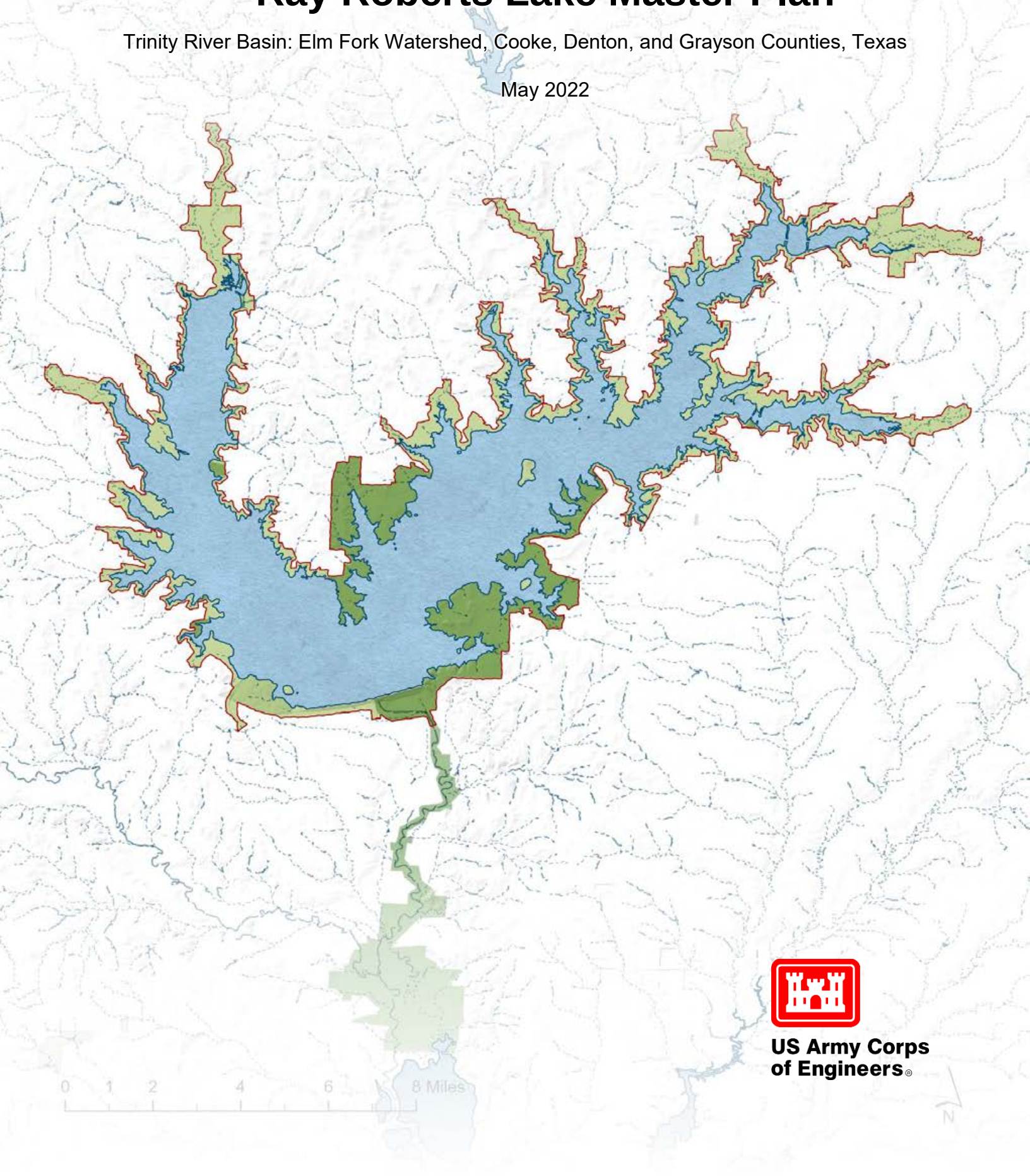
# Ray Roberts Lake Master Plan

Trinity River Basin: Elm Fork Watershed, Cooke, Denton, and Grayson Counties, Texas

May 2022




US Army Corps of Engineers®

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# EXECUTIVE SUMMARY

Ray Roberts Lake Master Plan
U.S. Army Corps of Engineers
Prepared by the Southwestern Division
Regional Planning and Environmental Center (RPEC)
May 2022

## ES.1 PURPOSE

The revision of the 1983 *Ray Roberts Lake Master Plan* (hereafter Plan or Master Plan) is a framework built collaboratively to guide appropriate stewardship of U.S. Army Corps of Engineers (USACE) administered resources at Ray Roberts Lake over the next 25 years. The 1983 Plan has served well past its intended 25-year planning horizon and does not reflect the growing population around the lake and regional recreation needs.

