management Objectives	Goals				
	A	B	C	D	E
As funding permits, complete an inventory in accordance with Section 110 NHPA and prepare a Cultural Resources Management Plan.	*	*		*	*
Increase public awareness and education of regional and local Tribal histories.		*		*	*
Monitor and enforce Title 36 and ARPA to prevent unauthorized excavation and removal of cultural resources.		*		*	*
Provide access to Tribal Nations to any cultural resources, sacred sites, or other Traditional Cultural Properties.	*	*			
Preserve and protect cultural resources sites in compliance with existing federal statutes and regulations.	*	*	*	*	*

*Denotes that the objective helps to meet the specified goal.

CHAPTER 4 – LAND ALLOCATION, LAND CLASSIFICATION, WATER SURFACE, AND PROJECT EASEMENT LANDS

4.1 LAND ALLOCATION

All lands at USACE water resource development projects are allocated by USACE into one of four categories in accordance with the congressionally authorized purpose for which the project lands were acquired: Operations, Recreation, Fish and Wildlife, and Mitigation. Land allocations, unlike classifications, are assigned at the time of purchase and do not change unless authorized by congress. At Kaw Lake, the land allocation categories that apply are Operations. Operations allocation is defined as those lands that are required to operate the project for the primary authorized purposes of flood control, hydropower, navigation, water supply, water quality, recreation, and fish and wildlife.

Recreation allocation is defined as lands acquired specifically for the authorized purpose of recreation, referred to as separable recreation lands. The remaining allocations of Fish and Wildlife or Mitigation would apply only if lands had been acquired specifically for these purposes.

4.2 LAND CLASSIFICATION

4.2.1 General

The objective of classifying project lands is to identify how a given parcel of land shall be used now and in the foreseeable future. Land classification is a central component of this plan, and once a particular classification is established any significant change to that classification would require a formal process including public review and comment.

4.2.2 Prior Land Classifications

The previous version of the Kaw Lake Master Plan included land classification criteria that were similar, but not identical to the current criteria. In the years since the previous Master Plan was published, wildlife habitat values, surrounding land use, and regional recreation trends have changed giving rise to the need for revised classifications. Table 4.1 identifies land and water surface classification changes from the 1971 Master Plan and supplements to the 2025 Master Plan Revision.

Table 4.1 Change from 1971 Land and Water Surface Classifications to 2025 Land and Water Surface Classification

Prior Land Classifications (1971)	Acres	Proposed Land Classifications (2025)	Acres
Project Operations (PO)	143	Project Operations (PO)	127
Environmentally Sensitive Areas (ESA)	0	Environmentally Sensitive Areas (ESA)	2,407
Operations Recreation - Intensive Use (OR/IU)	4,154	High Density Recreation (HDR)	3,022
Operations Recreation - Low Density (OR/LD)	6,261	Multiple Resource Management Lands - Low Density Recreation (LDR)	4,568
Operations Recreation - Quasi-Public	112		
State Area (SA)	11,692		
Wildlife Management - National	8,588	Wildlife Management (WM)	20,370
Wildlife Management - Recreational Lands (WMRL)	119		
TOTAL LAND ACRES	31,069	TOTAL LAND ACRES	30,494
Prior Water Surface Classifications (1971)	Acres	Proposed Water Surface Classifications (2025)	Acres
Water	18,840	Open Recreation (WS/OR)	19,192
		Restricted (WS/R)	19
		No Wake (WS/NW)	216
TOTAL WATER SURFACE ACRES	18,840	TOTAL WATER SURFACE ACRES	19,427
TOTAL FEE	49,909	TOTAL FEE	49,921

Total fee simple title acreage differences from the 1971 total to the 2025 totals are due to improvements in measurement technology, deposition/siltation, and erosion. Totals also differ due to rounding while adding parcels.

4.2.3 Land and Water Surface Classifications

USACE regulations require project lands and waters to be classified in accordance with the primary use for which project lands are managed. There are five primary, and four subcategories of land classifications identified in USACE regulations, as well as four water classifications which are as follows:

- Project Operations
- High Density Recreation
- Mitigation
- Environmentally Sensitive Areas
- Multiple Resource Management Lands
 - Low Density Recreation
 - Wildlife Management
 - Vegetative Management
 - Future/Inactive Recreation
- Water Surface
 - Restricted Areas
 - Designated No Wake Areas
 - Fish and Wildlife Sanctuary
 - Open Recreation

The land and water surface classifications for Kaw Lake were established after considering public comments, input from key stakeholders and lessees operating on USACE land, as well as USACE expert assessment. Additionally, wildlife habitat values identified in the WHAP and the trends analysis provided in the SCORP were used in land and water classification decision making. Furthermore, the USACE consulted with Tribal Nations who have cultural and historical interests in the lands at Kaw Lake. Maps showing the various land classifications can be found in Appendix A. Each of the land classifications, including the acreage and description of allowable uses, is described in the following paragraphs.

4.2.4 Project Operations (PO)

This classification includes the lands managed for operation of the dam, stilling basin, project office, maintenance compound, spillway, and levee, all of which must be maintained to carry out the primary authorized purposes of flood risk management, water supply, recreation, and fish and wildlife. In addition to the operational activities taking place on these lands, limited recreational use may be allowed for activities such as public fishing access below the discharge outlet works. Regardless of any limited recreation use allowed on these lands, the primary classification of Project Operations will take precedent over other uses. There are 127 acres of Project Operations land specifically managed for this purpose.

4.2.5 High Density Recreation (HDR)

This classification includes lands developed, or available to be developed for intensive recreational activities including day use areas, campgrounds, marinas, and related concession areas. Recreation development by lessees operating on USACE lands must follow policy guidance contained in USACE regulations at ER 1130-2-550, Chapter 16. That policy includes the following statement:

“The primary rationale for any future recreation development must be dependent on the project’s natural or other resources. This dependency is typically reflected in facilities that accommodate, or support water-based activities, overnight use, and day use such as marinas, campgrounds, picnic areas, trails, swimming beaches, boat launching ramps, and comprehensive resort facilities. Examples that do not rely on the project’s natural or other resources include theme parks or ride-type attractions, sports or concert stadiums, and standalone facilities such as restaurants, bars, motels, hotels, non-transient trailers, and golf courses. Normally, the recreation facilities that are dependent on the project’s natural or other resources, and accommodate or support water-based activities, overnight use, and day use, are approved first as primary facilities followed by those facilities that support them. Any support facilities (e.g., playgrounds, multipurpose sports fields, overnight facilities, restaurants, camp stores, bait shops, comfort stations, and boat repair facilities) must also enhance the recreation experience, be dependent on the resource-based facilities, and be secondary to the original intent of the recreation development...”

Lands classified for High Density Recreation are suitable for the development of comprehensive resorts. The regulation cited above defines Comprehensive Resort as follows:

“Typically, multi-faceted developments with facilities such as marinas, lodging, conference centers, golf courses, tennis courts, restaurants, and other similar facilities.”

At Kaw Lake, there are 3,022 acres classified as High Density Recreation land. Each of the High Density Recreation Public Use Areas is described briefly in Chapter 5 of this Plan.

4.2.6 Mitigation

This classification is used only for lands set aside for mitigation for the purpose of offsetting losses associated with the development of the project. There are no lands at Kaw Lake with this classification.

4.2.7 Environmentally Sensitive Areas (ESA)

These are areas where scientific, ecological, cultural, and aesthetic features have been identified. Several areas are designated as ESAs at Kaw Lake primarily for the protection of a combination of sensitive habitats, aesthetics, and legally protected

cultural resources. Each of these areas is discussed in Chapter 5 of this Plan and illustrated on the maps in Appendix A. Within those areas, hunting and other wildlife management activities are still permitted, but protection of sensitive resources takes priority over any other activity. The process of correspondence with Tribal Nations to designate ESAs is briefly described as a special topic in Chapter 6 of this Plan. There are 2,407 acres classified as ESA at Kaw Lake.

4.2.8 Multiple Resource Management Lands (MRML)

This classification is divided into four sub-classifications identified as: Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. A given tract of land may be classified using one or more of these sub-classifications, but the primary sub classification should reflect the dominant use of the land. Typically, Multiple Resource Management Lands support only passive, non-intrusive uses with very limited facilities or infrastructure. Where needed, some areas may require basic facilities that include, but are not limited to minimal parking space, a small boat ramp, and/or primitive sanitary facilities. There are 24,941 acres of land under this classification at Kaw Lake. The following paragraphs list each of the sub-classifications, and the number of acres and primary uses of each.

- **Low Density Recreation (LDR)**

These are lands that may support passive public recreational use (e.g., fishing, hunting, wildlife viewing, natural surface trails, hiking, etc.). There are 4,568 acres under this classification at Kaw Lake.

- **Wildlife Management (WM)**

This land classification applies to lands managed primarily for the conservation of fish and wildlife habitat. These lands generally include comparatively large contiguous parcels of land for passive recreation uses such as natural surface trails, fishing, hunting, and wildlife observation are compatible with this classification unless restrictions are necessary to protect sensitive species or to promote public safety. There are 20,370 acres of land included in this classification at Kaw Lake.

- **Vegetative Management (VM)**

These are lands designated for stewardship of forest, prairie, and other native vegetative cover. Passive recreation activities previously described may be allowed in these areas. There are no acres under this classification at Kaw Lake.

- **Future or Inactive Recreation (FOIR)**

These are lands with site characteristics compatible with High Density Recreation development but have been undeveloped or planned for very long-range recreation needs. These areas are typically closed to vehicular traffic and will be managed as

multiple resource management lands until development takes place. There are no acres classified as Future or Inactive Recreation.

4.2.9 Water Surface

USACE regulations specify four possible sub-categories of water surface classification. These classifications are intended to promote public safety, protect resources, or protect project operational features such as the dam and spillway. These areas are typically marked by the USACE or lessees with navigational or informational buoys or signs or are denoted on public maps and brochures. The Water Surface Classification map can be found in Appendix A of this Plan. The four sub-categories of water surface classification are as follows:

- **Restricted**

Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations, safety, and security purposes. The areas include the water surface immediately surrounding the gate control tower upstream of the Kaw Lake Dam, around the water intake structures, just below the dam, and at designated swim beaches. There are 19 acres of restricted water surface at Kaw Lake.

- **Designated No-Wake**

Designated No-Wake areas are intended to protect environmentally sensitive shorelines and improve boating safety near key recreational water access areas such as boat ramps. There are twelve (12) boat ramps at Kaw Lake where no-wake restrictions are in place for reasons of public safety and protection of property. There are 216 acres of designated no-wake water surface at Kaw Lake. No-wake areas are typically denoted by buoys in appropriate areas.

- **Fish and Wildlife Sanctuary**

This water surface classification applies to areas with annual or seasonal restrictions to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning. Kaw Lake has no acres of water surface designated as a Fish and Wildlife Sanctuary.

- **Open Recreation**

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. This classification encompasses the majority of the lake water surface and is open to general recreational boating. Boaters are advised through maps and brochures, or signs at boat ramps, that navigational hazards may be present at any time and at any location in these areas. Operation of a boat in these areas is at the owner's risk. Specific navigational hazards may or may not be marked with a buoy. There are 19,192 acres of water surface at Kaw Lake are designated as Open Recreation.

4.2.10 Project Easement Lands

Project Easement Lands are primarily lands on which easement interests were acquired. Fee title was not acquired on these lands, but the easement interests convey to the Federal government certain rights to use and/or restrict the use of the land for specific purposes. Easement lands are typically classified as Operations Easement, Flowage Easement, and/or Conservation Easement.

At Kaw Lake there are easement lands where a flowage easement was acquired. A flowage easement, in general, grants to the government the perpetual right to temporarily flood/inundate private land during flood risk management operations and to prohibit activities on the flowage easement that would interfere with flood risk management operations such as placement of fill material or construction of habitable structures.

There are no Operations or Conservations Easements at Kaw Lake.

CHAPTER 5 – RESOURCE PLAN

5.1 RESOURCE PLAN OVERVIEW

This chapter describes the management plans for each land use classification within the Master Plan. Management plans describe how the project lands and water surface will be managed in broad terms. A more descriptive plan for managing these lands resides in the Kaw Lake Operations Management Plan (OMP). The OMP is an annually updated, task and budget-oriented plan identifying tasks necessary to implement the Resource Plan and achieve the goals and objectives of the Master Plan. Management of all lands, recreation facilities, and related infrastructure must take into consideration the effects of pool fluctuations associated with authorized project purposes. Management actions are dependent on congressional appropriations, the financial capability of lessees and other key stakeholders, and the contributions of labor and other resources by volunteers. Acreages shown for the various land classifications were calculated using GIS technology and may not agree with lease documents, prior publications, or official land acquisition records.

5.2 PROJECT OPERATIONS

The Project Operations (PO) classification is land associated with the dam, spillway, levees, lake office, maintenance facilities, and other areas managed solely for the operation and fulfillment of the primary mission of the project. There are 127 acres of lands under this classification, all of which are managed by the USACE. The Project Operation land management plan consists of continuing to provide physical security necessary to ensure continued operation of the critical operational structures.

Public access to Project Operations lands is restricted although limited recreational access is permitted when lake operations allow. Regardless of any authorized public recreational use of lands that are classified as Project Operations, the operation, maintenance, and safety requirements of the dam and associated lands and infrastructure take priority over any recreational access.

5.3 HIGH DENSITY RECREATION

Kaw Lake has 3,022 acres classified as High Density Recreation. These lands were developed for intensive recreational activities for the visiting public including day use and campgrounds. National USACE policy set forth in ER and EP 1130-2-550, Chapter 16, limits recreation development on USACE lands to those activities that are dependent on a project's natural resources and typically include water-based activities, overnight use, and day use such as campgrounds, picnic areas, trails, swimming beaches, boat launching ramps and comprehensive resorts. Examples of activities that are not dependent on a project's natural resources include theme parks or ride-type attractions, sports or concert stadiums, and stand-alone facilities such as restaurants, bars, motels, hotels, and golf courses.

The High-Density Recreation areas at Kaw Lake include 15 (fifteen) park areas that are managed by USACE. The USACE will continue to review requests and ensure compliance with applicable laws and regulations for proposed activities in all USACE-operated HDR areas. USACE will also continue to ensure that recreation areas are managed and operated in accordance with the objectives prescribed in Chapter 3. Additional best management practices to implement may include the following:

- Monitor the Oklahoma SCORP to ensure that USACE is responsive to outdoor recreation trends, public needs and resource protection within a regional framework. All plans by others will be evaluated considering USACE policy and operational aspects of Kaw Lake. Preserve and restore wildlife habitat in high density recreation areas.
- Continue coordination with Oklahoma Forest Service regarding the management of emerald ash borer and sustaining general tree health in high density recreation areas.
- Work with Tribal Nations to provide educational and informational opportunities to the general public.

The following is a description of the parks operated by USACE at Kaw Lake, some of which are highly developed, while others have only basic facilities and limited development. Classifications for the various parks at Kaw Lake include Day Use, Class A (highly developed parks) and Class C (parks with basic facilities). Maps showing existing parks and facilities can be found in Appendix A.

5.3.1 USACE Managed High Density Recreation Areas

USACE is the largest federal provider of outdoor recreation, managing 12 million acres of lands and waters across the country. The recreation mission and overarching strategy of USACE is to manage and conserve natural resources while continuing to deliver a quality recreation program that is resilient considering today's fiscal realities and be responsive to the changing needs of the American people. The following parks are under USACE direct management.

Day Use Parks

- **Burbank Landing**

Burbank Landing is a recreation area which was closed in 1982 due to budget cuts within the federal government. Today, this area offers limited recreational opportunities but instead serves as an access point for hunting and fishing opportunities.

- **Trader's Bend**

Kaw Lake's most Northern USACE managed recreation area is Trader's Bend. While most of the previous campground and facilities have been closed in year's past due to budget constraints and flooding, a boat ramp remains open providing access to the Northern part of Kaw Lake along the Arkansas River. Trader's Bend also offers

great access to some of Kaw Lake's finest hunting and fishing opportunities.

- **Sandy Beach**

Sandy Beach is located on the southeast end of Kaw Lake, on the east end of Kaw Dam. The horseshoe shaped swimming beach is Kaw Lake's only designated swimming location. This area offers sand volleyball, a large reservable pavilion, a vault style restroom, and a large swimming area.

- **Fisherman's Bend**

Fishermen's Bend is a day use area that offers access to the Arkansas river on the west side below Kaw Dam. While this area primarily serves as an access point for fisherman with a large parking lot, there are also multiple picnic facilities with a newer style vault restroom on-site. Drinking water is provided at several hydrants throughout the recreation area.

- **Overlook**

Located just west of the Kaw Project Office, the Overlook area provides historical and interpretive information about Kaw Lake and its origins. Kaw Lake's only fitness trail is located here, offering various types of outdoor fitness equipment spread around the half mile walking trail. Drinking water and flush restrooms are available on-site, seasonally.

- **Pioneer Park**

Pioneer Park in Kaw City offers multiple types of day use recreational usage. Along with a three-lane boat ramp, this area has multiple access points to some of Kaw's most pristine sandy shoreline for walking, and wading. There is also a large pavilion at Pioneer Park boat ramp which can be reserved for family or community events.

- **Sarge Creek ORV**

Kaw Lake's Off-Road Vehicle area is roughly 181 acres of wooded, hilly trails that open for public use. There is a small picnic area located in the unpaved parking area and a trash can. There is also a map of the trail system in the parking area located just across Highway 11 from Sarge Creek Cove.

Campgrounds

- **Osage Cove**

Osage Cove Campground offers 97 campsites, including three large group sites that can accommodate up to 50 guests each. Modern amenities, such as electric hookups, drinking water, flush toilets, and showers are available. Two boat ramps provide easy access to the lake year-round. Osage Cove also offers a fishing dock and multiuse trail system for hiking, biking, and equestrian riding

- **Sandy Park**

Sandy Park is located below the dam and has 12 sites. Each site has water and electricity. There is a CXT shower and restroom facility in the middle of Sandy with a parking lot. The Sandy Park Boat Ramp gives the public access to the Arkansas River below the dam. As you leave the boat ramp and campground, there is a dump station and a CXT vault.

- **McFadden Cove**

McFadden Cove Campground offers 15 campsites with amenities including electric and individual water hookups as well as a vault restroom. The boat ramp and courtesy dock are just around the corner from the campground, providing year-round access to Kaw Lake. The nearest dump station is at Sandy Park. The McFadden Cove day use area offers four reservable picnic shelters, each one having a water hydrant. There are vault toilets near the first shelter. Each shelter is located close to the shore, giving the public lake access. A pond has recently been constructed with the goal of it being a youth fishing pond.

- **Coon Creek**

Coon Creek offers 57 campsites with modern amenities such as electric hookups, drinking water and flush toilets with showers. There is a dump station located near the gate shack at the entrance of the park. Two boats ramps with courtesy docks offer easy access to Kaw Lake and its navigable waterways. A lifejacket loaner board is located between the two boat ramps. Coon Creek is often considered to be a wonderful family destination with its large playground area, horseshoe pits, frisbee golf, and picnic pavilion.

- **Sarge Creek**

Sarge Creek Campground is situated along the banks of Kaw Lake in north central Oklahoma. Campsites with modern amenities like electric hookups, drinking water and flush toilets with showers are available, including one large group campsite that can accommodate up to 50 guests. A boat ramp providing easy access to Kaw Lake is located within Sarge Creek. Most of the campsites here are shaded and visitors looking to camp with their horses or ride Kaw Lake's Five Fingers Equestrian Trail will find Sarge Creek Campground to be very accommodating

- **Washunga Bay**

Washunga Bay Campground offers 24 campsites with modern amenities like electric hookups, drinking water and flush toilets with showers. A boat ramp with courtesy dock provides easy access to Kaw Lake. Washunga Bay Campground is situated along the banks of Kaw Lake in north central Oklahoma.

- **Bear Creek Cove**

Bear Creek Cove Campground is located on the Northern portion of Kaw Lake straight east of Newkirk, OK. This outdoor oasis offers 22 campsites complete with electric, water hookups and a comfort station with warm showers and flush toilets. A

boat ramp and dump station are also located on-site at Bear Creek Cove Campground. There is a swing set and monkey bars located centrally in the park. The boat ramp is only usable when the lake pool elevation is 6 feet or higher above conservation pool.

5.3.2 Quasi-Public High Density Recreation Areas

- **Camp McFadden**

There is a small fishing pond within Camp McFadden as well as an unmarked footpath used for camp hikes.

- **NOV Cove**

This property is leased out to Northern Oklahoma College and is primarily utilized by college students and faculty. Cabin rooms can be rented to the public. There is a large conference/kitchen building and a handful of cabin rooms in a sperate building. A shower toilet structure is present. There are also five RV hookups. There is a dock and boat ramp at this location.

5.3.3 Leased High Density Recreation Areas

- **Hideaway Marina**

Hideaway Marina is northwest of McFadden Cove campgrounds. This marina provides around 150 slips, a fuel dock, restaurant, and restroom.

- **Pioneer Marina**

Pioneer marina is located west of the Pioneer Cove boat ramp in Kaw City. The marina has 54 slips, a fuel dock, restaurant, and restroom.

5.3.4 Trails

- **Eagle View Trail**

The Eagle View Trail is located in Osage Cove recreational area with about 2.5 miles of maintained trails with interpretive stations and rest areas scattered along the trail. This trail is suitable for hiking, horseback riding, and biking. This trail is closed during Oklahoma's deer rifle and primitive firearms seasons. At the start of the trail, there is a gravel parking lot near the entrance of Osage Cove campground for the public to utilize.

- **Sarge Creek Cove Trail**

Sage Creek Cove Trail is located northeast of the Sarge Creek Cove gate shack. This trail is suitable for horseback riding and hiking. The first two miles are maintained

by USACE employees, and the remainder of the trail is maintained by volunteers and trail usage. This is part of the Five Fingers trail system that connects to Osage Cove.

5.4 MITIGATION

The Mitigation classification is applied to lands that were acquired specifically for the purpose of offsetting losses associated with the development of the project. There are no acres at Kaw Lake under this classification. USACE lands at Kaw Lake where environmental mitigation activities have taken place in association with real estate easements or other outgrants are not included in lands classified for Mitigation.

5.5 ENVIRONMENTALLY SENSITIVE AREAS

Multiple areas totaling 2,407 acres are designated as Environmentally Sensitive Areas (ESA). These are areas where scientific, ecological, cultural, or aesthetic features have been identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the Endangered Species Act, the National Historic Preservation Act (NHPA), or applicable state statutes. The primary management objective for ESAs is to allow existing compatible uses to continue while protecting sensitive resources from intensive development, use, or disturbance beyond that which currently exists. In general, these areas must be managed to ensure that they are not adversely impacted. With the exception of natural surface pedestrian trails and minimal visitor parking areas, limited or no development of public use facilities is allowed on these lands and no real estate outgrants for easements should be granted unless disturbance can be confined to the boundaries of existing easements. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration or provision of supplemental browse and forage for wildlife. An ESA classification provides the highest level of ecological protection among the various land use classifications. Future management of ESAs includes monitoring and surveillance of cultural resource sites to ensure they are not damaged or destroyed. For a brief description of consultation with Tribal Nations for ESA and land classification changes, see Chapter 6.

The ESAs are listed and described in Table 5.1 and depicted in the map book found in Appendix A, number of acres for each ESA and a brief location description of the ESA. Many of the ESAs were designated to protect culturally and/or historically significant sites. Since the purpose of the ESA designation is to protect those sites, many of the ESAs have been expanded well beyond the known cultural site to avoid identifying the exact location of the site and to protect potential additional unidentified sites adjacent to those which are being protected.

Table 5.1 ESA Listing

ESA#	Acres	Location and Description
ESA 1	699	ESA 1 is located on both sides of the Arkansas River near Trader's Bend Water Access area.
ESA 2	164	ESA 2 is located on both sides of Bear Creek east of Bear Creek Cove recreation area.
ESA 3	289	ESA 3 is located on both sides of Little Beaver Creek above the confluence with Beaver Creek to form the Beaver Creek arm of the lake.
ESA 4	590	ESA 4 is located on both sides of Beaver Creek and Rabbit Creek above the confluence with Little Beaver Creek to form the Beaver Creek arm of the lake.
ESA 5	49	ESA 5 is located on the west shore of the Beaver Creek arm of the lake near the confluence of Little Beaver Creek and Beaver Creek.
ESA 6	10	ESA 6 is located on the shoreline in Coon Creek Cove recreation area.
ESA 7	426	ESA 7 is located on the north shoreline of the Arkansas River arm of the lake above the confluence with Beaver Creek which includes the shoreline in Washunga Bay recreation area.
ESA 8	180	ESA 8 is located on the east shoreline of the Beaver Creek arm of the lake on either side of the East Furguson Road bridge.

5.6 MULTIPLE RESOURCE MANAGEMENT LANDS

Multiple Resource Management Lands (MRML) are, as the name implies, lands that serve multiple purposes, but that are sub-classified and managed for a predominant use. There are no lands sub-classified as Vegetation Management (VM) or Future or Inactive Recreation Areas at Kaw Lake. The following paragraph describes the sub-classification, how they are managed, and provides the number of acres in each sub-classification.

5.6.1 Wildlife Management

There are 20,370 acres of MRML – Wildlife Management, which is the dominant land classification at Kaw Lake. These are lands designated primarily for the stewardship of fish and wildlife resources but are available for passive recreation use such as natural surface trails, hiking, and nature study. The USACE objectives for these lands is to continue to ensure wildlife management practices are ecologically sustainable and provide the intended public benefits. In general, this land classification calls for managing the habitat to support native, ecologically adapted vegetation, which in turn supports native game and non-game wildlife species, with special attention given to federal and state-listed threatened and endangered species. Future management may include such activities as placement of nesting structures, construction of water features or brush piles, prescribed fire, fencing, removal of invasive species, and planting of specific food-producing plants that may be necessary to support wildlife needs. Additional best management practices may include use of erosion control blankets that do not pose entrapment hazards to wildlife; elimination of open-top vertical pipes that pose an entrapment hazard to wildlife; minimize nighttime lighting and only use down-shielded lighting to prevent disorientation of night-migrating birds; follow USFWS guidelines for building glass to prevent bird collisions; preserve and restore wildlife habitat in high density recreation areas; ensure that mowing practices provide standing tallgrass over winter to provide essential cover for wintering birds; and report sightings of state-listed species and presence of rare vegetative communities to USFWS and ODWC. Priority will be given to the improvement or restoration of existing wetlands, or the construction of wetlands where topography, soil type, and hydrology are appropriate.

Use of available funds for wildlife management must be prioritized to meet legal mandates and regional priorities. While exceptions can occur, management actions will be guided by the following, in order of priority: 1) Protect federal and state-listed threatened and endangered species. 2) Meet the needs of species protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. 3) Meet the needs of rare species and Species of Greatest Conservation Concern. 4) Meet the needs of resident species not included in the above priorities.

Additionally, agricultural leases for grazing or hay production may be employed when such actions are beneficial to long-term ecological management goals. Hunting and fishing activities are regulated by federal and state laws and special restrictions proposed by the USACE and approved through state regulatory processes. Natural

surface pedestrian trails are appropriate for most areas designated as Wildlife Management and can be implemented through partnerships with other agencies.

5.6.2 Low Density Recreation

There are 4,568 acres of MRML – Low Density Recreation at Kaw Lake. These lands have minimal development or infrastructure that support passive public use such as hiking, nature photography, bank fishing, and hunting. Since these lands are typically narrow or often adjacent to private residential developments, hunting is only allowed in select areas that are a reasonable and safe distance from adjacent residential properties. These lands are typically open to the public, including adjacent landowners, for pedestrian traffic and are frequently used by adjacent landowners for access to the shoreline near their homes. Prevention of unauthorized use on this land, such as trespassing or encroachment, is an important management and stewardship objective for all USACE lands but is especially important for lands near private development. Future management of these lands calls for maintaining a healthy, ecologically adapted vegetative cover to reduce erosion and improve aesthetics. Maintenance of an identifiable property boundary is also a high priority in these areas.

5.7 WATER SURFACE

Based on GIS data maintained by Tulsa District, at conservation pool level of 1010.0 NGVD29 there are 19,427 acres of water surface. The USACE is the primary agency responsible for managing the recreational use of the water surface at Kaw Lake. Enforcement of water surface rules and regulations is a shared responsibility between the USACE, ODWC, and the Marine Enforcement Division of the Oklahoma Highway Patrol (OHP). Zoning of the water surface is intended to ensure the security of key operations infrastructure, promote public safety, and protect habitat. In accordance with national USACE policy set forth in EP 1130-2-550, the water surface of the lake at the conservation pool elevation may be designated using the following classifications:

5.7.1 Restricted

Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations and safety and security purposes. Vessels are not allowed to enter Restricted water surface. The total acreage of Restricted water surface is approximately 19 acres. The Restricted water surface at Kaw Lake includes the area around the intake gate control tower near the dam, immediately below the dam which is restricted for safety and security concerns. Also, around the designated swimming beach. Future management calls for one or more of the following management measures: placement of buoys; placement of signs at swimming beach; and describing the areas on maps available to the public.

5.7.2 Designated No-wake

Designated No-Wake areas are intended to protect environmentally sensitive shorelines and improve visitor safety near key recreation water access areas such as

boat ramps, and swim beaches. Designated No-Wake areas at Kaw Lake include approximately 216 acres. Future plans include for No-wake Areas include continuing placement of buoys, placement of signs near boat ramps, and describing the areas on maps available to the public.

5.7.3 Open Recreation

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. Approximately 19,192 acres of Kaw Lake water surface is designated as Open Recreation. Signs at boat ramps warn boaters that navigation hazards such as standing dead timber, shallow water, and floating debris may be present at any time and location and it is incumbent upon boat operators to exercise caution. Boating on the lake is in accordance with USACE regulations and water safety laws of Oklahoma. The USACE encourages all boaters and swimmers to wear lifejackets at all times and to learn to swim well.

5.7.4 Recreational Seaplane Operations

Recreation seaplane landings and takeoffs may occur on water surface areas where this activity is not prohibited. A map depicting areas where seaplane landings and takeoffs are prohibited can be found in Appendix A. The USACE imposed restrictions that apply to seaplane operations are published by the Federal Aviation Administration in their Notice to Airmen and are also set forth in Title 36 of the Code of Federal Regulations, Chapter III, Section 327.4. Note that once a seaplane is on the water it is considered to be a water vessel and falls under the guidelines for watercraft.

CHAPTER 6 – SPECIAL TOPICS/ISSUES/CONSIDERATIONS

6.1 MILLET PROGRAM

USACE Kaw Lake and the Oklahoma Department of Wildlife Conservation (ODWC) have had a 25-year partnership planting millet along northern shoreline areas of Kaw Lake. Planting millet not only benefits migratory bird species, but it enhances waterfowl hunting opportunities locally. The success of our millet program also attracts many out-of-state hunters. Kaw Lake staff communicate with ODWC and the Oklahoma Municipal Power Authority (OMPA) to coordinate water levels to the best of our ability to enhance hunter's experiences at the Kaw Project.

6.2 ATV/ORV TRAILS

Located across Highway 11 from Sarge Creek, Kaw Lake's Off-Road Vehicle (ORV) area is roughly 181 acres of wooded, hilly trails that is open for public use. There is a small picnic area located in the unpaved parking lot and a trash can. There is also a map of the trail system in the parking area. All riders are encouraged to be aware of the rules, regulations and allowed boundaries within the riding area.

6.3 VOLUNTEERS/VOLUNTEER OF THE YEAR

Kaw has volunteer sites located in multiple parks including one at Bear Creek, two at Washunga Bay, three at Sarge Creek, three at Coon Creek, one at Sandy Beach, and four at Osage Cove. Kaw has been tracking volunteer hours and cost value since 2012. From 2012-2024, volunteers at Kaw have contributed 86,506 hours.

A couple won the 2023 USACE National Volunteer of the Year Award for their service at Kaw Lake. They have volunteered in the Sarge Creek recreation area since November of 2018. As of their start in 2018, they have dedicated 8,078 hours of service to Kaw Lake in various forms of tedious campground maintenance, equipment operation, assisting in local public events, and much more.

6.4 TRAILS

- **Sarge Creek Trail**

Sarge Creek Trail is a horseback riding trail that runs from Sarge Creek Cove to Osage Cove. The first two miles are maintained by USACE employees, and the remainder of the trail is maintained by volunteers and trail usage. This trail contains many hills and uneven terrain, making it better suited for horseback riders than hikers and bikers. For rider safety, Sarge Creek Trail is closed during Oklahoma's deer rifle and primitive firearms season.

- **Osage Cove Eagle View Trail**

Osage Cove Eagle View Trail is in Osage Cove recreational area and features 2.5 miles of maintained trails with interpretive stations and rest areas scattered

throughout. This trail is suitable for hiking, horseback riding, and biking. There is a gravel parking lot with maps of the trail system near the entrance of Osage Cove campgrounds for the public use. Osage Cove Eagle View Trail is closed during Oklahoma's deer rifle and primitive firearms seasons.

6.5 NEW ODWC SHOOTING RANGE

Located in Kaw WMA on N. Silverdale Lane at **36°53'03.4"N 96°56'30.3"W**.

Established in 2023 by the ODWC Oklahoma Department of Wildlife Conservation (ODWC) on Kaw Wildlife Management Area (WMA). This range features two 100-yard rifle ranges with 12 covered shooting benches, a 30-yard pistol range with six covered shooting benches, archery range with archery tower including four shooting lanes, and ADA access and parking. Although free to the public, users must have a valid hunting or combo license.



Photo 6.1 ODWC Shooting Range (Source:USACE)

6.6 YOUTH HUNT

Kaw Youth Hunt takes place on the first weekend in November. Six kids between 7-16 years of age receive bonus tags that can be utilized on two doe or one doe and one buck. Kaw Lake staff maintains areas designated for youth hunt blinds to provide ample opportunities for the youth hunters to tag out. Each youth hunter draws for their blind on the first evening of the hunt.

Partnerships play a big role in making Kaw Youth Hunt a memorable experience for all involved. Wildlife staff from ODWC assist in taking hunters to their blinds and help

in the tagging and cleaning of deer. Camp McFadden and other local partners also supported the hunt.

6.7 LOCAL PARTNERSHIPS

Through a local partnership with USACE Kaw Lake and the City of Kaw City, local improvement projects supporting recreation and environmental stewardship at Kaw Lake. These projects align with their organizational goals such as public safety and recreation, outdoor education, environmental stewardship, and youth education and outdoor involvement. Through local partnerships, the Kaw Project has been able to gain valuable recreation and environmental services that we alone could not have provided due to limited budgets.

We have partnered with the Veteran's Network of the local partner for work products around the Kaw Project to improve the existing facilities at Kaw Lake for the benefit of the public. Many of the facilities and components this partnership has impacted were aged, damaged, in severe need of replacement, or non-existent.

Through local partnerships, we at the Corps have been able to help educate more of the public about what we do and to give others the chance to help tell our story. Multiple articles and success stories have been shared through local media sources and corporate social media accounts of both the local partners and USACE, Tulsa District.



Photo 6.2 Pollinator Habitat created through Local Partnership (Source: USACE)

CHAPTER 7 – PUBLIC AND AGENCY COORDINATION

7.1 PUBLIC AND AGENCY COORDINATION OVERVIEW

The USACE is dedicated to serving the public interests in support of the overall development of land uses related to land management for cultural, natural, and recreational resources of Kaw Lake. An integral part of this effort is gathering public comment and engaging stakeholders in the process of planning. USACE policy guidance in ER and EP 1130-2-550 requires thorough public involvement and agency coordination throughout the master plan revision process including any associated NEPA process. Public involvement is especially important at Kaw Lake to ensure that future management actions are environmentally sustainable and responsive to public outdoor recreation needs. The following milestones provide a brief look at the overall process of revising the Kaw Lake Master Plan.

The USACE began planning to revise the Kaw Lake Master Plan in the summer of 2024. The objectives for the Master Plan revision are to (1) revise land classifications to reflect changes in USACE land management policies since the 1970 Master Plan, (2) prepare new resource goals and objectives, and (3) revise the Master Plan to reflect new agency requirements for Master Plan documents in accordance with ER 1130-2-550, and EP 1130-2-550.

7.2 INITIAL STAKEHOLDER AND PUBLIC OPEN HOUSE

On 24 July 2024 a public information open house was held at Community Building Kaw City to inform the public of the intent to revise the master plan. The public input period remained open for 37 days from 24 July 2024 to 30 August 2024. At the public information open house, a presentation was viewable that included the following topics:

- What is a Master Plan?
- What a Master Plan is Not
- Why Revise a Master Plan?
- Overview of the National Environmental Policy Act (NEPA) process
- Master Planning Process
- Instructions for submitting comments

For Kaw Lake, USACE received twelve (12) comments.

Table 7.1 Comments from Initial Comment Period

Comment	Response
<p>Would like the millet to be planted in Kaw Lake.</p>	<p>Noted. A project such as Kaw Lake serves many missions, creating quality habitat for migrating bird species and public hunting opportunities are certainly two of the many missions we support. Millet planting did return to Kaw Lake in 2024; carried out by both USACE (seeding by airboat) and ODWC (aerial seeding) to promote improved habitat and hunting opportunities. The millet program may vary some from what it was previous to 2016, but both agencies plan to work together to continue the success of the millet seeding at Kaw Lake while maintaining balance with the other missions of the Kaw Project such as flood control, recreation, water supply, water quality control and hydropower.</p>
<p>Good Evening, Kaw Lake has been a staple for waterfowl hunting in not only our state but our country for years, brining in revenue to the surrounding economy. My family has owned land around the lake forever. I grew up going to t he pasture with my grandpa and hunting with family for the last 20 years. Back when the lake was air-seeded with millet, the duck hunting on our ground was incredible - it still has its days - but it has changed completely since it has stopped. The decision to bring this back would change and sculpt not only the hunting on the lake but all the ponds in the surrounding area, back to what it used to be. I would love nothing more for my future children and their friends to have the opportunity to understand and appreciate how incredible the area can be</p>	<p>Noted. A project such as Kaw Lake serves many missions, creating quality habitat for migrating bird species and public hunting opportunities are certainly two of the many missions we support. Millet planting did return to Kaw Lake in 2024; carried out by both USACE (seeding by airboat) and ODWC (aerial seeding) to promote improved habitat and hunting opportunities. The millet program may vary some from what it was previous to 2016, but both agencies plan to work together to continue the success of the millet seeding at Kaw Lake while maintaining balance with the other missions of the Kaw Project such as flood control, recreation, water supply, water quality control and hydropower.</p>

Comment	Response
<p>for waterfowl hunting when true management and habitat conservation is taking place. Bringing this back would change my personal hunting experiences, and the future generations for years, and bring even more revenue back to the area. Thank you for listing to my comments and taking them into consideration.</p>	
<p>I think bringing back the millet to Kaw would benefit us hunters, and also benefit our local economy. Waterfowl hunters used to come from all over the country to hunt Kaw lake. Between the purchase of hunting licenses, hotel rooms, food, and boat permits it would financially benefit our community. It would also give the local and migratory birds a steady food source.</p>	<p>Noted. A project such as Kaw Lake serves many missions, creating quality habitat for migrating bird species and public hunting opportunities are certainly two of the many missions we support. Millet planting did return to Kaw Lake in 2024; carried out by both USACE (seeding by airboat) and ODWC (aerial seeding) to promote improved habitat and hunting opportunities. The millet program may vary some from what it was previous to 2016, but both agencies plan to work together to continue the success of the millet seeding at Kaw Lake while maintaining balance with the other missions of the Kaw Project such as flood control, recreation, water supply, water quality control and hydropower.</p>
<p>I would love to see the millet program reinstated where possible and water level control to take migrating fowl more into consideration. Allowing for water level drop some for summer millet seeding and retaining water in the fall/winter. On years when the water level is right, Kaw lake has been a major resting area for migrating waterfowl as well as a premier hunting destination</p>	<p>Noted. A project such as Kaw Lake serves many missions, creating quality habitat for migrating bird species and public hunting opportunities are certainly two of the many missions we support. Millet planting did return to Kaw Lake in 2024; carried out by both USACE (seeding by airboat) and ODWC (aerial seeding) to promote improved habitat and hunting opportunities. The millet program may vary some from what it was previous to 2016, but both agencies plan to work together to continue the success of the</p>

Comment	Response
	millet seeding at Kaw Lake while maintaining balance with the other missions of the Kaw Project such as flood control, recreation, water supply, water quality control and hydropower.
<p>I believe the millet program should be reinstated. I have a great friend that used to come every year from Wisconsin just to hunt ducks. He hunted every day both sides of the split. There used to be an abundance of birds through the winter. Would love to see the program come back and hopefully bring the bird population back up.</p>	<p>Noted. A project such as Kaw Lake serves many missions, creating quality habitat for migrating bird species and public hunting opportunities are certainly two of the many missions we support. Millet planting did return to Kaw Lake in 2024; carried out by both USACE (seeding by airboat) and ODWC (aerial seeding) to promote improved habitat and hunting opportunities. The millet program may vary some from what it was previous to 2016, but both agencies plan to work together to continue the success of the millet seeding at Kaw Lake while maintaining balance with the other missions of the Kaw Project such as flood control, recreation, water supply, water quality control and hydropower.</p>
<p>I think planting kaw lake back to millet is great for conservation, but also will benefit Ponca City and surrounding towns with more income that being how many different out of staters come to hunt that lake especially when it gets planted back to millet.</p>	<p>Noted. A project such as Kaw Lake serves many missions, creating quality habitat for migrating bird species and public hunting opportunities are certainly two of the many missions we support. Millet planting did return to Kaw Lake in 2024; carried out by both USACE (seeding by airboat) and ODWC (aerial seeding) to promote improved habitat and hunting opportunities. The millet program may vary some from what it was previous to 2016, but both agencies plan to work together to continue the success of the millet seeding at Kaw Lake while maintaining balance with the other missions of the Kaw Project such as flood</p>

Comment	Response
	control, recreation, water supply, water quality control and hydropower.
<p>Not long ago every duck hunter in the nation had heard of kaw lake and its plentiful and bountiful hunting. People came from all over the world to experience it. However that's no longer the case. Planting millet only improves the hunting and bolsters the local economy in some rather slow months. Planting millet on kaw is something every local and many non-local waterfowl hunters reminisces about. The commercialization of the waterfowl industry has only made it more imperative to plant millet on Kaw to insure casuals still have a place to chase their passion that cannot be commercialized. I beg you to please consider the points made above and reevaluate the situation</p>	<p>Noted. A project such as Kaw Lake serves many missions, creating quality habitat for migrating bird species and public hunting opportunities are certainly two of the many missions we support. Millet planting did return to Kaw Lake in 2024; carried out by both USACE (seeding by airboat) and ODWC (aerial seeding) to promote improved habitat and hunting opportunities. The millet program may vary some from what it was previous to 2016, but both agencies plan to work together to continue the success of the millet seeding at Kaw Lake while maintaining balance with the other missions of the Kaw Project such as flood control, recreation, water supply, water quality control and hydropower.</p>
<p>I would like to see the millet program brought back to Kaw lake. With that being said I know the water level being dropped is an issue. If we can drop the lake in late June and early July allowing us to plant the lake to millet. Knowing that the new lake level would need to be 1012-1023 allowing the water rights that are reserved at 1010 could continue to stay as they are now.</p>	<p>Noted. A project such as Kaw Lake serves many missions, creating quality habitat for migrating bird species and public hunting opportunities are certainly two of the many missions we support. Millet planting did return to Kaw Lake in 2024; carried out by both USACE (seeding by airboat) and ODWC (aerial seeding) to promote improved habitat and hunting opportunities. The millet program may vary some from what it was previous to 2016, but both agencies plan to work together to continue the success of the millet seeding at Kaw Lake while maintaining balance with the other missions of the Kaw Project such as flood control, recreation, water supply, water quality control and hydropower.</p>

Comment	Response
<p>I am participating in the NEPA and am proposing we revise the planting of the millet on the mud flats of kaw lake. Bringing this act back to the public would be a huge positive input, to the wildlife and to the aquatic life.</p>	<p>Noted. A project such as Kaw Lake serves many missions, creating quality habitat for migrating bird species and public hunting opportunities are certainly two of the many missions we support. Millet planting did return to Kaw Lake in 2024; carried out by both USACE (seeding by airboat) and ODWC (aerial seeding) to promote improved habitat and hunting opportunities. The millet program may vary some from what it was previous to 2016, but both agencies plan to work together to continue the success of the millet seeding at Kaw Lake while maintaining balance with the other missions of the Kaw Project such as flood control, recreation, water supply, water quality control and hydropower.</p>
<p>We enjoy bringing our RV and camping at Corps Lakes and areas. We would like to see improvements around campsites, level ground, no holes to trip in and level campsites. We would also like improvements in the restrooms and showers. It would be nice to see regular cleaning especially on holidays and when the park is full. Thank you.</p>	<p>Noted. USACE staff continuously assess and request funding to make recreational and amenity improvements in the public use areas at Kaw Lake. As funding allows, items such as these are ranked and discussed in terms of project priority. Kaw Lake has had some success in recent years in replacing restroom/ shower facilities around the project and this will continue to be an item of importance along with campsite and utility upgrades.</p>
<p>Have 50 amp hook-ups and sewer at campsites. Many people would be willing to pay more for these sites. Have a building at campgrounds with heat/ac and small kitchen for groups to rent (Sarge Creek). Have pavilion at campgrounds (coon, Washunga) for groups to rent.</p>	<p>Noted. USACE staff continuously assess and request funding to make recreational and amenity improvements in the public use areas at Kaw Lake. As funding allows, items such as these are ranked and discussed in terms of project priority. Kaw Lake has had some success in recent years in upgrading recreational sites and facilities around the project and this will continue to be an item of importance moving forward through our budget</p>

Comment	Response
	requests. Plans are in place to construct a new picnic pavilion at Coon Creek this off-season for public use.
EPA submitted an Environmental document that provide a detailed discussion of ambient air conditions, National Ambient Air Quality Standards, and non-NAAQS pollutants, criteria pollutant nonattainment areas, and potential air quality impacts of the proposed project.	Concur

7.3 PUBLIC AND AGENCY REVIEW OF DRAFT MP, EA, AND FONSI

This section will be completed following the draft release, public input process, and 30-day comment period. Any comments received and government responses will be added.