When originally built, the dam and lake's purposes were water supply, recreation, and fish and wildlife, and later added flood risk management and hydropower to the project's mission. However, the hydropower mission was not economically viable and was decommissioned in 2003, and major equipment related to hydropower was removed in 2014. Today, the lake and dam provide a multi-purpose reservoir for flood risk management, water supply, fish and wildlife management, and recreation within the Trinity River Basin. In addition to these primary missions, USACE has an inherent mission for environmental stewardship of project lands, working closely with the Texas Parks and Wildlife Department and local cities to provide regionally important outdoor recreation opportunities. 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.

Ray Roberts Lake is located in the Dallas-Fort Worth Metroplex and spans across the Texoma Council of Governments in the north and North Central Texas Council of Governments to the south, as shown in Figure ES.1. The 1983 Master Plan included a total of 48,566 acres, including 19,216 acres of land and 29,350 acres of water at the normal or conservation pool elevation of 632.5 feet National Geodetic Vertical Datum of 1929 (NGVD29). The acres figure was derived using land measurement technology dating from the 1970s-1980s to describe the size of the pool at the normal elevation. The mapping used for this Master Plan revision uses modern satellite imagery, Lidar (3-dimensional laser scanning) and Geographic Information System (GIS) mapping, resulting in different acreage calculations than that of the 1983 Master Plan. There are approximately 294 miles of shoreline at the top of the conservation pool. Ray Roberts Dam and Lake Project (Ray Roberts Lake hereafter) is part of an integral flood control and water conservation project in the Trinity River Basin consisting of eight major projects. This Plan and supporting documentation provide an inventory and analysis, goals, objectives, and recommendations for USACE lands and waters at Ray Roberts Lake, Texas, with input from the public, stakeholders, and subject matter experts.

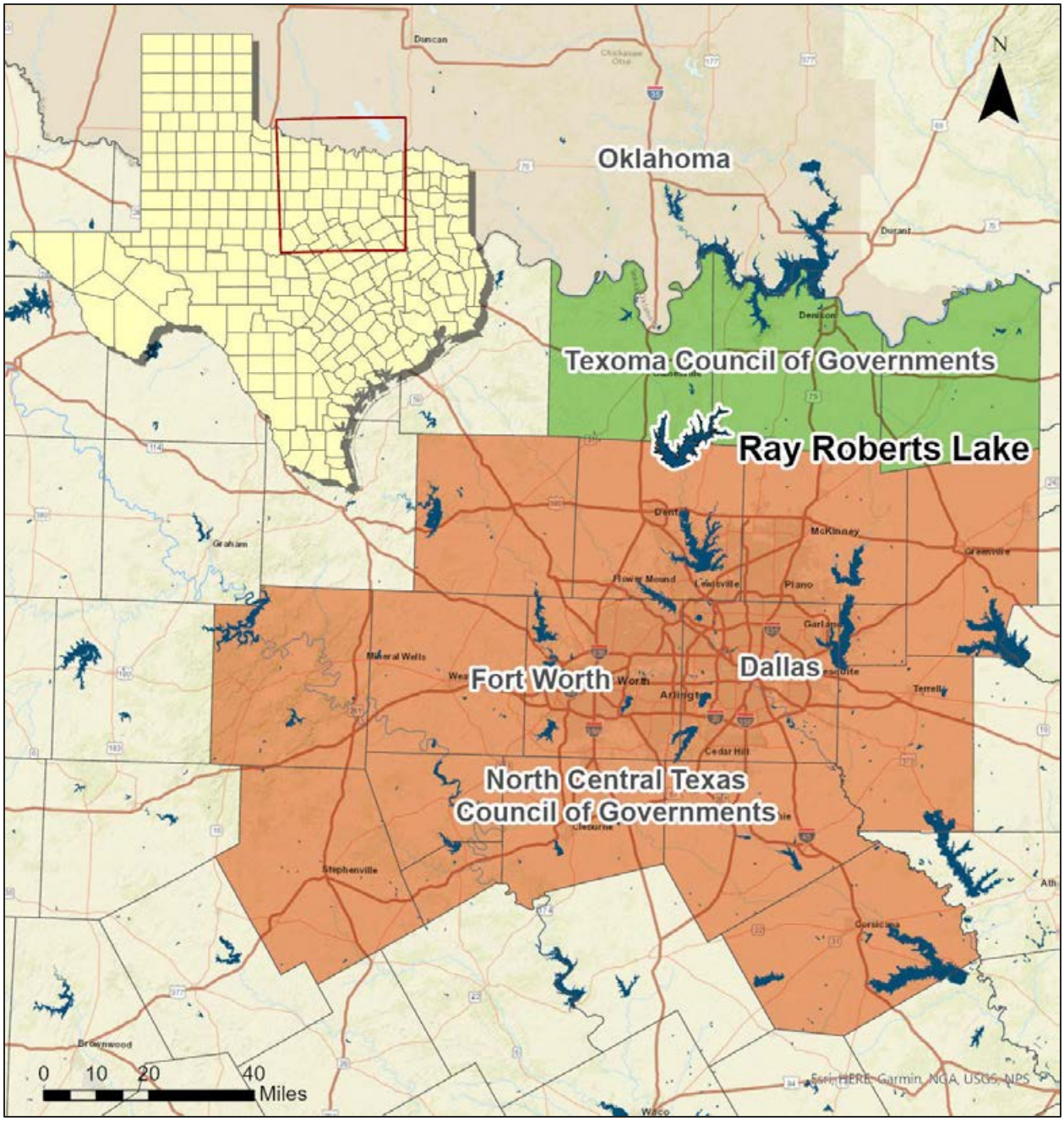


**Figure ES.1 Ray Roberts Lake within the larger Dallas Fort Worth Metropolitan Area and Council of Governments**

## ES.2 PUBLIC INPUT

To ensure a balance between operational, environmental, and recreational outcomes, the 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.

The first public input meeting was originally scheduled for the spring of 2020. In the interest of public health and well-being due to the COVID-19 pandemic, the public input process was changed from a face-to-face meeting to a virtual presentation detailing the specifics of the master plan revision. The presentation and public input process remained open for 45 days. The public comment period began May 11, 2020 and ran through June 26, 2020.

During the public comment period, the USACE received comments from one state agency and five members of the public. Issues addressed in the comments included partnership with TPWD and other agencies, natural resources, park amenities, land classification, invasive species, a logjam within the greenbelt between Ray Roberts and Lewisville Lakes, and the Ray Roberts Zoning by local counties. Comments received and government responses are listed in Table 7-1 and were considered in development of the Draft Master Plan.

The virtual workshop to announce the draft Master Plan with the EA will be held May 19, 2022, followed by a 30-day comment period. After closing the comment period, this section will be completed with further details including public meeting or presentation details, comments received as well as significant edits to the draft based on those comments.

## ES.3 RECOMMENDATIONS

The following land and water classification changes in Table ES.1 (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 Ray Roberts Lake was reclassified either by a change in nomenclature required by regulation or changes needed to identify actual and projected use. Areas used for project operations and maintenance were classified as Operations in the 1983 Plan, which is similar to the current Project Operations classification. The 1983 Plan classified most acres within designated parks as Recreation – Intensive Use, which is similar to the current High Density Recreation classification. The 1983 Plan classified other recreation areas as Recreation – Low Density Use, which is similar to the current Multiple Resource Management – Low Density Recreation classification. Most acres in the 1983 Plan were classified as Wildlife Management, which is similar to the current Multiple Resource Management – Wildlife Management classification. In addition, some acres have been changed to Environmentally Sensitive Areas which did not exist when the 1983 Plan was created.

**Table ES.1 Changes from Prior Classification (1983) to Proposed New Classification (2022)**

| Prior Land Classifications (1983 Plan) | Acres* | Proposed Land Classifications (2022) | Acres |
|---|---|---|---|
| Operations | 325 | Project Operations | 503 |
| Recreational – Intensive Use | 3,135 | High Density Recreation | 1,841 |
| -- | -- | Environmentally Sensitive Areas | 8,633 |
| Recreational – Low Density Use | 1,510 | Multiple Resource Management – Low Density Recreation | 1,659 |
| Wildlife Management | 14,246 | Multiple Resource Management – Wildlife Management | 5,790 |
| **TOTAL Land Acres** | **19,216*** | **TOTAL Land Acres** | **18,426** |
| **Prior Water Surface Classifications (1983 Plan)** | **Acres** | **Proposed Water Surface Classifications (2022)** | **Acres** |
| Permanent Pool | 29,350 | Permanent Pool | 27,801 |
| -- | -- | – Restricted | 6 |
| -- | -- | – Designated No Wake | 119 |
| -- | -- | – Open Recreation | 27,676 |
| **TOTAL Water Surface** | **29,350** | **TOTAL Water Surface** | **27,801** |

* Land classification acres and total land acres in the 1983 Master Plan includes both flowage easement and fee simple acres.
* Some acreage differences are due to improvements in mapping and measurement technology, deposition/siltation, and erosion.

There are several major differences in the acres between the 1983 Master Plan and the 2022 Master Plan which are not accounted for in Table ES.1 or the maps in Appendix A. These differences are due to the following:

- In the 1983 Master Plan, the land classification maps and land classification table include both fee simple and flowage easement land without differentiating them on either the table or maps. This makes a direct comparison of land classification acres between the two Plans impossible.
- After the 1983 Master Plan, some flowage easement acres were converted to fee acres, and the changed acres were not included in a supplement to the original Master Plan or changes to the maps.
- After the 1983 Master Plan, some flowage easement acres were disposed of (sold), and the changed acres were not included in a supplement to the original Master Plan or changes to the maps.
- Current mapping and measuring technology have improved since the 1983 Master Plan, providing more precise measurements. The current Plan uses Geographical Information System (GIS) technology, Light Detection and Ranging (LiDAR) spatial mapping, and updated boundary surveys.