CHAPTER 8 – SUMMARY OF RECOMMENDATIONS

8.1 SUMMARY OVERVIEW

The preparation of this Master Plan for Kaw Lake followed the USACE master planning guidance in ER 1130-2-550 and EP 1130-2-550, both dated 30 January 2013. Three major requirements set forth in the guidance include the preparation of contemporary Resource Objectives, Classification of project lands using the approved classification standards, and the preparation of a Resource Plan describing in broad terms how the land in each of the land classifications will be managed into the foreseeable future. Additional important requirements include rigorous public involvement throughout the process, consideration of regional recreation and natural resource management priorities identified by other federal, state, and municipal authorities, and consultation with local Tribal Nations.

The study team endeavored to follow this guidance to prepare a Master Plan that will provide for enhanced recreational opportunities for the public, improve environmental quality, and foster a management philosophy conducive to existing and projected USACE staffing levels at Kaw Lake as also reflected in ER 1130-2-540. Factors considered in the Plan development were identified through public involvement and review of regional and statewide planning documents including the 2023 Oklahoma SCORP, Mobility Plans by ODOT, EPA Ecoregion Handbook and descriptions, and the USFWS IPAC website. This Master Plan will guide the long-term sustainability of the outdoor recreation program and natural resources associated with Kaw Lake.

8.2 LAND CLASSIFICATION PROPOSALS

A key component in preparing this Master Plan was examining prior land classifications and addressing the needed transition to the updated land classification standards that reflect how lands are being managed now and will be managed in the foreseeable future. The updated land classification standards will also comply with current USACE standards. Public comment was solicited to assist in making these land reclassification decisions. Consultation was also conducted with Tribal Nations to provide input on cultural and natural resources to help inform the land classification decisions. Chapter 7 of this Plan describes the public involvement process and Table 7.1 provides a summary of public comments received. After analyzing public comment, examining recreational trends, and taking into account regional natural resource management priorities, USACE team members reclassified the Federal lands and waters associated with Kaw Lake as described in Table 8.1 and explained in Table 8.2.

Table 8.1 Change from 1971 Land and Water Surface Classifications to 2025 Land and Water Surface Classification

Prior Land Classifications (1971)	Acres	Proposed Land Classifications (2025)	Acres
Project Operations (PO)	143	Project Operations (PO)	127
Environmentally Sensitive Areas (ESA)	0	Environmentally Sensitive Areas (ESA)	2,407
Operations Recreation - Intensive Use (OR/IU)	4,154	High Density Recreation (HDR)	3,022
Operations Recreation - Low Density (OR/LD)	6,261	Multiple Resource Management Lands - Low Density Recreation (LDR)	4,568
Operations Recreation - Quasi-Public	112		
State Area (SA)	11,692		
Wildlife Management - National	8,588	Wildlife Management (WM)	20,370
Wildlife Management - Recreational Lands (WMRL)	119		
TOTAL LAND ACRES	31,069	TOTAL LAND ACRES	30,494
Prior Water Surface Classifications (1971)	Acres	Proposed Water Surface Classifications (2025)	Acres
Water	18,840	Open Recreation (WS/OR)	19,192
		Restricted (WS/R)	19
		No Wake (WS/NW)	216
TOTAL WATER SURFACE ACRES	18,840	TOTAL WATER SURFACE ACRES	19,427
TOTAL FEE	49,909	TOTAL FEE	49,921

Total fee simple title acreage differences from the 1971 total to the 2025 totals are due to improvements in measurement technology, deposition/siltation, and erosion. Totals also differ due to rounding while adding parcels.

Table 8.2 lists the descriptions and justifications for the reclassification of USACE lands at Kaw Lake. The team examined numerous parcels that ranged from a few acres to hundreds of acres, and rather than describing how each individual parcel was reclassified, the changes are grouped by classification category. A few examples of changes made to individual parcels are provided to assist in understanding how and why changes were made. The prior land classification Operations Recreation – Intensive Use (OR/IU) is similar to the current High Density Recreation (HDR) classification; and the prior State Area, Wildlife Management National, and Wildlife

Management – Recreation Land (WMRL) classifications are similar to the current MRML – Wildlife Management (WM) classification. The following table describes changes from the prior classification to current classifications but combines the similar classifications for ease of explaining changed acres.

Table 8.2 Changes and Justifications for Land Classifications ⁽¹⁾

Land Classification	Description of Changes ⁽²⁾	Justification
Project Operations (PO)	<p>The net decrease in PO lands from 143 to 127 is due to the following:</p> <ul style="list-style-type: none"> • 35 PO acres to HDR • 107 PO acres to LDR • 1 PO acre to WS/OR • 117 acres from OR/IU • 10 acres from Not in Fee 	<p>All lands classified as PO are managed and used primarily in support of critical operational requirements related to the primary missions of flood risk management and water conservation, including lands that were previously classified as OU/IU in 1971. Lands classified in 1971 as PO are reclassified to either HDR, LDR or WS/OR to appropriately capture the current use. Previously classified OR/IU lands at the dam structure and project office were corrected to PO. Lands previously not in fee in 1971 were classified to PO at the Arkansas City levee system.</p>
High Density Recreation (HDR)	<p>The net decrease in HDR lands from 4,154 to 3,022 is due to the following:</p> <ul style="list-style-type: none"> • 572 acres to WM • 344 acres to ESA • 273 acres to LDR • 117 acres to PO • 114 acres to WS/OR • 29 acres to WS/NW • 1 acre to WS/L • 119 acres from WM/RL • 3 acres from WM/N • 99 acres from OR/QP • 42 acres from OR/LD • 35 acres from PO • 19 acres from WATER 	<p>The net decrease in HDR lands resulted from acres near McFadden Cove reclassified from OR/LD to reflect current use. PO lands were reclassified to HDR to indicate current use. In addition, water acres throughout the project along the shoreline were reclassified as detailed GIS data is used in the analysis.</p>

Land Classification	Description of Changes ⁽²⁾	Justification
Low Density Recreation (LDR)	<p>The net decrease in Low Density Recreation from 6,261 to 4,568 acres resulted from the following:</p> <ul style="list-style-type: none"> • 288 acres to ESA • 1,546 acres to WM • 42 acres to HDR • 271 acres to WS/OR • 273 acres from (OR/IU) • 107 acres from PO • 75 acres from water 	<p>The net decrease in LDR is due to the following: Reclassification of 288 acres was determined by the study team to be necessary to provide a high level of protection for those areas supporting significant habitat, views, or cultural sites; 1,546 acres were reclassified as WM and 42 acres as HDR to reflect current use; Water acres throughout the project along the shoreline were reclassified as detailed GIS data is used in the analysis.</p> <p>(Note: Acres associated with the now closed Ponca Cove recreation area were reclassified from OR/IU to reflect current use of LDR and PO lands were corrected to LDR to indicate current use.)</p>
Wildlife Management (WM)	<p>The net increase in WM from 8,707 to 20,370 acres resulted from the following:</p> <ul style="list-style-type: none"> • 572 acres from OR/IU • 1,546 acres from OR/LD • 10,411 acres from State Area (SA) • 13 acres from water • 667 acres to ESA • 122 acres to HDR • 92 acres to WS/OR 	<p>The net increase in WM is primarily due to a name change as WM/N and State Area (SA) is not used as a land classification under the current EP. Acres associated with the Sarge Creek Cove, Trader's Bend, and Bear Creek Cove recreation areas were reclassified from OR/IU to reflect current use of WM. Fee lands along the Arkansas River upstream of Washunga Bay and Coon Creek Cove were changed from OR/LD to WM to reflect current and projected use. In addition, water acres throughout the project along the shoreline were reclassified as detailed GIS data is used in the analysis.</p>
Environmentally Sensitive Areas (ESA)	<p>The classification of 2,407 acres as Environmentally Sensitive Areas resulted from the following:</p> <ul style="list-style-type: none"> • 344 acres of OR/IU • 288 acres of OR/LD • 1,072 acres of SA 	<p>Reclassification of 2,407 acres was determined by the study team to be necessary to provide a high level of protection for those areas supporting significant habitat, views, and cultural sites. Classifying these areas as ESA</p>

Land Classification	Description of Changes ⁽²⁾	Justification
	<ul style="list-style-type: none"> • 37 acres of water • 666 acres of WM/N 	will afford these areas with the highest level of protection from disturbance.

(1) The land classification changes described in this table are the result of changes to individual parcels of land ranging from a few acres to several hundred acres. New acreages were measured using more accurate GIS technology, thus total changes will not equal individual changes. The acreage numbers provided are approximate.

(2) Acreages are based on GIS measurements and may vary from net difference detailed in Table 8.1.

CHAPTER 9 – BIBLIOGRAPHY

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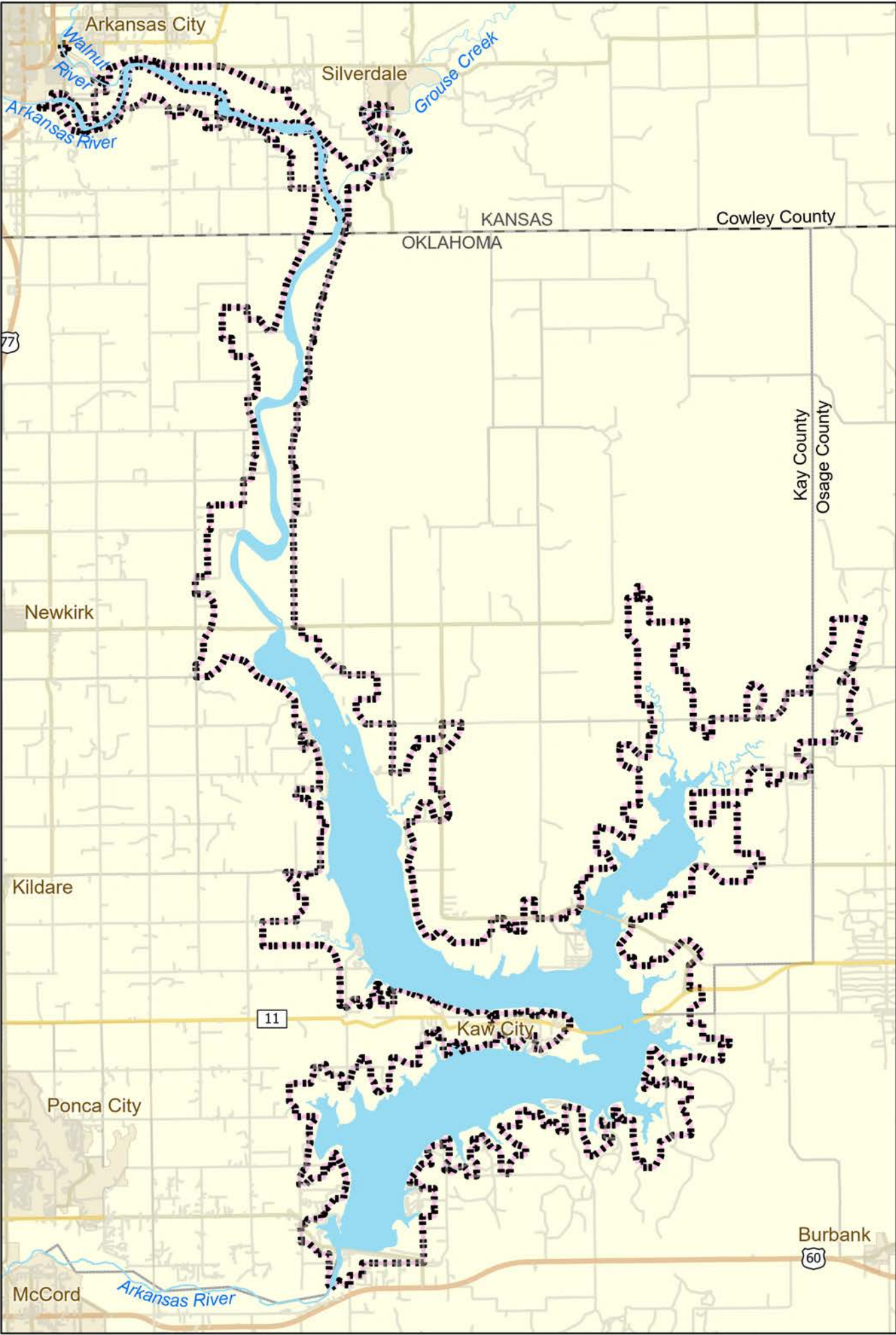
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APPENDIX A – LAND CLASSIFICATION, MANAGING AGENCIES, AND RECREATION MAPS



INDEX TO MASTER PLAN MAPS

GENERAL

MAP NO.	TITLE
KAW25MP-OI-00	PROJECT LOCATION & INDEX TO MAPS
KAW25MP-OM-01	LAND MANAGING ENTITIES
KAW25MP-OP-01	SEAPLANE GUIDE
KAW25MP-OW-01	WATER SURFACE CLASSIFICATIONS

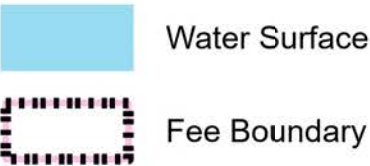
LAND AND WATER CLASSIFICATIONS

MAP NO.	TITLE
KAW25MP-OC-00	LAND AND WATER CLASSIFICATIONS (00)
KAW25MP-OC-01	LAND AND WATER CLASSIFICATIONS (01)
KAW25MP-OC-02	LAND AND WATER CLASSIFICATIONS (02)
KAW25MP-OC-03	LAND AND WATER CLASSIFICATIONS (03)

RECREATIONAL AREAS

MAP NO.	TITLE
KAW25MP-OR-0A	MANAGED RECREATIONAL AREAS
KAW25MP-OR-0B	PLATE PARK INDEX
KAW25MP-OR-01	BEAR CREEK COVE
KAW25MP-OR-02	WASHUNGA BAY
KAW25MP-OR-03	SARGE CREEK COVE
KAW25MP-OR-04	BURBANK LANDING
KAW25MP-OR-05	OSAGE COVE
KAW25MP-OR-06	SANDY BEACH
KAW25MP-OR-07	SANDY PARK
KAW25MP-OR-08	FISHERMAN'S BEND
KAW25MP-OR-09	McFADDEN COVE AND OVERLOOK
KAW5MP-OR-10	PIONEER PARK
KAW25MP-OR-11	COON CREEK COVE
KAW25MP-OR-12	TRADER'S BEND

THIS PRODUCT IS REPRODUCED FROM GEOSPATIAL INFORMATION PREPARED BY THE U.S. ARMY CORPS OF ENGINEERS. GIS DATA AND PRODUCT ACCURACY MAY VARY. THEY MAY BE DEVELOPED FROM SOURCES OF DIFFERING ACCURACY. ACCURATE ONLY FOR CERTAIN SCALES, BASED ON MODELING OR INTERPRETATION, INCOMPLETE WHILE BEING CREATED OR REVISED. USING GIS PRODUCTS FOR PURPOSES OTHER THAN THOSE FOR WHICH THEY WERE CREATED MAY YIELD INACCURATE OR MISLEADING RESULTS.



U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

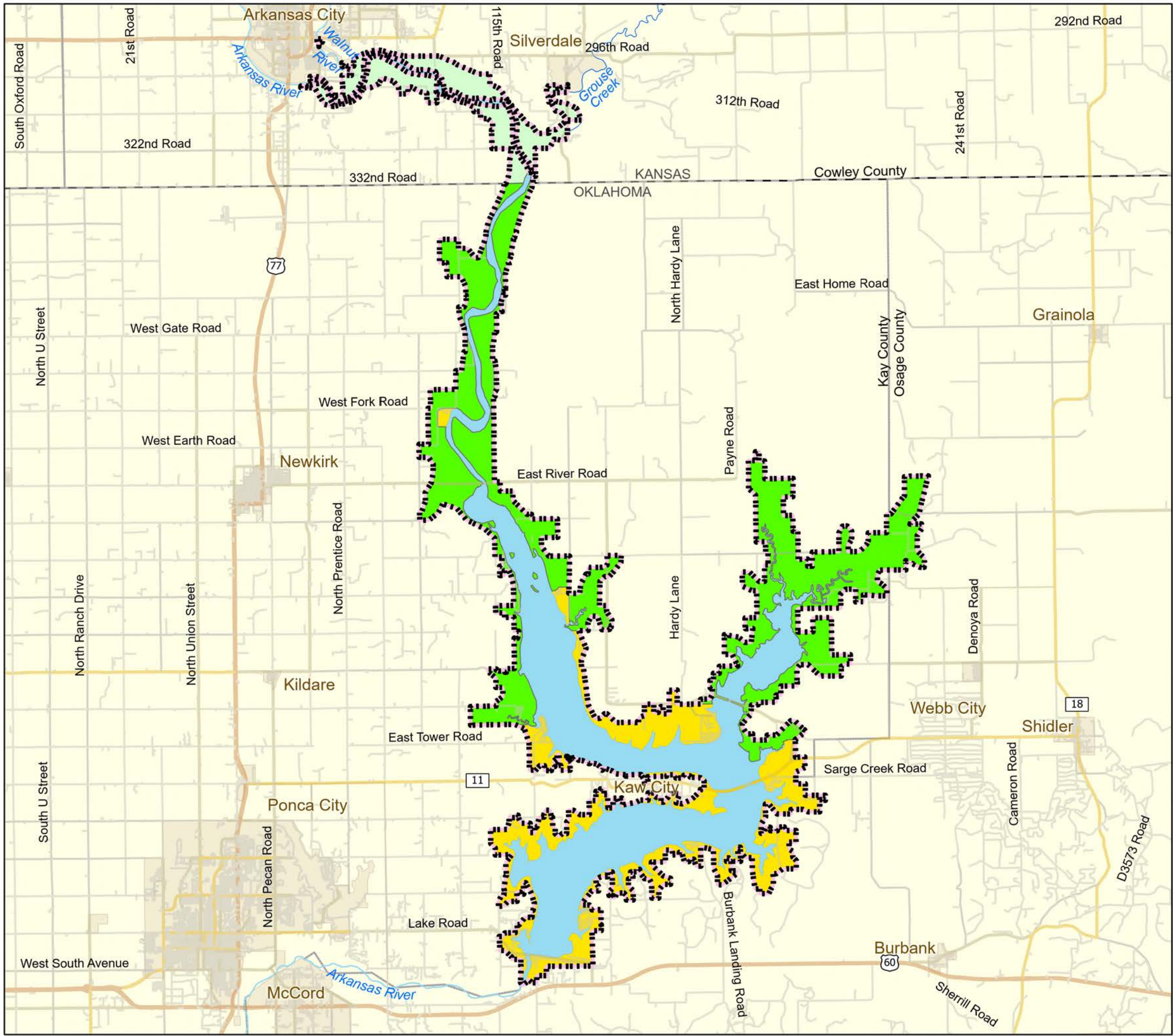
ARKANSAS RIVER BASIN KAW, OKLAHOMA



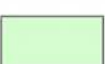


KAW LAKE MASTER PLAN


PROJECT LOCATION AND MAP INDEX



DATE:	MAP NO.
OCTOBER 2025	KAW25MP-OI-00



-  U.S. Army Corps of Engineers
-  Oklahoma Department of Wildlife Conservation
-  Kansas Department of Wildlife and Parks
-  Water Surface
-  Fee Boundary





**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

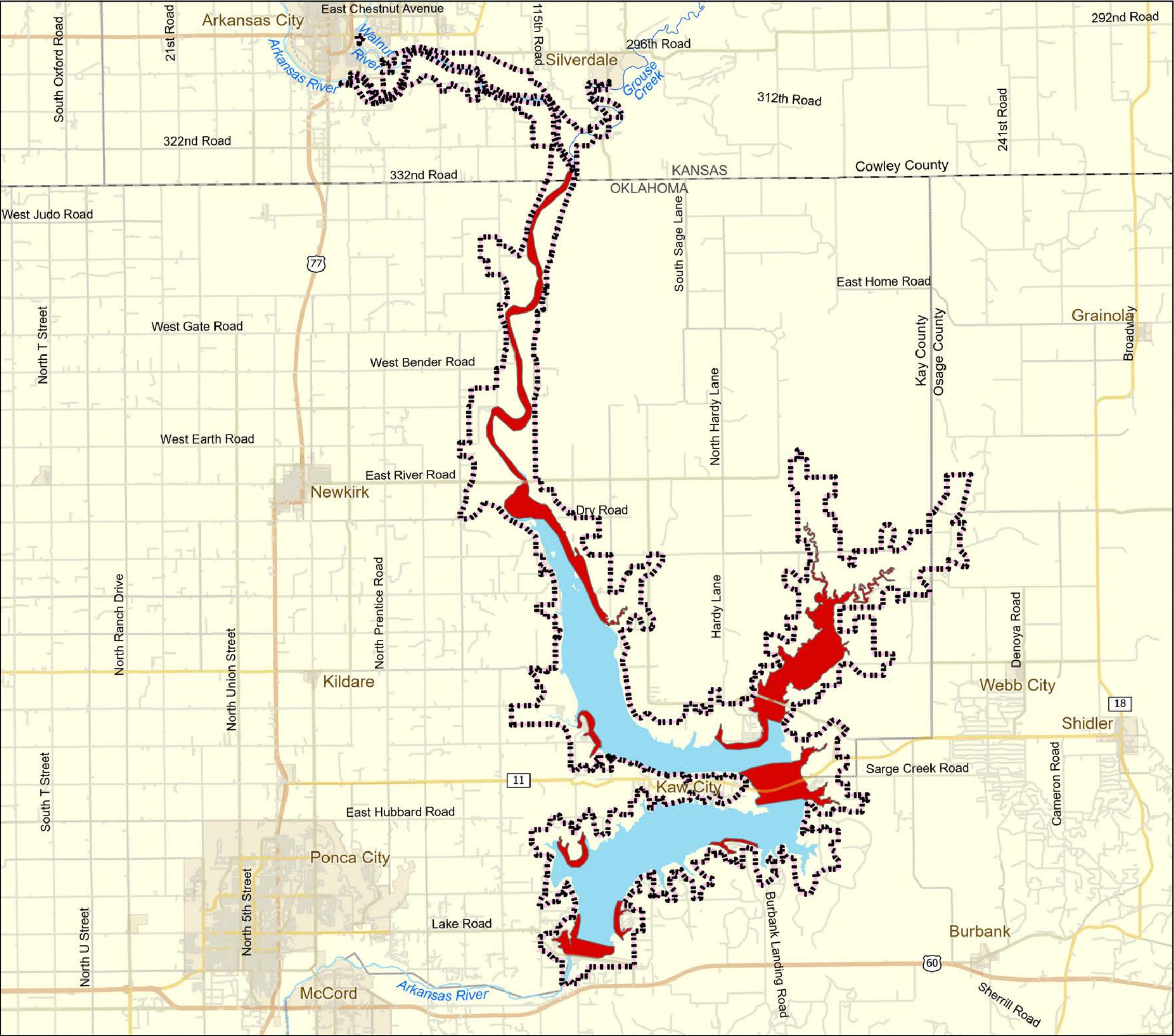
KAW, OKLAHOMA

**KAW LAKE MASTER PLAN
LAND MANAGING ENTITIES**



DATE:
OCTOBER 2025


MAP NO.
KAW25MP-OM-01



- Restricted Area
- Water Surface
- Fee Boundary

**TAKEOFF AND LANDING PROHIBITED
WITHIN 2,000 FEET OF DAM
STRUCTURE, WITHIN 2,500 FEET OF
BRIDGES AND WITHING 700 FEET OF
RECREATION AREAS.**

**OPERATION OF A SEAPLANE AT
U.S. ARMY CORPS OF ENGINEERS
PROJECTS IS AT RISK OF THE
PLANES OWNER, OPERATOR,
AND/OR PASSENGER(S).**





**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASINKAW, OKLAHOMA

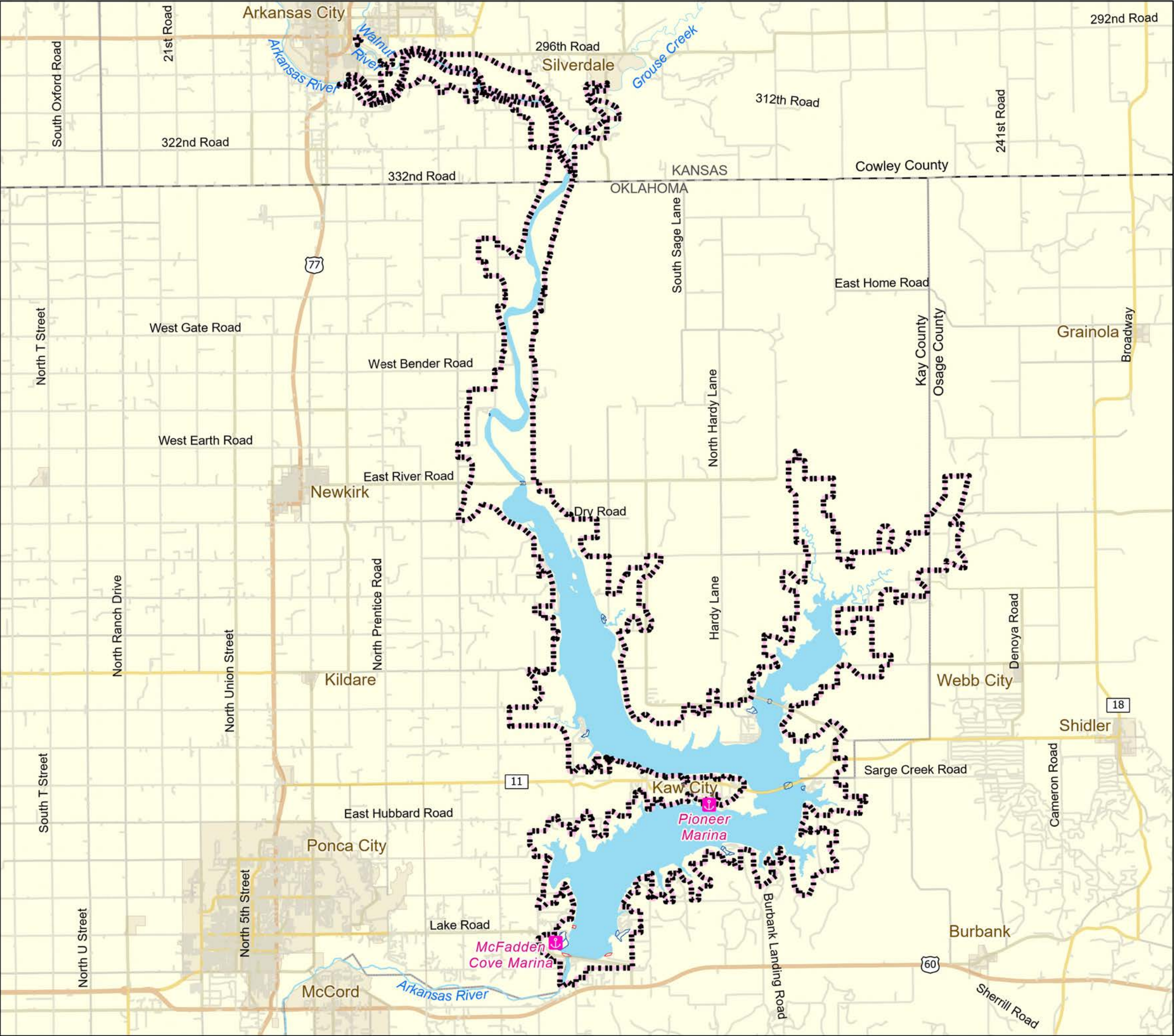
KAW LAKE MASTER PLAN

SEA PLANE GUIDE




DATE:
OCTOBER 2025

MAP NO.
KAW25MP-OP-01



-  Marina
-  Water Surface: Open Recreation
-  Water Surface: No Wake
-  Water Surface: Restricted
-  Fee Boundary





**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASINKAW, OKLAHOMA

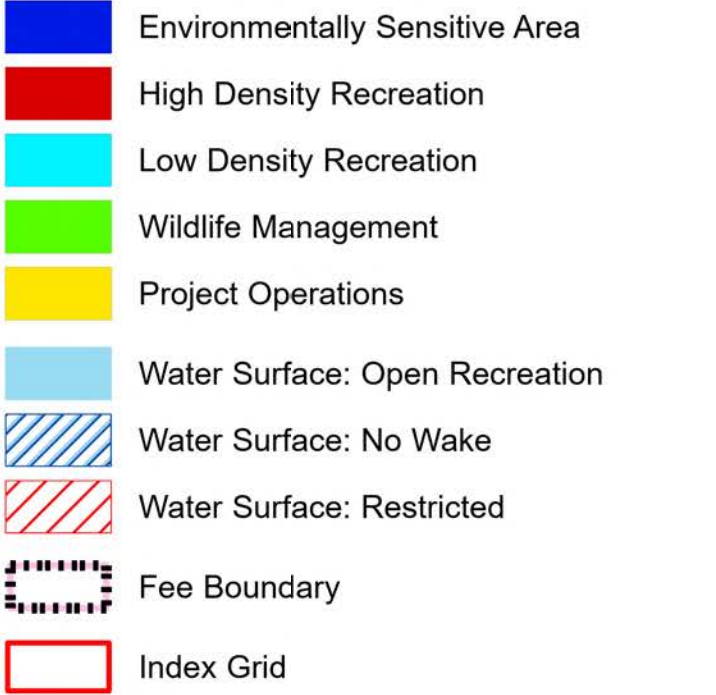
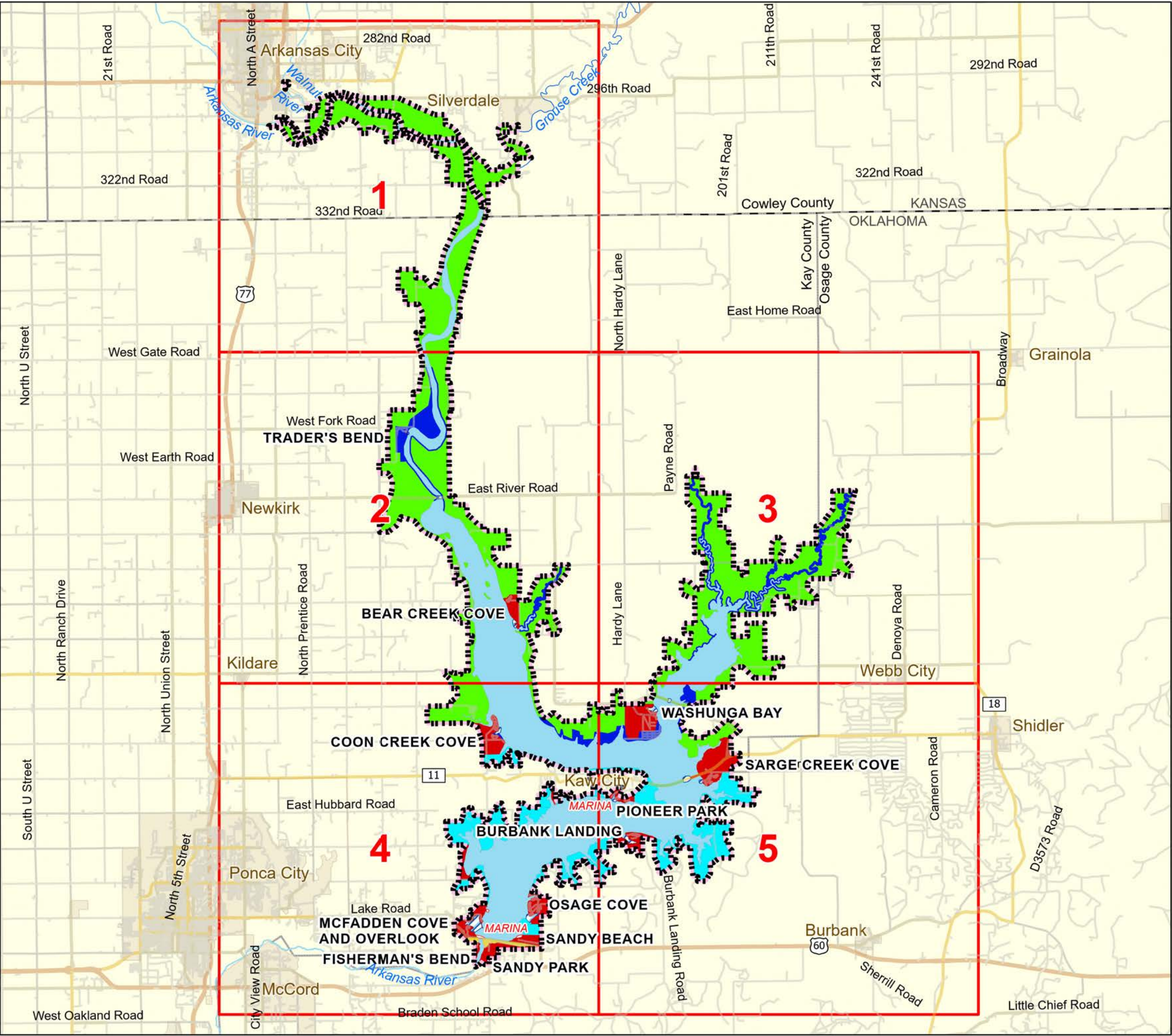
KAW LAKE MASTER PLAN


WATER SURFACE CLASSIFICATIONS AND MARINAS



DATE:
OCTOBER 2025

MAP NO.
KAW25MP-OW-01






**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

LAND AND WATER CLASSIFICATIONS
(INDEX SHEET 00)



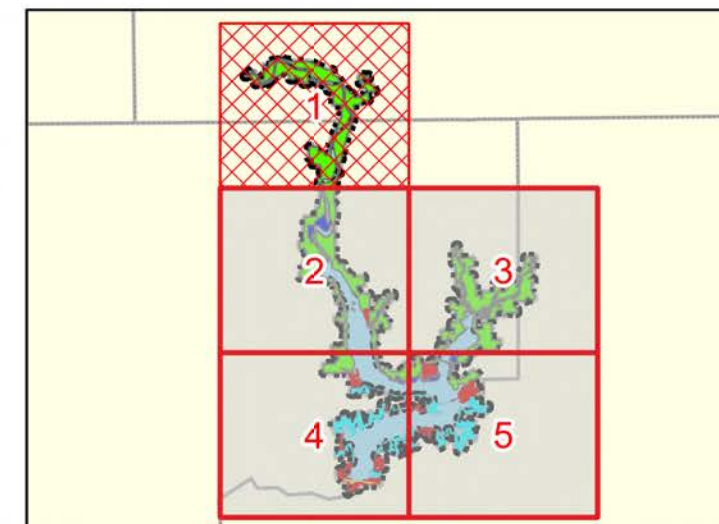
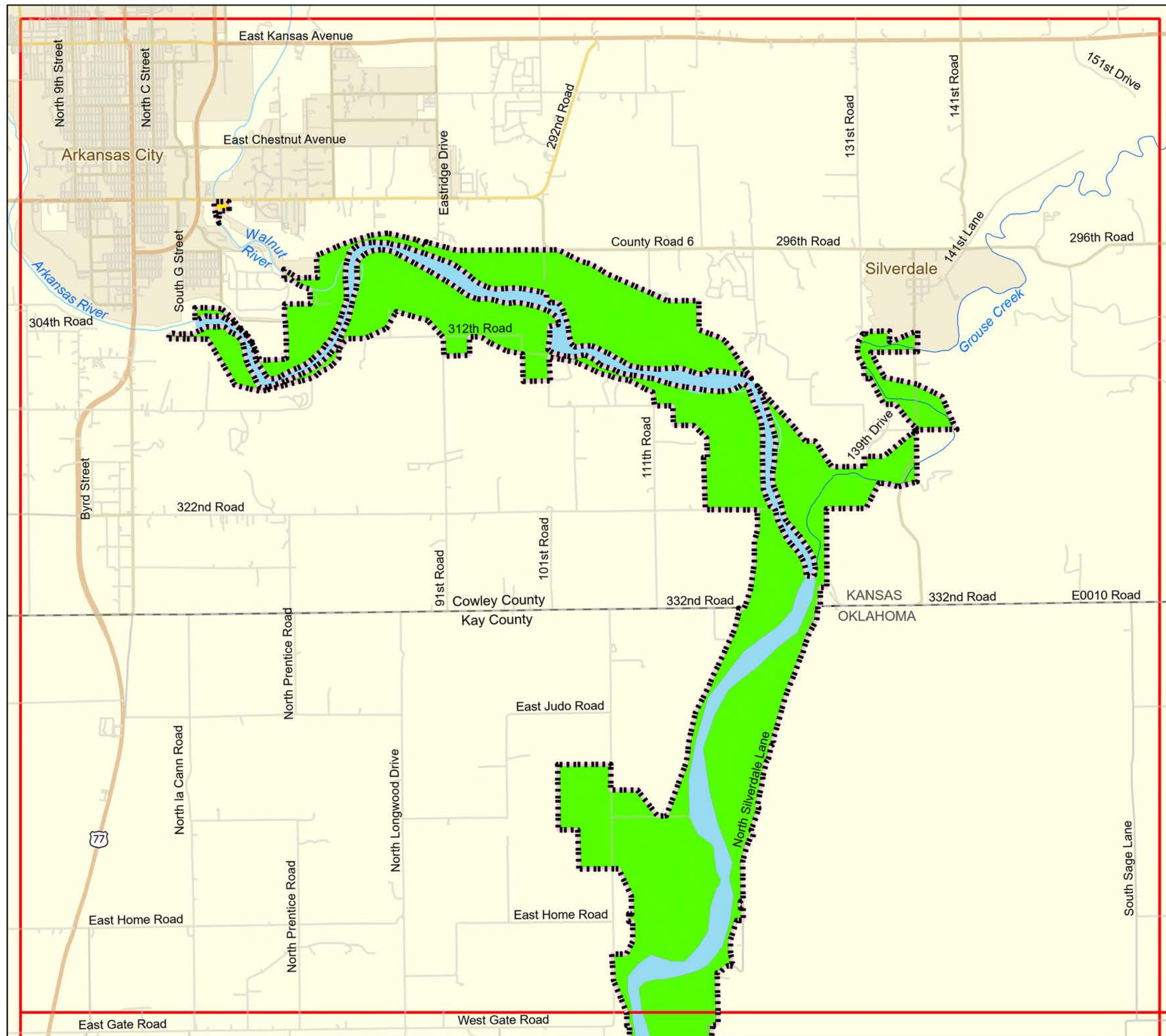
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DATE:

OCTOBER 2025

MAP NO.

KAW25MP-OC-00



-  Wildlife Management
-  Project Operations
-  Water Surface: Open Recreation
-  Fee Boundary
-  Index Grid



**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

LAND AND WATER CLASSIFICATIONS (INDEX SHEET 01)



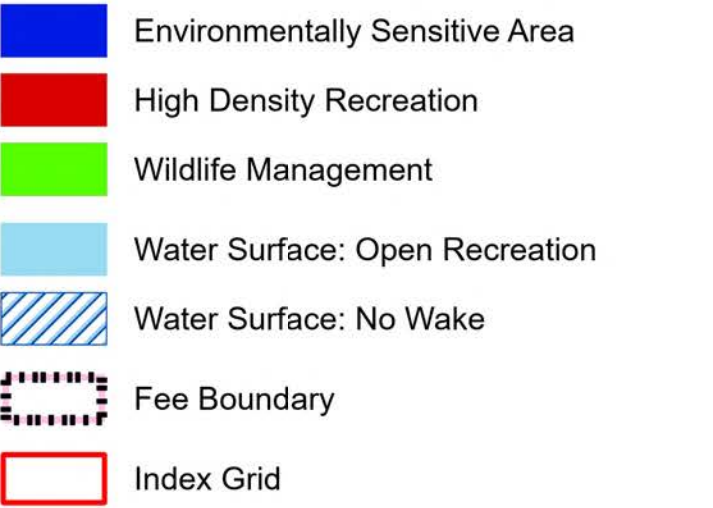
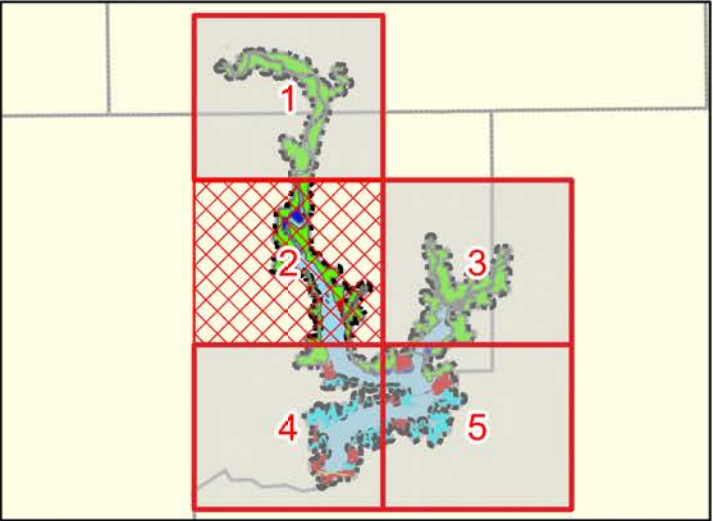
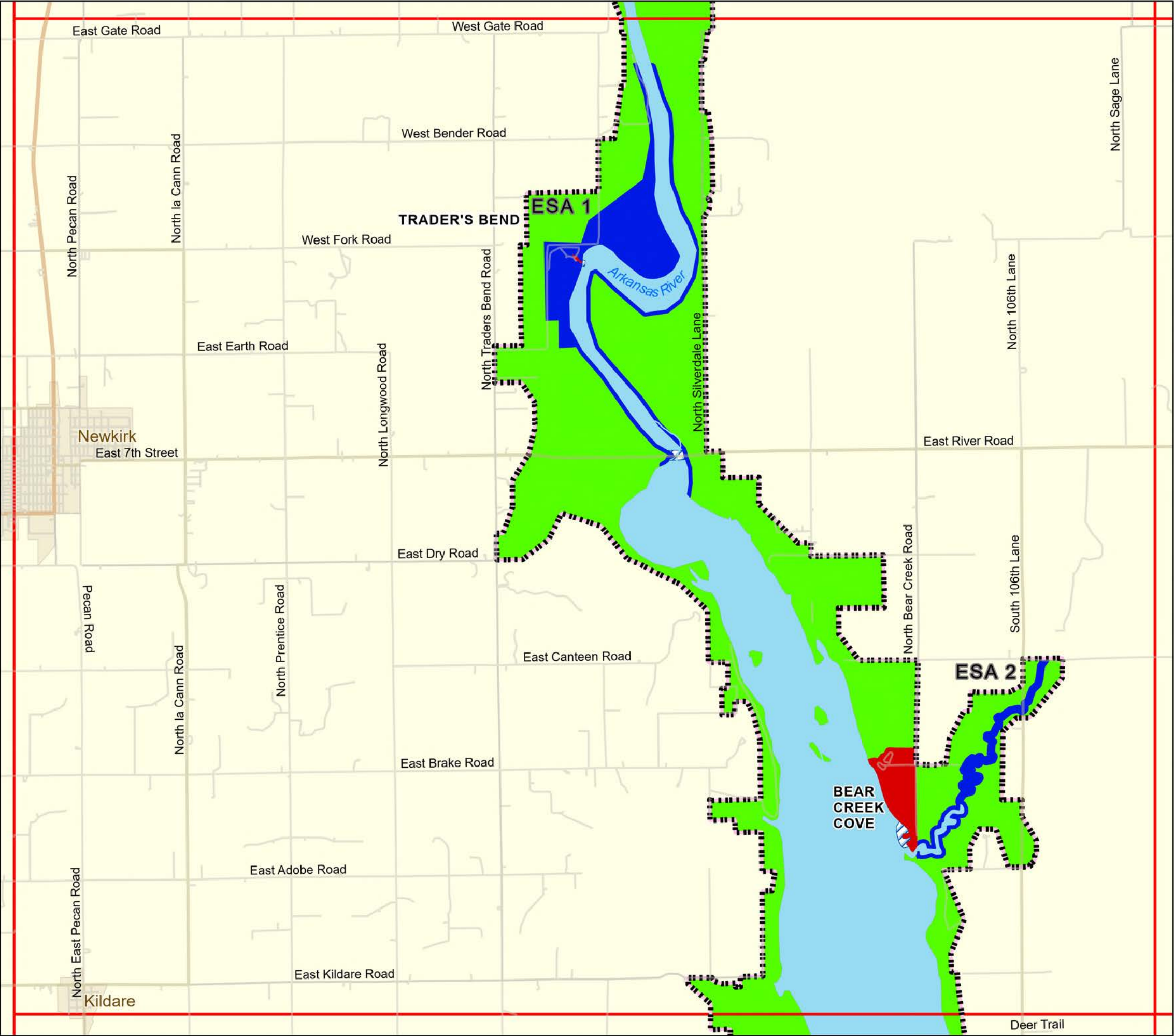
0 3,000 6,000 12,000 Feet


DATE:

OCTOBER 2025

MAP NO.