- Since the 1983 Master Plan, erosion and deposition/siltation have led to changes in the water surface acres and land acres, with some areas increasing and other areas decreasing the total acres.

## ES.4 PLAN ORGANIZATION

Chapter 1 of the Master Plan presents an overall introduction to Ray Roberts Lake. Chapter 2 consists of an inventory and analysis of Ray Roberts Lake and associated land resources. Chapters 3 and 4 lay out management goals, resource objectives, and land classifications. 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 Ray Roberts 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 changes in land 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 with the Master Plan, which analyzed alternative management scenarios for Ray Roberts Lake, in accordance federal regulations including the National Environmental Policy Act of 1969, as amended (NEPA); regulations of the Council on Environmental Quality; and USACE regulations, including Engineer Regulation 200-2-2: 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 1983 Master Plan, and 2) Proposed Action within the Master Plan. 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 plan that would result in significant disturbance to natural resources or result in significant public interest would require additional NEPA documentation at the time the action takes place.

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# CHAPTER 1 – INTRODUCTION

## 1.1. GENERAL OVERVIEW

Ray Roberts Dam and Lake (hereafter Ray Roberts Lake) is located at river mile (RM) 60.0 on the Elm Fork of the Trinity River. The damsite is located in Denton County, about 10 miles northwest of downtown Denton, 6 miles east of the City of Sanger, 6 miles southwest of the City of Pilot Point, and 4 miles northwest of the City of Aubrey. The lake lies partially within Denton, Cooke, and Grayson Counties and spans across the Texoma Council of Governments (TCOG) to the North and the North Central Texas Council of Governments (NCTCOG) to the south (Figure 1.1).

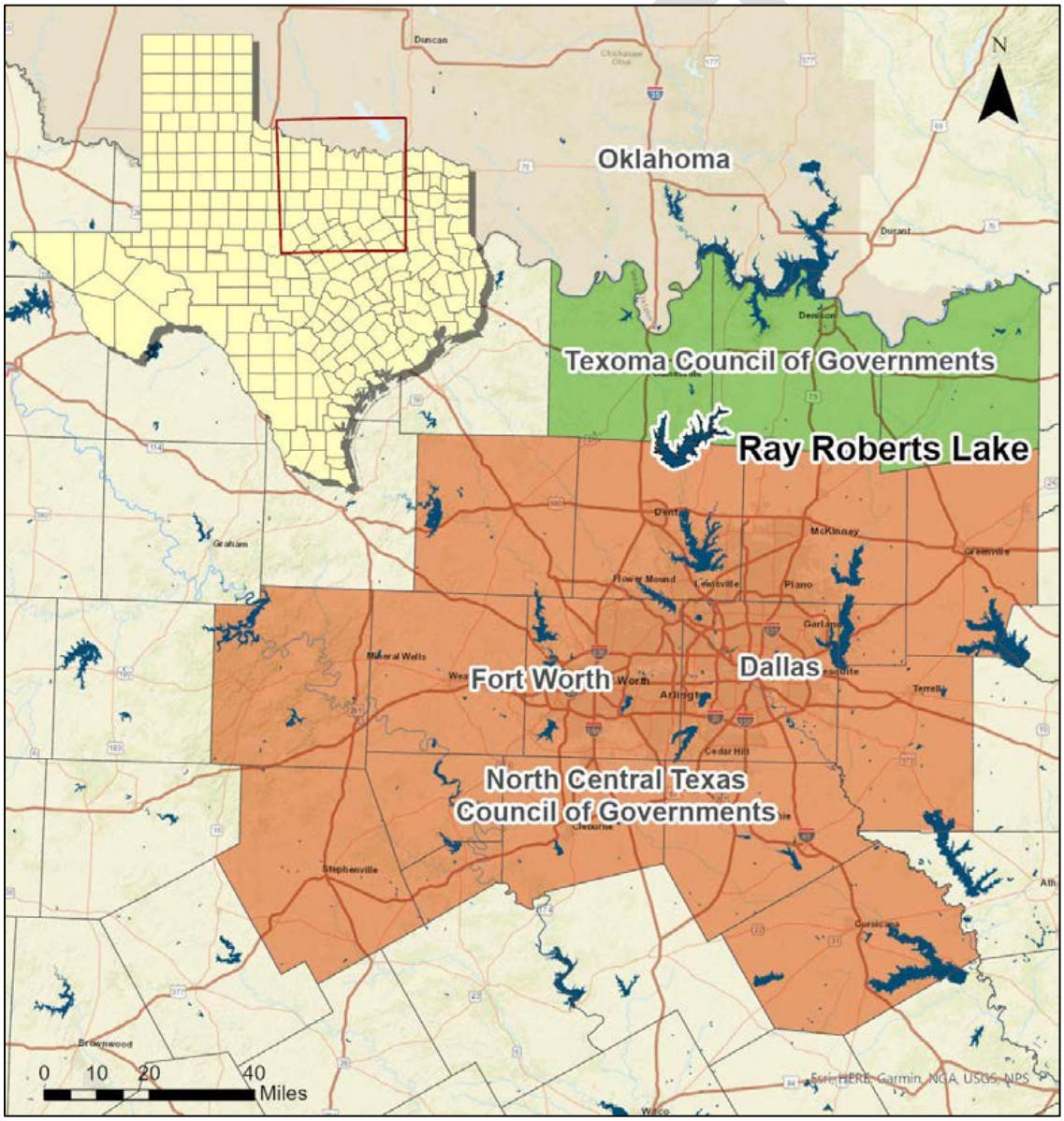


**Figure 1.1 Vicinity Map of Ray Roberts Lake and Dam**

The lake was authorized by the River and Harbor Act in 1965 as “Aubrey Lake,” but was renamed to “Ray Roberts Lake” in 1980 before construction, in honor of former U.S. Congressman Ray Roberts of Denton. For the purpose of this Master Plan, the project will be referred to only as Ray Roberts Lake except when referencing early documents prior to renaming the lake. The construction of Ray Roberts Dam began on May 31, 1982, and the main dam was completed on June 30, 1987. Deliberate impoundment began on June 30, 1987, and the conservation pool was filled on March 25,1990.

Ray Roberts Lake is an integral part of the U.S. Army Corps of Engineers (USACE) plan for flood control and water conservation in the Trinity River Basin. The plan presently consists of eight major flood control projects, known as Benbrook Dam, Bardwell Dam, Grapevine Dam, Joe Pool Dam, Lavon Dam, Lewisville Dam, Navarro Mills Dam, and Ray Roberts Dam. The eight flood mitigation projects in the Trinity River system mitigate approximately 1,591,300 acre-feet (ac-ft) of flood mitigation area. Ray Roberts mitigates 692 square miles of drainage area within the Trinity River Basin. 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 leases for park and recreation purposes. Ray Roberts Lake and Lewisville Lake are managed very closely together, since both are located in the Elm Fork Trinity River basin, and Ray Roberts Lake feeds into Lewisville Lake.

A water supply storage contract with the city of Dallas was approved September 16, 1980 for 74.0 percent (591,700 acre feet [ac-ft]) of the storage below elevation 632.5 at Ray Roberts Lake and 74.0 percent (131,400 ac-ft) between elevations 515.0 NGVD29 and 522.0 NGVD29 at Ray Roberts Lake. A water supply contract with the City of Denton was approved September 16, 1980 for 26.0 percent (207,900 ac-ft) of the conservation storage below elevation 632.5 NGVD29 and 26.0 percent (46,200 ac-ft) between elevations 515.0 NGVD29 and 522.0 NGVD29 at Ray Roberts Lake. Water supply releases to a downstream pickup point are through the low-flow system or the outlet works. Plans for future development include the possibility of using part of the low-flow system as water supply intake or building a pump station at the lake. The low flow system now has the option to send water straight to the Denton water treatment plan.

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 Ray Roberts Lake. 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 USACE, other agencies, and individuals granted leases to USACE lands must be consistent with the Master Plan. The Plan does not address the flood risk management or water supply purposes of Ray Roberts Lake (see the USACE Water Control Manual for Ray Roberts Lake for a description of these project purposes). The Ray Roberts Lake Master Plan was written in 1983 with a minor supplement in 2001, which is well past the intended planning horizon of 25 years.

National USACE missions associated with water resource development projects may include flood risk management, water conservation, navigation, recreation, fish and wildlife conservation, 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 fish and wildlife 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 moderates temperatures. To this end, 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.*

The USACE mission for the Responses to Climate Change Program is:

> *To develop, implement, and assess adjustments or changes in operations and decision environments to enhance resilience or reduce vulnerability of USACE projects, systems, and programs to observed or expected changes in climate.*

## 1.2. PROJECT AUTHORIZATION

Ray Roberts Lake was authorized October 27, 1965 with the primary missions of flood control and navigation as contained in the River and Harbor Act of 1965 (Public Law [PL] 289, 89th Congress, 1st Session). In the planning stages, it was named “Aubrey Lake” for the nearby town of Aubrey, TX, but was renamed “Ray Roberts Lake” in 1980 before construction, in honor of former U.S. Congressman Ray Roberts of Denton.

Construction began May 31, 1982, and the dam was completed and operational on June 30, 1987 when deliberate impoundment began. The conservation pool was filled March 25, 1990.