KAW25MP-OC-01







**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASINKAW, OKLAHOMA

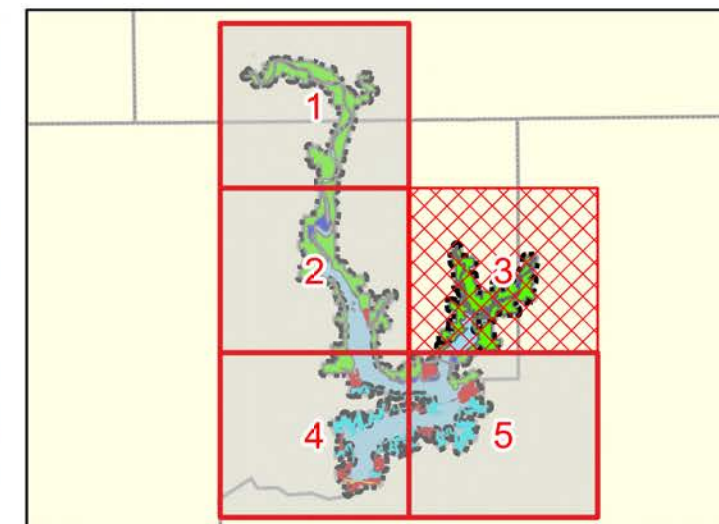
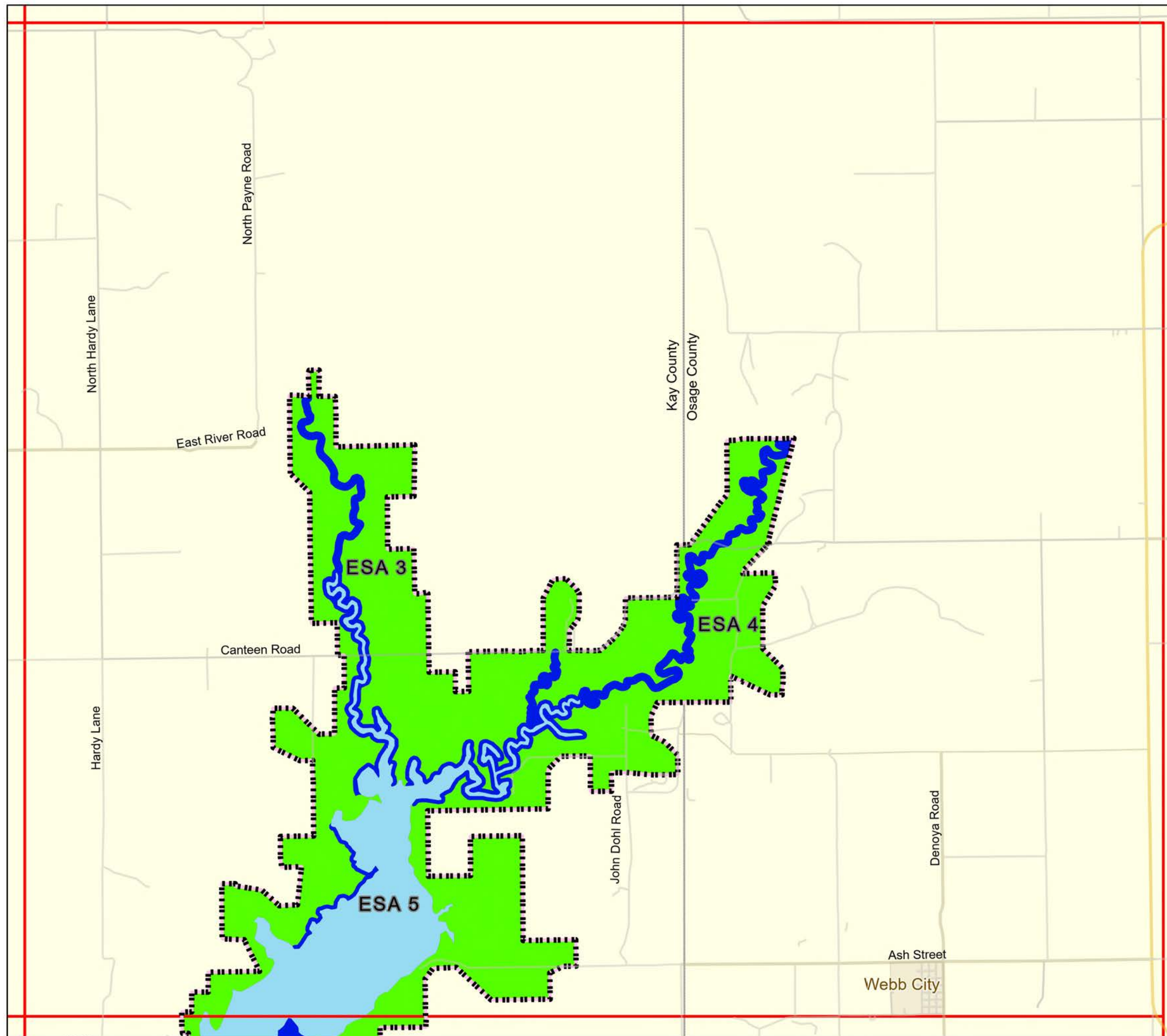
KAW LAKE MASTER PLAN

LAND AND WATER CLASSIFICATIONS (INDEX SHEET 02)



DATE:
OCTOBER 2025

MAP NO.
KAW25MP-OC-02



-  Environmentally Sensitive Area
-  Wildlife Management
-  Water Surface: Open Recreation
-  Fee Boundary
-  Index Grid



**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

LAND AND WATER CLASSIFICATIONS (INDEX SHEET 03)



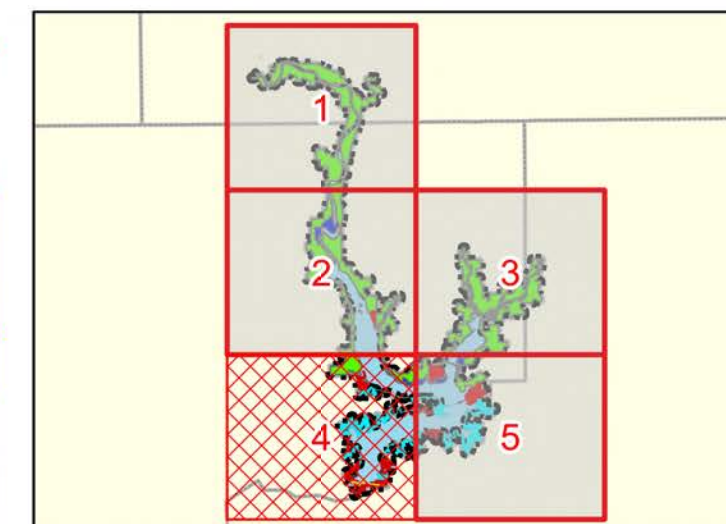
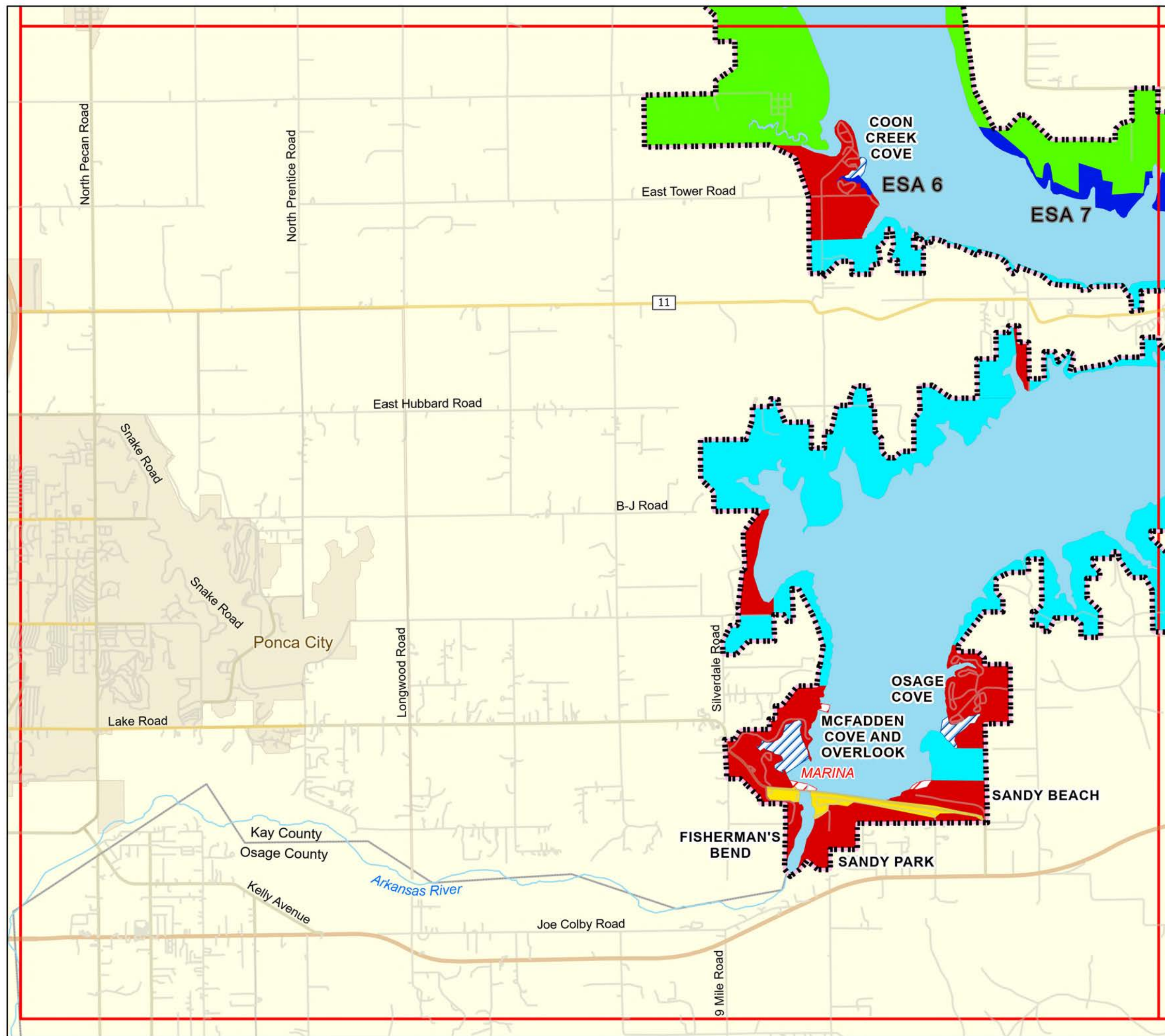
0 3,000 6,000 12,000 Feet

DATE:

OCTOBER 2025

MAP NO.

KAW25MP-OC-03



- Environmentally Sensitive Area
- High Density Recreation
- Low Density Recreation
- Wildlife Management
- Project Operations
- Water Surface: Open Recreation
- Water Surface: No Wake
- Water Surface: Restricted
- Fee Boundary
- Index Grid



**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

LAND AND WATER CLASSIFICATIONS (INDEX SHEET 04)



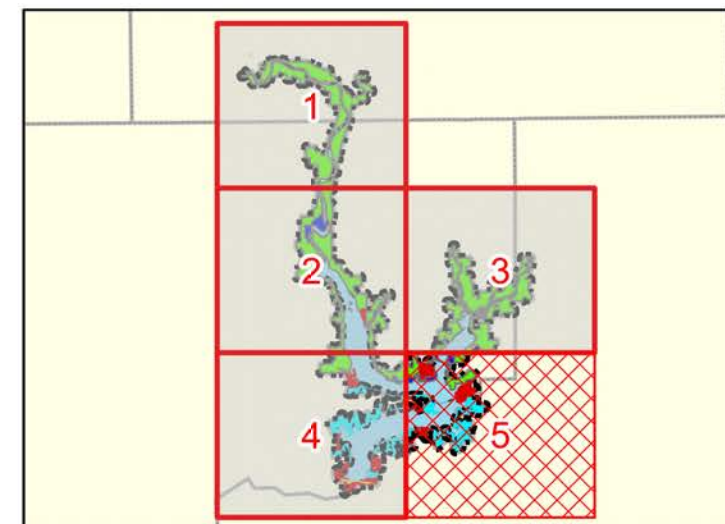
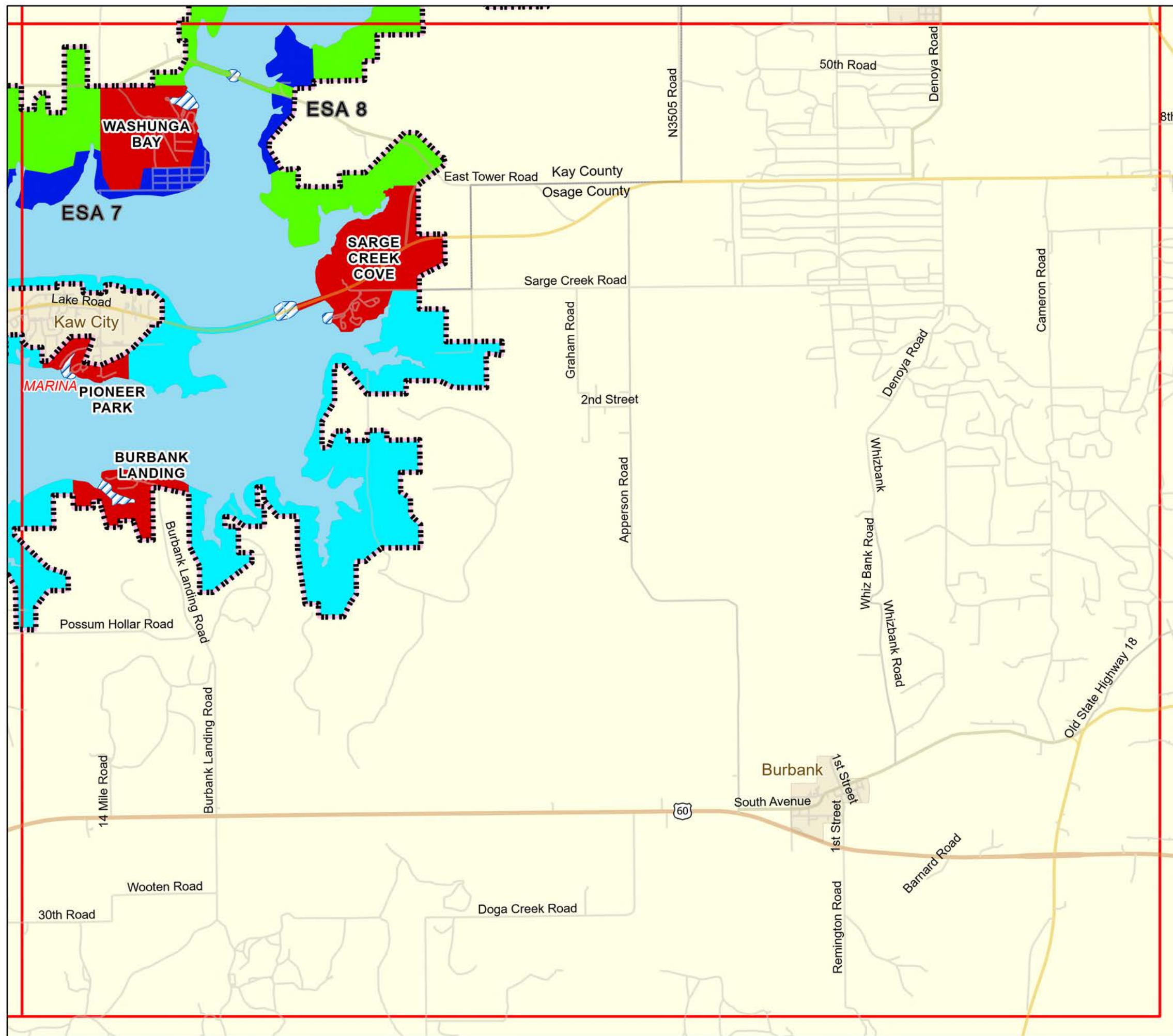
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DATE:

OCTOBER 2025

MAP NO.

KAW25MP-OC-04



- Environmentally Sensitive Area
- High Density Recreation
- Low Density Recreation
- Wildlife Management
- Water Surface: Open Recreation
- Water Surface: No Wake
- Fee Boundary
- Index Grid



**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

LAND AND WATER CLASSIFICATIONS (INDEX SHEET 05)



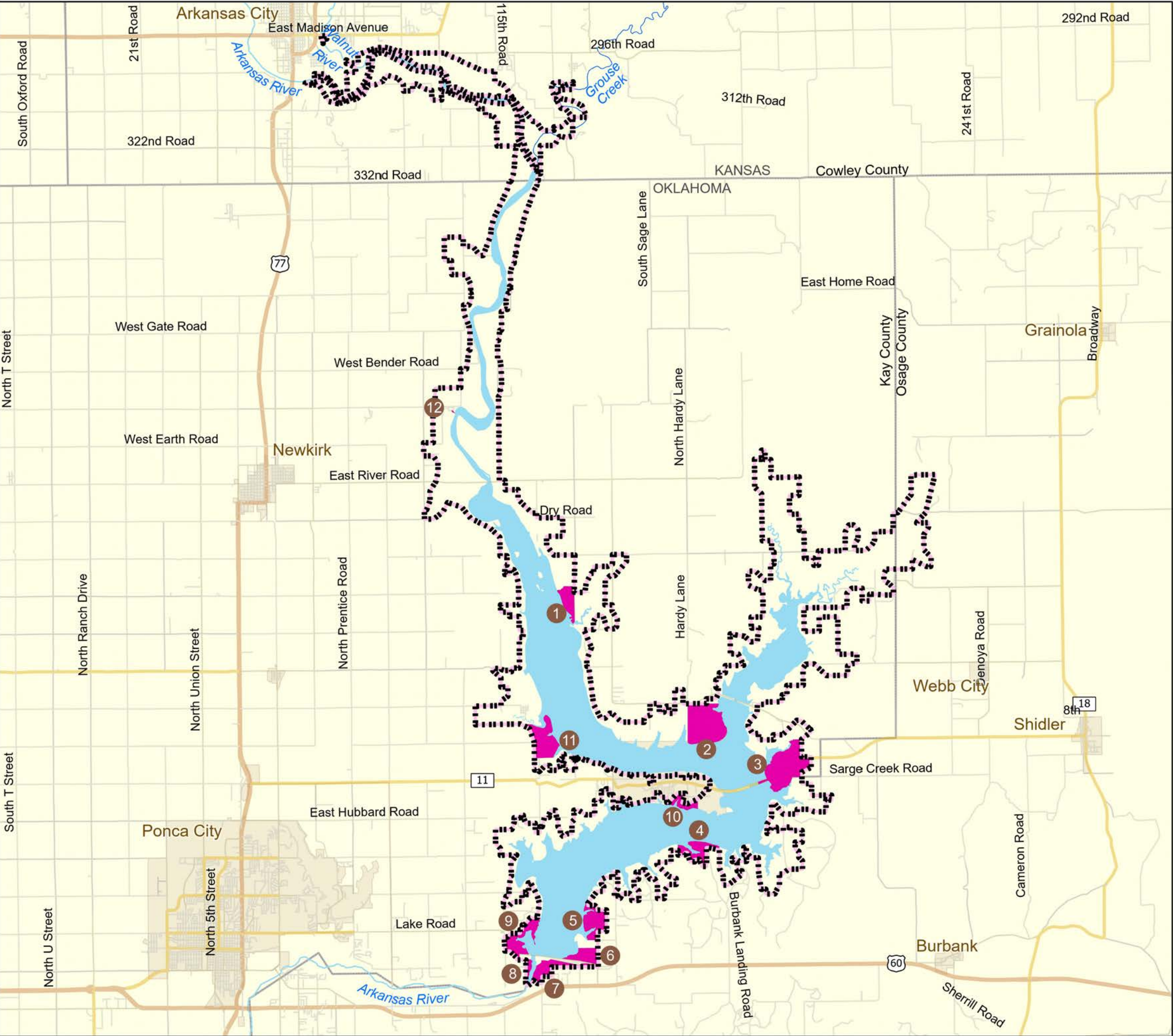
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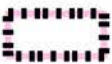
OCTOBER 2025

MAP NO.

KAW25MP-OC-05



 U. S. Army Corps of Engineers

 Fee Boundary

- KEY TO PARKS
- 1 BEAR CREEK COVE
 - 2 WASHUNGA BAY
 - 3 SARGE CREEK COVE
 - 4 BURBANK LANDING
 - 5 OSAGE COVE
 - 6 SANDY BEACH
 - 7 SANDY PARK
 - 8 FISHERMAN'S BEND
 - 9 McFADDEN COVE AND OVERLOOK
 - 10 PIONEER PARK
 - 11 COON CREEK COVE
 - 12 TRADER'S BEND



**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASINKAW, OKLAHOMA

KAW LAKE MASTER PLAN

MANAGED RECREATIONAL AREAS



00.751.53Miles

DATE:












OCTOBER 2025


MAP NO.

KAW25MP-OR-0A



ITEM	EXISTING
BOAT RAMP	1
CAMPSITE - IMPROVED	21
RV DUMP STATION	1
PLAYGROUND	1
RESTROOM W/ SHOWER	1

-  Boat Ramp
-  Campsite - Improved
-  Park Host/Volunteer
-  Playground
-  RV Dump Station
-  Restroom W/ Shower
-  Park Road
-  Parking
-  Water Surface: No Wake
-  Fee Boundary
-  Park Limit




**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

RECREATIONAL AREAS
(BEAR CREEK COVE)



02204408801,320Feet

DATE:















OCTOBER 2025


MAP NO.

KAW25MP-OR-01



ITEM	EXISTING
BOAT RAMP	1
CAMPSITE - IMPROVED	20
COURTESY DOCK	1
RV DUMP STATION	1
ENTRANCE GATE	1
PLAYGROUND	1
RESTROOM W/ SHOWER	1
VAULT TOILET	1

-  Boat Ramp
-  Courtesy Dock
-  Campsite - Improved
-  Park Host/Volunteer
-  Entrance Gate
-  Playground
-  RV Dump Station
-  Restroom W/ Shower
-  Vault Toilet
-  Park Road
-  Parking
-  Water Surface: No Wake
-  Fee Boundary
-  Park Limit




**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

RECREATIONAL AREAS
(WASHUNGA BAY)



0187.53757501,125

Feet

DATE:

OCTOBER 2025

MAP NO.

KAW25MP-OR-02



ITEM	EXISTING
AMPHITHEATER	1
BOAT RAMP	1
COURTESY DOCK	1
CAMPSITE	42
DISC GOLF COURSE	1
EQUESTRIAN CAMPSITE	8
GROUP CAMP AREA	1
ENTRANCE GATE	1
ORV AREA	1
PICNIC SITE	2
PLAYGROUND	1
RESTROOM W/ SHOWER	2
RV DUMP STATION	1
TRAILHEAD (MULTI-PURPOSE)	1
VAULT TOILET	1

-  Boat Ramp
-  Courtesy Dock
-  Campsite - Improved
-  Group Camp Area
-  Park Host/Volunteer
-  Trailhead (Multi-Purpose)
-  Entrance Gate
-  Amphitheater
-  Disc Golf Course
-  Equestrian Campsite
-  Picnic Site
-  Playground
-  RV Dump Station
-  Restroom W/ Shower
-  Vault Toilet
-  ORV Area
-  Park Road
-  Parking
-  Water Surface: No Wake
-  Park Limit



**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

**RECREATIONAL AREAS
(SARGE CREEK COVE)**










DATE:
OCTOBER 2025

MAP NO.
KAW25MP-OR-03



ITEM	EXISTING
BOAT RAMP	2

-  Boat Ramp
-  Park Road
-  Parking
-  Water Surface: No Wake
-  Fee Boundary
-  Park Limit




**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

RECREATIONAL AREAS
(BURBANK LANDING)



0212.54258501,275

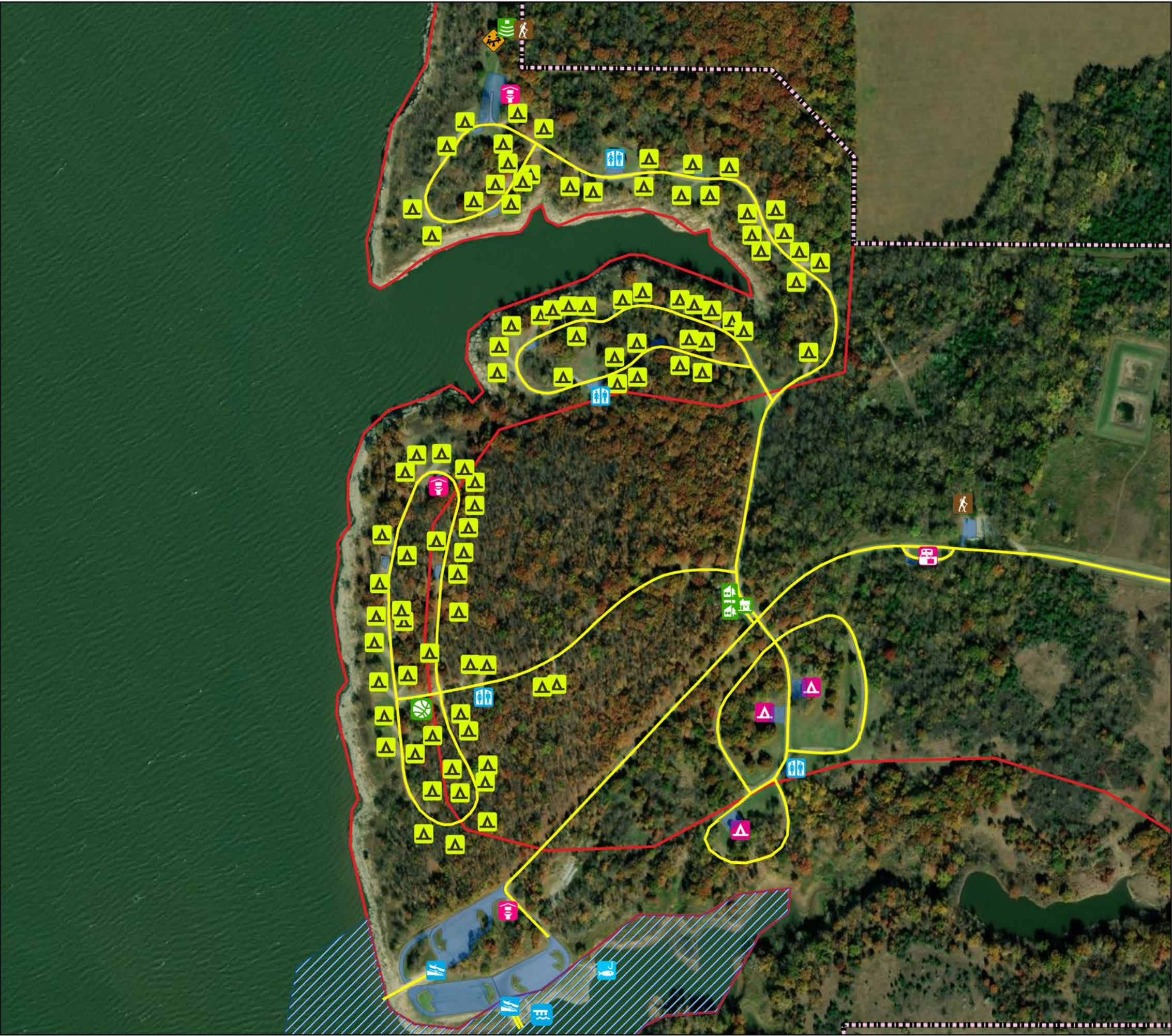
Feet

DATE:

OCTOBER 2025

MAP NO.

KAW25MP-OR-04



ITEM	EXISTING
AMPHITHEATER	1
BOAT RAMP	2
BASKETBALL COURT	1
COURTESY DOCK	1
CAMPSITE - IMPROVED	93
FISHING DOCK/ACCESS	1
ENTRANCE GATE	1
GROUP CAMP AREA	3
HIKING TRAIL/TRAILHEAD	2
PLAYGROUND	1
RV DUMP STATION	1
RESTROOM W/ SHOWER	4
VAULT TOILET	3

-  Boat Ramp
-  Courtesy Dock
-  Hiking Trail/Trailhead
-  Amphitheater
-  Playground
-  RV Dump Station
-  Restroom W/ Shower
-  Vault Toilet
-  Basketball Court
-  Entrance Gate
-  Campsite - Improved
-  Group Camp Area
-  Park Host/Volunteer
-  Fishing Dock/Access
-  Park Road
-  Parking
-  Water Surface: No Wake
-  Fee Boundary
-  Park Limit



U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT

ARKANSAS RIVER BASIN KAW, OKLAHOMA












KAW LAKE MASTER PLAN
RECREATIONAL AREAS
(OSAGE COVE)




DATE:	MAP NO.
OCTOBER 2025	KAW25MP-OR-05



ITEM	EXISTING
GROUP PICNIC SHELTER	1
PICNIC SITE	7
SWIM BEACH	1
VAULT TOILET	1
VOLLEYBALL COURT	1

-  Park Host/Volunteer
-  Group Picnic Shelter
-  Picnic Site
-  Swim Beach
-  Vault Toilet
-  Volleyball Court
-  Park Road
-  Parking
-  Water Surface: Restricted
-  Fee Boundary
-  Park Limit



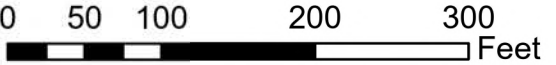

**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

RECREATIONAL AREAS
(SANDY BEACH)



DATE:


OCTOBER 2025


MAP NO.


KAW25MP-OR-06





ITEM	EXISTING
BOAT RAMP	1
CAMPSITE - IMPROVED	12
RESTROOM W/ SHOWER	1
VAULT TOILET	1


 Boat Ramp


 Campsite - Improved


 Restroom W/ Shower


 Vault Toilet


 Park Road


 Parking

 Water Surface: No Wake

 Water Surface: Restricted

 Fee Boundary

 Park Limit




**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

RECREATIONAL AREAS
(SANDY PARK)



0187.53757501,125

Feet

DATE:

OCTOBER 2025

MAP NO.

KAW25MP-OR-07




ITEM	EXISTING
FISHING DOCK/ACCESS	1
PICNIC SITE	10
VAULT TOILET	1

 Fishing Dock/Access

 Picnic Site

 Vault Toilet


 Lake Office

 Park Road

 Parking

 Water Surface: Restricted

 Fee Boundary

 Park Limit




**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN
**RECREATIONAL AREAS
(FISHERMAN'S BEND)**



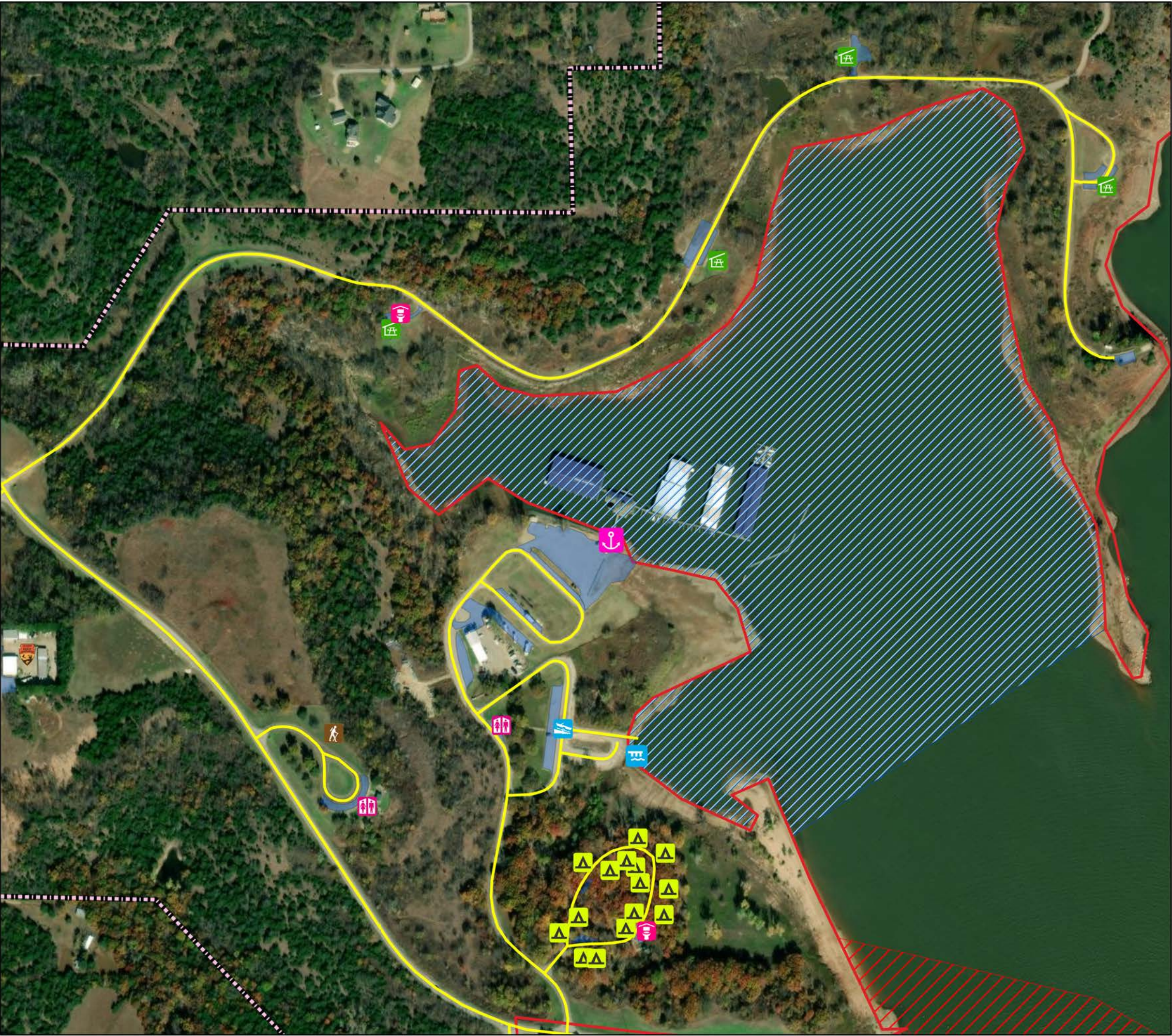
0 65 130 260 390 Feet

DATE:


OCTOBER 2025


MAP NO.


KAW25MP-OR-08





ITEM	EXISTING
BOAT RAMP	1
COURTESY DOCK	1
CAMPSITE - IMPROVED	15
GROUP PICNIC SHELTER	4
HIKING TRAIL/TRAILHEAD	1
MARINA	1
RESTROOM	2
VAULT TOILET	2


 Boat Ramp


 Courtesy Dock


 Marina


 Campsite - Improved


 Hiking Trail/Trailhead


 Group Picnic Shelter


 Restroom


 Vault Toilet


 ODWC


 Park Road

 Parking

 Water Surface: No Wake

 Water Surface: Restricted

 Fee Boundary

 Park Limit

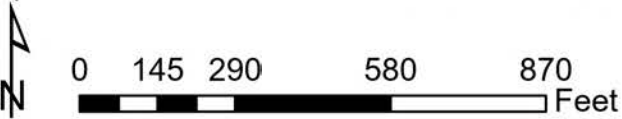


U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT

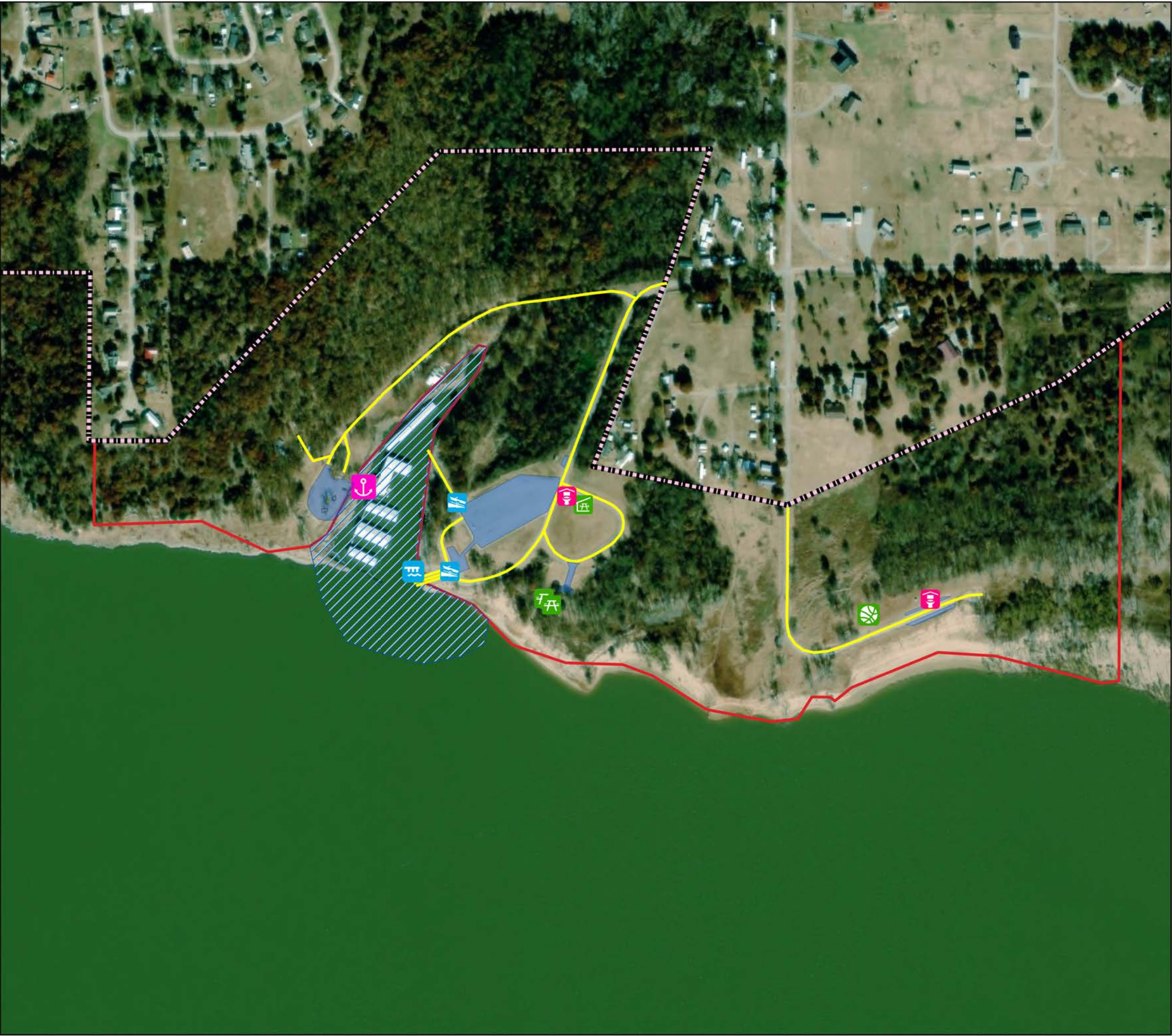
ARKANSAS RIVER BASIN KAW, OKLAHOMA

KAW LAKE MASTER PLAN


RECREATIONAL AREAS
(McFADDEN COVE AND OVERLOOK)





DATE:	MAP NO.
OCTOBER 2025	KAW25MP-OR-09





ITEM	EXISTING
BASKETBALL COURT	1
BOAT RAMP	2
COURTESY DOCK	1
GROUP PICNIC SHELTER	1
MARINA	1
PICNIC SITE	2
VAULT TOILET	2


 Boat Ramp


 Courtesy Dock


 Marina


 Group Picnic Shelter


 Picnic Site

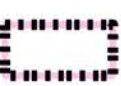
 Vault Toilet


 Basketball Court

 Park Road

 Parking

 Water Surface: No Wake

 Fee Boundary

 Park Limit



U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT

ARKANSAS RIVER BASIN KAW, OKLAHOMA


KAW LAKE MASTER PLAN
RECREATIONAL AREAS
(PIONEER PARK)





DATE:	MAP NO.
OCTOBER 2025	KAW25MP-OR-10





ITEM	EXISTING
BOAT RAMP	2
COURTESY DOCK	1
CAMPSITE - IMPROVED	57
DISC GOLF COURSE	1
RV DUMP STATION	1
ENTRANCE GATE	1
GROUP PICNIC SHELTER	1
PICNIC SITE	1
PLAYGROUND	1
RESTROOM W/ SHOWER	2
VAULT TOILET	1


 Boat Ramp


 Courtesy Dock


 Campsite - Improved


 Park Host/Volunteer


 Entrance Gate


 Disc Golf Course


 Group Picnic Shelter


 Picnic Site


 Playground


 RV Dump Station


 Restroom W/ Shower


 Vault Toilet

 Park Road

 Parking

 Water Surface: No Wake

 Fee Boundary

 Park Limit



U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT

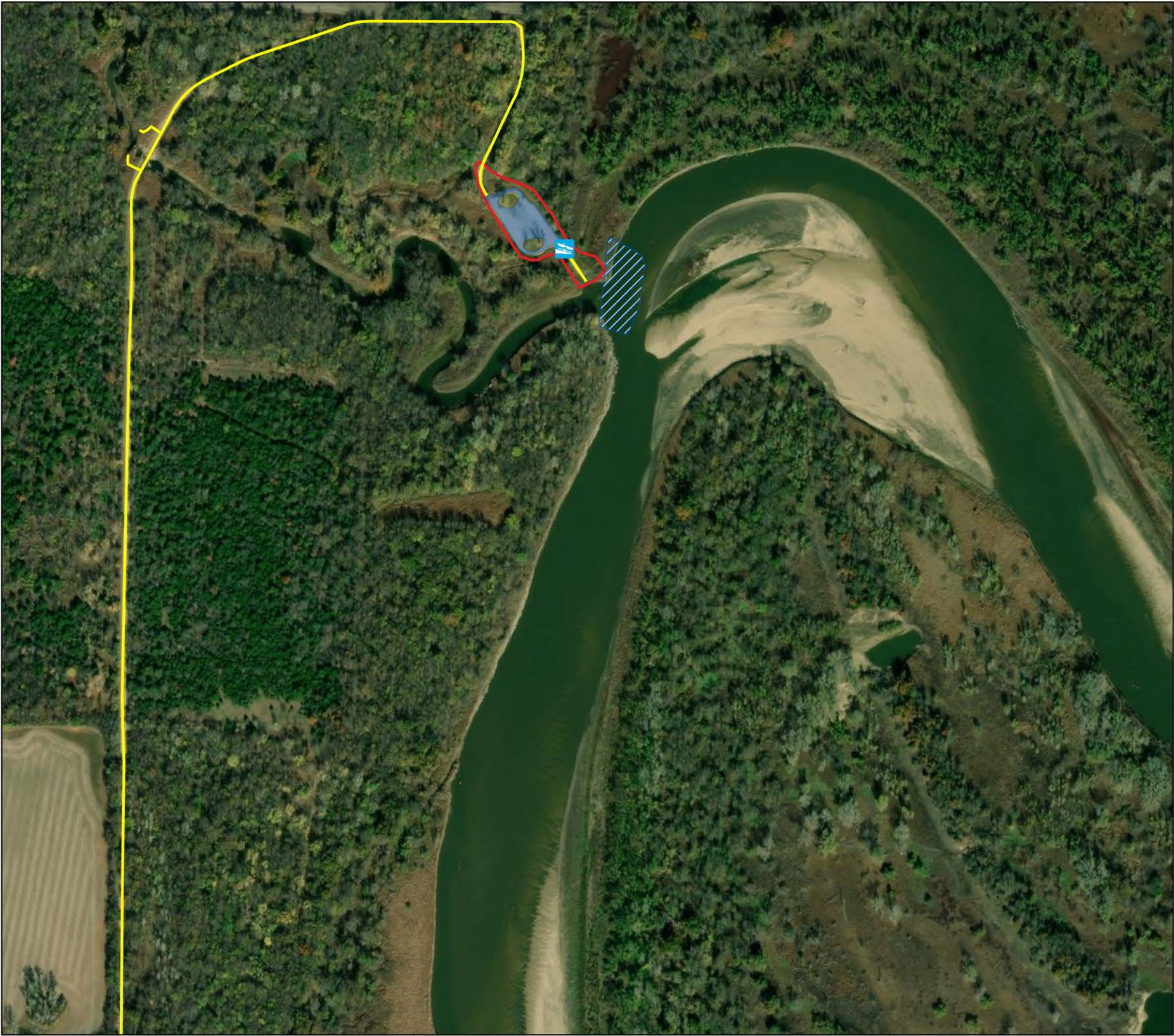
ARKANSAS RIVER BASIN KAW, OKLAHOMA

KAW LAKE MASTER PLAN






RECREATIONAL AREAS
(COON CREEK COVE)




DATE:	MAP NO.
OCTOBER 2025	KAW25MP-OR-11



ITEM	EXISTING
BOAT RAMP	1

-  Boat Ramp
-  Park Road
-  Parking
-  Water Surface: No Wake
-  Park Limit




**U.S. ARMY CORPS
OF ENGINEERS
TULSA DISTRICT**

ARKANSAS RIVER BASIN

KAW, OKLAHOMA

KAW LAKE MASTER PLAN

RECREATIONAL AREAS
(TRADER'S BEND)



0155310620930

Feet

DATE:

OCTOBER 2025

MAP NO.