## 1.3. PROJECT PURPOSE

When originally built, the dam and lake's purposes were water supply, recreation, and fish and wildlife, and later added flood risk management and hydropower to the project's mission. However, the hydropower mission was not economically viable and was decommissioned in 2003, and major equipment related to hydropower was removed in 2014. Today, the lake and dam provide a multi-purpose reservoir for flood risk management, water supply, fish and wildlife management, and recreation within the Trinity River Basin. The USACE administers the surrounding federal lands and water surface to provide a variety of public, outdoor recreation opportunities. Recreation facilities on Federal land at Ray Roberts Lake are currently leased to and operated and maintained by Texas Parks and Wildlife Department (TPWD). Refer to the maps in Appendix A for an overview of the lands managed by the USACE and TPWD.

## 1.4. MASTER PLAN PURPOSE AND SCOPE

The Ray Roberts Lake Master Plan is the living, flexible, long-term strategic land-use management document that guides the comprehensive management and development of all the project's recreational, natural, and cultural resources. Under the guidance published in Engineering Regulation (ER) 1130-2-550 Change 7, and the accompanying Engineer Pamphlet (EP) 1130-2-550 Change 5, the Master Plan guides the efficient and cost-effective development, management, and use of project lands. It is a dynamic tool that provides for the responsible stewardship and sustainability of the project's resources for the benefit of present and future generations. 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. The Master Plan guides and articulates the USACE responsibilities pursuant to federal laws. The USACE vision for the future management of the natural resources and recreation program at Ray Roberts Lake is set forth as follows:

> *The land, water, and recreational resources of Ray Roberts Lake will be managed to protect, conserve, and sustain natural and cultural resources, especially environmentally sensitive resources, and provide outdoor recreation opportunities that complement overall project purposes for the benefit of present and future generations.*

It is important to note what the Master Plan does not address. Details of design, management and administration, and implementation are not addressed here; but are covered in the Ray Roberts Lake OMP. In addition, the Master Plan does not address the specifics of regional water quality, 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 Plan does not address the flood risk management or water conservation purposes of Ray Roberts Lake with respect to management of the water level in the lake (see the USACE Water Control Manual for Ray Roberts Lake for a description of these project purposes).

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

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

The Ray Roberts Lake Master Plan was originally written in 1983 and was supplemented in 2001 with changes to land classification at Culp Branch Park. The purpose of the supplement was to establish a land classification of Culp Branch Park which reflects the USACE and TPWD's long-term goal to manage the area as a native prairie preserve that is available for low-intensity public recreation activities. Although the previous revision was sufficient for prior land use planning and management, many changes are affecting the region. Outdoor recreation trends, regional land use, rapidly growing population, current legislative requirements, and USACE management policy have evolved. Increased urbanization, fragmentation of wildlife habitat, impacts of climate change, and the growing demand for recreational access and natural resource management have affected the region and Ray Roberts Lake. In response to these escalating pressures, a full revision of the 1983 Master Plan is required. The Master Plan revision will update land classifications, include new resource management objectives, and describe future plans proposed by key partners and stakeholders. The Plan will also inform the management of vegetation, wildlife, and other natural resources for the next 25 years.

## 1.5. BRIEF WATERSHED AND PROJECT DESCRIPTION

Ray Roberts Lake is located in the Elm Fork Trinity River watershed in the Upper Trinity River Basin. The headwaters of Elm Fork of the Trinity River begin in the eastern part of Montague County in north central Texas and flows in southeasterly directions for approximately 110 miles through Cooke, Denton, and Dallas Counties to its confluence with the West Fork of the Trinity River in the City of Dallas. The watershed is comprised of parts of Montague, Cooke, Grayson, Collin, Wise, Tarrant, Denton, and Dallas Counties. The watershed of Elm Fork of the Trinity River is about 80 miles long along its axis and has a maximum width of 60 miles, and the total drainage area is 2,577 square miles of which 1,660 square miles are upstream from Ray Roberts Dam, and Ray Roberts Lake controls 692 square miles within the watershed.

The principal tributaries contributing to the Elm Fork of the Trinity River are the right bank tributaries, Denton Creek, Hickory Creek and Clear Creek, and the left bank tributaries, Isle Du Bois Creek and Little Elm Creek. Ray Roberts Dam is slightly downstream of the mouth of Isle Du Bois Creek, a major left bank tributary. Wolf Creek, Indian Creek, Timber Creek, Jordan Creek, Range Creek, and Buck Creek combine to form Isle Du Bois Creek. Spring Creek and the Elm Fork of the Trinity River are on the right arm of the lake. Downstream of Ray Roberts Lake, Little Elm Creek drains the left bank, while Clear Creek, Hickory Creek, and Denton Creek are major right bank tributaries.

There are not any sizable impoundments upstream of Ray Roberts Lake. The Natural Resources Conservation Service (NRCS, formerly the U.S. Soil Conservation Service) of the U.S. Department of Agriculture has constructed at least 42 smaller retention structures in the Elm Fork Watershed upstream of Ray Roberts Lake. These structures help to trap sediment, control local erosion, and have a cumulative impact on flood mitigation by retaining approximately 32,245 acre-feet of flood storage.

Ray Roberts Dam consists of a compacted earthfill embankment, an uncontrolled broad-crested weir spillway, outlet works, and decommissioned hydropower facility. The total length of the embankment portion of the dam is 14,980 feet, while the length including the uncontrolled spillway is 15,250 feet. The outlet works consist of an approach channel, an intake structure with trash rack and gates, flood conduit, low flow conduit, stilling basin, and a discharge channel. The intake tower is located in the lake upstream from the dam embankment station.

The 1983 Master Plan documented 48,566 fee simple acres acquired for project purposes as well as 4,960 acres required for flowage easement for the construction of Ray Roberts Lake. The real estate acquisition was based on contour elevation 645.5 feet NGVD29 (5 feet above the flood control pool and 13 feet above the conservation pool of 632.5 feet NGVD29). The guide contour elevation is based upon the backwater effect for the 50-year hypothetical flood operation or the top of controlled storage, whichever is higher.

## 1.6. DESCRIPTION OF RESERVOIR

The depth of the lake just upstream of the dam within the original river channel is approximately 100 feet deep, but depths decrease further north of the dam. The top of the flood control pool is 640.5 feet NGVD29, and the uncontrolled spillway crest is 645.5 feet NGVD29. The 1983 Master Plan documented the water surface as 29,350 acres at the top of the conservation pool of 632.5 feet NGVD29, containing 799,600 acre-feet of storage. The lake was originally designed to hold an estimated 54,600 acre-feet of sediment within a 100-year period.

The Texas Development Water Board (TDWB) conducts reservoir volumetric surveys and sediment surveys for major reservoirs in Texas. The most recent TDWB survey for Ray Roberts Lake was in 2008 which indicated the lake surface encompasses 28,646 surface acres containing a total volume of 788,490 acre-feet at

the conservation pool. The 2008 TWDB survey shows the actual sediment accumulation is less than the original estimates through 2008, but that difference could be due to differences in survey methodology. The TWDB survey estimates the storage volume at 788,490 acre-feet in 2008. These changes are due to erosion and sedimentation over time, which have continued even after the 2008 survey. This Master Plan uses GIS and satellite imagery to make adjustments to the acres, which results in the water surface acres being different than the 1983 Master Plan or the 2008 TDWB survey.

## 1.7. PROJECT ACCESS

Ray Roberts Lake is easily accessed by several primary, secondary, and tertiary roads, as displayed in Figure 1.2. The three main east-west access roads include Farm to Market Road (FM) 455 that crosses Ray Roberts Dam, FM 3002 that crosses the western branch of the lake, and FM 922 located farther north that crosses the water surface several times. The two main north-south access roads are Interstate (I) 35 to the west of the lake and U.S. Highway (US) 377 east of the lake, and also crossing the easternmost branches of the lake. FM 455 connects US 377 in the east to I 35 at Sanger before continuing west. FM 3002 goes east from I 35 to the west, crosses portions of Ray Roberts Lake, before turning north into FM 372 and continuing towards FM 922.