KAW25MP-OR-12

APPENDIX B – NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTATION

DRAFT
FINDING OF NO SIGNIFICANT IMPACT ENVIRONMENTAL ASSESSMENT FOR
THE 2025 KAW LAKE MASTER PLAN
ARKANSAS RIVER BASIN
KAY AND OSAGE COUNTIES, OKLAHOMA

In accordance with the National Environmental Policy Act of 1969, as amended, including in the Fiscal Responsibility Act of 2023 and U.S. Army Corps of Engineers (USACE) regulations, including 33 CFR Part 230, the Tulsa District and the Regional Planning and Environmental Center (RPEC) of USACE have assessed the potential environmental impacts of the 2025 Kaw Lake Master Plan (MP) revision.

Engineering Regulation (ER) 1130-2-550 and Engineering Pamphlet (EP) 1130-2-550, require Master Plans for USACE water resources development projects having a federally owned land base. The proposed revision of the 1971 Kaw Lake MP and 1987 Supplement was conducted pursuant to this ER and EP, and is necessary to reflect current ecological, socio-demographic, and outdoor recreation trends that are affecting the lake, as well as those anticipated to occur within the planning period of 2025 to 2050. The recommendation is contained in Chapter 8 of the 2025 Kaw Lake MP.

The proposed revision of the 1971 Kaw Lake MP is a framework built collaboratively to serve as a guide toward appropriate stewardship of USACE administered resources at Kaw Lake over the next 25 years.

The Environmental Assessment (EA) for the draft 2025 Kaw Lake MP evaluated two alternatives. In addition to a “No Action” Alternative, one alternative (Proposed Action) was evaluated that fully meets the project purposes and current USACE policies. A summary of potential effects of the Proposed Action are included in Table 1.

Section 2 of the draft EA discusses the alternative formulation and selection, as well as a summary of the new goals and objectives. Chapter 8, Tables 8-1, and 8-2 of the Master Plan summarize the changes to the land classifications. The Proposed Action includes coordination with the public, updates to comply with the USACE regulations and guidance, and reflects changes in land management and land uses that have occurred since 1971 and 1987 supplement to the Master Plan. Land classifications were refined to meet authorized project purposes and current resource objectives that address a mix of natural resources and recreation management objectives that are compatible with regional goals, recognize outdoor recreation trends, and are responsive to public comments.

Table 1: Summary of Potential Effects of the Proposed Plan

Resource	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aquatic resources/wetlands	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cultural resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish and wildlife habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threatened/Endangered species/critical habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historic properties	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other cultural resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floodplains	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hazardous, toxic & radioactive waste	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Health & Safety	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hydrology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Land use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Socio-economics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soils	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Topography, Geology, and Soils	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All practicable and appropriate means to avoid or minimize adverse environmental effects have been analyzed and incorporated into the recommended plan. The recommended plan will not entail any ground-disturbing activities. Future ground-disturbing activities on USACE property will be subject to all necessary environmental evaluations and compliance regulations.

No compensatory mitigation is required as part of the Proposed Action.

Public review of the Draft Master Plan, Environmental Assessment, and FONSI will begin on December 17th, 2025. All comments submitted during the public review period will be responded to in the final Master Plan and Environmental Assessment.

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the USACE determined that the recommended plan will have no effect on federally listed species or their designated critical habitat.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the USACE determined that the proposed plan will have no potential to effect on historic properties.

All applicable environmental laws were considered and coordination with appropriate agencies and officials has been completed.

All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State, and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan will not cause significant adverse impacts on the quality of the human environment, therefore, preparation of an Environmental Impact Statement is not required.

DRAFT

Date

JESSICA D. GOFFENA
Colonel, EN
Commanding

Environmental Assessment for the 2025 Kaw Lake Master Plan

DRAFT REPORT

Arkansas River Basin

**Kay and Osage Counties, Oklahoma, and Cowley County,
Kansas**

December 2025

EAXX-202-00-M5O-1760957022



**US Army Corps
of Engineers**

Tulsa District

ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment (EA) evaluates the potential environmental and socioeconomic impacts of the 2025 Kaw Lake and Dam Master Plan Revision. This EA would facilitate the decision process regarding the Proposed Action and alternatives.

- SECTION 1* *INTRODUCTION* of the Proposed Action summarizes the purpose of and need for the Proposed Action, provides relevant background information, and describes the scope of the EA.
- SECTION 2* *PROPOSED ACTION AND ALTERNATIVES* examines alternatives for implementing the Proposed Action and describes the recommended alternative.
- SECTION 3* *AFFECTED ENVIRONMENT* describes the existing environmental and socioeconomic setting.
- ENVIRONMENTAL CONSEQUENCES* identifies the potential environmental and socioeconomic effects of implementing the Proposed Action and alternatives.
- SECTION 4* *CUMULATIVE IMPACTS* describes the impact on the environment that may result from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions.
- SECTION 5* *COMPLIANCE WITH ENVIRONMENTAL LAWS* provides a listing of environmental protection statutes and other environmental requirements.
- SECTION 6* *IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES* identifies any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action.
- SECTION 7* *PUBLIC AND AGENCY COORDINATION* provides a listing of individuals and agencies consulted during preparation of the EA.
- SECTION 8* *ACRONYMS/ABBREVIATIONS*
- SECTION 9* *LIST OF PREPARERS* identifies persons who prepared the document and their areas of expertise.
- ATTACHMENT A* National Environmental Policy Act (NEPA) Coordination and Scoping

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ENVIRONMENTAL ASSESSMENT
2025 Kaw Lake Master Plan Revision
Kaw Lake and Dam

Kay and Osage Counties, Oklahoma, and Cowley County, Kansas

SECTION 1: INTRODUCTION

This Environmental Assessment (EA) has been prepared by the United States Army Corps of Engineers (USACE) to evaluate the 2025 Kaw Lake Master Plan (MP). The 2025 MP is a programmatic document that is subject to evaluation under the National Environmental Policy Act (NEPA) of 1969, (42 U.S. Code [U.S.C.] 4321 et seq.). This document provides an assessment of potential impacts that could result with the implementation of either the No Action or Proposed Action and has been prepared in accordance with the National Environmental Policy Act (42 U.S.C. 4321 et seq.) as amended, including in the Fiscal Responsibility Act of 2023, and USACE regulations, including 33 CFR Part 230: Procedures for Implementing NEPA (1988). This EA was prepared prior to the new NEPA implementation guidance issued on 30 June 2025 by the Department of Defense and follows the previous Army and USACE NEPA implementation guidance.

The 2025 MP is a strategic land use management plan that provides direction to the orderly development, administration, maintenance, preservation, enhancement, and management of all natural, cultural and recreational resources of a USACE water resource project, which includes all government-owned lands in and around a reservoir. It is a vital tool for responsible stewardship and sustainability of the project's natural and cultural resources, as well as the provision of outdoor recreation facilities and opportunities on Federal lands associated with Kaw Lake for the benefit of present and future generations. The 2025 MP identifies conceptual types and levels of activities, but does not include designs, project sites, or estimated costs. All actions carried out by the USACE, other agencies, and individuals granted leases to USACE lands must be consistent with the 2025 MP. Therefore, the MP must be revised in order to provide effective guidance in USACE decision-making.

1.1 PROJECT LOCATION AND SETTING

Kaw Lake is a multi-purpose reservoir located approximately 8 miles east of Ponca City, Oklahoma. The damsite is located in both Kay and Osage County, Oklahoma, with the reservoir located in Kay and Osage counties, Oklahoma, and Cowley County, Kansas. The lake is located at mile 653.7 on the Arkansas River. Construction of the dam began in June 1966 and the project storage began in April 1976. Kaw Lake is a unit of the Arkansas River, which has a drainage area that is approximately 38,771 square miles.

Construction of Kaw Lake and Dam was approved by the Flood Control Act on October 23, 1962, and is currently managed by the Tulsa District of USACE for the authorized purposes of flood control, hydropower, navigation, water supply, water quality, recreation, and fish and wildlife. Using 2025 GIS measurements, Kaw Lake has

a water surface area of 19,427 acres at conservation pool of approximately 1,010 feet National Geodetic Vertical Datum (NGVD) 29. For more information on Kaw Dam and its spillway, outlet, levee, and drainage system, please refer to Section 1.5 and 1.6 of the 2025 MP.

The existing Land Classifications from the 1971 Kaw Lake MP are presented alongside the proposed Land Classifications for the 2025 Kaw Lake and Dam MP in Table 1. Descriptions of each Land Classification type are included at the beginning of Section 2 of this EA.

Table 1 - Existing and Proposed Land Classifications

Prior Land Classifications (1971)	Acres	Proposed Land Classifications (2025)	Acres
Project Management Area (PO)	143	Project Operations (PO)	127
Environmentally Sensitive Areas (ESA)	0	Environmentally Sensitive Areas (ESA)	2,407
Operations Recreation – Intensive Use (OR/IU)	4,154	High Density Recreation (HDR)	3,022
Recreation – Low Density Use (OR/LD)	6,261	Low Density Recreation (LDR)	4,568
Operations Recreation – Quasi-Public	112		0
State Area (SA)	11,692		0
Wildlife Management – National	8,588	Wildlife Management (WM)	20,370
Wildlife Management – Recreational Lands (WMRL)	119		
TOTAL LAND ACRES	31,069	TOTAL LAND ACRES	30,494
Prior Water Surface Classifications (1971)	Acres	Water Surface Classifications (2025)	Acres
Water	18,840	Open Recreation (WS/OR)	19,192
		Restricted (WS/R)	19
		No Wake (WS/NW)	216
TOTAL WATER SURFACE ACRES	18,840	TOTAL WATER SURFACE ACRES	19,427

* Total Acreage differences from the 1971 total to the 2025 totals are due to improvements in measurement technology, real estate actions, deposition/siltation, and erosion.

1.2 PURPOSE AND NEED FOR THE ACTION

The purpose of the Proposed Action is to ensure that the conservation and sustainability of the land, water, and recreational resources at Kaw Lake comply with applicable environmental laws and regulations and to maintain quality lands for future

public use. The 2025 MP is intended to serve as a comprehensive land and recreation management plan with an effective life of approximately 25 years.

The Kaw Lake Master Plan must be kept current in order to provide effective guidance in decision-making that responds to changing regional and local needs, resource capabilities and suitability, and expressed public interests consistent with authorized project purposes and pertinent legislation and regulations. The current 1971 Kaw Lake Master Plan is over 50 years old and does not currently reflect ecological, socio-political, and socio-demographic changes that are currently affecting Kaw Lake, or those changes anticipated to occur through 2050. Changes in outdoor recreation trends, regional land use, population, current legislative requirements and USACE management policy have indicated the need to revise the plan. Additionally, increasing fragmentation of wildlife habitat, national policies related to changing conditions, a growing demand for recreational access, and protection of natural resources are all factors impacting public lands both nationwide and regionally, and have the potential to affect the Kaw Lake Project. In response to these continually evolving trends, the USACE determined that a full revision of the 1971 MP is needed.

The master planning process encompasses a series of interrelated and overlapping tasks involving the examination and analysis of past, present, and future environmental, recreational, and socioeconomic conditions and trends. With a generalized conceptual framework, the process focuses on the following four primary components:

- Regional and ecosystem needs
- Project resource capabilities and suitability
- Expressed public interests that are compatible with Kaw Lake's authorized purposes
- Environmental sustainability elements

1.3 SCOPE OF THE ACTION

This EA was prepared to evaluate existing conditions and potential impacts of proposed alternatives associated with the implementation of the 2025 Master Plan (MP). The alternative considerations were formulated with special attention given to revised land reclassifications, new resource management objectives, and a conceptual resource plan for each land reclassification category. The proposed 2025 MP is currently available and is incorporated into this EA by reference. This EA was prepared pursuant to the National Environmental Policy Act (NEPA), (42 U.S.C 4321 et seq.) as amended. The application of NEPA to more strategic decisions not only meets the Fiscal Responsibility Act of 2023 and USACE regulations for implementing NEPA, but also allows the USACE to consider the environmental consequences of its actions long before any physical activity is implemented. Multiple benefits can be derived from such early consideration. Effective and early NEPA integration with the master planning process can significantly increase the usefulness of the 2025 MP to the decision maker.

SECTION 2: PROPOSED ACTION AND ALTERNATIVES

During the alternative development process, the Project Delivery Team (PDT) utilized an iterative process to evaluate different land classes for each parcel of USACE land. This evaluation included consideration of the multiple Congressionally authorized missions of the Project, public and agency comments, USACE staff knowledge, and potential impacts to the social, cultural, and environmental resources, to determine the primary use for each parcel (i.e. land classification). USACE regulations specify five possible categories of land reclassification: Project Operations (PO), High Density Recreation (HDR), Mitigation, Environmentally Sensitive Areas (ESA), and Multiple Resource Managed Lands (MRML). MRML are divided into four subcategories: Low Density Recreation (MRML-LDR), Wildlife Management (MRML-WM), Vegetation Management (MRML-VM), and Inactive/Future Recreation (MRML-IFR) Areas.

Two alternatives were developed in detail and brought forward for evaluation, including a No Action Alternative and a Proposed Action Alternative. The Proposed Action Alternative is the culmination of the iterative evaluation process described above and best meets the Purpose and Need identified in Section 1.2 of this document and Section 1.4 of the 2025 MP revision. The No Action Alternative, while it does not meet the purpose and need, serves as a benchmark of existing conditions against which Federal actions can be evaluated, and, therefore, is included in this EA.

The goals for the 2025 MP include the following:

GOAL A. Provide the best management practices to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.

GOAL B. Protect and manage the project's natural and cultural resources through sustainable environmental stewardship programs.

GOAL C. Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining the project's natural resources.

GOAL D. Recognize the project's unique qualities, characteristics, and potentials.

GOAL E. Provide consistency and compatibility with national objectives and other State and regional goals and programs.

In addition to the above goals, USACE management activities are guided by USACE-wide Environmental Operating Principles as follows:

- Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse, and sustainable condition is necessary to support life.
- Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of USACE programs and act accordingly in all appropriate circumstances.

- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
- Seek ways and means to assess and mitigate cumulative impacts to the environment; bringing systems approaches to the full life cycle of our processes and work.
- Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work.
- Respect the views of individuals and groups interested in USACE activities; listen to them actively and learn from their perspective in the search to find innovative win-win solutions to the nation's problems that also protect and enhance the environment.

Specific resource objectives to accomplish these goals can be found in Chapter 3 of the 2025 MP.

The USACE will not address the flood risk management or water supply authorized purposes of Kaw Lake under either the No Action or Proposed Action alternatives.

2.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE

The No Action Alternative serves as a basis for comparison to the anticipated effects of the other action alternatives, and its inclusion in this EA is required by NEPA. Under the No Action Alternative, the USACE would not revise the 1971 MP or adopt the implementation of the 2025 MP. Instead, the USACE would continue to manage Kaw Lake's natural resources as set forth in the 1971 MP. The 1971 MP would continue to provide the only source of comprehensive management guidelines and philosophy.

2.2 ALTERNATIVE 2: PROPOSED ACTION

Under the Proposed Action, the USACE will adopt and implement the 2025 MP, which guides and articulates USACE responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources. The 2025 MP will replace the 1971 MP and provide an up-to-date management plan that follows current Federal laws and regulations while sustaining the project's natural resources and providing recreational opportunities for the next 25 years through the planning horizon of 2050. The Proposed Action will meet regional goals associated with good stewardship of land, water, and recreational resources; address identified recreational trends; and allow for continued use and development of project lands in accordance with national policies and public laws.

The 2025 MP will classify all Federal land lying above elevation 1010 feet NGVD29 into management reclassification categories. These management reclassification categories will allow uses of Federal property that meet the definition of the assigned category and ensure the protection of natural resources and environmental stewardship while allowing maximum public enjoyment of the lake's resources.

The land reclassification categories to be used are defined as follows:

- Project Operations: Lands required for the dam, spillway, switchyard, levees, dikes, offices, maintenance facilities, and other areas used solely for the operation of Kaw Lake.
- High Density Recreation: Lands developed for the intensive recreational activities for the visiting public including day use and campgrounds. These areas could also be for commercial concessions and quasi-public development.
- Environmentally Sensitive Areas: Areas where scientific, ecological, cultural, or aesthetic features have been identified.
- Multiple Resource Management Lands (MRML): Allows for the designation of a predominate use with the understanding that other compatible uses may also occur on these lands.
 - MRML Low Density Recreation: Lands with minimal development or infrastructure that support passive recreational use (primitive camping, fishing, hunting, trails, wildlife viewing, etc.)
 - MRML Wildlife Management: Lands designated for stewardship of fish and wildlife resources.
 - MRML Vegetation Management: Lands designated for stewardship of vegetative resources.
 - MRML Inactive/Future Recreation: Areas with site characteristics compatible with potential future recreational development or recreation areas that are closed. Until there is an opportunity to develop or reopen these areas, they will be managed for multiple resources.
- Surface Water: Allows for surface water zones.
 - Restricted: Water areas restricted for Kaw Lake operations, safety, and security.
 - Designated No-Wake: Water areas to protect environmentally sensitive shoreline areas and recreational water access areas from disturbance and areas to protect public safety.
 - Open Recreation: Water areas available for year-round or seasonal water-based recreational use. Table 2 shows the prior land

classifications from the 1971 MP, the proposed land classifications from the 2025 MP, and the net difference between the two.

Table 2 - Changes from 1971 Land and Water Surface Classifications to Proposed 2025 Land and Water Surface Classifications

Prior Land Classifications (1971)	Acres	Proposed Land Classifications (2025)	Acres	Net Difference
Project Operations (PO)	143	Project Operations (PO)	127	-(16)
Environmentally Sensitive Areas (ESA)	0	Environmentally Sensitive Areas (ESA)	2,407	2,407
Operations Recreation – Intensive Use (OR/IU)	4,154	High Density Recreation (HDR)	3,022	-(1,132)
Operations Recreation – Low Density (OR/LD)	6,261	Low Density Recreation (LDR)	4,568	-(1,693)
Operations Recreation – Quasi-Public	112		0	-(112)
State Area (SA)	11,692		0	-(11,692)
Wildlife Management – National	8,588	Wildlife Management	20,370	11,782
Wildlife Management – Recreational Lands (WMRL)	119		0	-(119)
TOTAL LAND ACRES	31,069	TOTAL LAND ACRES	30,494	-(575)
Prior Water Surface Classifications (1971)	Acres	Water Surface Classifications (2025)	Acres	Net Difference
Water	18,840	Open Recreation (WS/OR)	19,192	352
		Restricted (WS/R)	19	19
		No Wake (WS/NW)	216	216
TOTAL WATER SURFACE	18,840	TOTAL WATER SURFACE	19,427	587
TOTAL FEE	49,909	TOTAL FEE	49,911	2

Table 3 catalogs each change proposed by the 2025 MP and the associated justification for that change.

Table 3 - Changes and Justifications for Proposed Land Classifications

Land Classification	Description of Changes ⁽²⁾	Justification
Project Operations (PO)	<p>The net decrease in Project Operations lands from 143 to 127 is due to the following:</p> <ul style="list-style-type: none"> • 35 PO acres to HDR • 107 PO acres to LDR • 1 PO acre to WS/OR • 117 acres from OR/IU • 10 acres from Not in Fee 	<p>All lands classified as PO are managed and used primarily in support of critical operational requirements related to the primary missions of flood risk management and water conservation, including lands that were previously classified as OU/IU in 1971. Lands classified in 1971 as PO are reclassified to either HDR, LDR or WS/OR to appropriately capture the current use. Previously classified OR/IU lands at the dam structure and project office were corrected to PO. Lands previously not in fee in 1971 were classified to PO at the Arkansas City levee system.</p>
High Density Recreation (HDR)	<p>The net decrease in High Density Recreation lands from 4,154 to 3,022 is due to the following:</p> <ul style="list-style-type: none"> • 572 acres to WM • 344 acres to ESA • 273 acres to LDR • 117 acres to PO • 114 acres to WS/OR • 29 acres to WS/NW • 1 acre to WS/R • 119 acres from WM/RL • 3 acres from WM/N • 99 acres from OR/QP • 42 acres from OR/LD • 35 acres from PO • 19 acres from WATER 	<p>The net decrease in HDR lands resulted from acres near McFadden Cove reclassified from OR/LD to reflect current use. PO lands were reclassified to HDR to indicate current use. In addition, water acres throughout the project along the shoreline were reclassified as detailed GIS data is used in the analysis.</p>

Land Classification	Description of Changes ⁽²⁾	Justification
Low Density Recreation (LDR)	<p>The net decrease in Low Density Recreation from 6,261 to 4,568 acres resulted from the following:</p> <ul style="list-style-type: none"> • 272 acres from OR/IU • 4,114 acres from OR/LD • 107 acres from PO • 75 acres from water 	<p>The net decrease in LDR is due to the following: Reclassification of 288 acres was determined by the study team to be necessary to provide a high level of protection for those areas supporting significant habitat, views, or cultural sites; 1,546 acres were reclassified as WM and 42 acres as HDR to reflect current use; Water acres throughout the project along the shoreline were reclassified as detailed GIS data is used in the analysis.</p> <p>(Note: Acres associated with the now closed Ponca Cove recreation area were reclassified from OR/IU to reflect current use of LDR and PO lands were corrected to LDR to indicate current use.)</p>
Wildlife Management (WM)	<p>The net increase in Wildlife Management from 8,707 to 20,373 acres resulted from the following:</p> <ul style="list-style-type: none"> • 572 acres from OR/IU • 1,546 acres from OR/LD • 10,411 acres from State Area (SA) • 13 acres from water • 667 acres to ESA • 119 acres to HDR • 92 acres to WS/OR 	<p>The net increase in WM is primarily due to a name change as WM/N and State Area (SA) is not used as a land classification under the current EP. Acres associated with the Sarge Creek Cove, Trader's Bend, and Bear Creek Cove recreation areas were reclassified from OR/IU to reflect current use of WM. Fee lands along the Arkansas River upstream of Washunga Bay and Coon Creek Cove were changed from OR/LD to WM to reflect current and projected use. In addition, water acres throughout the project along the shoreline were reclassified as detailed GIS data is used in the analysis.</p>

Land Classification	Description of Changes ⁽²⁾	Justification
Environmentally Sensitive Areas (ESA)	<p>The classification of 2,407 acres as Environmentally Sensitive Areas resulted from the following:</p> <ul style="list-style-type: none"> • 346 acres of OR/IU • 288 acres of OR/LD • 1,072 acres of SA • 37 acres of water • 666 acres of WM/N 	<p>Reclassification of 2,407 acres was determined by the study team to be necessary to provide a high level of protection for those areas supporting significant habitat, views, and cultural sites. Classifying these areas as ESA will afford these areas with the highest level of protection from disturbance.</p>

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

As previously discussed in this Section, other alternatives to the Proposed Action were initially considered as part of the alternative development process for the MP revision. However, none met the Purpose and Need for the Proposed Action, current USACE regulations and guidance, or addressed public and agency comments or concerns. Therefore, no other alternatives are being carried forward for analysis in this EA.

SECTION 3: AFFECTED ENVIRONMENT AND CONSEQUENCES

This section of the EA describes the potential impacts of the No Action and Proposed Action alternatives on the natural, cultural, and social resources found within the USACE Kaw Lake Fee Boundary. A description of the existing conditions of resources can be found in Chapter 2 of the 2025 MP. Only those resources that have the potential to be affected by implementation of either alternative will be analyzed in this EA.

Impacts (consequence or effect) can be either beneficial or adverse and can be either directly related to the action or indirectly caused by the action. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or further removed in distance but are still reasonably foreseeable. As discussed in this section, the alternatives may create temporary (less than 1 year), short-term (up to 3 years), long-term (3 to 10 years following the master plan revision), or permanent effects.

In considering whether the effects of the Proposed Action are significant, agencies shall analyze the potentially affected environment and degree of the effects of the action. In considering the potentially affected environment, agencies should consider, as appropriate to the specific action, the affected area (national, regional, or local) and its resources, such as listed species and designated critical habitat under the Endangered Species Act. In considering the degree of the effects, agencies should consider the following, as appropriate to the specific action: both short-and long-term effects, both beneficial and adverse effects, effects on public health and safety, effects that will violate Federal, State, Tribal, or local law protecting the environment. For the purpose of this analysis, the intensity of impacts will be classified as negligible, minor, moderate, or major. The intensity thresholds are defined as follows:

- Negligible: A resource would not be affected, or the effects would be at or below the level of detection, and changes would not be of any measurable or perceptible consequence.
- Minor: Effects on a resource would be detectable, although the effects would be localized, small, and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse effects, would be simple and achievable.
- Moderate: Effects on a resource would be readily detectable, long-term, localized, and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable.
- Major: Effects on a resource would be obvious and long-term and would have substantial consequences on a regional scale. Mitigation measures to offset the adverse effects would be required and extensive, and success of the mitigation measures would not be guaranteed.

3.1 LAND USE

Please refer to Section 4.2 of the 2025 MP for existing land and water use information in and around Kaw Lake and Dam.

3.1.1 Alternative 1: No Action Alternative

Under the No Action Alternative, USACE would not implement the 2025 MP, and existing land use management would not be updated to reflect current and projected future needs and demands. The operation and maintenance of USACE lands at Kaw Lake would continue as outlined in the 1971 MP to the extent that current and future laws and regulations would permit. Management would have difficulty meeting the current and future recreational needs identified through scoping efforts and USACE Project staff experience and recommendations. If the 1971 MP is kept and implemented, this would not align with current and future operations and recreation trends or needs for the Lake. This divergence would create a patchwork of management requirements that would be inefficient for Kaw Lake staff to implement. The management would also increasingly lack transparency to the public or alternately create more of a burden to staff to communicate how the lake management differs from that in the 1971 MP. Implementation of the No Action Alternative would have moderate, adverse, long-term impacts on land use within and on fee-owned Kaw Lake project lands due to conflicting guidance and management of USACE lands.

3.1.2 Alternative 2: Proposed Action

The objectives for revising the 1971 MP describe current and foreseeable land uses while considering expressed public opinion, regional trends, and USACE policies that have evolved to meet day-to-day operational needs. The reclassifications in the 2025 MP were developed to help fulfill regional goals associated with good stewardship of land and water resources that will allow for continued use and development of project lands.

While the initial 143 acres of Project Operations (1971) were reclassified to HDR, LDR, and WS/OR, 117 acres of OR/IU, and 10 acres Not in Fee previously, were reclassified to Project Operations (2025). The previously reclassified OR/IU lands at the dam structure and project office were corrected to PO. The Project Operations lands for Kaw Lake reflects current needs for project access and management to support critical operational requirements for flood risk management and water conservation.

While HDR is technically a new management classification for Kaw Lake, the bulk of the 3,022 acres of HDR land is from areas previously classified as OR/IU. The proposed action would result in a net decrease of 1,132 acres from OR/IU to HDR, from 4,154 acres of OR/IU to 3,022 HDR acres. The reason for the 1,132 net decrease in HDR lands is due to their reclassification as Wildlife Management, ESA, LDR, PO, and WS/OR acres, which reflects their current and future land management use. Acres near Mc Fadden Cove were reclassified to HDR while the PO lands were reclassified to HDR to indicate current use.

LDR lands had a net decrease of 1,693 acres. This decrease is due to 1,546 acres being reclassified as WM, 288 acres reclassified as ESA, and 42 acres reclassified as HDR. The new LDR acres come from OR/IU, OR/LD, and the old PO classifications. These changes reflect current and future planned use for these acres. Acres associated with the now closed Ponca Cover were reclassified from OR/IU to reflect current use.

Acres previously classified as WM-N and State Area (SA) lands were reclassified as WM lands in the new Master Plan. Additionally, the WM classification received acres from previous OR/IU, OR/LD, and water classifications, resulting in a net increase of 11,782 acres. Associated acres in Sarge Creek Cove, Trader's Bend, and Bear Creek Cove recreation areas were reclassified from OR/IU to reflect current use. Fee lands along the Arkansas River upstream of Washuga Bay and Coon Creek Cove were changed from OR/LD to WM. The overall increase in WM lands will help establish the necessary acreage for the USACE to conserve, manage, and supplement wildlife areas at Kaw Lake appropriately and efficiently.

Approximately 2,407 acres of Kaw Lake would be reclassified as ESA to provide a high level of protection in those areas supporting significant habitat, views, and cultural sites. Classifying these lands as ESA will afford these areas with the highest level of protection from disturbance.

On the waters of Kaw Lake, the 2025 MP will add established surface water use categories in addition to the current ad hoc management of the lake. The establishment of 19 acres as Restricted, 216 acres as No Wake, and 19,192 acres as Open Recreation to the water surface, respectively, will allow for a delineated and safer management of the lake's waters when the lake is at conservation pool. These reclassifications will help to improve safety of those recreating on and around Kaw Lake by restricting boat access and speeds around certain parts of the lake, as well as establishing areas that boating can occur in. The Kaw Lake office will still maintain the authority to make ad hoc adjustments as needed by lake level, which will prevent the reclassifications from being overly rigid or even ineffectual in various lake level conditions. This 587-acre difference is a result of changes in measuring technology, real estate actions, and sediment deposition and erosion.

The current and foreseeable land use demand and patterns for Kaw Lake does not entail the need for utility corridors, therefore, none will be implemented in the 2025 MP. However, if needed, current USACE policy dictates that all utilities must go around USACE property unless no other feasible alternative exists. If a feasible alternative does not exist, then the utility must go through the NEPA review process prior to approval and implementation.

The majority of the land use reclassifications in the 2025 MP will maintain and improve the functional management that is currently occurring. While the terminology updates appear substantial, they have been implemented after considerable public input and seek to maintain the values the public holds highest at Kaw Lake. Additionally, the land reclassifications provide a balance between public use, both intensive and passive, and natural resources conservation. Therefore, the implementation of the proposed

action will have moderate, long-term beneficial impacts to land use as the land reclassifications further refine areas for appropriate activities and provide more efficient land management.

3.2 WATER RESOURCES

Please refer to Section 2.5 in the 2025 MP for more information on existing conditions for hydrology (including surface and ground water), water quality, and wetlands, respectively.

3.2.1 Alternative 1: No Action Alternative

There would be no impacts to any water resources as a result of implementing the No Action Alternative, since there would be no changes or additions to the existing 1971 MP that would affect any of these resources.

3.2.2 Alternative 2: Proposed Action

The 2025 MP would increase WM by 11,782 acres and ESA lands by 2,407 acres which would help to conserve, protect, and manage habitat and vegetation that help to reduce erosion due to shoreline stabilization. These benefits would also promote the preservation and enhancement of wetland habitats at Kaw Lake as described in Section 2.5.2 of the 2025 MP. Increased shoreline stabilization and decreased erosion may also help improve water clarity and therefore quality, resulting in minor, long-term benefits to water resources. The 1,132-acre decrease in HDR lands would result in minor, long-term, potential beneficial impacts to water resources. Overall, the 2025 MP would provide minor, long-term, beneficial impacts to water resources.

3.3 CLIMATE

For more information on existing conditions for Climate and Changing Conditions, please refer to section 2.2 and 2.3 of the 2025 MP.

3.3.1 Alternative 1: No Action Alternative

The No Action Alternative would not result in any changes in climate or changing conditions at Kaw Lake. Implementation of the 1971 MP would have no impact (beneficial or adverse) on existing or future climate conditions. Current policy (Executive Orders [EO] 13834 and 13783, and related USACE policy) requires project lands and recreational programs be managed in a way that advances broad national changing conditions mitigation goals including, but not limited to, changing conditions resilience and carbon sequestration. Changing conditions were not evaluated in the 1971 MP, as such the 1971 MP does not align with current laws and regulations. This non-compliance has no impact on climate or changing conditions because the 1971 MP does not have any action that impacts existing conditions.

3.3.2 Alternative 2: Proposed Action

The 2025 MP will have no effect to climate in the region. Management under the 2025 MP will follow current USACE policy to meet changing conditions goals as

described for the No Action Alternative. Any ground disturbing activities considered under the 2025 MP will be evaluated and analyzed for impacts to climate under NEPA and design processes prior to implementation.

3.4 AIR QUALITY

For more information on existing conditions for Air Quality at Kaw Lake and the surrounding area, please refer to Section 2.3 in the 2025 MP.

3.4.1 Alternative 1: No Action Alternative

The continued implementation of the 1971 MP would not result in any changes to current and reasonably foreseeable future air quality in the region. No new increase in vehicular traffic, mass permanent vegetation removal, or large construction activities would occur as result of implementing this alternative. The No Action Alternative would remain compliant with the Clean Air Act because the 1971 MP only includes guidelines and does not incorporate actions which produce or contribute to criteria pollutants or Greenhouse Gases (GHG). The No Action Alternative will not produce any impacts on air quality.

3.4.2 Alternative 2: Proposed Action

Similar to the No Action Alternative, the 2025 MP will not result in any change to current and reasonably foreseeable air quality in the region. The Proposed Action will not implement any actions (i.e. ground disturbing activities) that directly or indirectly produce criteria pollutants or regulated pollutants such as GHGs (i.e. total emissions are 0); therefore, implementation of the Proposed Action will remain compliant with the Clean Air Act and State Implementation Plan and is not subject to a conformity determination.

3.5 TOPOGRAPHY, GEOLOGY, AND SOILS

Please refer to Section 2.4 of the 2025 MP for more information on existing conditions for topography, geology, and soils at Kaw Lake.

3.5.1 Alternative 1: No Action Alternative

The No Action Alternative would have minor, adverse, long-term impacts to topography, geology, or soils since the 1971 MP would not be revised. Continued implementation of the 1971 MP would not provide any benefits to topography, geology, and soils such as increased habitat protection, reduced erosion, or shoreline stabilization, since there would be no land reclassifications that could potentially benefit these resources.

3.5.2 Alternative 2: Proposed Action

The Proposed Action takes into consideration the various topographical, geological, and soils aspects of USACE Kaw Lake project lands. The establishment of 2,407 acres of ESA land and classification of 20,370 acres as WM lands (+11,782 acres) will help to increase the long-term preservation and stabilization of soils within USACE Kaw Lake

project lands. Reductions in HDR and LDR lands will result in less ground-disturbing activities in the future from recreation development thereby contributing to the benefits described for topography, geology, and soils. Implementation of the Proposed Action will have minor, beneficial, long-term impacts on soil conservation and topography, and geology at Kaw Lake.

3.6 NATURAL RESOURCES

For more information on the existing conditions for natural resources (including fish and wildlife resources and vegetation resources), please refer to Section 2.9 of the 2025 MP.

3.6.1 Alternative 1: No Action Alternative

The No Action Alternative would not update land management policies, as well as not provide any updated land classifications that could affect natural resources at Kaw Lake. The No Action Alternative would cause minor, long-term adverse impacts to natural resources since they would not be managed by current policies and needs at Kaw Lake.

3.6.2 Alternative 2: Proposed Action

The Proposed Action would bring land management policies up to date with current needs and natural resource requirements at Kaw Lake. The implementation of the proposed land classifications will allow project lands to further support the USACE and Oklahoma Department of Wildlife Conservation (ODWC) missions for wildlife conservation, as well as implementation of operational procedures that will protect and enhance wildlife and fishery populations and habitat. The 2025 MP resource goals and objectives aim to further enhance, conserve, and protect natural resources at Kaw Lake, including Species of Greatest Conservation Need (SGCN) and State and Federally Listed species. The establishment of ESA lands (+2,407 acres) and increase in WM lands (+11,782 acres) will help protect and conserve natural resources from various types of adverse impacts such as disturbance and habitat fragmentation. Therefore, the Proposed Action would provide moderate, short and long-term benefits to natural resources.

3.7 FEDERALLY THREATENED AND ENDANGERED SPECIES AND STATE SENSITIVE SPECIES

The Endangered Species Act of 1973 (16 U.S.C. § 1531 et seq., as amended) defines an endangered species as a species “in danger of extinction throughout all or a significant portion of its range.” A threatened species is a species “likely to become endangered within the foreseeable future throughout all or a significant portion of its range.” Proposed species are those that have been proposed in the Federal Register (FR) to be listed under Section 4 of the Endangered Species Act. Species may be considered endangered or threatened “because of any of the following factors: (1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purpose; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; and (5)

other natural or human-induced factors affecting continued existence.” USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which the USFWS has sufficient information to support proposals to list as endangered or threatened under the Endangered Species Act.

Section 7(a)(2) of the Endangered Species Act requires Federal agencies to ensure that any action authorized, funded, or carried out by such agency is not likely to 1) jeopardize the continued existence of any endangered or threatened species, or 2) result in the destruction or adverse modification of critical habitat. The term "jeopardize the continued existence of" means to appreciably reduce the likelihood of both the survival and recovery of listed species in the wild by reducing the species' reproduction, numbers, or distribution. Jeopardy opinions must present reasonable evidence that the project will jeopardize the continued existence of the listed species or result in destruction or adverse modification of critical habitat.

Using the Information for Planning and Consultation tool (IPaC), an official species list was obtained on September 16, 2025 from the USFWS Oklahoma Ecological Services Field Office. A copy of this list is available in Appendix C. All Federally listed Threatened and Endangered species as well as Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Act (BGEA) species reported on the official USFWS species are described in Table 4.

Table 4 - Federal and State Listed Conservation Species Potentially Occurring at the Kaw Lake and Dam Project Area (USFWS, 2025)

Species	Federal Status	State Status
Piping Plover (<i>Charadrius melodus</i>)	Threatened	None
Rufa Red Knot (<i>Calidris canutus rufa</i>)	Threatened	None
Alligator Snapping Turtle (<i>Macrochelys temminckii</i>)	Proposed Threatened	None
Peppered Chub (<i>Marchybopsis tetranema</i>)	Endangered	None
American Burying Beetle (<i>Nicrophorus americanus</i>)	Threatened	None
Monarch Butterfly (<i>Danaus plexippus</i>)	Proposed Threatened	None
Western Regal Fritillary (<i>Argynnis idalia occidentalis</i>)	Proposed Threatened	None
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	MBTA / BGEPA Protected	Threatened

Species	Federal Status	State Status
Golden Eagle (<i>Aquila chrysaetos</i>)	MBTA/ BGEPA Protected	None
Black-Billed Cuckoo (<i>Coccyzus erythrophthalmus</i>)	MBTA Bird of Conservation Concern	None
Carolina Chickadee (<i>Poecile carolinensis</i>)	MBTA Bird of Conservation Concern	None
Bobolink (<i>Dolichonyx oryzivorus</i>)	MBTA Bird of Conservation Concern	None
Canada Warbler (<i>Cardellina canadensis</i>)	MBTA Bird of Conservation Concern	None
Cerulean Warbler (<i>Dendroica cerulea</i>)	MBTA Bird of Conservation Concern	None
Chimney Swift (<i>Chaetura pelagica</i>)	MBTA Bird of Conservation Concern	None
Northern Saw-whet Owl (<i>Aegolius acadicus acadicus</i>)	MBTA Bird of Conservation Concern	None
Prairie Warbler (<i>Dendroica discolor</i>)	MBTA Bird of Conservation Concern	None
Prothonotary Warbler (<i>Protonotaria citrea</i>)	MBTA Bird of Conservation Concern	None
Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	MBTA Bird of Conservation Concern	None
Rusty Blackbird (<i>Euphagus carolinus</i>)	MBTA Bird of Conservation Concern	None
Wood Thrush (<i>Hylocichla mustelina</i>)	MBTA Bird of Conservation Concern	None

3.7.1 Alternative 1: No Action Alternative

The No Action Alternative would have no effect on any Threatened and Endangered species that may occur at Kaw Lake. Migratory bird species protected under the MBTA as well as the Bald and Golden Eagle Act protected species would not be adversely affected. Threatened and Endangered species would continue to be managed with existing USACE guidelines established under the 1971 MP, Section 7 of the ESA, the MBTA, the BGEA, and Oklahoma State Law.

3.7.2 Alternative 2: Proposed Action

The implementation of the 2025 MP will allow for better cooperative management plans with the USFWS and Oklahoma Department of Wildlife Conservation that will help to preserve, enhance, and protect vegetation and wildlife habitat resources that are essential to various federally listed endangered and threatened species, and state listed rare species and communities that may be found within USACE Kaw Lake federal project lands. To strengthen management opportunities and beneficially impact habitat diversity, the reclassifications in the 2025 MP include a 11,782-acre net increase for WM lands, as well as the classification of 2,407 acres as ESA lands. The net increase in wildlife management lands and establishment of ESA lands may provide suitable

The resource objectives will require that threatened and endangered species are managed by various ecosystem management principles, which will further help those species. Any future activities that could potentially result in impacts to Federally listed species will be coordinated with USFWS through Section 7 of the Endangered Species Act (ESA). Within the context of the ESA, the USACE has determined that the implementation of the Proposed Action will have No Effect on any federally listed threatened or endangered species and Would Not Jeopardize the Continued Existence of species proposed for Federal listing that may occur within the Kaw Lake federal fee boundary.

3.8 INVASIVE SPECIES

Please refer to Section 2.8.6 for information on the existing condition of invasive species at Kaw Lake in the 2025 MP.

3.8.1 Alternative 1: No Action Alternative

The No Action Alternative would have no effect on invasive species or their management. The 1971 MP would not be updated. No changes to policies or guidelines at Kaw Lake concerning invasive species would occur as a result of the No Action Alternative.

3.8.2 Alternative 2: Proposed Action

The reclassifications of land classes, improvement of resource management objectives, and the overall improvement of the 2025 MP will allow invasive species within USACE Kaw Lake federal project lands to be better managed. The establishment of ESA land (2,407 acres) and classifying 20,370 acres as WM lands helps to protect natural resources from various types of adverse impacts such as habitat fragmentation which increases the opportunity for the spread of invasive species. These areas will also receive updated invasive species management efforts. The resource goals and objectives will require monitoring and reporting of invasive species, as well as action items to prevent and/or reduce the spread of these species. Therefore, under the Proposed Action, there will be long-term minor, beneficial impacts on invasive species management as a result of implementing the 2025 MP.

3.9 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

Cultural resources preservation and management is an equal and integral part of all resource management at USACE-administered water resources projects. The term “cultural resources” is a broad term that includes but is not limited to historic and prehistoric archaeological sites, deposits, and features; burials and cemeteries; historic and prehistoric districts comprised of groups of structures or sites; cultural landscapes; built environment resources such as buildings, structures (such as bridges), and objects; Traditional Cultural Properties (TCP) and sacred sites. These property types may be listed on the National Register of Historic Places (NRHP) if they meet the criteria specified by 36 CFR 60.4 as authorized by the NHPA, reflecting significance in architecture, history, archaeology, engineering, and culture. Cultural resources that are identified as eligible for listing in the NRHP are referred to as “historic properties,” regardless of category. A TCP is a property that is eligible for inclusion in the NRHP based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community. Ceremonies, hunting practices, plant-gathering, and social practices which are part of a culture’s traditional lifeways, are also cultural resources.

Stewardship of cultural resources on USACE Civil Works water resources projects is an important part of the overall Federal responsibility. Numerous laws pertaining to identification, evaluation, and protection of cultural resources, Native American Indian rights, curation and collections management, and the protection of resources from looting and vandalism establish the importance of cultural resources to our Nation’s heritage. With the passage of these laws, the historical intent of Congress has been to ensure that the Federal government protects cultural resources. Guidance is derived from a number of cultural resources laws and regulations, including but not limited to Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1971 (as amended); Archaeological Resources Protection Act (ARPA) of 1979; Native American Graves Protection and Repatriation Act (NAGPRA); and 36 CFR Part 79, Curation of Federally Owned and Administered Archeological Collections. Implementing regulations for Section 106 of the NHPA and NAGPRA are 36 CFR Part 800 and 43 CFR Part 10, respectively. All cultural resources laws and regulations should be addressed under the requirements of the National Environmental Policy Act (NEPA) of 1969 (as amended), as applicable. USACE summarizes the guidance provided in these laws in ER and EP 1130-2-540.

For information on the existing conditions of Cultural, Historical, and Archaeological Resources at Kaw Lake, please refer to Section 2.10 of the 2025 MP.

3.9.1 Alternative 1: No Action Alternative

The No Action Alternative would not have any impacts to Cultural Resources identified in Section 2.10 of the 2025 MP. No changes to Cultural Resources Management at Kaw Lake would occur.

3.9.2 Alternative 2: Proposed Action

The Proposed Action would provide long-term protection measures for Cultural Resources Management efforts at Kaw Lake and Dam. The 2025 MP will not have an adverse effect on historic properties eligible or listed on the NRHP, but instead would provide updated monitoring and protection for historic properties over the next 25 years. As a result, the 2025 MP would provide minor, long-term benefits to Cultural Resources over the planning horizon of 25 years.

3.10 SOCIOECONOMICS AND DEMOGRAPHICS

For more information on the existing conditions of socioeconomics and demographics, please refer to Section 2.11 of the 2025 MP.

EO 13045 requires each federal agency “to identify and assess environmental health risks and safety risks that may disproportionately affect children” and “ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.” This EO was prompted by the recognition that children, still undergoing physiological growth and development, are more sensitive to adverse environmental health and safety risks than adults. The potential for impacts on the health and safety of children is greater where projects are located near residential areas.

3.10.1 Alternative 1: No Action Alternative

The No Action Alternative would not have any impacts on socioeconomics or demographics. The 2025 MP would not be implemented, and Kaw Lake would continue to be managed based on the 1971 MP and subsequent updates. The No Action alternative would not disproportionately affect children.

3.10.2 Alternative 2: Proposed Action

The Proposed Action would implement the 2025 MP and would not have any impacts on socioeconomics or demographics since no construction or changes that could affect local socioeconomic/demographic factors would occur; the changes proposed in the 2025 MP would not affect the local economy or local populations in any perceivable way. The Proposed Action would not disproportionately affect children.

3.11 RECREATION

For information on the existing conditions of recreation and the zone of influence for Kaw Lake, please refer to Section 2.12 of the 2025 MP.

3.11.1 Alternative 1: No Action Alternative

The No Action Alternative would keep the 1971 MP in place, which would cause moderate, long-term adverse impacts to recreation. These impacts would result from lack of updates in land management as well as land classifications related to recreation that would not reflect current recreation needs at Kaw Lake.

3.11.2 Alternative 2: Proposed Action

The Proposed Action would implement the 2025 MP, which provides updates to both recreation policies and goals, as well as large-scale changes to recreation land classifications. The 2025 MP would result in a 1,132-acre net decrease in HDR land. These land classification changes reflect current land management strategies (e.g. WM or PO acres), or the need for ESA areas. Lands that were once HDR and now identified as WM is still accessible to the public and can be used as recreational use. The overall updates and land classification changes presented by the 2025 MP would provide moderate, long-term benefits to recreation at Kaw Lake.

3.12 AESTHETIC RESOURCES

For information on the existing conditions of aesthetic resources at Kaw Lake, please refer to Section 2.9 of the 2025 MP.

3.12.1 Alternative 1: No Action Alternative

There would be no impacts on aesthetic resources as a result of the No Action Alternative, as there would be no changes to the existing 1971 MP.

3.12.2 Alternative 2: Proposed Action

The Proposed Action may have negligible, long-term, positive impacts to aesthetic resources due to a net decrease in future high density recreation areas, as well as an increase in MRML-WM lands and establishment of ESA lands. Benefits to aesthetic resources may occur due to overall less disturbance of aesthetic nature areas in ESA lands as well as an increase in MRML-WM lands.

3.13 HAZARDOUS, TOXIC, AND RADIOLOGICAL (HTRW)

For information on the existing conditions of HTRW at Kaw Lake, please refer to Section 2.6 of the 2025 MP.

3.13.1 Alternative 1: No Action Alternative

There would be no impacts to HTRW resources as a result of the No Action Alternative, as there would be no changes to the existing 1971 MP, and no known HTRW resources or facilities in the immediate vicinity of Kaw Lake would be affected by keeping the 1971 MP implemented.

3.13.2 Alternative 2: Proposed Action

The Proposed Action seeks to implement the 2025 MP which is a land management document that does not involve construction or ground-disturbing activities. There would be no impacts to any HTRW facilities or resources identified in the vicinity of Kaw Lake.

3.14 HEALTH AND SAFETY

For information on the existing conditions of health and safety at Kaw Lake, please refer to Section 2.7 of the 2025 MP.

3.14.1 Alternative 1: No Action Alternative

There would be no impacts to health and safety as a result of implementing the No Action Alternative, as there would be no changes made to the 1971 MP. Health and safety would continue to be managed and follow guidelines from the 1971 MP.

3.14.2 Alternative 2: Proposed Action

The Proposed Action would adopt and implement the 2025 MP which would change land management policies and land classifications at Kaw Lake. The Proposed Action does not involve any construction or ground-disturbing activities. The addition of 19 acres of Restricted and 216 acres of Designated No-wake water surface classifications will provide minor, long-term, benefits to health and safety since they enhance public safety near the dam and the swimming beach.

3.15 SUMMARY OF CONSEQUENCES AND BENEFITS

Table 5 provides a tabular summary of the consequences and benefits for the No Action and Proposed Action alternatives for each of the assessed resource categories in Section 3.

Table 5 - Summary of Consequences and Benefits

Resource	Change Resulting from 2025 MP (Proposed Action)	Environmental Consequences : No Action Alternative	Environmental Consequences: Proposed Action	Benefits Summary
Land Use	<p>Updates to land management policies and land reclassifications:</p> <ul style="list-style-type: none"> • Project Operations: 127 acres (-16) • Environmentally Sensitive Areas: 2,407 (+2,407) • High Density Recreation: 3,022 acres (-1,132) • Wildlife Management: 20,370 acres (+11,782) 	Moderate, long-term, adverse impacts due to outdated land management policies and land classifications.	Moderate, long-term beneficial impacts due to updated land management policies, updated land classifications, and updated resource goals and objectives.	Benefits caused by updated land management policies, land classifications, and updated resource goals and objectives that better align land management at Kaw Lake with current needs and trends, allowing for more effective and appropriate Land Use.
Water Resources Including Groundwater, Wetlands, and Water Quality	<p>Updates to water resource reclassifications:</p> <ul style="list-style-type: none"> • Restricted: 19 (+19) • Open Recreation: 19,192 (+352) • No Wake: 216 (+216) 	No effect.	Minor, long-term, beneficial impacts due to increased soil stabilization and reduced erosion that may enhance water quality.	Benefits caused by increases in WM and ESA lands that may enhance or preserve shoreline habitat that may reduce erosion by stabilizing soils, which reduces sediment runoff into the aquatic environment.
Climate	No change.	No effect.	No effect.	N/A
Air Quality	No change	No effect	No effect.	N/A

Resource	Change Resulting from 2025 MP (Proposed Action)	Environmental Consequences : No Action Alternative	Environmental Consequences: Proposed Action	Benefits Summary
Topography, Geology and Soils	No change	Minor, adverse, long-term impacts due to unmanaged, continued erosion and destabilization of soils.	Minor, beneficial, long-term impacts due to decreased erosion and soil disturbance.	Benefits occur from decreased erosion and soil disturbance due to ESA lands and increased WM lands. Soil erosion is also decreased by the conservation and enhancement of vegetation that further stabilizes soils.
Natural Resources	Establishment of ESA lands (+2,407 acres) and increase in WM lands (+11,782).	Minor, long-term adverse impacts due to outdated land management policies and land classifications that do not reflect current needs for Natural Resources.	Moderate, short and long-term benefits due to updated land management policies and land classifications that align with current needs for Natural Resources.	Benefits occur due to updated land management policies and land classifications that would enhance and preserve wildlife habitat. Increased ESA and WM lands would provide better managed wildlife habitat and less habitat disturbance due to anthropogenic activities.

Resource	Change Resulting from 2025 MP (Proposed Action)	Environmental Consequences : No Action Alternative	Environmental Consequences: Proposed Action	Benefits Summary
Threatened and Endangered Species, including SGCN species.	The implementation of the 2025 MP will allow for better cooperative management plans with the USFWS and Oklahoma Department of Wildlife Conservation that will help to preserve, enhance, and protect vegetation and wildlife habitat resources that are essential to various endangered and threatened species that may be found within USACE Kaw Lake federal project lands.	No effect	Minor, long-term beneficial impacts on T&E species and SGCN species habitats, no effects on T&E species in the context of Section 7 of the Endangered Species Act.	Benefits would occur due to updated land management policies and land classifications that would enhance and conserve wildlife habitat, including potential T&E/SGCN species' habitat. Establishing ESA lands and increased MRML-WM lands provides less potential disturbance to any of the listed species and their habitat.
Invasive Species	No change	No effect	Minor, long-term beneficial impacts due to updated land management policies and land classifications allowing for updated and more effective invasive species management.	Benefits occur from updated land management and land classifications allowing invasive species to be more effectively managed based on current needs at Kaw Lake.

Resource	Change Resulting from 2025 MP (Proposed Action)	Environmental Consequences : No Action Alternative	Environmental Consequences: Proposed Action	Benefits Summary
Cultural Resources	Updated long-term goals and objectives for Cultural Resources.	No effect	Minor, long-term benefits due to updated goals and objectives.	Benefits would occur due to updated long-term goals and objectives that would provide updates to Cultural Resource management at Kaw Lake.
Socioeconomics and Demographics	No change	No effect	No effect	No added benefit
Recreation	No change	Moderate, long-term adverse impacts since there would be no updates to reflect current recreation trends and needs at Kaw Lake.	Moderate, long-term benefits since the 2025 MP would update land classifications to reflect current needs and trends in recreation at Kaw Lake.	Benefits occur from updates to land classifications that reflect current recreation trends and needs at Kaw Lake. These changes allow recreation to be more effectively managed.
Aesthetic Resources	No change	No effect	Negligible, long-term benefits due to increased WM lands and ESA lands that may enhance aesthetic areas.	Benefits occur from increased WM lands and ESA lands that may provide more opportunities for less disturbed natural areas to become aesthetic.
Hazardous, Toxic, and Radioactive Waste	No change	No effect	No effect	No added benefit.

Resource	Change Resulting from 2025 MP (Proposed Action)	Environmental Consequences : No Action Alternative	Environmental Consequences: Proposed Action	Benefits Summary
Health and Safety	No change	No effect	Minor, long-term, benefits due to increased water safety as a result of establishing Restricted and No-Wake zones.	The addition of 19 acres of Restricted and 216 acres of Designated No-wake water surface classifications will provide minor, long-term, benefits to health and safety since they enhance public safety near the dam and the swimming beach.

SECTION 4: CUMULATIVE IMPACTS

Federal agencies are required to analyze the reasonably foreseeable effects of the proposed action consistent with Section 102 of NEPA. In accordance with CEQ guidance on the implementation of Section 102 of NEPA (seen below), the USACE also evaluates cumulative impacts. Cumulative impacts are defined as an impact on the environment that results from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from actions with individually minor but collectively significant effects taking place over a period of time. Impacts can be adverse or beneficial.

By Memorandum dated June 24, 2005 from the Chairman of the CEQ to the Heads of Federal Agencies entitled "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis", CEQ made clear its interpretation that "...generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions..." and that the "...CEQ regulations do not require agencies to catalogue or exhaustively list and analyze all individual past actions." CEQ guidance also recommends narrowing the focus of cumulative impacts analysis to important issues of national, regional, or local significance.

The initial step of the cumulative impact analysis uses information from the evaluation of direct and indirect impacts in the selection of environmental resources that should be evaluated for cumulative impacts. A Proposed Action would not contribute to a cumulative impact if it would not have a direct or indirect effect on the resource.

Based on a review of the likely environmental impacts analyzed in Section 3 (Affected Environment and Consequences) the USACE determined that the analysis of cumulative impacts will not include the following resources: socioeconomics and demographics and HTRW. With respect to these resource topics in Section 3, both the No Action and Proposed Action alternatives will either:

1. Not result in any direct or indirect impacts and therefore will not contribute to a cumulative impact; or,
2. That the nature of the resource is such that impacts do not have the potential to cumulate. For example, impacts related to geology are site specific and do not cumulate; or,
3. That the future with or future without project condition analysis is a cumulative analysis and no further evaluation is required. For example, because changing conditions are global in nature, the future without project condition and future with project condition analysis is inherently a cumulative impact assessment.

For each resource topic carried forward for cumulative impact analysis, the timeframe for analysis is the time since the 1971 MP and 25 years following the revised MP (2025-2050). The zone of interest for all resources are the 48 counties in a 50-mile radius of Kaw Lake defined in Section 2.11.1 of the 2025 MP.

4.1 PAST IMPACTS WITHIN THE ZONE OF INTEREST

Construction of Kaw Lake was authorized by the Flood Control Act of 1938 and is currently managed by the Tulsa District of USACE for the authorized purposes of flood control, hydropower, navigation, water supply, water quality, recreation, and fish and wildlife along the Arkansas River. Kaw Lake spans approximately 49,900 acres total, approximately 19,427 acres of which are water surface area at the conservation pool elevation of 1,010 feet NGVD29.

4.2 CURRENT AND REASONABLY FORESEEABLE PROJECTS WITHIN AND NEAR THE ZONE OF INTEREST

Potential future development or material placement on Flowage Easement Lands at Kaw Lake may result in cumulative impacts. Future management of the Flowage Easement Lands at Kaw Lake includes routine inspection of these areas to ensure that the Government's rights specified in the easement deeds are protected. In almost all cases, the Government acquired the right to prevent placement of fill material or habitable structures on the easement area. Placement of any structure that may interfere with the USACE flood risk management and water conservation missions may also be prohibited.

At the time of this publication, there are many foreseeable road projects within the zone of interest by the Oklahoma Department of Transportation.

National USACE policy set forth in ER 1130-2-550, Appendix H, states that USACE lands will, in most cases, only be made available for roads that are regional arterials or

freeways (as defined in ER 1130-2-550). All other types of proposed roads, including driveways and alleys, are generally not permitted on USACE lands. Any proposed expansion or widening of existing roadways on USACE lands will be considered on a case-by-case basis.

4.3 ANALYSIS OF CUMULATIVE IMPACTS

Impacts on each resource were analyzed according to how other actions and projects within the zone of interest might be affected by the No Action Alternative and Proposed Action. Impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis the intensity of impacts will be classified as negligible, minor, moderate, or major. These intensity thresholds were previously defined in Section 3.0. Moderate growth and development are expected to continue in the vicinity of Kaw Lake and cumulative adverse impacts on resources will not be expected when added to the impacts of activities associated with the Proposed Action or No Action Alternative. A summary of the anticipated cumulative impacts on each resource is presented below.

4.3.1 Land Use

A major impact would occur if any action were inconsistent with adopted land use plans or if an action would substantially alter those resources required for, supporting, or benefiting the current use. Land use around Kaw Lake and within the Arkansas River watershed is primarily agricultural with mixed urban areas, disc golf courses, forests, and open spaces. Under the No Action Alternative, land use would not change. The Proposed Action will result in the reclassification of project lands, the reclassifications were developed to help fulfill regional goals associated with good stewardship of land resources that would allow for continued use of project lands.

Therefore, cumulative impacts on land use within the area surrounding Kaw Lake, when combined with past and future actions in the region, are anticipated to be negligible.

4.3.2 Water Resources

A major impact would occur if any action were inconsistent with adopted surface water classifications or water use plans, or if an action would substantially alter those resources required for, supporting, or benefiting the current use. Kaw Lake was developed for water supply, flood control, and low flow augmentation purposes and is secondarily authorized for recreation and water quality. The reclassifications and resource objectives required to revise the 1971 MP are compatible with water use plans and surface water classification; further, they were developed to help fulfill regional goals associated with good stewardship of water resources that will allow for continued use of water resources associated with Kaw Lake. Therefore, cumulative impacts on water resources within the area surrounding Kaw Lake, when combined with past and proposed actions in the region, are anticipated to be negligible.

4.3.3 Air Quality

There are many highway projects in the zone of interest for Kaw Lake and many potential proposed projects that may contribute to the amount of new emissions that could potentially affect air quality within the region. The Proposed Action will have no effect to air quality localized to Kaw Lake. Vehicle traffic along park and area roadways and routine daily activities in nearby communities contribute to current and future emission sources; however, the impacts associated with the Proposed Action will still have no effect. The use of gas-powered equipment by the USACE to manage vegetation already occurs at Kaw Lake, and the Proposed Action would not contribute to a regional increase in criteria pollutant or regulated pollutant emissions that would degrade air quality. Therefore, there would be negligible cumulative impacts to air quality resulting from the Proposed Action when combined with past and future proposed action in the area.

4.3.4 Topography, Geology, and Soils

A major impact could occur if a proposed future Action exacerbates or promotes long-term erosion, if the soils are inappropriate for the proposed construction and would create a risk to life or property, or if there would be a substantial reduction in agricultural production or loss of Prime Farmland soils. The Proposed Action does not include any construction or ground-disturbing activities. The potential repeated removal or mowing of vegetation at Kaw Lake consistent with current use and as a result of the Proposed Action may contribute to negligible amounts of soil loss in the forecasted 25-year period of analysis. The Proposed Action is also expected to provide minor, long-term benefits to these resources by stabilizing the soil and reducing erosion due to enhanced vegetative habitat. Cumulative impacts on topography, geology, and soils within the area surrounding Kaw Lake, when combined with past and proposed actions in the region, are anticipated to be negligible.

4.3.5 Natural Resources

The significance threshold for natural resources would include a substantial reduction in ecological processes, communities, or populations that would threaten the long-term viability of a species or result in the substantial loss of a sensitive community that could not be offset or otherwise compensated. Past, present, and future projects are not anticipated to impact the viability of any plant species or community, rare or sensitive habitats, or wildlife. The Proposed Action is expected to have moderate, short and long-term impacts due to enhanced preservation and conservation of natural resources. The Proposed Action would not threaten viability of any natural resources or contribute to any substantial losses of communities. Therefore, there would be negligible cumulative impacts because of the Proposed Action when combined with past and future proposed actions in the area.

4.3.6 Threatened and Endangered Species

The Proposed Action is not expected to affect any Threatened and Endangered species within the context of Section 7 of the ESA. The Proposed Action is expected to

provide minor, long-term benefits to wildlife habitat that Threatened and Endangered species may utilize at Kaw Lake.

Should Federally listed species change in the future (delisting of species or listing of new species), associated requirements will be reflected in revised land management practices in coordination with the USFWS. The USACE will continue cooperative management plans with the USFWS and ODWC to preserve, enhance, and protect critical wildlife resources. The proposed Master Plan does not authorize construction activities, therefore USACE has determined the project will have No Effect to T&E species. The Master Plan re-classifies 1,148 acres from non-habitat conservation-based land classes like HDR to conservation-based land classes. Two-thousand four-hundred seven acres to ESA land and 11,782 acres to WM land with the proposed changes, future activities on those lands would be compatible to T&E species and support long-term conservation efforts of listed species in the area. Any construction or management activities in the future would go through project specific ESA reviews to account for any effects to T&E species.

4.3.7 Invasive Species

The land reclassifications required to revise the 1971 MP are compatible with Kaw Lake invasive species management practices. Therefore, there will be minor long-term beneficial impacts on reducing and preventing invasive species within the area surrounding Kaw Lake, resulting in negligible cumulative impacts when combined with past and future actions in the area.

4.3.8 Cultural Resources

Impacts could occur if a future proposed action would exacerbate the loss or degradation of cultural, historical, or archaeological resources at Kaw Lake. The Proposed Action is expected to provide minor, long-term, beneficial impacts to cultural, historical, and archaeological resources at Kaw Lake due to updated long-term goals and objectives that would modernize cultural resource management for Kaw Lake. The Proposed Action also does not involve any ground-disturbing activities that may affect cultural, historical, or archaeological resources and the 2025 MP takes into consideration the issue of artifact looting at Kaw Lake. Therefore, the Proposed Action, when combined with other past and future actions in the area, is expected to have negligible cumulative impacts when combined with past and future actions in the area.

4.3.9 Recreation

Kaw Lake provides regionally significant outdoor recreation benefits including a variety of recreation opportunities. The Proposed Action is expected to provide moderate, long-term benefits to recreation due to updated land classifications that reflect current recreation trends and needs at Kaw Lake. Cumulative impacts to recreation are expected to be negligible as a result of the Proposed Action combined with past and future actions in the area.

4.3.10 Aesthetic Resources

The Proposed Action is expected to have negligible, long-term benefits to aesthetic resources due to conservation and enhancement of natural environments across Kaw Lake as a result of increase ESA lands and increased WM lands. Cumulative impacts to aesthetic resources are expected to be negligible because of the Proposed Action combined with past and future actions in the area.

4.3.11 Health and Safety

The Proposed Action is expected to have minor, local, beneficial impacts to health and safety at Kaw Lake due to the establishment of No-Wake and Restricted water surface classifications that would improve public safety. Cumulative impacts to health and safety are expected to be negligible as a result of the Proposed Action combined with past and future actions in the area.

SECTION 5: COMPLIANCE WITH ENVIRONMENTAL LAWS

This EA has been prepared to satisfy the requirements of all applicable environmental laws and regulations and has been prepared in accordance with the NEPA, the Fiscal Responsibility Act of 2023, and USACE NEPA procedures. The proposed revision of the 1971 MP is consistent with the USACE's Environmental Operating Principles. The following is a list of applicable environmental laws and regulations that were considered in the planning of this project and the status of compliance with each:

Fish and Wildlife Coordination Act of 1958, as amended – The USACE initiated public involvement and agency scoping activities to solicit input on the 2025 MP EA, and to identify significant issues related to the Proposed Action. Information provided by USFWS and ODWC on fish and wildlife resources has been utilized in the development of the 2025 MP.

Endangered Species Act of 1973, as amended – Current lists of threatened or endangered species were compiled for the 2025 MP. The USACE has determined that no Federally Listed Species, State Listed Species or Species of Greatest Conservation Need would be affected by either the No Action Alternative or The Proposed Action.

Executive Order 13186 (Migratory Bird Habitat Protection) – Sections 3a and 3e of EO 13186 direct Federal agencies to evaluate the impacts of their Actions on migratory birds, with emphasis on species of concern, and inform the USFWS of potential negative impacts on migratory birds. The 2025 MP would not result in adverse impacts on migratory birds or their habitat.

Migratory Bird Treaty Act, as amended – The Migratory Bird Treaty Act of 1918 extends Federal protection to migratory bird species. The nonregulated “take” of migratory birds is prohibited under this act in a manner similar to the prohibition of “take” of threatened and endangered species under the Endangered Species Act. The timing of resource management activities at Kaw Lake would be coordinated to avoid impacts on migratory and nesting birds.

CWA of 1977, as amended – The Proposed Action will comply with all state and Federal CWA regulations and requirements and is regularly monitored by the USACE and the Oklahoma Department of Environmental Quality for water quality. A state water quality certification pursuant to Section 401 of the CWA is not required for the 2025 MP. There will be no change in the existing management of the reservoir that will impact water quality, but minor, long-term benefits to water quality are expected from the Proposed Action.

National Historic Preservation Act (NHPA) of 1971, as amended – Compliance with the NHPA of 1971, as amended, requires identification of all properties in the project area listed in, or eligible for listing in, the NRHP. All previous surveys, site testing, and excavations will be coordinated with the Oklahoma State Historic Preservation Officer and Native American Tribes with interest in the project area. Known sites are mapped and avoided by maintenance activities with review and approval from District Archeologist. Areas that have not undergone cultural resources surveys or evaluations

will need to do so prior to any earthmoving or other potentially impacting activities, as determined by the District Archeologist during review of the project.

Clean Air Act of 1977, as amended – The USEPA established nationwide air quality standards to protect public health and welfare. Existing operation and management of the reservoir is compliant with the Clean Air Act and will not change with the 2025 MP. A General Conformity Determination is not required since the emissions of either alternative are negligible at best and are otherwise de minimis.

Farmland Protection Policy Act (FPPA) of 1980 and 1995 – The FPPA's purpose is to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. There are Prime Farmland and farmland of state importance on Kaw Lake project lands, but these will not be impacted.

Executive Order 11990, Protection of Wetlands, as amended – EO 11990 requires Federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in executing Federal projects. The Proposed Action complies with EO 11990.

Executive Order 11988, Floodplain Management, as amended – This EO directs Federal agencies to evaluate the potential impacts of proposed actions in floodplains. Both alternatives comply with EO 11988, as neither will have impacts to the existing floodplain at Kaw Lake.

CEQ Memorandum dated August 11, 1980, Prime or Unique Farmlands – Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The Proposed Action will not impact Prime Farmland present on Kaw Lake project lands.

SECTION 6: IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

NEPA requires that Federal agencies identify “any irreversible and irretrievable commitments of resources which will be involved in the Proposed Action should it be implemented” (42 U.S.C. § 4332). An irreversible commitment of resources occurs when the primary or secondary impacts of an Action result in the loss of future options for a resource. Usually, this is when the Action affects the use of a nonrenewable resource, or it affects a renewable resource that takes a long time to regenerate. An irretrievable commitment of resources is typically associated with the loss of productivity or use of a natural resource (e.g., loss of production or harvest). No irreversible or irretrievable impacts on Federally protected species or their habitat is anticipated from implementing the 2025 MP.

SECTION 7: PUBLIC AND AGENCY COORDINATION

In accordance with NEPA, the USACE initiated public involvement and agency scoping activities to solicit input on the proposed revision of the 1971 MP, as well as identifying any issues related to the Proposed Action. The initial scoping meeting was a public open house held at the Kaw City Community Building in Kaw City, OK. The purpose of this open house was to provide attendees with information regarding the proposed Master Plan revision, including;

- What is a Master Plan?
- What a Master Plan is Not;
- Why Revise a Master Plan?
- Overview of the National Environmental Policy Act (NEPA) process;
- Master Planning process;
- Proposed Changes to the Master Plan; and
- Instructions for submitting comments.

A 30-day public input period was established from July 24, 2024, to August 23, 2024, to receive comments from the public and agencies. This comment period was extended to August 30, 2024 to allow time for additional comments. The USACE received 12 comments during this initial scoping period. These comments and the USACE response can be found in Chapter 7 of the 2025 MP.

Attachment A to this EA includes the news release, agency coordination letters, and the distribution list for all coordination letters. The EA has been coordinated with agencies having legislative and administrative responsibilities for environmental protection.

SECTION 8: ACRONYMS AND ABBREVIATIONS

%	Percent
°	Degrees
§	Section
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
CO ₂ e	CO ₂ -equivalent
CRMP	Cultural Resources Management Plan
CWA	Clean Water Act
DOE	Department of Energy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EP	Engineer Pamphlet
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ER	Engineer Regulation
F	Fahrenheit
Ft	Feet
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection and Policy Act
FY	Fiscal Year
GHG	Greenhouse Gas
GPM	Gallons Per Minute
HPMP	Historic Properties Management Plan
HTRW	Hazardous, Toxic, Radioactive Wastes
IPaC	Information for Planning and Consultation (USFWS)
LDA	Limited Development Area
LDR	Low Density Recreation
MBTA	Migratory Bird Treaty Act
MP	Master Plan
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NO ₂	Nitrogen Dioxide
NOX	Nitrogen Oxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRM	Natural Resources Management tool
NWI	National Wetlands Inventory (USFWS)
NWS	National Weather Service
Pb	Lead

PBO	Programmatic Biological Opinion
PL	Public Law
PM _{2.5}	Particulate Matter Less than 2.5 Microns
PM ₁₀	Particulate Matter Less than 10 Microns
RPEC	Regional Planning and Environmental Center
SGCN	Species of Greatest Conservation Need
SO ₂	Sulfur Dioxide
TCP	Traditional Cultural Properties
TDS	Total Dissolved Solids
TSI	Trophic State Index
TMDL	Total Maximum Daily Load
U.S.	United States
U.S.C.	U.S. Code
USCB	United States Census Bureau
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Service
VOC	Volatile Organic Compound
WMA	Wildlife Management Area
WSST	Web Soil Survey Tool

SECTION 9: LIST OF PREPARERS

Sylvester Rodriguez: USACE Regional Planning and Environmental Center, 5 Years of Experience

Attachment A: Public and Agency Coordination



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
2488 EAST 81ST STREET
TULSA, OKLAHOMA 74137-4290

July 11th, 2024

PUBLIC NOTICE

**OPEN HOUSE FOR KAW LAKE MASTER PLAN REVISION
KAW LAKE, OKLAHOMA**

The Tulsa District, U.S. Army Corps of Engineers (USACE), is revising the Kaw Lake Master Plan. The USACE defines the master plan (MP) as the strategic land use management document that guides the comprehensive management and development of all recreational, natural, and cultural resources throughout the life of the water resource development project. It defines "how" the resources will be managed for public use and resource conservation. The current MP, last approved in 1966, needs revision to address changes in regional land use, population, outdoor recreation trends, and the USACE management policy.

Revision of the MP will not detail the technical or operational aspects of the lake related to flood risk management, the water conservation missions of the project, or the shoreline management program, which specifies what private uses are permitted along the shoreline. The MP study area will include Kaw Lake proper and all adjacent recreational and natural resources in USACE fee-owned property.

An open house will be held from 4:00 pm to 6:00 pm on July 24, 2024, at the Kaw Community Building, located at 300 Morgan Square North, Kaw City, OK 74641. The open house will provide attendees with information regarding the revision content and process and a general schedule. Attendees can view current land use classification maps and ask USACE staff questions.

Key topics to be discussed in the revised MP include revised land use classifications, new natural and recreational resource management objectives, recreation facility needs, and special issues such as invasive species management and threatened and endangered species habitat. A 30-day public comment period will begin July 24, 2024, and end August 23, 2024. During this time, the public can send comments, suggestions, and concerns. Public participation is critical to the successful revision of the MP. Information provided at the open house, including the existing MP, may be viewed on the Tulsa District website at the following link.

<https://www.swt.usace.army.mil/Missions/Recreation/Master-Plans/>

Written comments can be submitted in writing at the scheduled open house or mailed to the USACE, Lake Manager, 9400 Lake Road, Ponca City, OK 74604. Comments can also be emailed to CESWT-OD-NX@usace.army.mil.

Sincerely,

Robert Morrow, PMP

Robert Morrow, PMP
Chief, Environmental Branch
Regional Planning and Environmental Center

Project	Stakeholder	Address	City	State	Zip	Phone #	email Address
Kaw	City of Ponca City	516 E. Grand	Ponca City	OK	74601	580-767-0300	development@poncacityok.gov
Kaw	City of Kaw City	900 Morgan Sq.	Kaw City	OK	74641	580-269-2525	utilities@kawcityok.net
Kaw	City of Enid	P.O. Box 1768	Enid	OK	73702	580-616-7269	gpankonin@enid.org
Kaw	City of Stillwater (Water Authority)	723 S. Lewis St	Stillwater	OK	74074	405-372-0025	news@stillwater.org
Kaw	Kaw Nation	P.O. Box 50	Kaw City	OK	74641	580-269-2552	jthompson@kawnation.com
Kaw	ODWC	P.O. Box 53465	Oklahoma City	OK	73152	405-521-2739	
Kaw	Oklahoma Municipal Power Authority	2701 W I-35 Frontage Rd	Edmond	OK	73013	405-340-5047	kbeaston@ompa.com
Kaw	Kaw Lake Education Foundation	400 E. Central Suite 304	Ponca City	OK	74601	580-716-9015	
Kaw	OG&E Sooner Generating Station	10800 County Road 230	Red Rock	OK	74651	800-272-9741	
Kaw	Markwayne Mullin US Senator	3817 NW Expressway #780	Oklahoma City	OK	73112	405-246-0025	www.mullin.senate.gov/contact
Kaw	Janes Lankford US Senator	1015 N. Broadway Ave	Oklahoma City	OK	73102	405-231-4941	www.lankford.senate.gov/contact/email
Kaw	Frank Lucas US Representative	10952 N.W. Expressway	Yukon	OK	73099	405-373-2046	www.lucas.house.gov/contact/email
Kaw	Bill Coleman OK State Senator	2300 N. Lincoln Blvd.	Oklahoma City	OK	73105	405-521-5581	bill.coleman@oksenate.gov
Kaw	Ken Luttrell OK State Representative	10 Ramblewood St.	Ponca City	OK	74604	405-557-7355	ken.luttrell@okhouse.gov



NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS

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USACE to host in-person public open house review of the Kaw Lake Master Plan revision

Kaw City, Oklahoma – The Tulsa District, U.S. Army Corps of Engineers will host a public open house from 4 p.m. – 6 p.m., July 24, 2024, at the Kaw Community Building, 300 Morgan Square North, Kaw City, OK 74641 to provide information and receive public input on the Kaw Lake Master Plan and Environmental Assessment.

The meeting will be an open house format for the public to view the current land use maps, ask questions, and provide comments about the project. If unable to attend the in-person meeting, documents will be available for comment at <https://www.swt.usace.army.mil/Missions/Recreation/Master-Plans/>

Documents posted for online public review include:

- 1970 Master Plan for Kaw Lake
- 1970 Land Classification Map
- Comment Form
- Downloadable Presentation

USACE defines the Master Plan as the strategic land use management document that guides the comprehensive management and development of all recreational, natural, and cultural resources throughout the life of the water resource development project. Public participation is critical to the successful revision of the Master Plan.

The Master Plan study area includes Kaw Lake proper and all adjacent recreational and natural resource properties under USACE administration. Kaw Lake is a multi-purpose reservoir constructed and managed for flood control, hydropower, navigation, water supply, water quality, recreation and fish and wildlife.. The current Master Plan for Kaw Lake is dated 1970. The revision is needed to address changes in regional land use, population, outdoor recreation trends, and USACE management policy.

Key topics addressed in the Master Plan include updated land and water classifications, new natural and recreational resource management objectives, recreation facility needs, and special topics such as public hunting. The Master Plan **does not** address in detail the technical operational aspects of the lake related to the flood risk management of the project.

Comments may be submitted online by filling out the Comment Form and emailing or mailing comments to the address below. Only written comments will be accepted. The comment period begins July 24, 2024 and ends August 23, 2024.

Questions pertaining to the Master Plan or public meeting can be addressed to: USACE, Lake Manager, 9400 Lake Road, Ponca City, OK 74604 or sent via email to CESWT-OD-NX@usace.army.mil.

-30-

U.S. ARMY CORPS OF ENGINEERS – TULSA DISTRICT

2488 E 81st St,
Tulsa, OK 74137
WWW.SWT.USACE.ARMY.MIL

KAW LAKE MASTER PLAN REVISION:

PUBLIC INVOLVEMENT PRESENTATION



U.S. Army Corps of Engineers
Tulsa Worth District



MISSION / PEOPLE / TEAMWORK



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Purpose of Presentation

- Inform the public and stakeholders that a master plan revision has started
- **Define** a master plan
- **Describe** the master plan **revision process**
- **Provide instructions** on how to participate in the revision process
- **Encourage** participation
- **Provide links** to documents

The Corps defines a Master Plan 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 the water resource development project.”

Source: Chapter 3 of EP 1130-2-550 available at
www.usace.army.mil/library/publications



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Presentation Topics

What is a master plan?

Why do a revision?

What is the revision process?

What is not part of a master plan?

What is changing in the plan?

How can I participate?

Who can I talk to about the plan?

When will the master plan be done?



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What is a master plan?

- The master plan is a **25 year comprehensive land use management guide** for recreational, natural, and cultural resources
- **Adheres to Federal laws** to preserve, conserve, restore, maintain, manage, and develop project lands, waters, and associated resources, including the National Environmental Policy Act (NEPA) for environmental stewardship and outdoor recreation
- Provides **land classifications** and **resource management objectives** that are broad and adaptive over time
- Requires and encourages **public involvement**



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Why do a revision?

- The current master plan is **out of date** and is **no longer compliant** with new regulations
- **Substantial changes in** environmental, cultural, social, and recreational **conditions have occurred** since the current master plan was approved
- **Re-examine land classification** due to these substantial changes
- The master plan **provides long-term goals** and **consistent management objectives** to guide balanced management of resources and public recreation



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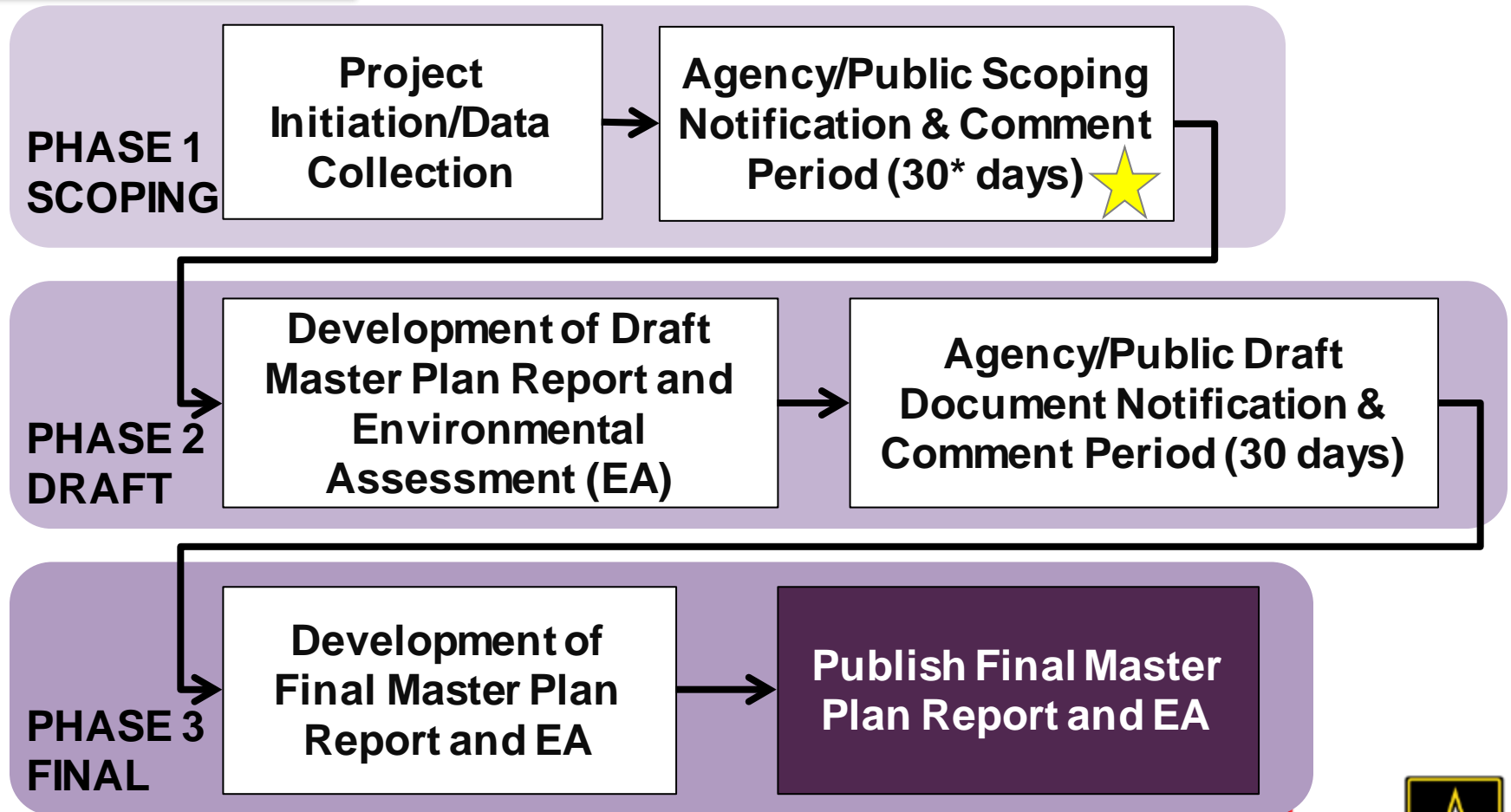
What is the revision process?

The process is a cover-to-cover **review and revision of the entire plan** and is accomplished by:

- **A team of Corps employees** including Operations, Real Estate, Master Planning, and Environmental Compliance subject matter experts
- **Receive input from** and **collaboration with** partners, neighbors, stakeholders, elected officials, resource agencies, and the public
- A thorough review and update of **land and water surface classifications**
- Developing appropriate **NEPA compliance** documents



What is the revision process?



Where we are today



Source: Engineering Pamphlet (EP) 1130-2-550

Project Operations

Lands required for the dam, spillway, levees, office, maintenance facilities and other areas that are used solely for project operations.

High Density Recreation

Land developed for intensive recreational activities for the visiting public, including day use areas and campground areas for commercial concessions, and quasi-public development.

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

Multiple Resource Management Lands

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

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

Inactive and/or Future Recreation Areas: Recreation areas planned for the future or that have been temporarily closed.

Environmentally Sensitive Areas

Areas where scientific, ecological, cultural or aesthetic features have been identified. These areas must be considered by management to ensure they are not adversely impacted.

Mitigation

Lands acquired or designated specifically for offsetting losses associated with development of the project. Lands allocated as separable mitigation lands can be given this classification.



Source: Engineering Pamphlet (EP) 1130-2-550

Open Recreation	Those waters available for year-round or seasonal water-based recreational use.
Restricted	Water areas restricted for project operations, safety, and security purposes.
Designated No-Wake	To protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and for public safety.
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.

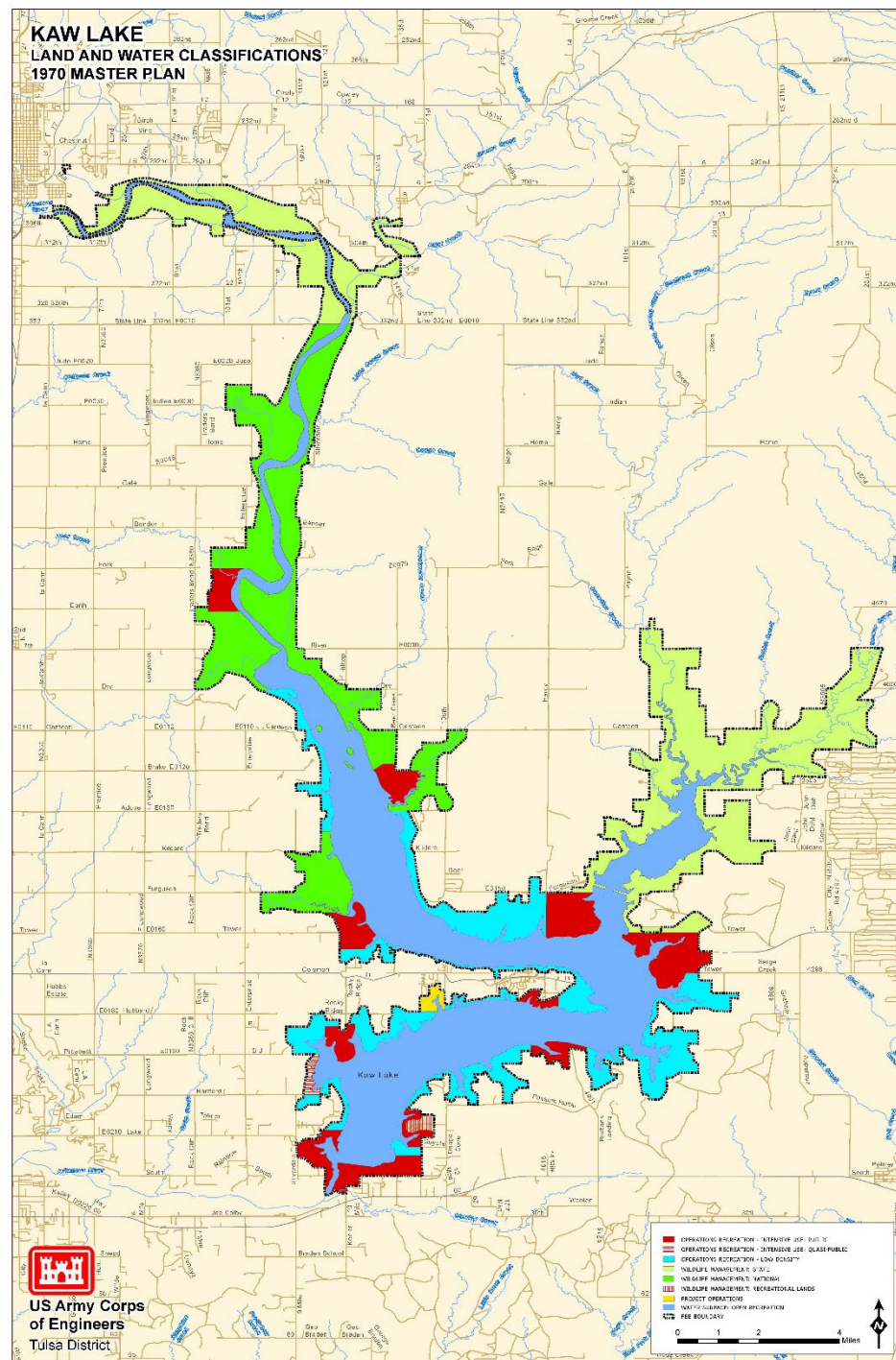


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What is the revision process?

Land Use Map from 1970 Master Plan



What is the revision process?

NEPA Compliance

National Environmental Policy Act (NEPA)

Purpose of NEPA is to:

- Ensure federal agencies give proper **consideration to the environment** prior to undertaking a federal action
- **Involve the Public** (scoping) in the decision-making process
- **Document the process** by which agencies make informed decisions

NEPA Scoping Process:

- Opportunity for **public comments and questions** on the potential impacts of proposed federal actions
- Includes comments from other federal, state, and local governments, and Tribal Nations



What is not part of a master plan?

- Facility **design details**
- Details of **daily project administration**
- Technical aspects of:
 - Water management for **flood risk management**
 - Regional **water quality**
 - **Water supply**
 - **Shoreline management**
 - **Water level management**
 - **Hydropower**
 - **Navigation**



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What is changing in the plan?

At this point in the revision process **there are no proposed changes**

The Corps is **requesting written comments for RECOMMENDED changes** to the existing master plan

Possible Changes to the Revised Mater Plan Could Include:

- Change Land and Water Classification
- Change Resource Goals and Objectives
- Create Utility Corridors



Submit written comments!

Review all documents available on the
USACE website:

<https://www.swt.usace.army.mil/Missions/Recreation/Master-Plans/>

Documents available on the website include:

- Project maps
- Comment form
- Presentation

Spread the word by telling your
colleagues, friends and neighbors
to participate



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How can I participate?

Comments will be accepted only **in writing**, some of the methods for submitting a comment include:

- You may **download the comment form** provided on the website, fill it out electronically, and email it to the Corps
- Or you may **print the comment form** provided on the website, fill it out by hand, and mail it to the Corps at the address on the comment form
- Or you may **write a comment or send an email** without using the comment form, and mail or email it to the Corps at the address provided on the website
- Comments are due by close of business on **August 23, 2024**



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Who can I talk to about the plan?

Talk to anyone from the USACE at the meeting to answer your questions.

- Call the Lake Office at:
580-762-5611
- Visit the Lake Office at:
9400 Lake Road, Ponca City, OK 74604
- Email us your questions at:
CESWT-OD-NX@usace.army.mil



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- The master plan will take **18-24 months** to complete
- Projected milestones/schedule

Public Notification for Scoping

24 July

Public Comment Period (30 days)

24 July– 23 August 2024

Draft Master Plan/EA Public Notification

October 2025*

Public Comment Period (30 days)

November 2025*

Final Master Plan/EA Approved

May 2026*

* Projected



Thank you for viewing this presentation and participating in the master plan revision process at Kaw Lake.

Website address:

<https://www.swt.usace.army.mil/Missions/Recreation/Master-Plans/>

Email:

CESWT-OD-NX@usace.army.mil

Mail:

USACE
Lake Manager
9400 Lake Road
Ponca City, OK 74604



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**DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
2488 EAST 81ST STREET
TULSA, OKLAHOMA 74137-4290**

July 30th, 2024

PUBLIC NOTICE

**EXTENTION OF THE COMMENT PERIOD FOR CANTON, KAW, AND SKIATOOK LAKES
MASTER PLAN REVISION**

The Tulsa District, U.S. Army Corps of Engineers (USACE), is revising the Canton, Kaw, and Skiatook Lake Master Plans. Due to a server error the information posted on our website about the master plan update for each of these lakes was temporarily unavailable. The issue began on July 23rd and was resolved before close of business on July 24th. We want to ensure that all members of the public can access the master plan update materials. To ensure this we will be extending the public comment period for all three lakes until 5:00 P.M. on August 30th.

During this time, the public can send comments, suggestions, and concerns. Public participation is critical to the successful revision of the Master Plans. Information provided at the open houses for each of the lakes, including the existing Master Plans, can be viewed on the Tulsa District website at the following link.

<https://www.swt.usace.army.mil/Missions/Recreation/Master-Plans/>

Sincerely,

Brandon Perry
Acting Chief, Natural Resources and
Recreation Branch
Operations Division
U.S. Army Corps of Engineers
Tulsa District

Comment	Response
Comments from the EPA	
<p>The region 6 office of the U.S. Environmental Protection Agency (EPA) has reviewed the Tulsa District, U.S. Army Corps of Engineers (USACE), project requesting comments on environmental issues for the proposed revision of the Kaw Lake Master Plan. The USACE defines the master plan (MP) as the strategic land use management document that guides the comprehensive management and development of all recreational, natural, and cultural resources throughout the life of the water resource development project. It defines “how” the resources will be managed for public use and resource conservation. The current Kaw Lake MP was approved in 1976 and needs revision to address changes in regional land use, population, outdoor recreation trends, and the USACE management policy. The MP study area will include Kaw Lake proper and all adjacent recreational and natural resources in USACE fee-owned property. To assist in the scoping process for the Project, EPA has identified significant areas for your attention. We offer the following comments for your consideration:</p> <p>Air Quality Comments</p> <p>EPA asks that the environmental document provide a detailed discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards (NAAQS) and non-NAAQS pollutants, criteria pollutant nonattainment areas, and potential air quality impacts of the proposed project. Such an evaluation is necessary to understand the potential impacts from temporary, long-term, or cumulative degradation of air quality.</p> <p>EPA recommends the environmental document describe and estimate air emissions from potential construction, maintenance, and operation activities, as well as proposed mitigation measures to minimize those emissions. We recommend an evaluation of the following measures to reduce emissions of criteria air pollutants and hazardous air pollutants (air toxics):</p> <p>For existing conditions, EPA recommends the environmental document provide a detailed discussion of ambient air conditions, NAAQS, and criteria pollutant nonattainment areas in the vicinity of the project.</p> <p>EPA recommends the environmental document estimate emissions of criteria and hazardous air pollutants (air toxics) from the proposed project and discuss the timeframe for release of these emissions over the lifespan of the project and describe and</p>	<p>Noted. USACE seeks to address this comment through the Environmental Assessment section on Air Quality. Currently there are no anticipated construction activities within the Master Plan. Any future construction would be required to complete necessary NEPA analysis.</p>

Comment	Response
<p>estimate emissions from potential construction activities, as well as proposed mitigation measures to</p> <p>document should also consider any expected air quality/visibility impacts to Class I Federal Areas identified in 40 CFR Part 81, Subpart D.</p> <p>EPA recommends the environmental document specify all emission sources by pollutant from mobile sources (on and off-road), stationary sources (including portable and temporary emission units), fugitive emission sources, area sources, and ground disturbance. This source specific information should be used to identify appropriate mitigation measures and areas in need of the greatest attention.</p> <p>a draft Construction Emissions Mitigation Plan and ultimately adopt this plan in the Record of Decision. We recommend all applicable local, state (e.g., coordination of land-clearing activities with the state air quality agency to determine air quality conditions such as atmospheric inversions prior to performing open burning activities), or Federal requirements (e.g., certification of non-road engines as in compliance with the EPA Tier 4 regulations found at 40 CFR Parts 89 and 1039) be included in the Construction Emissions Mitigation Plan in order to reduce impacts associated with emissions of particulate matter and other toxics from any potential construction-related activities.</p> <p>National Pollutant Discharge Elimination System (NPDES) Comments</p> <p>EPA comments are specific to CWA Section 402, 40 CFR § 122.26(b)(14)(x) and 40 CFR § 122.26(b)(15)(i) National Pollutant Discharge Elimination System (NPDES) permitting regulations which authorize the discharge of stormwater from large and small construction activities in areas upland from a waterbody and not considered a jurisdictional wetland area, regardless of the land's designation as federal, state, Indian country or private.</p> <p>Involvement presentation identified construction-related land classification definitions within the revision process including: Project</p> <p>Operations lands required for office, maintenance facilities and other areas used solely for project operations; High Density Recreation land developed for intensive recreational activities for the visiting public, including day use areas and campground areas for</p>	

Comment	Response
<p>development; and, Multiple Resource Management Lands - Low Density Recreation lands with minimal development or infrastructure that support passive public recreational use (e.g., trails, primitive camping, wildlife observation, fishing and hunting). Additionally, the Kaw Lake, Arkansas River Design Memorandum No. 4B identified 10 public-use areas with facilities including individual/group camping facilities, waterborne sanitary facilities, potable water supply, electrical hook-ups, boat ramps, access roads, gate sheds, picnic sites, group picnic shelters, parking facilities,</p> <p>trailer dump stations, playground equipment, amphitheatre, walkways, change houses, administration and maintenance buildings. Also, multiple Supplements To Design Memorandum No. 4B Master Plan (Updated) from 1973-1994 have included construction of a waterborne shower/toilet building, group shelters, an amphitheater, and additional dry boat storage; change of land use allocation from water supply to intensive use recreation, redesign/construction of group camping, roads, ramps and parking; relocation/construction of Kaw Council House, realign road access, move 14 campsites and provide toilets, electrical outlets and utilities; expand</p> <p>boat docks and a mooring area, relocate/construct 25 campsites from one recreational area to another; and revision/updates to the three recreational area public use area site plans to reflect as built conditions. EPA recommends clarity on whether the Kaw Lake,</p> <p>the previous iteration and supplements of the master plan. Therefore, it is important to clarify that stormwater discharges from earth disturbances related to construction activities for buildings/shelters/change houses, trails, roads, driveways, parking, housing/RV or trailer parks/guest establishments, cafes/sport shop/grocery stores, picnic shelters/group shelters,</p> <p>identified above in the presentation and master plan/supplements do fall under Section 402 of the CWA and NPDES permitting program. For 40 CFR § 122.26(b)(14)(x) and 40 CFR § 122.26(b)(15)(i) NPDES regulations (applicable to State NPDES programs, see § 123.25) which authorize the discharge of stormwater from large and small construction activities, all entities associated with a</p>	

Comment	Response
<p>construction project who: 1) meet the NPDES permitting authority's definition of "operator," 2) cause an earth disturbance of 1 acre or greater, or less than one acre if part of a larger common plan of development or sale that ultimately disturbs 1 acre or greater, and 3) discharge stormwater from their construction activities (including any on- and off-site construction support activities), are required to obtain NPDES permit coverage via the Construction General Permit (CGP) or individual NPDES permit from the NPDES permitting authority prior to beginning construction activities and/or construction support activities.</p> <p>EPA's 2022 CGP definition of construction activities refer to "earth-disturbing activities, such as the clearing, grading, and excavation of land, and other construction-related activities (e.g., grubbing; stockpiling of fill material; placement of raw materials at the site) that could lead to the generation of pollutants. Some of the types of pollutants that are typically found at construction sites are: sediment; nutrients; heavy metals; pesticides and herbicides; oil and grease; bacteria and viruses; trash, debris, and solids; treatment polymers; and any other toxic chemicals." Therefore, demolition, building additions, renovations and new construction on existing pavement that results in earth disturbance and/or construction support activities (e.g., equipment staging yards, materials storage areas, excavated material disposal areas, etc.) that involve earth disturbance or pollutant-generating activities of its own, are considered construction-related activities that require NPDES permit coverage.</p> <p>Additionally, because it appears that the overall earth disturbance of this Kaw Lake Master Plan project will be greater than 1 acre, the larger common plan of development or sale will be triggered, therefore stormwater discharges from all construction activities and all -site or off-site construction support activities (i.e., borrow pits, staging areas, material storage areas, temporary batch plants, laydown areas, etc.) will be required to obtain NPDES permit coverage via the CGP or individual NPDES permit (except any portion of the project's construction activities that is covered by a CWA 404 permit or waived from permit coverage) regardless if the smaller project's earth disturbance in areas upland from the waterbody and not considered a jurisdictional wetland area is less than 1 acre. In Oklahoma, the Oklahoma Commission on Environmental Quality (ODEQ) is the NPDES</p>	

Comment	Response
<p>permitting authority, except discharges in the State of Oklahoma 1) in areas under the authority of the Oklahoma Department of Agriculture and Forestry and 2) areas of Indian country covered by an extension of state program authority pursuant to Section 10211 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA) and 3) areas associated with oil and gas exploration, drilling, operations, and pipelines (includes SIC Groups 13 and 46, and SIC codes 492 and 5171) of which EPA is the NPDES permitting authority.</p> <p>Resource Conservation and Recovery Act (RCRA) Permits and Solid Waste Comments</p> <p>EPA recommends applicable public laws to include RCRA, Toxic Substance Control Acts (TSCA) if needed and Update locations of solid/hazardous waste containers.</p> <p>EPA recommends addressing potential/current sources of contamination to the area and have an illegal trash dumping action plan.</p> <p>EPA recommends addressing impacts on hazardous, toxic, radioactive, or solid wastes (including PCBs and asbestos) of proposed action and alternatives.</p> <p>EPA recommends addressing solid and hazardous waste management plans and any hazardous or solid waste concerns with implementation of the proposed master plan.</p> <p>EPA appreciates the opportunity to review the environmental issues and are available to discuss EPA's comments.</p>	
Comments from the Public	
<p>Would like the millet to be planted in Kaw Lake.</p>	<p>Noted. As part of the Master Plan revision process, the study team considered the vast recreational opportunities offered at Kaw Lake. A resource objective was created to consider existing and future potential recreational opportunities for multiple user groups while ensuring visitor safety. Resource goals and objectives can be found in Chapter 3 of the Kaw Lake Master Plan. The consideration of recreational opportunities for multiple user groups is also addressed in Chapter 6 of the Master Plan.</p>

Comment	Response
<p>Good Evening, Kaw Lake has been a staple for waterfowl hunting in not only our state but our country for years, brining in revenue to the surrounding economy. My family has owned land around the lake forever. I grew up going to t he pasture with my grandpa and hunting with family for the last 20 years. Back when the lake was air-seeded with millet, the duck hunting on our ground was incredible - it still has its days - but it has changed completely since it has stopped. The decision to bring this back would change and sculpt not only the hunting on the lake but all the ponds in the surrounding area, back to what it used to be. I would love nothing more for my future children and their friends to have the opportunity to understand and appreciate how incredible the area can be for waterfowl hunting when true management and habitat conservation is taking place. Bringing this back would change my personal hunting experiences, and the future generations for years, and bring even more revenue back to the area. Thank you for listing to my comments and taking them into consideration.</p>	<p>Noted. As part of the Master Plan revision process, the study team considered the vast recreational opportunities offered at Kaw Lake. A resource objective was created to consider existing and future potential recreational opportunities for multiple user groups while ensuring visitor safety. Resource goals and objectives can be found in Chapter 3 of the Kaw Lake Master Plan. The consideration of recreational opportunities for multiple user groups is also addressed in Chapter 6 of the Master Plan.</p>
<p>I think bringing back the millet to Kaw would benefit us hunters, and also benefit our local economy. Waterfowl hunters used to come from all over the country to hunt Kaw lake. Between the purchase of hunting licenses, hotel rooms, food, and boat permits it would financially benefit our community. It would also give the local and migratory birds a steady food source.</p>	<p>Noted. As part of the Master Plan revision process, the study team considered the vast recreational opportunities offered at Kaw Lake. A resource objective was created to consider existing and future potential recreational opportunities for multiple user groups while ensuring visitor safety. Resource goals and objectives can be found in Chapter 3 of the Kaw Lake Master Plan. The consideration of recreational opportunities for multiple user groups is also addressed in Chapter 6 of the Master Plan.</p>
<p>I would love to see the millet program reinstated where possible and water level control to take migrating fowl more into consideration. Allowing for water level drop some for summer millet seeding and retaining water in the fall/winter. On years when the water level is right, Kaw lake has been a major resting area for migrating waterfowl as well as a premier hunting destination.</p>	<p>Noted. As part of the Master Plan revision process, the study team considered the vast recreational opportunities offered at Kaw Lake. A resource objective was created to consider existing and future potential recreational opportunities for multiple user groups while ensuring visitor safety. Resource goals and objectives can be found in Chapter 3 of the Kaw Lake Master Plan. The</p>

Comment	Response
	consideration of recreational opportunities for multiple user groups is also addressed in Chapter 6 of the Master Plan.
I believe the millet program should be reinstated. I have a great friend that used to come every year from Wisconsin just to hunt ducks. He hunted every day both sides of the split. There used to be an abundance of birds through the winter. Would love to see the program come back and hopefully bring the bird population back up.	Noted. As part of the Master Plan revision process, the study team considered the vast recreational opportunities offered at Kaw Lake. A resource objective was created to consider existing and future potential recreational opportunities for multiple user groups while ensuring visitor safety. Resource goals and objectives can be found in Chapter 3 of the Kaw Lake Master Plan. The consideration of recreational opportunities for multiple user groups is also addressed in Chapter 6 of the Master Plan.
I think planking kaw lake back to millet is great for conservation, but also will benefit Ponca City and surrounding towns with more income that being how many different out of staters come to hunt that lake especially when it gets planted back to millet.	Noted. As part of the Master Plan revision process, the study team considered the vast recreational opportunities offered at Kaw Lake. A resource objective was created to consider existing and future potential recreational opportunities for multiple user groups while ensuring visitor safety. Resource goals and objectives can be found in Chapter 3 of the Kaw Lake Master Plan. The consideration of recreational opportunities for multiple user groups is also addressed in Chapter 6 of the Master Plan.
Not long ago every duck hunter in the nation had heard of kaw lake and its plentiful and bountiful hunting. People came from all over the world to experience it. However that's no longer the case. Planting millet only improves the hunting and bolsters the local economy in some rather slow months. Planting millet on kaw is something every local and many non-local waterfowl hunters reminisces about. The commercialization of the waterfowl industry has only made it more imperative to plant millet on Kaw to insure casuals still have a place to chase their passion that cannot be commercialized. I	Noted. As part of the Master Plan revision process, the study team considered the vast recreational opportunities offered at Kaw Lake. A resource objective was created to consider existing and future potential recreational opportunities for multiple user groups while ensuring visitor safety. Resource goals and objectives can be found in Chapter 3 of the Kaw Lake Master Plan. The

Comment	Response
<p>beg you to please consider the points made above and reevaluate the situation.</p>	<p>consideration of recreational opportunities for multiple user groups is also addressed in Chapter 6 of the Master Plan.</p>
<p>I would like to see the millet program brought back to Kaw lake. With that being said I know the water level being dropped is an issue. If we can drop the lake in late June and early July allowing us to plant the lake to millet. Knowing that the new lake level would need to be 1012-1023 allowing the water rights that are reserved at 1010 could continue to stay as they are now.</p>	<p>Noted. As part of the Master Plan revision process, the study team considered the vast recreational opportunities offered at Kaw Lake. A resource objective was created to consider existing and future potential recreational opportunities for multiple user groups while ensuring visitor safety. Resource goals and objectives can be found in Chapter 3 of the Kaw Lake Master Plan. The consideration of recreational opportunities for multiple user groups is also addressed in Chapter 6 of the Master Plan.</p>
<p>I am participating in the NEPA and am proposing we revise the planting of the millet on the mud flats of kaw lake. Bringing this act back to the public would be a huge positive input, to the wildlife and to the aquatic life.</p>	<p>Noted. As part of the Master Plan revision process, the study team considered the vast recreational opportunities offered at Kaw Lake. A resource objective was created to consider existing and future potential recreational opportunities for multiple user groups while ensuring visitor safety. Resource goals and objectives can be found in Chapter 3 of the Kaw Lake Master Plan. The consideration of recreational opportunities for multiple user groups is also addressed in Chapter 6 of the Master Plan.</p>
<p>We enjoy bringing our RV and camping at Corps Lakes and areas. We would like to see improvements around campsites, level ground, no holes to trip in and level campsites. We would also like improvements in the restrooms and showers. It would be nice to see regular cleaning especially on holidays and when the park is full. Thank you.</p>	<p>Noted.</p>
<p>Have 50 amp hook-ups and sewer at campsites. Many people would be willing to pay more for these sites. Have a building at campgrounds with heat/ac and small kitchen for groups to rent (Sarge Creek). Have pavilion at campgrounds (coon, Washunga) for groups to rent.</p>	<p>Noted.</p>

APPENDIX C – WILDLIFE DOCUMENTS

TRUST RESOURCES REPORT – USFWS

OFFICIAL SPECIES LIST – USFWS

LIST OF SGCN SPECIES

WHAP REPORT



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129-1428
Phone: (918) 581-7458 Fax: (918) 581-7467



In Reply Refer To:

11/24/2025 16:28:04 UTC

Project Code: 2025-0088831

Project Name: Kaw Lake 2025 Master Plan Revision

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see <https://www.fws.gov/program/migratory-bird-permit/what-we-do>.

It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Note: IPaC has provided all available attachments because this project is in multiple field office jurisdictions.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Oklahoma Ecological Services Field Office

9014 East 21st Street

Tulsa, OK 74129-1428

(918) 581-7458

This project's location is within the jurisdiction of multiple offices. However, only one species list document will be provided for all offices. The species and critical habitats in this document reflect the aggregation of those that fall in each of the affiliated office's jurisdiction. Other offices affiliated with the project:

Kansas Ecological Services Field Office

2609 Anderson Avenue

Manhattan, KS 66502-2801

(785) 539-3474

PROJECT SUMMARY

Project Code: 2025-0088831

Project Name: Kaw Lake 2025 Master Plan Revision

Project Type: Land Management Plans - NWR

Project Description: Updated version of the previous Kaw Lake Master Plan will include updated land classifications and updated T&E species.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@36.8685409,-96.93300984186044,14z>



Counties: Kansas and Oklahoma

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
<p>Piping Plover <i>Charadrius melodus</i></p> <p>Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.</p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/6039</p>	Threatened
<p>Rufa Red Knot <i>Calidris canutus rufa</i></p> <p>There is proposed critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/1864</p>	Threatened

REPTILES

NAME	STATUS
<p>Alligator Snapping Turtle <i>Macrochelys temminckii</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/4658</p>	Proposed Threatened

FISHES

NAME	STATUS
<p>Peppered Chub <i>Macrhybopsis tetranema</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/532</p>	Endangered

INSECTS

NAME	STATUS
<p>American Burying Beetle <i>Nicrophorus americanus</i></p> <p>Population: Wherever found, except where listed as an experimental population</p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/66</p>	Threatened
<p>Monarch Butterfly <i>Danaus plexippus</i></p> <p>There is proposed critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/9743</p>	Proposed Threatened
<p>Western Regal Fritillary <i>Argynnis idalia occidentalis</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/12017</p>	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

-
1. The [Bald and Golden Eagle Protection Act](#) of 1940.
 2. The [Migratory Birds Treaty Act](#) of 1918.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your [project](#) area.

Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the [National Bald Eagle Management Guidelines](#). You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#).

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

If disturbance or take of eagles cannot be avoided, an [incidental take permit](#) may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the [Do I Need A Permit Tool](#). For assistance making this determination for golden eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

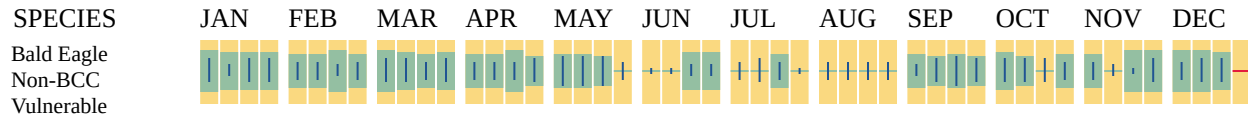
Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort — no data



Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) ¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover <i>Pluvialis dominica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10561	Breeds elsewhere
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Aug 31

NAME	BREEDING SEASON
Black Tern <i>Chlidonias niger surinamenisis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Bobolink <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9454	Breeds May 20 to Jul 31
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will <i>Antrostomus vociferus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10678	Breeds May 1 to Aug 20
Grasshopper Sparrow <i>Ammodramus savannarum perpallidus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329	Breeds Jun 1 to Aug 20
Kentucky Warbler <i>Geothlypis formosa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9443	Breeds Apr 20 to Aug 20
Least Tern <i>Sternula antillarum antillarum</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11919	Breeds Apr 25 to Sep 5
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Little Blue Heron <i>Egretta caerulea</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9477	Breeds Mar 10 to Oct 15
Pectoral Sandpiper <i>Calidris melanotos</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere

NAME	BREEDING SEASON
Prairie Loggerhead Shrike <i>Lanius ludovicianus excubitorides</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8833	Breeds Feb 1 to Jul 31
Prothonotary Warbler <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9439	Breeds Apr 1 to Jul 31
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9478	Breeds elsewhere
Semipalmated Sandpiper <i>Calidris pusilla</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9603	Breeds elsewhere
Upland Sandpiper <i>Bartramia longicauda</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9294	Breeds May 1 to Aug 31
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

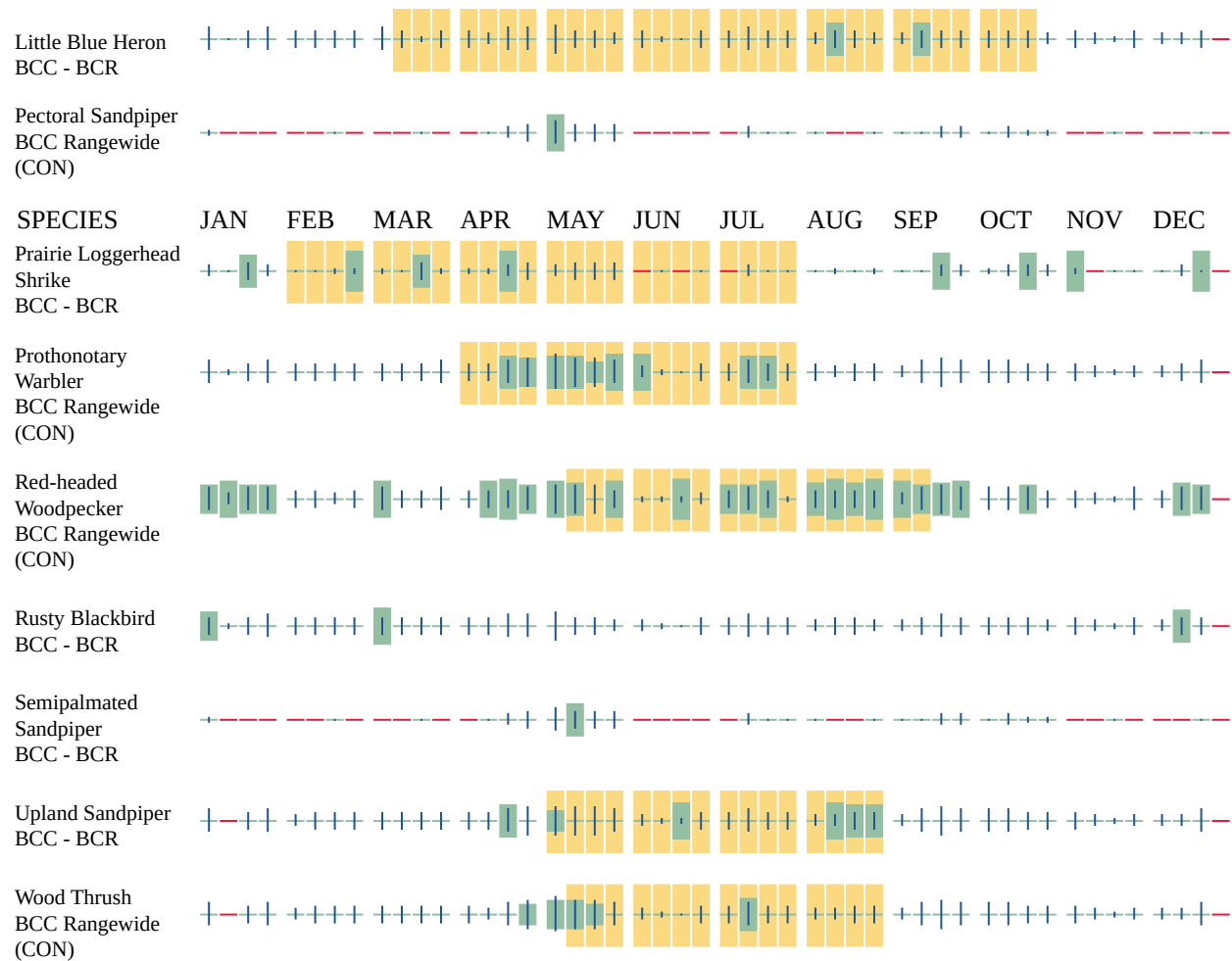
Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (-)

A week is marked as having no data if there were no survey events for that week.





Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- R3UBH
- R2UBH
- R5UBF
- R4SBC
- R2USA
- R4SBA
- R2UBG
- R5UBH
- R2USC
- R2UBF

FRESHWATER FORESTED/SHRUB WETLAND

- PSS1A
- PFO1C
- PFO1Ch
- PFOAx
- PSSA
- PSS1Ah
- PFO1A
- PSSAx
- PSS1C
- PSS1Ch
- PFO1Ah
- PFO5Fh
- PFOA
- PSS1Fh
- PFO5Hh

FRESHWATER EMERGENT WETLAND

- PEM1/FO1Ah
- PEM1Ad
- PEM1Fh
- PEM1Ch
- PEM1/SS1A

- PEM1Ah
- PEM1/SS1Ch
- PEM1C
- PEM1A
- PEM1Cx
- PEM1F

FRESHWATER POND

- PUBFh
- PUSAx
- PUBHh
- PUSCx
- PABF
- PUSAh
- PUSA
- PUBHx
- PUBFx
- PUBF
- PUSC
- PUSCh

LAKE

- L2UBFh
- L1UBHh
- L2UBFx
- L2UBHh
- L2USCh
- L2USAh

IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers

Name: Sylvester Rodriguez

Address: 819 Taylor Street

City: Fort Worth

State: TX

Zip: 76102

Email: sylvester.i.rodriguez@usace.army.mil

Phone: 8178861486

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Kaw Lake 2025 Master Plan Revision

LOCATION

Kansas and Oklahoma



DESCRIPTION

Some(Updated version of the previous Kaw Lake Master Plan will include updated land classifications and updated T&E species.)

Local offices

Oklahoma Ecological Services Field Office

☎ (918) 581-7458

📠 (918) 581-7467

9014 East 21st Street
Tulsa, OK 74129-1428

Kansas Ecological Services Field Office

☎ (785) 539-3474

📠 (785) 539-8567

2609 Anderson Avenue
Manhattan, KS 66502-2801

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

-
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
 2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Rufa Red Knot <i>Calidris canutus rufa</i> Wherever found There is proposed critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/1864	Threatened

Reptiles

NAME	STATUS
Alligator Snapping Turtle <i>Macrochelys temminckii</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4658	Proposed Threatened

Fishes

NAME	STATUS
Peppered Chub <i>Macrhybopsis tetranema</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/532	Endangered

Insects

NAME	STATUS
American Burying Beetle <i>Nicrophorus americanus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/66	Threatened

Monarch Butterfly *Danaus plexippus*

Proposed Threatened

Wherever found

There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.

<https://ecos.fws.gov/ecp/species/9743>

Western Regal Fritillary *Argynnis idalia occidentalis*

Proposed Threatened

Wherever found

No critical habitat has been designated for this species.

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

There are Bald Eagles and/or Golden Eagles in your [project](#) area.

Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the [National Bald Eagle Management Guidelines](#). You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#).

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

If disturbance or take of eagles cannot be avoided, an [incidental take permit](#) may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the [Do I Need A Permit Tool](#). For assistance making this determination for golden eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read ["Supplemental Information on Migratory Birds and Eagles"](#), specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

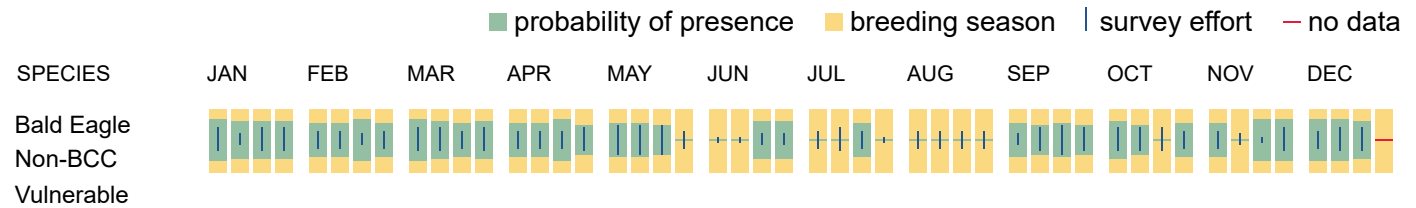
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) ¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>

- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC

<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases [birds of concern](#), including [Birds of Conservation Concern \(BCC\)](#), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the [Nationwide avoidance and minimization measures for birds](#) document, and any other project-specific avoidance and minimization measures suggested at the link [Measures for avoiding and minimizing impacts to birds](#) for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles document](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
American Golden-plover <i>Pluvialis dominica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Aug 31
Black Tern <i>Chlidonias niger surinamensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20

Bobolink <i>Dolichonyx oryzivorus</i>	Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	
Chimney Swift <i>Chaetura pelagica</i>	Breeds Mar 15 to Aug 25
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	
Eastern Whip-poor-will <i>Antrostomus vociferus</i>	Breeds May 1 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	
Grasshopper Sparrow <i>Ammodramus savannarum perpallidus</i>	Breeds Jun 1 to Aug 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	
https://ecos.fws.gov/ecp/species/8329	
Kentucky Warbler <i>Geothlypis formosa</i>	Breeds Apr 20 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	
Least Tern <i>Sternula antillarum antillarum</i>	Breeds Apr 25 to Sep 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	
Lesser Yellowlegs <i>Tringa flavipes</i>	Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	
https://ecos.fws.gov/ecp/species/9679	
Little Blue Heron <i>Egretta caerulea</i>	Breeds Mar 10 to Oct 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	
Pectoral Sandpiper <i>Calidris melanotos</i>	Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	
Prairie Loggerhead Shrike <i>Lanius ludovicianus excubitorides</i>	Breeds Feb 1 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	
https://ecos.fws.gov/ecp/species/8833	

Prothonotary Warbler *Protonotaria citrea*

Breeds Apr 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker *Melanerpes erythrocephalus*

Breeds May 10 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rusty Blackbird *Euphagus carolinus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Semipalmated Sandpiper *Calidris pusilla*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Upland Sandpiper *Bartramia longicauda*

Breeds May 1 to Aug 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9294>

Wood Thrush *Hylocichla mustelina*

Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

- To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

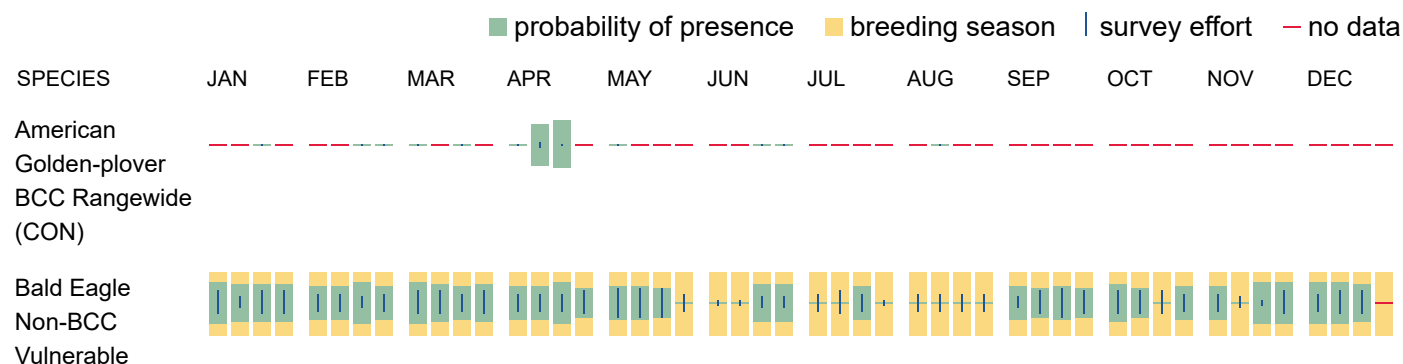
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

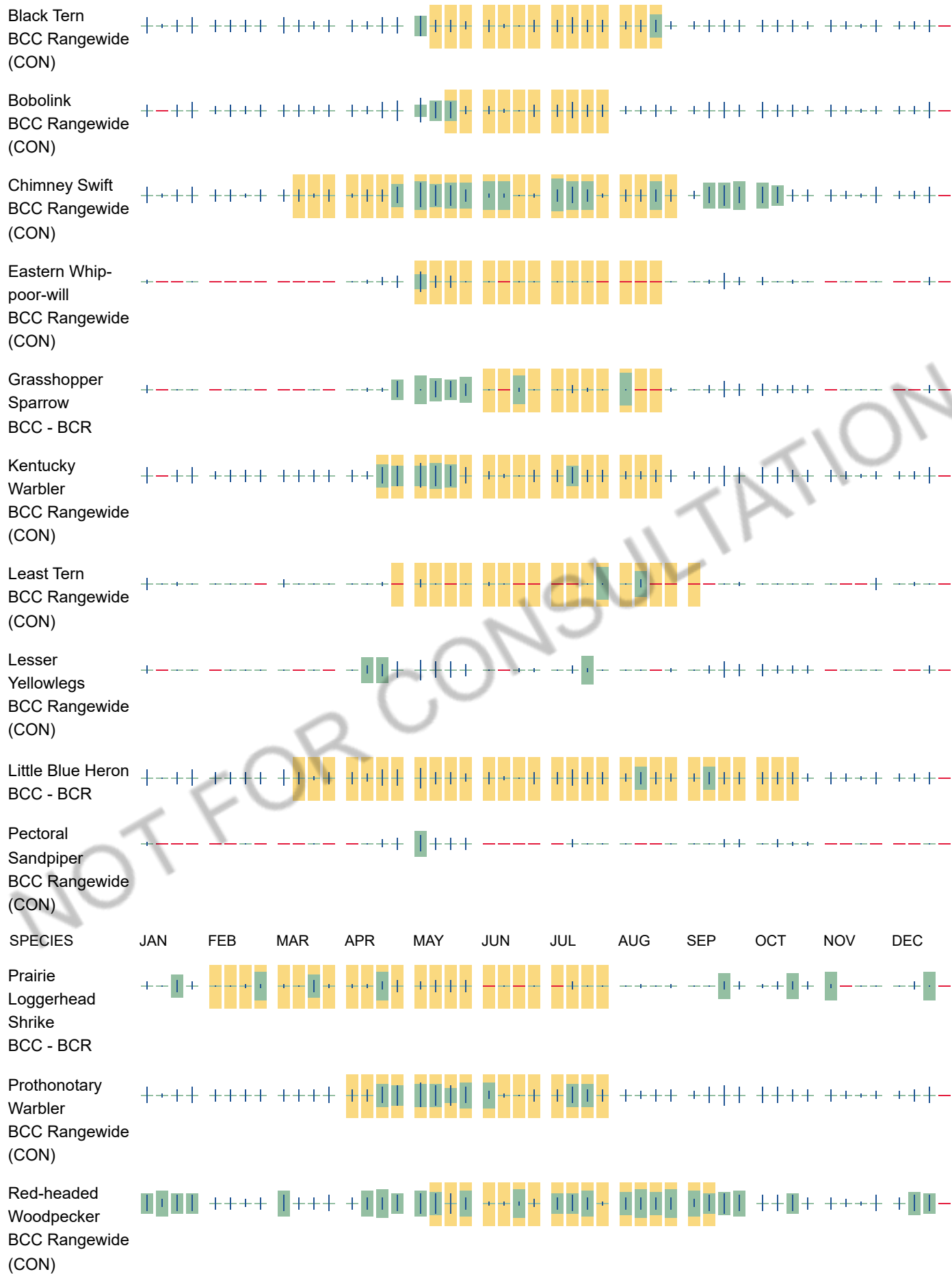
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

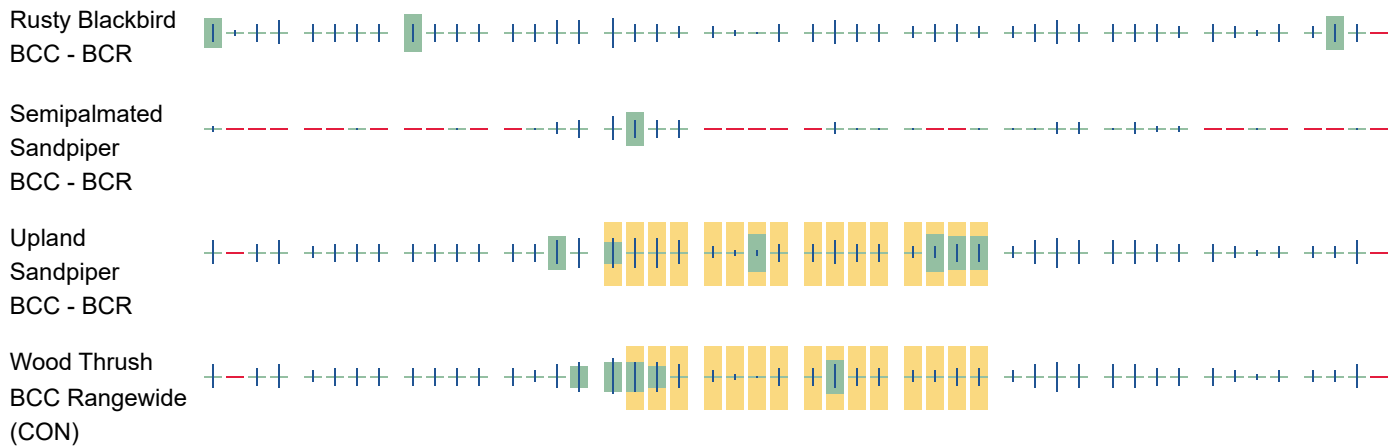
No Data (—)

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Avoidance & Minimization Measures for Birds](#) describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the [Bald and Golden Eagle Protection Act](#) and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Bald and Golden Eagle Protection Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project

review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1Ch](#)

[PEM1Ah](#)
[PEM1Fh](#)
[PEM1C](#)
[PEM1A](#)
[PEM1/FO1Ah](#)
[PEM1/SS1A](#)
[PEM1Ad](#)
[PEM1/SS1Ch](#)
[PEM1Cx](#)
[PEM1F](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PFO1A](#)
[PFO5Hh](#)
[PSS1Ah](#)
[PFO1Ah](#)
[PSS1Ch](#)
[PFOA](#)
[PFO1Ch](#)
[PSS1A](#)
[PFO1C](#)
[PSSA](#)
[PSS1Fh](#)
[PSS1C](#)
[PFOAx](#)
[PSSAx](#)
[PFO5Fh](#)

FRESHWATER POND

[PUBHh](#)
[PUSCh](#)
[PUBFh](#)
[PUBFx](#)
[PUSAh](#)
[PABF](#)
[PUBF](#)
[PUSCcx](#)
[PUSA](#)
[PUBHx](#)
[PUSC](#)
[PUSAx](#)

LAKE

[L1UBHh](#)

[L2USCh](#)

[L2USAh](#)

[L2UBFx](#)

[L2UBHh](#)

[L2UBFh](#)

RIVERINE

[R2UBH](#)

[R2UBG](#)

[R4SBC](#)

[R2USC](#)

[R2USA](#)

[R5UBF](#)

[R4SBA](#)

[R2UBF](#)

[R5UBH](#)

[R3UBH](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Validated Scientific Name	Validated Common Name	Source State	Source Year	Validated Taxonomic Rank	Validated Taxonomic Category
Ambystoma annulatum	Ringed Salamander	Oklahoma	2016	Species	Amphibians
Ambystoma talpoideum	Mole Salamander	Oklahoma	2016	Species	Amphibians
Amphiuma tridactylum	Three-toed Amphiuma	Oklahoma	2016	Species	Amphibians
Anaxyrus debilis	Green Toad	Oklahoma	2016	Species	Amphibians
Anaxyrus speciosus	Texas Toad	Oklahoma	2016	Species	Amphibians
Desmognathus brimleyorum	Ouachita Salamander	Oklahoma	2016	Species	Amphibians
Dryophytes avivoca	Bird-voiced Treefrog	Oklahoma	2016	Species	Amphibians
Eurycea multiplicata	Many-ribbed Salamander	Oklahoma	2016	Species	Amphibians
Eurycea spelaea	Grotto Salamander	Oklahoma	2016	Species	Amphibians
Eurycea tynnerensis	Oklahoma Salamander	Oklahoma	2016	Species	Amphibians
Hemidactylium scutatum	Four-toed Salamander	Oklahoma	2016	Species	Amphibians
Lithobates areolatus	Crawfish Frog	Oklahoma	2016	Species	Amphibians
Plethodon angusticlavius	Ozark Salamander	Oklahoma	2016	Species	Amphibians
Plethodon kiamichi	Kiamichi Slimy Salamander	Oklahoma	2016	Species	Amphibians
Plethodon ouachitae	Rich Mountain Salamander	Oklahoma	2016	Species	Amphibians
Plethodon sequoyah	Sequoyah Slimy Salamander	Oklahoma	2016	Species	Amphibians
Plethodon serratus	Southern Red-backed Salamander	Oklahoma	2016	Species	Amphibians
Scaphiopus hurterii	Hurter's Spadefoot	Oklahoma	2016	Species	Amphibians
Siren intermedia	Lesser Siren	Oklahoma	2016	Species	Amphibians
Crosbyella spinturnix	a cave harvestman *	Oklahoma	2016	Species	Arachnids
Islandiana unicornis	a cave obligate spider *	Oklahoma	2016	Species	Arachnids
Ammospiza leconteii	LeConte's Sparrow	Oklahoma	2016	Species	Birds
Ammospiza nelsoni nelsoni	Nelson's Sparrow	Oklahoma	2016	Subspecies	Birds
Anas acuta	Northern Pintail	Oklahoma	2016	Species	Birds
Anthus spragueii	Sprague's Pipit	Oklahoma	2016	Species	Birds
Anrostomus vociferus	Eastern Whip-poor-will	Oklahoma	2016	Species	Birds
Aquila chrysaetos	Golden Eagle	Oklahoma	2016	Species	Birds
Asio flammeus	Short-eared Owl	Oklahoma	2016	Species	Birds
Athene cunicularia	Burrowing Owl	Oklahoma	2016	Species	Birds
Aythya affinis	Lesser Scaup	Oklahoma	2016	Species	Birds
Aythya valisineria	Canvasback	Oklahoma	2016	Species	Birds
Baeolophus ridgwayi	Juniper Titmouse	Oklahoma	2016	Species	Birds
Bartramia longicauda	Upland Sandpiper	Oklahoma	2016	Species	Birds
Buteo regalis	Ferruginous Hawk	Oklahoma	2016	Species	Birds
Buteo swainsoni	Swainson's Hawk	Oklahoma	2016	Species	Birds
Calcarius ornatus	Chestnut-collared Longspur	Oklahoma	2016	Species	Birds
Calcarius pictus	Smith's Longspur	Oklahoma	2016	Species	Birds
Calidris canutus rufa	Red Knot	Oklahoma	2016	Subspecies	Birds
Calidris mauri	Western Sandpiper	Oklahoma	2016	Species	Birds

<i>Calidris subruficollis</i>	Buff-breasted Sandpiper	Oklahoma	2016	Species	Birds
<i>Callipepla squamata</i>	Scaled Quail	Oklahoma	2016	Species	Birds
<i>Centronyx bairdii</i>	Baird's Sparrow	Oklahoma	2016	Species	Birds
<i>Centronyx henslowii</i>	Henslow's Sparrow	Oklahoma	2016	Species	Birds
<i>Charadrius alexandrinus</i>	Kentish Plover	Oklahoma	2016	Species	Birds
<i>Charadrius melodus</i>	Piping Plover	Oklahoma	2016	Species	Birds
<i>Charadrius montanus</i>	Mountain Plover	Oklahoma	2016	Species	Birds
<i>Colinus virginianus</i>	Northern Bobwhite	Oklahoma	2016	Species	Birds
<i>Coturnicops noveboracensis</i>	Yellow Rail	Oklahoma	2016	Species	Birds
<i>Cygnus buccinator</i>	Trumpeter Swan	Oklahoma	2016	Species	Birds
<i>Egretta caerulea</i>	Little Blue Heron	Oklahoma	2016	Species	Birds
<i>Egretta thula</i>	Snowy Egret	Oklahoma	2016	Species	Birds
<i>Elanoides forficatus</i>	American Swallow-tailed Kite	Oklahoma	2016	Species	Birds
<i>Empidonax traillii</i>	Willow Flycatcher	Oklahoma	2016	Species	Birds
<i>Euphagus carolinus</i>	Rusty Blackbird	Oklahoma	2016	Species	Birds
<i>Falco mexicanus</i>	Prairie Falcon	Oklahoma	2016	Species	Birds
<i>Falco peregrinus</i>	Peregrine Falcon	Oklahoma	2016	Species	Birds
<i>Geothlypis formosa</i>	Kentucky Warbler	Oklahoma	2016	Species	Birds
<i>Grus americana</i>	Whooping Crane	Oklahoma	2016	Species	Birds
<i>Gymnorhinus cyanocephalus</i>	Pinyon Jay	Oklahoma	2016	Species	Birds
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Oklahoma	2016	Species	Birds
<i>Helmitheros vermivorum</i>	Worm-eating Warbler	Oklahoma	2016	Species	Birds
<i>Hylocichla mustelina</i>	Wood Thrush	Oklahoma	2016	Species	Birds
<i>Icterus bullockii</i>	Bullock's Oriole	Oklahoma	2016	Species	Birds
<i>Lanius ludovicianus</i>	Loggerhead Shrike	Oklahoma	2016	Species	Birds
<i>Laterallus jamaicensis</i>	Black Rail	Oklahoma	2016	Species	Birds
<i>Leuconotopicus borealis</i>	Red-cockaded Woodpecker	Oklahoma	2016	Species	Birds
<i>Limnothlypis swainsonii</i>	Swainson's Warbler	Oklahoma	2016	Species	Birds
<i>Limosa haemastica</i>	Hudsonian Godwit	Oklahoma	2016	Species	Birds
<i>Melanerpes aurifrons</i>	Golden-fronted Woodpecker	Oklahoma	2016	Species	Birds
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	Oklahoma	2016	Species	Birds
<i>Mycteria americana</i>	Wood Stork	Oklahoma	2016	Species	Birds
<i>Numenius americanus</i>	Long-billed Curlew	Oklahoma	2016	Species	Birds
<i>Parkesia motacilla</i>	Louisiana Waterthrush	Oklahoma	2016	Species	Birds
<i>Passerina ciris</i>	Painted Bunting	Oklahoma	2016	Species	Birds
<i>Peucaea aestivalis</i>	Bachman's Sparrow	Oklahoma	2016	Species	Birds
<i>Peucaea cassinii</i>	Cassin's Sparrow	Oklahoma	2016	Species	Birds
<i>Phalaropus tricolor</i>	Wilson's Phalarope	Oklahoma	2016	Species	Birds
<i>Pluvialis dominica</i>	Lesser Golden-Plover	Oklahoma	2016	Species	Birds
<i>Protonotaria citrea</i>	Prothonotary Warbler	Oklahoma	2016	Species	Birds

Rallus elegans	King Rail	Oklahoma	2016	Species	Birds
Rhynchophanes mccownii	Thick-billed Longspur	Oklahoma	2016	Species	Birds
Scolopax minor	American Woodcock	Oklahoma	2016	Species	Birds
Setophaga cerulea	Cerulean Warbler	Oklahoma	2016	Species	Birds
Setophaga citrina	Hooded Warbler	Oklahoma	2016	Species	Birds
Setophaga discolor	Prairie Warbler	Oklahoma	2016	Species	Birds
Setophaga pinus	Pine Warbler	Oklahoma	2016	Species	Birds
Sitta pusilla	Brown-headed Nuthatch	Oklahoma	2016	Species	Birds
Sternula antillarum athalassos	Interior Least Tern *	Oklahoma	2016	Subspecies	Birds
Tringa solitaria	Solitary Sandpiper	Oklahoma	2016	Species	Birds
Tympanuchus cupido	Greater Prairie-Chicken	Oklahoma	2016	Species	Birds
Tympanuchus pallidicinctus	Lesser Prairie-Chicken	Oklahoma	2016	Species	Birds
Tyto alba	Common Barn-Owl	Oklahoma	2016	Species	Birds
Vermivora chrysoptera	Golden-winged Warbler	Oklahoma	2016	Species	Birds
Vireo atricapilla	black-capped vireo	Oklahoma	2016	Species	Birds
Vireo bellii	Bell's Vireo	Oklahoma	2016	Species	Birds
Zonotrichia querula	Harris' Sparrow	Oklahoma	2016	Species	Birds
Allocrangonyx pellucidus	Oklahoma cave amphipod	Oklahoma	2016	Species	Crustaceans
Amerigoniscus centralis	a cave obligate isopod *	Oklahoma	2016	Species	Crustaceans
Bactrurus hubrichti	Kansas well bactrurid	Oklahoma	2016	Species	Crustaceans
Caecidotea acuticarpa	a cave obligate isopod *	Oklahoma	2016	Species	Crustaceans
Caecidotea adenta	a cave obligate isopod *	Oklahoma	2016	Species	Crustaceans
Caecidotea ancyla	a cave obligate isopod *	Oklahoma	2016	Species	Crustaceans
Caecidotea antricola	a cave obligate isopod *	Oklahoma	2016	Species	Crustaceans
Caecidotea mackini	a cave obligate isopod *	Oklahoma	2016	Species	Crustaceans
Caecidotea macropropoda	bat cave isopod	Oklahoma	2016	Species	Crustaceans
Caecidotea oculata	a cave obligate isopod *	Oklahoma	2016	Species	Crustaceans
Caecidotea simulator	a cave obligate isopod *	Oklahoma	2016	Species	Crustaceans
Caecidotea stiladactyla	a cave obligate isopod *	Oklahoma	2016	Species	Crustaceans
Cambarus subterraneus	Delaware County cave crayfish	Oklahoma	2016	Species	Crustaceans
Cambarus tartarus	Oklahoma cave crayfish	Oklahoma	2016	Species	Crustaceans
Eubranchipus oregonus	Oregon fairy shrimp	Oklahoma	2016	Species	Crustaceans
Fallicambarus tenuis	Ouachita Mountain Crayfish	Oklahoma	2016	Species	Crustaceans
Faxonella blairi	Blair's Fencing Crayfish	Oklahoma	2016	Species	Crustaceans
Faxonius deanae	Conchas crayfish	Oklahoma	2016	Species	Crustaceans
Faxonius difficilis	painted crayfish	Oklahoma	2016	Species	Crustaceans
Faxonius macrus	Neosho midget crayfish	Oklahoma	2016	Species	Crustaceans
Faxonius meeki	Meek crayfish	Oklahoma	2016	Species	Crustaceans
Faxonius menae	Mena Crayfish	Oklahoma	2016	Species	Crustaceans
Faxonius nana	Midget Crayfish	Oklahoma	2016	Species	Crustaceans

Faxonius saxatilis	Kiamichi crayfish	Oklahoma	2016	Species	Crustaceans
Lirceus trilobus	a cave obligate isopod *	Oklahoma	2016	Species	Crustaceans
Miktoniscus oklahomensis	a cave obligate isopod *	Oklahoma	2016	Species	Crustaceans
Stygobromus bowmani	Bowman's cave amphipod	Oklahoma	2016	Species	Crustaceans
Stygobromus ozarkensis	Ozark cave amphipod	Oklahoma	2016	Species	Crustaceans
Alosa alabamae	Alabama shad	Oklahoma	2016	Species	Fishes
Amblyopsis rosae	Ozark cavefish	Oklahoma	2016	Species	Fishes
Ameiurus nebulosus	Brown Bullhead	Oklahoma	2016	Species	Fishes
Ammocrypta clara	Western Sand Darter	Oklahoma	2016	Species	Fishes
Ammocrypta vivax	Scaly Sand Darter	Oklahoma	2016	Species	Fishes
Anguilla rostrata	American eel	Oklahoma	2016	Species	Fishes
Atractosteus spatula	alligator gar	Oklahoma	2016	Species	Fishes
Crystallaria asprella	crystal darter	Oklahoma	2016	Species	Fishes
Cycleptus elongatus	Blue Sucker	Oklahoma	2016	Species	Fishes
Cyprinella camura	Bluntnose Shiner	Oklahoma	2016	Species	Fishes
Cyprinella spiloptera	Spotfin Shiner *	Oklahoma	2016	Species	Fishes
Cyprinodon rubrofluvialis	Red River pupfish	Oklahoma	2016	Species	Fishes
Etheostoma artesiae	Redspot Darter	Oklahoma	2016	Species	Fishes
Etheostoma collettei	Creole Darter	Oklahoma	2016	Species	Fishes
Etheostoma cragini	Arkansas Darter	Oklahoma	2016	Species	Fishes
Etheostoma histrio	Harlequin Darter	Oklahoma	2016	Species	Fishes
Etheostoma microperca	Least Darter	Oklahoma	2016	Species	Fishes
Etheostoma mihileze	Sunburst Darter	Oklahoma	2016	Species	Fishes
Etheostoma parvipinne	Goldstripe Darter	Oklahoma	2016	Species	Fishes
Etheostoma radiosum	Orangebelly Darter	Oklahoma	2016	Species	Fishes
Etheostoma whipplei	Redfin Darter	Oklahoma	2016	Species	Fishes
Fundulus sciadicus	plains topminnow	Oklahoma	2016	Species	Fishes
Hiodon tergisus	mooneye	Oklahoma	2016	Species	Fishes
Hybognathus hayi	Cypress Minnow	Oklahoma	2016	Species	Fishes
Hybognathus placitus	Plains Minnow	Oklahoma	2016	Species	Fishes
Hybopsis amnis	Pallid Shiner	Oklahoma	2016	Species	Fishes
Ichthyomyzon gagei	southern brook lamprey	Oklahoma	2016	Species	Fishes
Ictiobus niger	Black Buffalo	Oklahoma	2016	Species	Fishes
Luxilus cardinalis	Cardinal Shiner	Oklahoma	2016	Species	Fishes
Lythrurus snelsoni	Ouachita Shiner	Oklahoma	2016	Species	Fishes
Macrhybopsis aestivalis	Speckled Chub	Oklahoma	2016	Species	Fishes
Macrhybopsis australis	Prairie Chub	Oklahoma	2016	Species	Fishes
Moxostoma macrolepidotum	Shorthead Redhorse	Oklahoma	2016	Species	Fishes
Nocomis asper	Redspot Chub	Oklahoma	2016	Species	Fishes
Notropis atrocaudalis	Blackspot Shiner	Oklahoma	2016	Species	Fishes

Notropis bairdi	Red River Shiner	Oklahoma	2016	Species	Fishes
Notropis chalybaeus	Ironcolor Shiner	Oklahoma	2016	Species	Fishes
Notropis girardi	Arkansas River Shiner	Oklahoma	2016	Species	Fishes
Notropis greenei	Wedgespot Shiner	Oklahoma	2016	Species	Fishes
Notropis maculatus	Taillight Shiner	Oklahoma	2016	Species	Fishes
Notropis nubilus	Ozark Minnow	Oklahoma	2016	Species	Fishes
Notropis ortenburgeri	Kiamichi Shiner	Oklahoma	2016	Species	Fishes
Notropis perpallidus	Peppered Shiner	Oklahoma	2016	Species	Fishes
Notropis potteri	Chub Shiner	Oklahoma	2016	Species	Fishes
Notropis shumardi	Silverband Shiner	Oklahoma	2016	Species	Fishes
Notropis suttkusi	Rocky Shiner	Oklahoma	2016	Species	Fishes
Noturus eleutherus	Mountain Madtom	Oklahoma	2016	Species	Fishes
Noturus placidus	Neosho Madtom	Oklahoma	2016	Species	Fishes
Percina maculata	blackside darter	Oklahoma	2016	Species	Fishes
Percina nasuta	longnose darter	Oklahoma	2016	Species	Fishes
Percina pantherina	leopard darter	Oklahoma	2016	Species	Fishes
Percina shumardi	river darter	Oklahoma	2016	Species	Fishes
Platygobio gracilis	Flathead Chub	Oklahoma	2016	Species	Fishes
Polyodon spathula	paddlefish	Oklahoma	2016	Species	Fishes
Pteronotrops hubbsi	Bluehead Shiner	Oklahoma	2016	Species	Fishes
Scaphirhynchus platyrhynchus	shovelnose sturgeon	Oklahoma	2016	Species	Fishes
Allocaonia jeanae	Osage Snowfly	Oklahoma	2016	Species	Insects
Allocaonia peltoides	Shield Snowfly	Oklahoma	2016	Species	Insects
Amblyscirtes linda	Linda's Roadside-Skipper	Oklahoma	2016	Species	Insects
Apobaetis futilis	a mayfly *	Oklahoma	2016	Species	Insects
Argia bipunctulata	Seepage Dancer	Oklahoma	2016	Species	Insects
Atrytone arogos iowa	Arogos Iowa Skipper *	Oklahoma	2016	Subspecies	Insects
Bombus fraternus	Southern plains bumble bee	Oklahoma	2016	Species	Insects
Bombus pensylvanicus	bumble bee	Oklahoma	2016	Species	Insects
Bombus variabilis	Variable Cuckoo Bumble Bee	Oklahoma	2016	Species	Insects
Cogia outis	Outis Skipper	Oklahoma	2016	Species	Insects
Cordulegaster talaria	Ouachita Spiketail	Oklahoma	2016	Species	Insects
Cylindera celeripes	Swift Tiger Beetle	Oklahoma	2016	Species	Insects
Dromochorus belfragei	Loamy-ground Dromo Tiger Beetle	Oklahoma	2016	Species	Insects
Dubiraphia parva	Little Dubiraphian Riffle Beetle *	Oklahoma	2016	Species	Insects
Ellipsoptera lepida	Ghost Tiger Beetle	Oklahoma	2016	Species	Insects
Eximacris phenax	Big Cedar Grasshopper *	Oklahoma	2016	Species	Insects
Gomphus oklahomensis	Oklahoma Clubtail	Oklahoma	2016	Species	Insects
Gomphus ozarkensis	Ozark Clubtail	Oklahoma	2016	Species	Insects
Gryllotalpa major	Prairie Mole Cricket *	Oklahoma	2016	Species	Insects

Hemileuca slosseri	Slosser's Buckmoth	Oklahoma	2016	Species	Insects
Hesperia attalus	Dotted Skipper	Oklahoma	2016	Species	Insects
Hydroptila protera	a microcaddisfly *	Oklahoma	2016	Species	Insects
Libellula composita	Bleached Skimmer	Oklahoma	2016	Species	Insects
Mayatrachia ponta	a microcaddisfly *	Oklahoma	2016	Species	Insects
Melanoplus oklahomae	Oklahoma Spur-throat Grasshopper *	Oklahoma	2016	Species	Insects
Metrichia nigrutta	a spring caddisfly *	Oklahoma	2016	Species	Insects
Nicrophorus americanus	American burying beetle	Oklahoma	2016	Species	Insects
Nixe flowersi	a mayfly *	Oklahoma	2016	Species	Insects
Ochrotrichia weddleae	a microcaddisfly *	Oklahoma	2016	Species	Insects
Papaipema eryngii	Rattlesnake Master Borer	Oklahoma	2016	Species	Insects
Perlesta bolukta	Truncate Stonefly *	Oklahoma	2016	Species	Insects
Perlesta browni	Toothed Stonefly *	Oklahoma	2016	Species	Insects
Problema byssus	Byssus Skipper	Oklahoma	2016	Species	Insects
Somatochlora ozarkensis	Ozark Emerald	Oklahoma	2016	Species	Insects
Speyeria diana	Diana Fritillary	Oklahoma	2016	Species	Insects
Speyeria idalia	Regal Fritillary	Oklahoma	2016	Species	Insects
Triaenodes tridentatus	Three-toothed Caddisfly *	Oklahoma	2016	Species	Insects
Tricorythodes curvatus	a mayfly *	Oklahoma	2016	Species	Insects
Zealeuctra cherokee	Cherokee Needlefly *	Oklahoma	2016	Species	Insects
Bassariscus astutus	Ringtail	Oklahoma	2016	Species	Mammals
Conepatus leuconotus leuconotus	Hog-nosed Skunk *	Oklahoma	2016	Subspecies	Mammals
Corynorhinus rafinesquii	Eastern Big-eared Bat	Oklahoma	2016	Species	Mammals
Corynorhinus townsendii ingens	Ozark big-eared bat	Oklahoma	2016	Subspecies	Mammals
Corynorhinus townsendii pallascens	pale Townsend's big-eared bat	Oklahoma	2016	Subspecies	Mammals
Cratogeomys castanops	Yellow-faced Pocket Gopher	Oklahoma	2016	Species	Mammals
Cynomys ludovicianus	Arizona black-tailed prairie dog	Oklahoma	2016	Species	Mammals
Dipodomys elator	Texas Kangaroo Rat	Oklahoma	2016	Species	Mammals
Geomys breviceps	Mer Rouge pocket gopher	Oklahoma	2016	Species	Mammals
Lasiurus seminolus	Seminole Bat	Oklahoma	2016	Species	Mammals
Mustela frenata	Long-tailed Weasel	Oklahoma	2016	Species	Mammals
Myotis austroriparius	Southeastern Myotis	Oklahoma	2016	Species	Mammals
Myotis grisescens	Gray Myotis	Oklahoma	2016	Species	Mammals
Myotis leibii	Small-footed Myotis	Oklahoma	2016	Species	Mammals
Myotis septentrionalis	Northern Long-eared Bat	Oklahoma	2016	Species	Mammals
Myotis sodalis	Indiana Myotis	Oklahoma	2016	Species	Mammals
Neotoma leucodon	White-toothed Woodrat	Oklahoma	2016	Species	Mammals
Notiosorex crawfordi	gray shrew	Oklahoma	2016	Species	Mammals
Ochrotomys nuttalli	Golden Mouse	Oklahoma	2016	Species	Mammals
Oryzomys couesi	Coues's Rice Rat	Oklahoma	2016	Species	Mammals

<i>Perimyotis subflavus</i>	Tricolored Bat	Oklahoma	2016	Species	Mammals
<i>Peromyscus nasutus</i>	Northern Rock Mouse	Oklahoma	2016	Species	Mammals
<i>Peromyscus pectoralis</i>	White-ankled Deermouse	Oklahoma	2016	Species	Mammals
<i>Puma concolor</i>	Cougar	Oklahoma	2016	Species	Mammals
<i>Reithrodontomys humulis</i>	Eastern Harvest Mouse	Oklahoma	2016	Species	Mammals
<i>Spilogale putorius</i>	Eastern Spotted Skunk	Oklahoma	2016	Species	Mammals
<i>Sylvilagus aquaticus</i>	Swamp Rabbit	Oklahoma	2016	Species	Mammals
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat	Oklahoma	2016	Species	Mammals
<i>Tamias quadrivittatus</i>	Colorado Chipmunk	Oklahoma	2016	Species	Mammals
<i>Vulpes velox</i>	Swift Fox	Oklahoma	2016	Species	Mammals
<i>Zapus hudsonius</i>	Meadow Jumping Mouse	Oklahoma	2016	Species	Mammals
<i>Alasmodonta marginata</i>	elktoe	Oklahoma	2016	Species	Mollusks
<i>Arcidens wheeleri</i>	Wheeler's pearly mussel	Oklahoma	2016	Species	Mollusks
<i>Catinella wandae</i>	slope ambersnail	Oklahoma	2016	Species	Mollusks
<i>Cyprogenia aberti</i>	western fanshell	Oklahoma	2016	Species	Mollusks
<i>Ellipsaria lineolata</i>	butterfly mussel	Oklahoma	2016	Species	Mollusks
<i>Euchemotrema wichitorum</i>	Wichita Mountains pillsnail	Oklahoma	2016	Species	Mollusks
<i>Fusconaia ozarkensis</i>	Ozark pigtoe	Oklahoma	2016	Species	Mollusks
<i>Helicodiscus nummus</i>	wax coil	Oklahoma	2016	Species	Mollusks
<i>Helicodiscus tridens</i>	crosstimbers coil	Oklahoma	2016	Species	Mollusks
<i>Inflectarius edentatus</i>	smooth-lip shagreen	Oklahoma	2016	Species	Mollusks
<i>Lampsilis cardium</i>	plain pocketbook	Oklahoma	2016	Species	Mollusks
<i>Lampsilis hydiana</i>	Louisiana fatmucket	Oklahoma	2016	Species	Mollusks
<i>Lampsilis rafinesqueana</i>	Neosho mucket	Oklahoma	2016	Species	Mollusks
<i>Leaunio lienosus</i>	little spectaclecase	Oklahoma	2016	Species	Mollusks
<i>Ligumia recta</i>	black sandshell	Oklahoma	2016	Species	Mollusks
<i>Megalonaias nervosa</i>	washboard	Oklahoma	2016	Species	Mollusks
<i>Megapallifera ragsdalei</i>	Ozark mantleslug	Oklahoma	2016	Species	Mollusks
<i>Millerelix deltoidea</i>	Oklahoma liptooth	Oklahoma	2016	Species	Mollusks
<i>Millerelix simpsoni</i>	Wyandotte liptooth	Oklahoma	2016	Species	Mollusks
<i>Neohelix lioderma</i>	Tulsa whitelip	Oklahoma	2016	Species	Mollusks
<i>Obovaria arkansasensis</i>	Ouachita creekshell	Oklahoma	2016	Species	Mollusks
<i>Obovaria arkansasensis</i>	Ouachita creekshell	Oklahoma	2016	Species	Mollusks
<i>Pallifera tournescalii</i>	Ouachita mantleslug	Oklahoma	2016	Species	Mollusks
<i>Patera indianorum</i>	lidded oval	Oklahoma	2016	Species	Mollusks
<i>Pleurobema rubrum</i>	pyramid pigtoe	Oklahoma	2016	Species	Mollusks
<i>Potamilus leptodon</i>	scaleshell	Oklahoma	2016	Species	Mollusks
<i>Ptychobranchus occidentalis</i>	Ouachita kidneyshell	Oklahoma	2016	Species	Mollusks
<i>Pustulosa nodulata</i>	wartyback	Oklahoma	2016	Species	Mollusks
<i>Quadrula fragosa</i>	winged mapleleaf	Oklahoma	2016	Species	Mollusks

<i>Stenotrema pilsbryi</i>	Rich Mountain slitmouth	Oklahoma	2016	Species	Mollusks
<i>Stenotrema unciferum</i>	Ouachita slitmouth	Oklahoma	2016	Species	Mollusks
<i>Theliderma cylindrica</i>	rabbitsfoot	Oklahoma	2016	Species	Mollusks
<i>Theliderma metanevra</i>	monkeyface	Oklahoma	2016	Species	Mollusks
<i>Toxolasma lividum</i>	purple lilliput	Oklahoma	2016	Species	Mollusks
<i>Toxolasma texasiense</i>	Texas lilliput	Oklahoma	2016	Species	Mollusks
<i>Zonitoides kirbyi</i>	shadow gloss	Oklahoma	2016	Species	Mollusks
<i>Pseudosinella dubia</i>	a cave springtail *	Oklahoma	2016	Species	Other Invertebrates
<i>Pygmarrhopalites jay</i>	a cave springtail	Oklahoma	2016	Species	Other Invertebrates
<i>Trigenotyla blacki</i>	a cave obligate millipede *	Oklahoma	2016	Species	Other Invertebrates
<i>Trigenotyla vaga</i>	a cave obligate millipede *	Oklahoma	2016	Species	Other Invertebrates
<i>Alligator mississippiensis</i>	American Alligator	Oklahoma	2016	Species	Reptiles
<i>Apalone mutica</i>	Smooth Softshell	Oklahoma	2016	Species	Reptiles
<i>Apalone spinifera</i>	Spiny Softshell	Oklahoma	2016	Species	Reptiles
<i>Aspidoscelis tessellatus</i>	Common Checkered Whiptail	Oklahoma	2016	Species	Reptiles
<i>Cemophora coccinea copei</i>	Northern Scarlet Snake	Oklahoma	2016	Subspecies	Reptiles
<i>Crotalus atrox</i>	Western Diamondback Rattlesnake	Oklahoma	2016	Species	Reptiles
<i>Deirochelys reticularia miaria</i>	Western Chicken Turtle	Oklahoma	2016	Subspecies	Reptiles
<i>Farancia abacura reinwardtii</i>	Western Mud Snake	Oklahoma	2016	Subspecies	Reptiles
<i>Graptemys geographica</i>	Northern Map Turtle	Oklahoma	2016	Species	Reptiles
<i>Graptemys ouachitensis ouachitensis</i>	Ouachita Map Turtle	Oklahoma	2016	Subspecies	Reptiles
<i>Graptemys pseudogeographica kohnii</i>	Mississippi Map Turtle	Oklahoma	2016	Subspecies	Reptiles
<i>Holbrookia maculata</i>	Lesser Earless Lizard	Oklahoma	2016	Species	Reptiles
<i>Lampropeltis gentilis</i>	Central Plains Milksnake	Oklahoma	2016	Species	Reptiles
<i>Liodytes rigida sinicola</i>	Gulf Swampsnake	Oklahoma	2016	Subspecies	Reptiles
<i>Macrochelys temminckii</i>	Alligator Snapping Turtle	Oklahoma	2016	Species	Reptiles
<i>Phrynosoma cornutum</i>	Texas Horned Lizard	Oklahoma	2016	Species	Reptiles
<i>Phrynosoma modestum</i>	Round-tailed Horned Lizard	Oklahoma	2016	Species	Reptiles
<i>Pseudemys concinna</i>	River Cooter	Oklahoma	2016	Species	Reptiles
<i>Rhinocheilus lecontei</i>	Long-nosed Snake	Oklahoma	2016	Species	Reptiles
<i>Sistrurus tergeminus tergeminus</i>	Prairie Massasauga	Oklahoma	2016	Subspecies	Reptiles
<i>Sternotherus carinatus</i>	Razor-backed Musk Turtle	Oklahoma	2016	Species	Reptiles
<i>Thamnophis cyrtopsis</i>	Black-necked Garter Snake	Oklahoma	2016	Species	Reptiles
<i>Thamnophis sirtalis annectens</i>	Texas Garter Snake	Oklahoma	2016	Subspecies	Reptiles

WILDLIFE HABITAT APPRAISAL PROCEDURE (WHAP)

SUMMARY REPORT

KAW LAKE MASTER PLAN

OSAGE AND KAY COUNTIES, OKLAHOMA

June 18th, 2025



**US Army Corps
of Engineers®**

Tulsa District

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Introduction

Habitat assessments were conducted at Kaw Lake on June 15-16th, 2024 using Texas Parks and Wildlife Department's (TPWD) Wildlife Habitat Appraisal Procedure (WHAP) (TPWD 1995). WHAP survey point locations were based on points believed or known to have various habitat types and features based on aerial imagery from existing Geographical Information Systems (GIS) data as well as from local knowledge of the area. A total of 65 WHAP points were surveyed, all within U.S. Army Corps of Engineers (USACE) fee boundary (Figures 1 & 2).

The purpose of this report is to describe wildlife habitat quality within the USACE Kaw Lake fee-owned property in Osage County, Oklahoma. This report is being prepared by the USACE Regional Planning and Environmental Center to provide habitat quality information and inform land classifications as part of the Kaw Lake Master Plan revision process.

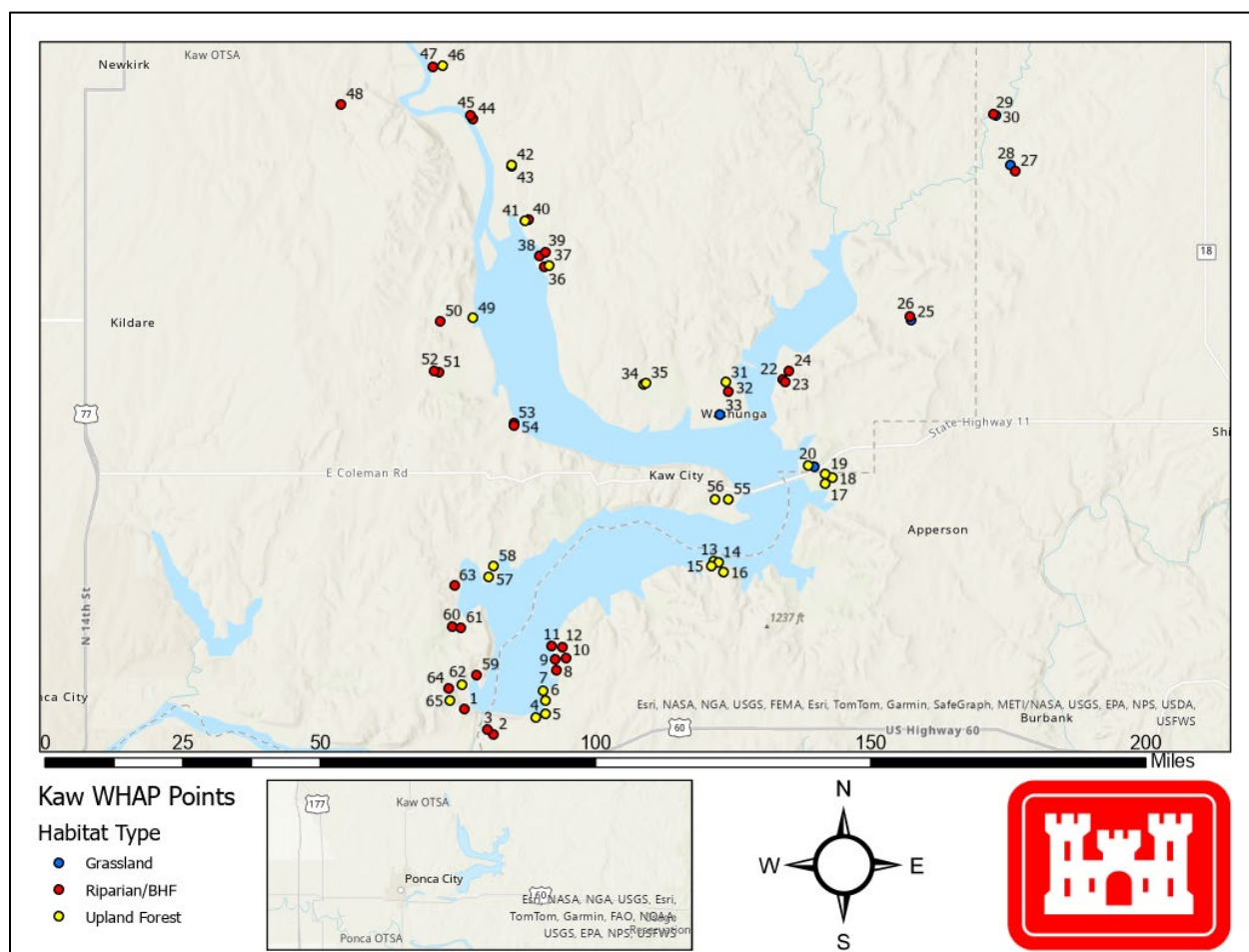


Figure 1. Distribution of WHAP Points within Kaw Lake with Habitat Types

Study Area

The study area for the WHAP consist of approximately 31,068 acres of USACE fee owned property at Kaw Lake, located northeast of Oklahoma City, Oklahoma and is near to the cities of Ponca City, Kaw City and Webb City. USACE property at Kaw Lake is located within the Flint Hills ecoregion and the Central Great Plains Ecoregion as defined by the Environmental Protection Agency (EPA).

Methodology

The WHAP requires evaluating representative sites of each cover type present within an area of interest. For this project, a search area of 0.1 acre (circle with radius of 37.2 feet) was used at each WHAP site to compile a list of plant species occurring at each site and to complete the Biological Components Field Evaluation Form (TPWD 1995). Field data collected on the form at each WHAP site included the following components:

1. Site Potential
2. Temporal Development of Existing Successional Stage
3. Uniqueness and Relative Abundance
4. Vegetation Species Diversity
5. Vertical Vegetation Stratification
6. Additional Structural Diversity
7. Condition of Existing Vegetation

The TPWD developed the WHAP to allow qualitative holistic evaluation of wildlife habitat for tracts of land statewide without imposing significant time requirements regarding field work and compilation of data (TPWD 1995). The WHAP was not designed to evaluate habitat quality in relation to specific wildlife species.

The WHAP is based on the following assumptions:

1. Vegetation structure including species composition and physiognomy is itself sufficient to define the habitat suitability for wildlife;
2. A positive relationship exists between vegetation diversity and wildlife species diversity;
3. Vegetation composition and primary productivity directly influence population densities of wildlife species.

As designed, the WHAP is intended to be used for the following applications:

1. Evaluating impacts upon wildlife populations from specific development project alternatives.
2. Establishing baseline data prior to anticipated or proposed changes in habitat conditions for specific areas.
3. Comparing tracts of land that are candidates for land acquisition or mitigation.
4. Evaluating general habitat quality and wildlife management potential for tracts of land over large geographical areas, including wildlife planning units.

At each site, a 1/10th acre plot (circle with radius of 37.2 feet) was evaluated, and points were assigned to all applicable components based on field conditions. A habitat quality score, where values range from 0.0 (low quality) to 1.0 (high quality), was then calculated for each site by adding together all points and

multiplying by 0.01. Habitat quality was then determined for all sites within the same habitat type. The scores for each site can be found in Attachment A. Photographs were taken at each site and are included as Attachment B.

The WHAP protocol can be used to assess a wide range of habitats; however, it was originally developed to assess and develop mitigation requirements for loss of bottomland hardwoods and other aquatic habitats. Scores can yield higher results for these habitats based on how the scoring is allotted to each WHAP habitat component. Upland forest and grassland habitat types cannot reach a score indicative of high-quality habitat, although they may exhibit high quality features. Subsequently, high quality upland habitat may not be identified or can be overlooked.

Grasslands fall into this category. The Site Potential component has a maximum score of 0.25 points and allocates more points based on higher hydrologic connectivity. To receive the highest score for this component, the area must exhibit at least one of the following: periodically support predominately hydrophytic vegetation, have predominately undrained hydric soil and supports or can support hydrophytic vegetation, and/or is saturated with water or covered by shallow water during 1-2 months of the growing season each year. In a grassland setting, when conditions become conducive to hydrophytic plant growth, a successional shift from a grassland to herbaceous wetlands, swamps, or riparian forest is likely to occur. Therefore, grasslands would almost always be limited to a maximum score of 0.12 points (uplands with thick surface layers).

Similarly, grasslands would be limited to a maximum of 0.12 points for the Temporal Development of Existing Successional Stage component, whereas other forested habitats could receive the full 0.25 points.

High value grasslands may not have any woody vegetation, nor vegetation that is more than 12 feet tall, and very little additional structural components. To account for this, total scores for areas categorized as grasslands do not reflect the Vegetation Species Diversity component and makes the maximum score for Vertical Vegetation Stratification component as a value of 4 and Additional Structural Diversity component as 1.

These components regularly exclude grassland habitat from receiving the maximum score of 1.00 on the WHAP point scale. To identify the maximum score each habitat type can receive, USACE environmental staff scored each criteria given ideal conditions for riparian/bottomland hardwood forest (BHF), upland forest (includes all non-riparian/BHF forests), grassland, and marsh habitats. The maximum value scores, shown in Table 1, were then used to normalize scores for habitats that are prevented from reaching the maximum WHAP score. This is primarily due to arbitrary low scores in the two WHAP components described above. Normalizing habitat scores will identify high quality habitat that would otherwise not be detected.

Cover Type	Compo nent 1	Compo nent 2	Compo nent 3	Compo nent 4	Compo nent 5	Compo nent 6	Compo nent 7	Compo nent 8	Maxi mum Total Value
Marsh	25	20	20	20	N/A	5	10	N/A	1.00

Riparian /BHF	25	20	20	15	5	5	5	5	1.00
Upland Forest	12	20	20	15	5	5	5	5	0.87
Grassland	12	12	20	6	3	5	5	5	0.68

Table 1. Cover Types and Maximum Total Scores

Riparian/BHF habitats can achieve the maximum score, therefore, no normalization of scores were made for that habitat type. Upland forest and grasslands, however, can only reach within 0.87 and 0.68 points of the maximum WHAP score, even in ideal conditions.

To evaluate all habitat types on an even scoring basis, upland forest and grassland scores were normalized by dividing their original scores by the maximum possible score for their respective habitat types. For example, if a grassland site received an initial score of 0.42, it would be divided by the maximum total points a grassland site can receive, 0.68. The normalized total score used for further analysis for the grassland site would be 0.62.

This adjustment allows habitat type scores to be analyzed and compared to their corresponding habitat type maximum total score. Rather than, for instance, a grassland being evaluated on a bottomland hardwood scoring scale.

All WHAP scores analyzed and discussed from here forward reflect the normalized total scores. As mentioned above riparian/BHF habitat was not normalized because it already can achieve the maximum score. Grassland scores were normalized by dividing initial scores by 0.68, while all upland forest scores were normalized by dividing the initial score by 0.87.

Site potential allocates more points based on soil substrates characteristics and hydrologic connectivity that can support hydrophytic habitats, such as marshes, swamps, and bottomland hardwood forests that are often considered to be higher quality, more diverse habitat. This allows areas to score higher even though a recent disturbance, such as fire or flood, may have removed most of the vegetation. Areas scoring high in site potential but low in other metrics can be targeted for management efforts as these areas' vegetation community response should be favorable, thus increasing habitat value.

Successional stage refers to the age of the vegetative community. Older, mature forests and climax prairies, score higher than younger pole stands or disturbed grasslands because they provide more diverse forage, cover, and niche habitats. These scores are expected to increase across the habitats, except in areas that may not have the soil types to support hydrophytic vegetation or are flooded frequently enough to limit upland forest or grassland growth and development.

Uniqueness and Relative Abundance takes into consideration the rarity of a habitat or vegetative community and its abundance in the region. Current and past agricultural and forestry practices have significantly influenced the region's remaining habitat composition.

Habitat

Kaw Lake lies within the Flint Hills ecoregion (Level III) and the Central Great Plains – Prairie Tableland (Level III).

The Flint Hills ecoregion is part of the Central Tallgrass Prairie and covers from east and northeast of the main Central Tallgrass area. The ecoregion contains thin, cherty, limestone-derived soils which doesn't make it optimal for crop agriculture. Bands of hills run from northeastern Kansas to northeastern Oklahoma. Due to the soils not being suitable for crop agriculture, most of Flint Hills are native prairie. Some of the native grasses in the Flint Hills ecoregion are big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum* L.) (Noss, 2024). Dry upland forest is dominated by both blackjack and post oak, bottomland forest contains cottonwoods, hackberries, elms, and oaks. Common shrubs in this region are persimmons, sumacs, and small oaks. Thickets of grapevine, poison ivy and greenbriar can be found as well (ODWC, 27-28).

The Central Great Plains – Prairie Tableland ecoregion extends from Nebraska to central Texas, passing through the western half of Oklahoma. Grasslands cover most of the ecoregion with woodlands are along the ravines and streams. The native grassland species in the Central Great Plains are little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), and several other short grass species (ODWC, 28-29).

Riparian/Bottomland Hardwood Forest – Riparian/Bottomland hardwoods are found along rivers and streams, mostly in broad floodplains. They are commonly found in areas where the rivers or streams are flooding beyond their channel confines. Common species found in riparian/bottomland hardwood forest can be made up of different Gum (*Nyssa* sp.) and Oak (*Quercus* sp.) and Bald Cypress (*Taxodium distichum*) (EPA¹, 2024). This habitat type acts as a natural buffer between uplands and adjacent water bodies, they act as natural filters of nonpoint source pollutants (EPA², 2024.).

Marsh – Marshes are wetlands that are frequently inundated with water and are characterized by emergent soft-stemmed vegetation that can withstand the saturated soil conditions. Most marshes receive most of their water from surface water, and many marshes are also fed by ground water (EPA³, 2024.).

Upland Forest – Post oaks (*Quercus stellata*), blackjack oaks (*Quercus marilandica*), and black hickories (*Cary texana*) are found in upland forest in Oklahoma. Low shrubby plants like buckbrush (*Ceanothus cuneatus*) and fragrant sumac (*Rhus aromatica*) provide habitat for wildlife species (Crawford, 2024.).

Grassland – Grasslands are found in areas that don't get enough rain to become a forest, but just enough to where deserts can form. Grasslands support a variety of species for animal species to graze and utilize (Nunez, 2023). Some of the common grasses that can be found in Oklahoma are little bluestem (*Schizachyrium scoparium*) and big bluestem (*Andropogon gerardii*).

Table 2 displays the number of habitats surveyed and the number of points surveyed within each respective habitat type.

Habitat Type	Points Surveyed
Riparian/BHF	34
Marsh	0
Upland Forest	26

Grassland	5
Total Points Surveyed	65

Table 2. Survey Points per Habitat Type

Results and Discussion

The total habitat scores for each point surveyed is a representation of multiple habitat attributes including vegetative diversity and structure, site soil potential, successional stage, and uniqueness of the habitat across the landscape. Data analysis highlights are discussed below, while detailed data for each point surveyed can be found in Attachment A: Kaw Lake WHAP Summary Results of this report.

In Figure 1 and Table 3, the upland forest habitat type occurred 26 times with a score range of 0.48 – 0.77, the grassland habitat type occurred 5 times with a score range of 0.56 – 0.82, and the riparian/BHF habitat occurred 35 times with a score range of 0.40 – 0.77, the marsh habitat type did not occur at all during the survey. Figure 1 displays the locations of where each habitat type was found around Kaw Lake while Figure 2 show the score range for all 65 surveyed points. Having a low habitat score doesn't mean that the area is in poor condition or does not provide value to the environment but that it can be improved over time.

Habitat Type	Average Total Score	Maximum Total Score	Minimum Total Score
Riparian/BHF	0.57	0.77	0.40
Marsh	None	None	None
Upland Forest	0.61	0.77	0.48
Grassland	0.70	0.82	0.56

Table 3. Average, Minimum, and Maximum Scores per Habitat Type

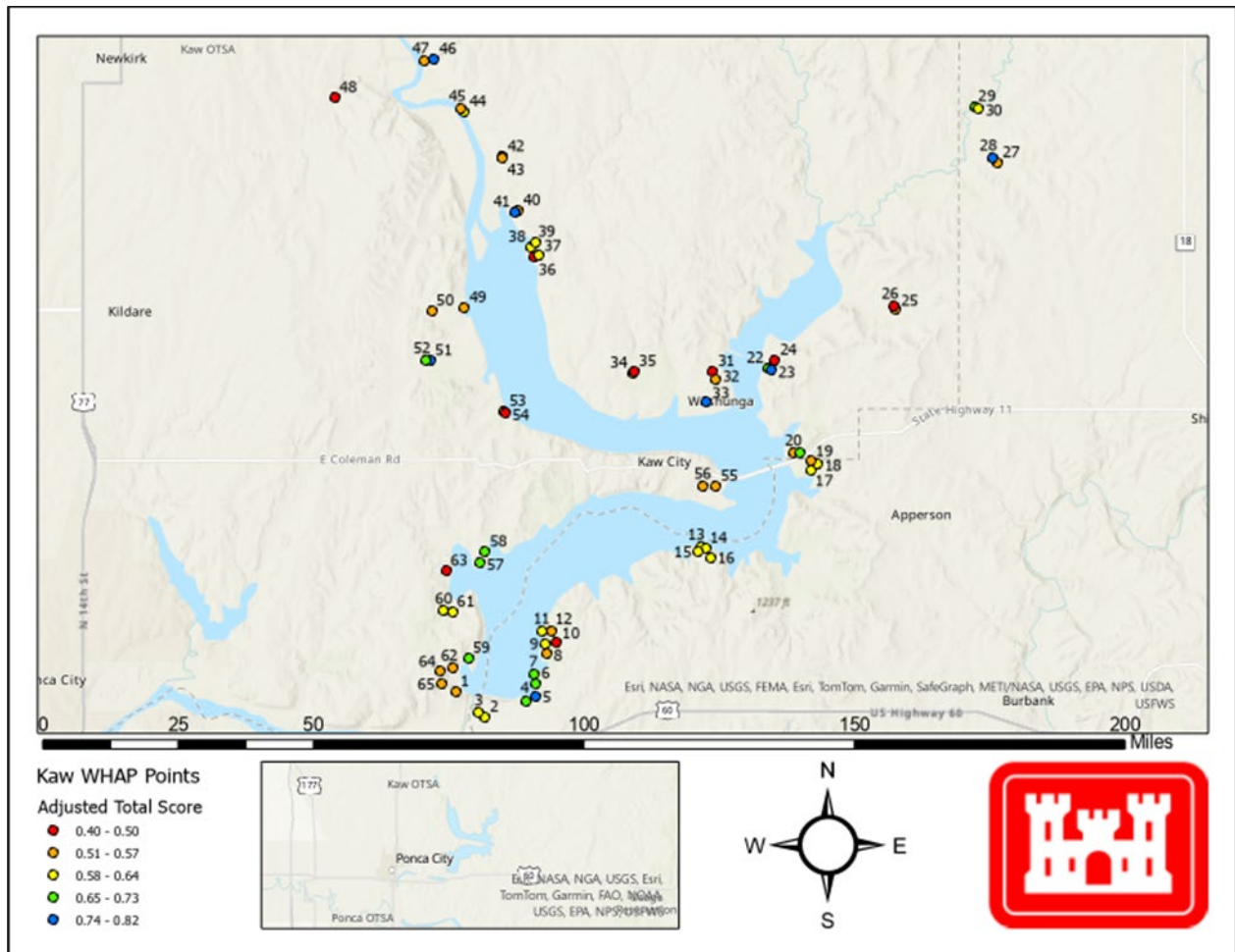


Figure 2. Distribution of WHAP Points within Kaw Lake with Adjusted Total Score

Habitat Type	Average Site Potential	Average Successional Stage	Average Uniqueness and Relative Abundance
Riparian/BHF	13.3	9.81	8.46
Marsh	None	None	None
Upland Forest	13.2	9.81	8.46
Grassland	11	8.6	9

Table 4. Average Site Potential, Successional Stage, and Uniqueness and Relative Abundance Scores per Habitat Type

Site potential allocates more points based on soil substrates characteristics and hydrologic connectivity that can support hydrophytic habitats, such as marshes, swamps, and bottomland hardwood forests that are often considered to be higher quality, more diverse habitat. This allows areas to score higher even

though a recent disturbance, such as fire or flood, may have removed most of the vegetation. Areas scoring high in site potential but low in other metrics can be targeted for management efforts as these areas' vegetation community response should be favorable, thus increasing habitat value. The predominate thick soil surface layer that is common within Cooper Lake is the main factor that upland forest and grassland sites scored so high in average site potential.

Successional stage refers to the age of the vegetative community. Older, mature forests and climax prairies, score higher than younger pole stands or disturbed grasslands because they provide more diverse forage, cover, and niche habitats. These scores are expected to increase across the habitats, except in areas that may not have the soil types to support hydrophytic vegetation or are flooded frequently enough to limit upland forest or grassland growth and development.

Uniqueness and Relative Abundance takes into consideration the rarity of a habitat or vegetative community and its abundance in the region. Current and past agricultural and forestry practices have significantly influenced the region's remaining habitat composition.

Recommendations

The data points collected up north of Kaw Lake have a low adjusted total score ranging from 0.40 to 0.57, this can be improved by continuing to monitor and remove invasive species in the respective areas while introducing native species in the lake still. The points south of the lake can also be improved as well by again continuing to remove invasive species, however, some scores show a range from 0.65 to 0.73. Those areas do show a potential to be classified as wildlife management.

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Attachment A: Kaw Lake WHAP Results Summary

Point_Num ber	Habitat	Habitat Group	Adjusted Total Score	Total Score	Site Potential	Successional Stage	Uniquen ess and Relative Abunda nce	Diversity of Woody Species	Number of Woody Species	Vertical Stratificati on	Additional Structural Diversity	Condition of Woody Vegetation	Herbaceous Vegetation	Cropland Condition	Marsh_C ondition	Berry_Drupe	Legume_Pod	Acorn	Nut_Nutlike	Samara	Cone	Achene	All_Others	Herbaceous_Species	Remarks
1	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.51	51	12	6	10	5	3	4	3	3	5			Poison Ivy, Virginia creeper, Flowering dogwood	Lespedeza, Redbud	Blackjack oak, Post oak	Hickory	Elm				Johnson grass, Sage brush, Virginia wild rye, Illinois bundle flower, Milkweed, Cordgrass, Asphila Siphoides	
2	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.60	60	12	12	10	4	3	4	5	5	5			Virginia creeper, Hackberry, Greenbriar, Coralberry	Redbud		Hickory				Cottonwood	Switchgrass, Virginia rye, Black snakeroot, Fish on a fishing pole, American jumpseed, Ticktrefoil, Fleabane, Tall Thistle	
3	Crostitimers: Sandyland Shrubland and Grassland	Riparian/BHF	0.62	62	20	6	15	3	1	4	3	5	5				Locust sp.		Black walnut	American Elm				Fish on a fishing pole, Johnson grass, Buttonweed, Black eyed susan, Sand bur, Fleabane, Cordgrass, Rosette grass	
4	Crostitimers: Sandyland Post Oak - Blackjac k Oak Forest and Woodland	Upland Forest	0.68	59	12	12	10	3	3	4	5	5	5			Poison Ivy, Virginia creeper, Flowering dogwood	Lespedeza						Buttonbush, Cottonwood	Black eyed susan, Johnson grass, Horseweed, Ragweed, Sagebrush, Texas ragweed, Cocklebur, Tall bonset	
5	Crostitimers: Sandyland Post Oak - Blackjac k Oak Forest and Woodland	Upland Forest	0.77	67	20	12	10	4	3	5	5	5	3			Hackberry, Pokeweed, Coralberry, Poison Ivy, Virginia creeper	Black locust			American Elm	Eastern Redcedar			Horseweed, Western ironweed, Tall thistle, Switchgrass	
6	Crostitimers: Sandyland Post Oak - Blackjac k Oak Forest and Woodland	Upland Forest	0.69	60	12	12	10	4	3	4	5	5	5				Lespedeza	White oak, Red oak	Pecan, Hickory				Buttonbush	Hoary verbena, Pokeweed, Tall thistle, Johnson grass, Cordgrass, Horenettle, Ticktrefoil, Rush sp.	
7	Crostitimers: Sandyland Post Oak - Blackjac k Oak Forest and Woodland	Upland Forest	0.68	59	12	12	10	5	3	4	5	5	3			American persimmon, Poison Ivy, Hackberry	Lespedeza	White oak, Red oak		Silver maple			Willow	Johnson grass, Rush sp., Texas ragweed, Western ragweed	
8	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.56	56	12	12	10	4	3	4	5	3	3			Virginia creeper, Coralberry, Hackberry	Nimblewill	White oak, Post oak, Chinkapin oak	Hickory					Rosette grass , Cordgrass, Western ironweed	
9	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.62	62	20	12	10	4	3	4	3	5	1			Virginia creeper, Coralberry	Lespedeza, Redbud	Post oak, Blackjac k oak	Hickory		Eastern redcedar			Large Tickweed, Bedstraw sp., Western ironweed	
10	High Plains: Riparian Hardwood Woodland	Riparian/BHF	0.47	47	12	6	5	4	3	4	3	5	5			Greenbriar, Coralberry, Mulberry, Sumac, Hackberry	Redbud	Pin oak	Hickory					Hedge parsley, Cordgrass, Pickly lettuce, Rosette grass, Johnson grass, Fish on a fishing pole, Horseweed, Tall thistle	
11	High Plains: Riparian Hardwood Woodland	Riparian/BHF	0.60	60	20	6	10	3	3	5	5	5	3			Sumac, Hackberry	Black locust, Redbud, Mimosa		Hickory					Illinois bundleflower, Rosette grass, Johnson grass, Switchgrass	
12	High Plains: Riparian Hardwood Woodland	Riparian/BHF	0.51	51	12	6	10	5	3	4	3	5	3			Coralberry, Hackberry, Grape sp.	Redbud	Post oak, Red oak, Chinkapin oak		American elm	Eastern Redcedar			Western ironweed, Cordgrass, Horseweed, Ticktrefoil, Rosette grass	
13	Ruderal Deciduous Woodland	Upland Forest	0.62	54	20	6	10	3	1	5	5	3	1			Virginia creeper, Dogwood	Redbud			American elm				Yellow sweet clover	
14	Crostitimers: Post Oak - Blackjack Oak Forest and Woodland	Upland Forest	0.63	55	12	6	10	6	3	5	5	5	3			Sand plum, Poison Ivy		Chinkapin oak, Pin oak	Hickory	American elm	Eastern Redcedar		Prickly pear	Virginia rye, Bush clover, coneflower, Johnson grass, Cordgrass	
15	Ruderal Deciduous Woodland	Upland Forest	0.60	52	12	6	10	3	3	5	5	3	5			Coralberry, Dogwood, Sumac	Lespedeza, Redbud				Eastern Redcedar			Sagebrush, Fish on a fishing pole, Bushgrass, Johnson grass, Cordgrass, Croton, Coneflower, Virginia rye	
16	Ruderal Deciduous Woodland	Upland Forest	0.64	56	12	6	10	6	3	4	5	5	5			Poison Ivy	Redbud, Lespedeza	Pin oak		American elm	Eastern Redcedar		Cottonwood, Buttonbush	Johnson grass, Illinois Bundleflower, Sagebrush, Ragweed, Virginia rye, Mayweed, White flower (unknown), Fish on a fishing pole	
17	Crostitimers: Sandyland Post Oak - Blackjac k Oak Forest and Woodland	Upland Forest	0.60	52	20	12	5	2	1	3	3	5	1				Partridge pea						Willow, Buttonbush	False boneset, Rosette grass	
18	High Plains: Bottomland Herbaceous Wetland	Upland Forest	0.64	56	20	12	5	4	3	3	3	5	1			Virginia creeper, Winged sumac		Post oak	Hickory				Buckbrush	Rosette grass, Sedge sp.	
19	Crostitimers: Sandyland Post Oak - Blackjac k Oak Forest and Woodland	Upland Forest	0.56	49	7	12	10	4	3	4	3	5	1				Partridge pea		Hickory	Ash			Willow, Buttonbush	False briar, Rosette grass	
20	High Plains: Bottomland Hardwood Forest	Upland Forest	0.53	46	7	12	10	5	5	4		3	0			Flowering dogwood, Virginia creeper, Poison Ivy, Winged sumac, Grapevine, Hackberry	Eastern redbud	Post oak	Hickory				Buckbrush		
21	Crostitimers: Sandyland Shrubland and Grassland	Grassland	0.72	49	7	12	10	6	3	4	3	3	1			Poison Ivy, Virginia creeper, Hackberry		Post oak	Hickory	Cedar elm	Eastern red cedar		Buckbrush	Sedge sp.	
22	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.72	72	12	20	15	5	7	4	3	3	3			Greenbriar, Soapberry, flowering dogwood, Wild grape, Hackberry, Coralberry, V									
23	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.74	74	12	20	15	5	7	4	3	3	5			Grapevine, Wild cherry, Poison oak, Virginia creeper, Coralberry	Honey Locust, Lespedeza								
24	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.50	50	12	6	10	5	5	5	1	5	1			Greenbriar, Hackberry, Virginia creeper, Wild grape, Dogwood, Fragrant sumac, Poison Ivy, Coralberry	Eastern Redbud, Lespedeza	White oak, Chinkapin oak	Hickory	Green ash				Violets, Woodland oats, White snakeroot	

52	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.73	73	12	20	15	5	5	5	5	3	3		Virginia creeper, Dogwood, Greenbriar		Pin oak, Chinkapin oak	Pecan, Hickory	Winged elm, Ash	Juniper			Violets, Virginia rye, Boneset, Snailseed, Sedge sp., Avena	
53	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.55	55	12	6	10	5	5	4	3	5	5		Poison ivy, Trumpet vine, Greenbriar, Hackberry, Poison oak	Honey locust, Lespedeza		Hickory	Silver maple, American elm, Cedar elm, Green ash			Buttonbush	Wild lettuce, Snakeroot, Frostweed, Cordgrass, Panicgrass, Ragweed, Black snakeroot	
54	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.47	47	12	6	5	5	3	3	3	5	5		Sumac	Honey locust, Lespedeza		Hickory	Cedar elm, American elm			Buttonbush	Johnson grass, Sawgrass, Ragweed, Wild rye, Woodland oats, Panicgrass, American germander, Foxtails, Black eyed susan, Texas verbane	
55	Crosstimbers: Sandyland Post Oak - Blackjack Oak Forest and Woodland	Upland Forest	0.54	47	20	5	5	3	1	4	5	3	1				Willow	Hickory				Buttonbush	Johnson grass, False bonset, Aster	
56	Crosstimbers: Sandyland Post Oak - Blackjack Oak Forest and Woodland	Upland Forest	0.57	50	12	12	10	4	3	4	1	1	3		Poison ivy, Hackberry, Mulberry, Virginia creeper	Honey locust		Hickory				Eastern cottonwood	Johnson grass, Canadian rye, False boneset, Sedge sp.	
57	Ruderal Deciduous Woodland	Upland Forest	0.69	60	12	12	10	6	3	4	3	5	5		Coralberry	Honey locust, Lespedeza		Hickory	Silver maple	Ashe juniper		Osage orange, Eastern cottonwood	Texas Verbane, Woodland oats, Sawgrass, Horsenettle, Sage brush, Sedge sp., Dogbane	
58	Ruderal Deciduous Woodland	Upland Forest	0.66	57	12	12	10	5	3	4	1	5	5		Coralberry, Mulberry, Hackberry	Honey locust, Lespedeza		Hickory		Ashe juniper		Osage orange	3-seeded mercury, Sedge sp., Cordgrass, White avens, Sage brush, Golden rod, Panicgrass	
59	High Plains: Riparian Hardwood Woodland	Riparian/BHF	0.69	69	20	12	10	4	3	5	5	5	5		Persimmon	Lespedeza		Pecan				Willow, Buttonbush	Johnson grass, Ragweed, Golden rod, Boneset, Milkweed, Switchgrass, Rosette grass, Green bristle grass	
60	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.58	58	12	12	10	5	3	5	5	5	1		Poison ivy, Hackberry	Lespedeza	Black walnut, Live oak	Pecan	Silver maple				Johnson grass	
61	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.59	59	12	12	10	4	3	5	5	5	3		Poison ivy, Sumac, Muscadine grape	Lespedeza, Partridge pea		Pecan, Hickory				Buttonbush	Johnson grass, White sweetclover, Cordgrass, Black eyed susan, Fleabane, Hemp dogbane, Panicgrass	
62	Ruderal Mixed Deciduous - Eastern Redcedar Woodland	Upland Forest	0.52	45	12	12	5	2	1	4	3	5	1				Chinkapin oak			Eastern redcedar			Grass sp., Panicgrass	
63	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.46	46	12	6	5	4	3	5	5	5	1		Coralberry, American persimmon, Virginia creeper, Poison ivy, Greenbriar	Eastern redbud, Partridge pea		Pecan	American elm				Switchgrass, Johnson grass	
64	High Plains: Bottomland Hardwood Forest	Riparian/BHF	0.55	55	12	6	10	5	3	4	5	5	5		Dogwood, Persimmon	Mimosa, Redbud, unknown legume	Chinkapin oak	Hickory		Eastern redcedar			Ticktrefoil, Fleabane, Switchgrass, Panicgrass, Illinois Bundleflower, Frostweed, Western ironweed, Fish on a fishing pole	
65	Crosstimbers: Post Oak - Blackjack Oak Slope Forest	Upland Forest	0.53	46	12	12	5	3	1	4	3	5	1		Coralberry, Poison ivy	Redbud				Eastern redcedar			Tall dropseed	

Attachment B: Kaw Lake WHAP Poin

WHAP POINT 17 (N, E, S, W)



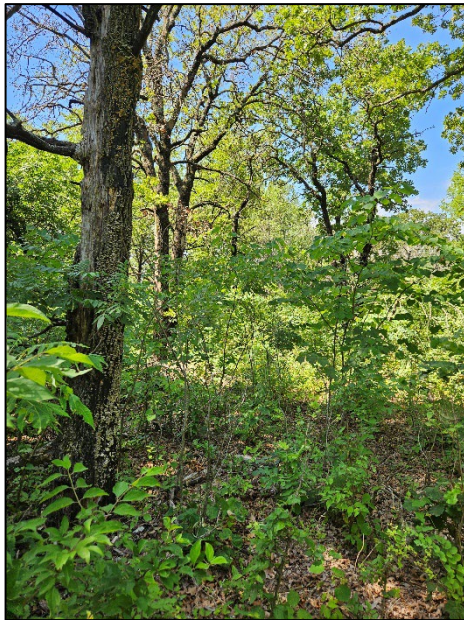
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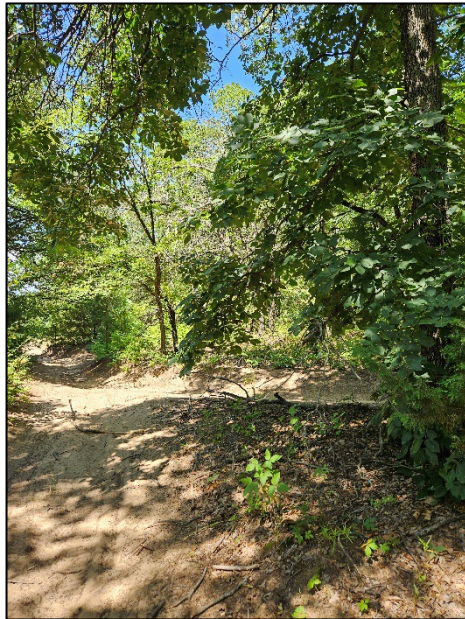
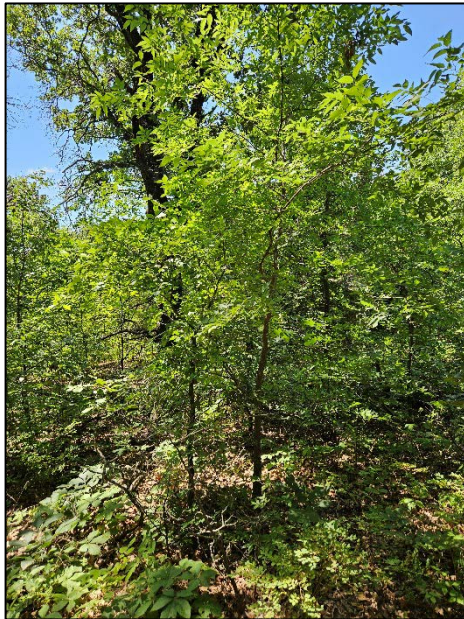
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WHAP POINT 20 (N, E, S, W)



WHAP POINT 21 (N, E, S, W)



WHAP POINT 22 (N, E, S, W)



WHAP POINT 23 (N, E, S, W)



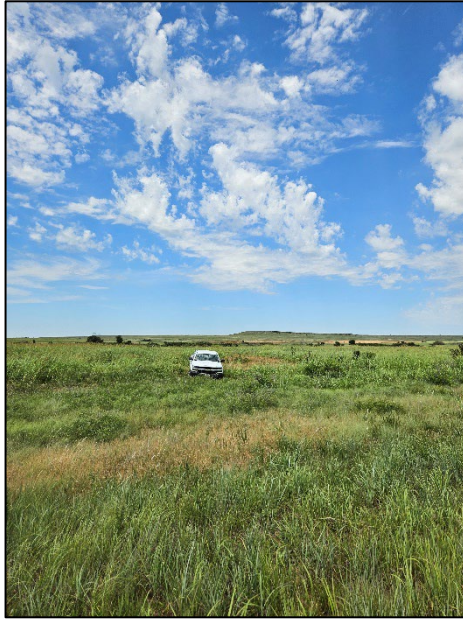
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WHAP POINT 25 (N, E, S, W)



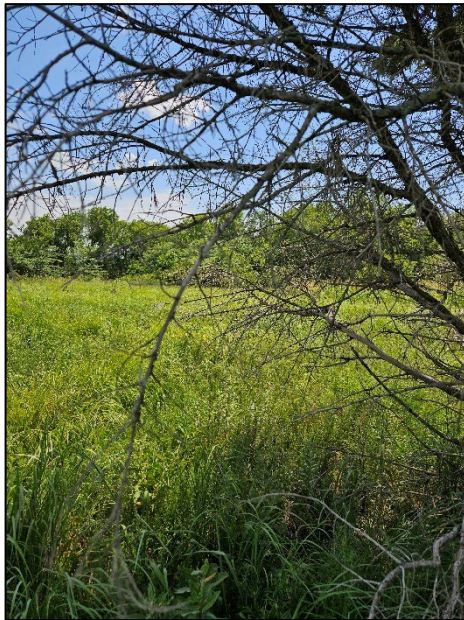
WHAP POINT 26 (N, E, S, W)



WHAP POINT 27 (N, E, S, W)



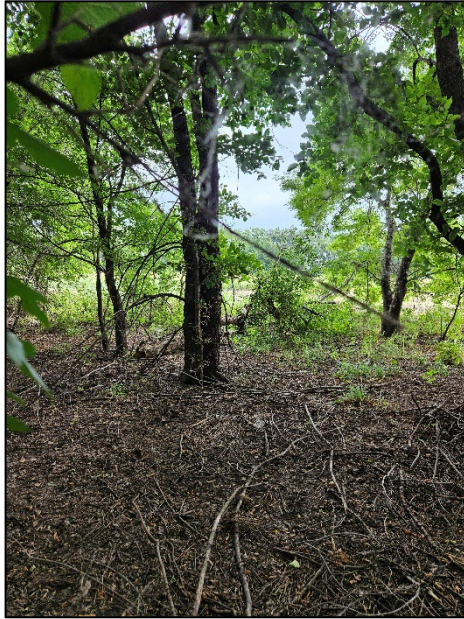
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WHAP POINT 29 (N, E, S, W)



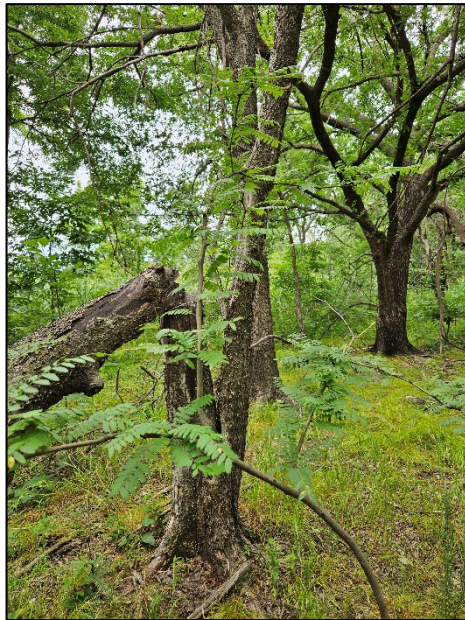
WHAP POINT 30 (N, E, S, W)



WHAP POINT 31 (N, E, S, W)



WHAP POINT 32 (N, E, S, W)



WHAP POINT 33 (N, E, S, W)



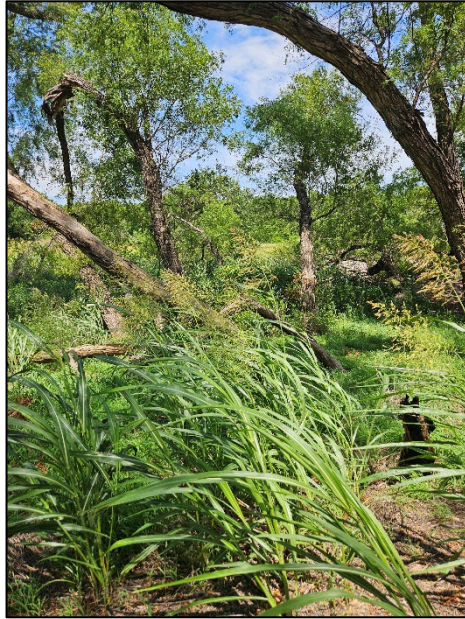
WHAP POINT 34 (N, E, S, W)



WHAP POINT 35 (N, E, S, W)



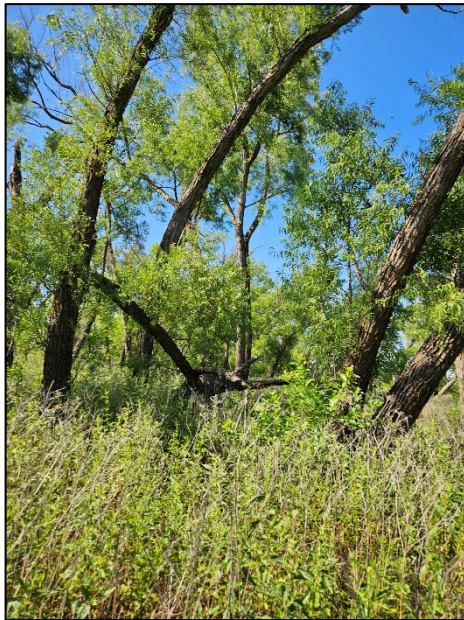
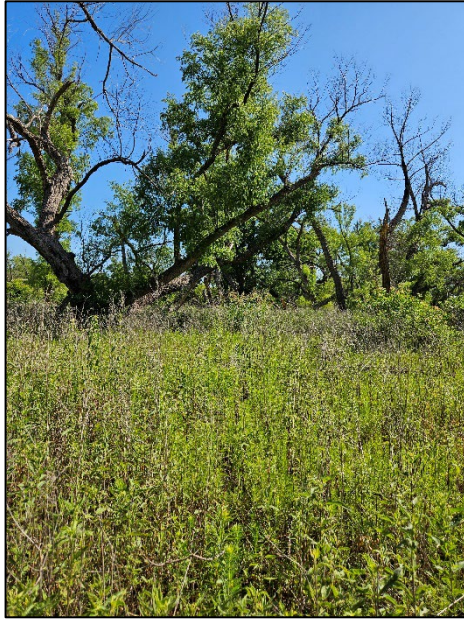
WHAP POINT 36 (N, E, S, W)



WHAP POINT 37 (N, E, S, W)



WHAP POINT 55 (N, E, S, W)



WHAP POINT 56 (N, E, S, W)



APPENDIX D - PERTINENT LAWS

- Antiquities Act of 1906, Public Law 59-209, 34 Stat. 225, 54 U.S.C. Sections 320301-320303: The first Federal law established to protect what are now known as "cultural resources" on public lands. It provides a permit procedure for investigating "antiquities" and consists of two parts: An act for the Preservation of American Antiquities, and Uniform Rules and Regulations.
- Historic Sites Act of 1935, Public Law 74-292, 49 Stat. 666, 16 U.S.C. Sections 461-467: Declares it to be a national policy to preserve for (in contrast to protecting from) the public historic (including prehistoric) sites, buildings, and objects of national significance. This act provides both authorization and a directive for the Secretary of the Interior, through the National Park Service, to assume a position of national leadership in the area of protecting, recovering, and interpreting national archeological historic resources. It also establishes an "Advisory Board on National Parks; Historic Sites, Buildings, and Monuments, a committee of eleven experts appointed by the Secretary to recommend policies to the Department of the Interior".
- Flood Control Act of 1938, Public Law 75-761: This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. Sections 668-668d: This Act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who take, possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or any manner, any bald eagle [or any golden eagle], alive or dead, or any part, nest, or egg thereof. The Act defines "take" as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.
- Flood Control Act of 1944, Public Law 78-534: Section 4 of the act as last amended in 1962 by Section 207 of Public Law 87-874 authorizes USACE to construct, maintain, and operate public parks and recreational facilities in reservoir areas and to grant leases and licenses for lands, including facilities, preferably to Federal, State or local governmental agencies.
- River and Harbor Act of 1946, Public Law 79-525: This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Flood Control Act of 1946, PL 79-526: This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes. This law amends PL 78-534 to include authority to grant leases to non-profit organizations at recreational facilities in reservoir areas at reduced or nominal fees.
- Flood Control Act of 1954, Public Law 83-780: This act authorizes the construction, maintenance, and operation of public parks and recreational facilities in reservoir areas under the control of the Department of the Army and authorizes the Secretary of the Army to grant leases of lands in reservoir areas deemed to be in the public interest.

- Fish and Wildlife Coordination Act, Public Law 85-624: This act, as amended, sets down the general policy that fish and wildlife conservation shall receive equal consideration with other project purposes and be coordinated with other features of water resource development programs. Opportunities for improving fish and wildlife resources and adverse effects on these resources shall be examined along with other purposes which might be served by water resources development.
- Public Law 86-717: This act provides for the protection of forest and other vegetative cover for reservoir areas under this jurisdiction of the Secretary of the Army and the Chief of Engineers.
- Flood Control Act of 1962, Public Law 87-874: This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Land and Water Conservation Fund Act of 1965, Public Law 88-578: This act established a fund from which U.S. Congress can make appropriations for outdoor recreation. This law makes entrance and user fees at reservoirs possible by deleting the words "without charge" from Section 4 of the 1944 Flood Control Act, as amended.
- Public Law 88-29: Authorized the Secretary of the Interior to inventory and classify outdoor recreation needs and resources and to prepare a comprehensive outdoor recreation plan taking into consideration the plans of the various Federal agencies, State, and other political subdivisions. It also states that the federal agencies undertaking recreational activities shall consult with the Secretary of the Interior concerning these activities and shall carry out such responsibilities in general conformance with the nationwide plan.
- Federal Water Project Recreation Act, Public Law 89-72: This act requires that not less than one-half the separable costs of developing recreational facilities and all operation and maintenance costs at Federal reservoir projects shall be borne by a non-Federal public body. A HQUSACE/OMB implementation policy made these provisions applicable to projects completed prior to 1965.
- Water Resources Planning Act, Public Law 89-80: This act established the Water Resources Council and gives it the responsibility to encourage the development, conservation, and use of the Nation's water and related land resources on a coordinated and comprehensive basis.
- Solid Waste Disposal Act, as amended, Public Law 89-272, 42 U.S.C. Sections 6901 et seq.: This act authorized a research and development program with respect to solid-waste disposal. It proposes (1) to initiate and accelerate a national research and development program for new and improved methods of proper and economic solid-waste disposal, including studies directed toward the conservation of natural resources by reducing the amount of waste and unsalvageable materials and by recovery and utilization of potential resources in solid waste; and (2) to provide technical and financial assistance to State and local governments and interstate

agencies in the planning, development, and conduct of solid-waste disposal programs.

- National Historic Preservation Act of 1966, Public Law 89-665, 54 U.S.C. Sections 300101 et seq.: This act provides for: (1) an expanded National Register of significant sites and objects; (2) matching grants to states undertaking historic and archeological resource inventories; and (3) a program of grants-in aid to the National Trust for Historic Preservation; and (4) the establishment of an Advisory Council on Historic Preservation. Section 106 requires that the President's Advisory Council on Historic Preservation have an opportunity to comment on any undertaking which adversely affects properties listed, nominated, or considered important enough to be included on the National Register of Historic Places.
- Flood Control Act of 1968, Section 210, Public Law 90-483: Restricted collection of entrance fee at USACE lakes and reservoirs to users of highly developed facilities requiring continuous presence of personnel.
- National Environmental Policy Act of 1969 (NEPA), Public Law 91-190, 42 U.S.C. Sections 4321 et seq.: NEPA declared it a national policy to encourage productive and enjoyable harmony between man and his environment, and for other purposes. Specifically, it declared a "continuing policy of the Federal Government... to use all practicable means and measures...to foster and promote the general welfare, to create conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." Section 102 authorized and directed that, to the fullest extent possible, the policies, regulations and public law of the United States shall be interpreted and administered in accordance with the policies of the Act. It is Section 102 that requires consideration of environmental impacts associated with Federal actions. Section 101 of NEPA requires the federal government to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony.

Specifically, Section 101 of NEPA declares:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations
- Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings
- Attain the widest range of beneficial uses of the environment without degradation risk to health or safety or other undesirable and unintended consequences
- Preserve important historic, cultural, and natural aspects of our national heritage and maintain wherever possible an environment which supports diversity and variety of individual choice
- Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources

- River and Harbor Act of 1970 and Flood Control Act of 1970, Public Law 91-611: Establishes the requirement for evaluating the economic, social, and environmental impacts of projects.
- Public Law 92-347: This act revises Public Law 88-578, the Land and Water Conservation Fund Act of 1965, to require Federal agencies to collect special recreation user fees for the use of specialized sites developed at Federal expense and to prohibit the USACE from collecting entrance fees to projects.
- Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500: The Federal Water Pollution Control Act of 1948 (PL 845, 80th U.S. Congress), as amended in 1961, 1966, 1970, 1972, 1977, and 1987, established the basic tenet of uniform State standards for water quality. Public Law 92-500 strongly affirms the Federal interest in this area. "The objective of this act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters."
- Federal Environmental Pesticide Control Act of 1972, Public Law 92-516, 86 Stat. 973, 7 U.S.C. Sections 136 et seq.: This act completely revises the Federal Insecticide, Fungicide and Rodenticide Act. It provides for complete regulation of pesticides to include regulation, restrictions on use, actions within a single State, and strengthened enforcement.
- Public Law 93-81: This law amends Section 4 of the Land and Water Conservation Fund Act of 1965, as amended, to require each Federal agency to collect special recreation use fees for the use of sites, facilities, equipment, or services furnished at Federal expense.
- Endangered Species Act of 1973, Public Law 93-205, 16 U.S.C. Sections 1531 et seq.: This law repeals the Endangered Species Conservation Act of 1969. It also directs all Federal departments/agencies to carry out programs to conserve endangered and threatened species of fish, wildlife, and plants and to preserve the habitat of these species in consultation with the Secretary of the Interior. This Act establishes a procedure for coordination, assessment, and consultation.
- Water Resources Development Act of 1974, Public Law 93-251: Section 107 of this law establishes a broad Federal policy which makes it possible to participate with local governmental entities in the costs of sewage treatment plan installations.
- Archeological and Historic Preservation Act of 1974, Public Law 93-291: The Secretary of the Interior shall coordinate all Federal survey and recovery activities authorized under this expansion of the 1960 act. The Federal Construction agency may transfer up to one percent of project funds to the Secretary with such transferred funds considered non-reimbursable project costs. This amends the Reserve Salvage Act of 1960 (PL-86-523).
- Public Law 93-303: This law amends Section 4 of the Land and Water Conservation Fund Act of 1965, as amended, to establish less restricted criteria under which Federal agencies may charge fees for the use of campgrounds developed and operated at Federal areas under their control.

- Safe Drinking Water Act, Public Law 93-523: The act assures that water supply systems serving the public meet minimum national standards for protection of public health. The act (1) authorizes the Environmental Protection Agency to establish Federal standards for protection from all harmful contaminants, which standards would be applicable to all public water systems, and (2) establishes a joint Federal-State system for assuring compliance with these standards and for protecting underground sources of drinking water.
- Public Law 94-422: Expands the role of the Advisory Council on Historic Preservation. Section 201 amends Section 106 of the National Historical Preservation Act of 1966 to say that the Council can comment on activities which will have an adverse effect on sites either included in or eligible for inclusion in the National Register of Historic Places.
- Clean Water Act of 1977, as amended, Public Law 95-217: This Act amends the Federal Water Pollution Control Act Amendments of 1972 and extends the appropriations authorization. The Clean Water Act is a comprehensive Federal water pollution control program that has as its primary goal the reduction and control of the discharge of pollutants into the nation's navigable waters. The Clean Water Act of 1977 has been amended by the Water Quality Act of 1987, Public Law 100-4.
- American Indian Religious Freedom Act, Public Law 95-341: The Act protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use and possession of sacred objections, and the freedom to worship through ceremonials and traditional rites.
- Endangered Species Act Amendments of 1978, Public Law 95-632: This law amends the Endangered Species Act of 1973. Section 7 directs agencies to conduct a biological assessment to identify threatened or endangered species that may be present in the area of any proposed project. This assessment is conducted as part of a Federal agency's compliance with the requirements of Section 102 of NEPA.
- Archeological Resources Protection Act of 1979, Public Law 96-95: This Act protects archeological resources and sites that are on public and tribal lands and that fosters increased cooperation and exchange of information between governmental authorities, the professional archeological community, and private individuals. It also establishes requirements for issuance of permits by the Federal land managers to excavate or remove any archeological resource located on public or Indian lands.
- Supplemental Appropriations Act, 1983, Public Law 98-63: This Act authorized the USACE Volunteer Program. The United States Army Chief of Engineers may accept the services of volunteers and provide for their incidental expenses to carry out any activity of the USACE, except policymaking or law or regulatory enforcement.
- Water Resources Development Act of 1986, Public Law 99-662: Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.
- North American Wetland Conservation Act of 1989, Public Law 101-233: This act directs the conservation of North American wetland ecosystems and requires

agencies to manage their lands for wetland/waterfowl purposes to the extent consistent with missions.

- Americans with Disabilities Act of 1990 (ADA), PL101-336, as amended by the ADA Amendments Act of 2008 (PL110-325): This law prohibits discrimination based on disabilities in, among others, the area of public accommodations and requires reasonable accommodations for persons with disabilities.
- Native American Graves Protection and Repatriation Act, Public Law 101-601: This act requires Federal agencies to return Native American human remains and cultural items, including funerary objects and sacred objects, to their respective peoples.
- Water Resources Development Act (WRDA) of 1992 PL 102-580: This act authorizes the USACE to accept contributions of funds, materials and services from non-Federal public and private entities to be used for managing recreational sites and facilities and natural resources.
- Omnibus Reconciliation Act of 1993, Public Law 103-66: Day use fees - authorizes the USACE to collect fees for the use of developed recreational sites and facilities, including campsites, swimming beaches and boat ramps.
- WRDA 1996, PL 104-303: authorizes recreation and fish and wildlife mitigation as purposes of a project, to the extent that the additional purposes do not adversely affect flood control, power generation, or other authorized purposes of a project.
- Omnibus Parks and Public Lands Management Act of 1996, Public Law 104-333: This act created an advisory commission to review the current and anticipated demand for recreational opportunities at lakes or reservoirs managed by the Federal Government and to develop alternatives to enhance such opportunities for such use by the public.
- Neo-tropical Migratory Bird Conservation Act of 2000, Public Law106-147: This act promotes the conservation of habitat for neo-tropical migratory birds.

APPENDIX E – ACRONYMS

ac-ft	Acre Feet
AQI	Air Quality Index
BMP	Best Management Practices
CAP	Climate Action Plan
CRMP	Cultural Resources Management Plan
CWA	Clean Water Act
DC	District Commander
DF	Deciduous Forest
DQC	District Quality Control
DQCB	District Quality Control Board
DM	Design Memorandum
EA	Environmental Assessment, NEPA Document
EMS	Ecological Mapping System
EOP	Environmental Operating Principles
EP	Engineering Pamphlet
EPA	United States Environmental Protection Agency
ER	Engineering Regulation
ESA	Environmentally Sensitive Area
°F	Degrees Fahrenheit
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination act of 1958
GIS	Geographical Information Systems
HDR	High Density Recreation
HQ	USACE Headquarters (also HQUSACE)
IH	Interstate Highway
IPaC	Information for Planning and Consultation
KR	King Ranch (also King Ranch Bluestem)
LDR	Low Density Recreation
LEED	Leadership in Energy and Environmental Design
MP	Master Plan or Master Planning
MRML	Multiple Resource Management Lands
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act, 1970
NGVD/NGVD29	National Geodetic Vertical Datum (1929)
NHPA	National Historic Prevention Act
NRHP	National Register of Historic Places
NOA	Notice of Availability
NRCS	Natural Resource Conservation Service
NRHP	National Registry of Historic Places
NVCS	National Vegetation Classification System
NWI	National Wetland Inventory
ODWC	Oklahoma Department of Wildlife Conservation
O&M	Operations and Maintenance
OK	Oklahoma
OMB	Office of Management and Budget
OMBIL	Operations and Maintenance Business Information

OMP	Operations Management Plan for a specific lake Project
OPM	Operations Project Manager
PDT	Project Development Team
PL	Public Law
PM	Project Management or Project Manager
PMP	Project Management Plan
PO	Project Operations
RBLH	Riparian Bottomland Hardwoods
RBS	Recreational Boating Survey
RIFA	Red Imported Fire Ant
RPEC	Regional Planning and Environmental Center
RTEST	Rare, Threatened, and Endangered Species of Texas
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SGCN	Species of Greatest Conservation Need
SH	State Highway
SHPO	State Historical Preservation Office
SMPS	Shoreline Management Policy Statement
SIP	State Implementation Plan
SWA	State Wildlife Area
TPWD	Texas Parks and Wildlife Department
U.S.	United States (also US)
USACE	United States Army Corps of Engineers
USFWS	U. S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VM	Vegetative Management Area
WDA	Workforce Development Area
WHAP	Wildlife Habitat Appraisal Procedure
WM	Wildlife Management Area