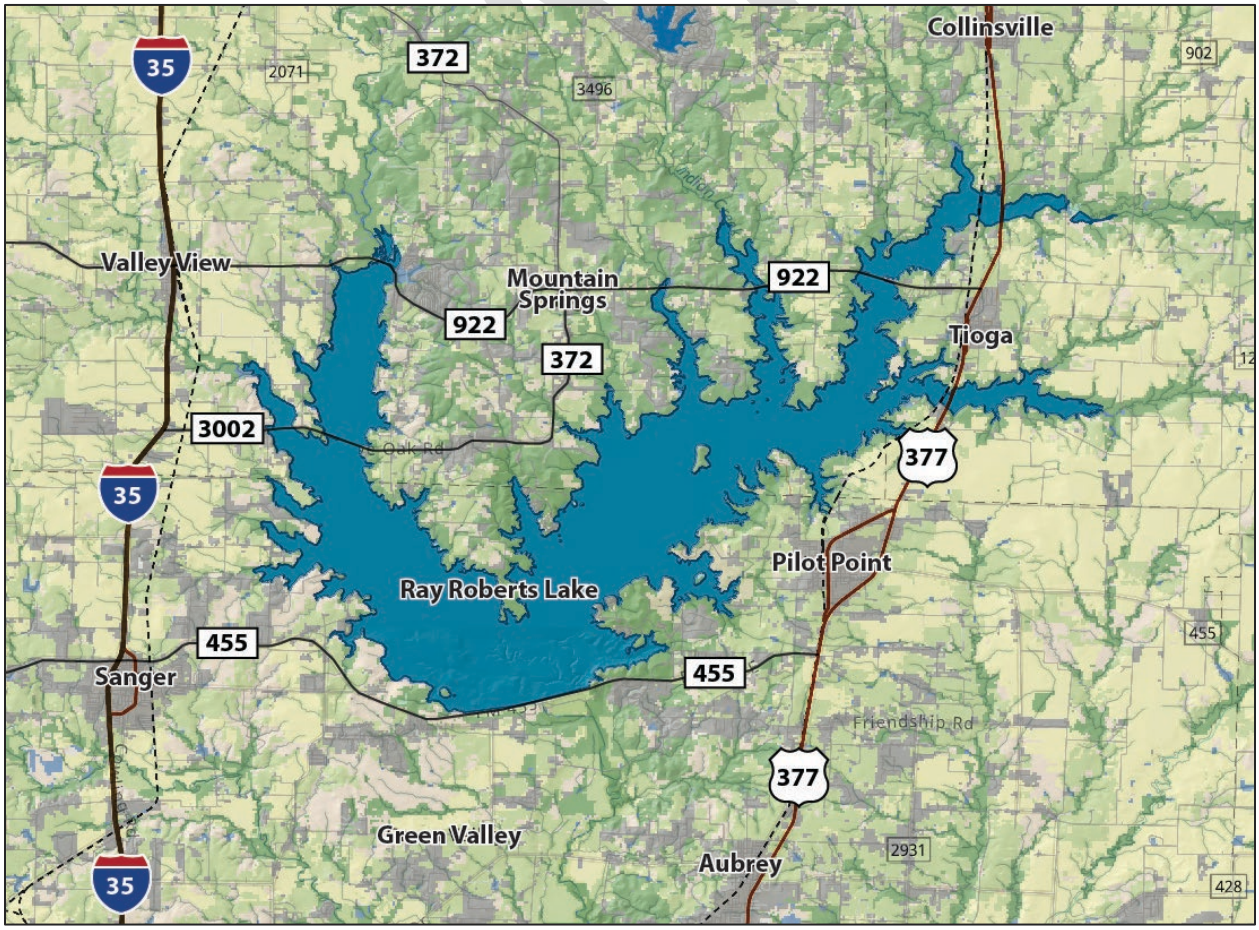


**Figure 1.2 Local Project Access**

The North Central Texas Council of Governments (NCTCOG) coordinates with cities, counties, and transportation partners to plan road, transit, bicycle, and pedestrian transportation improvements for 16 counties comprising the NCTCOG and serves as the Metropolitan Planning Organization for the Dallas-Fort Worth Area. Only the southern portion of Ray Roberts Lake within Denton County falls within NCTCOG's planning areas. NCTCOG's Mobility 2045 plan was used as a reference document for this Master Plan. Items recommended for implementation in the Mobility 2045 plan that are of significance to the area surrounding Ray Roberts Lake include the following:

- Multiple updates to I 35 including highway widening and dedicated cargo truck lanes.
- Make general improvements to FM 455 including intersection at US 377.
- Make improvements to US 377 including widening, intersections, and interchange at I 35.
- Trail improvements along greenway towards Lewisville Lake.
- High speed rail recommended from the Dallas-Fort Worth Area to Oklahoma west of Ray Roberts Lake.

The 2017 Denton County Thoroughfare Plan include that are significant to Ray Roberts Lake include the following:

- Widen I 35 to six or more lanes.
- Widen portions of FM 455 around I 35 to four lanes.
- Make improvements to US 377 including intersections, railroad crossings, turning lanes, and general repairs.

The 2017 Cook County Thoroughfare Plan identified several projected needs around Ray Roberts Lake including the following:

- Access improvements along FM 922 including intersections at I 35.
- Improvements to I 35 including adding collector/service roads and intersections at FM 922 and FM 3002.
- High speed rail west of the lake.

The 2014 Grayson County Thoroughfare Plan and 2018 Update identified the following transportation need around Ray Roberts Lake:

- Improvements to US 377.

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. The proposed expansion or widening of existing roadways on USACE lands will be considered on a case-by-case basis.

## 1.8. PRIOR DESIGN MEMORANDA

Design Memorandums were prepared from 1972 thru 1985 setting forth design criteria 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. A few supplements and project related reports and manuals were added after 1985. Table 1.1 lists the Design Memoranda and other relevant manuals and reports for Ray Roberts Lake.

**Table 1.1 Design Memoranda (DM), Manuals, and Reports – Ray Roberts Lake**

| No. | Title | Date Approved |
|---|---|---|
| 1. | Hydrology<br>- Supplement No. 1<br>- Supplement No. 2<br>- Supplement No. 3 | Aug 1972<br>Feb 1973<br>Sep 1973<br>Oct 1974 |
| 2. | General<br>- Supplement No. 1<br>- Supplement No. 2<br>- Supplement No. 3 | Oct 1973<br>Apr 1982<br>Nov 1984<br>Jul 1985 |
| 3. | Availability of Materials | Jun 1972 |
| 4. | Lands for Construction Areas | Nov 1973 |
| 4A. | Lands for Lake Areas | May 1974 |
| 5. | Embankment and Spillway<br>- Revised Embankment and Spillway | May 1974<br>Jun 1976 |
| 6. | Outlet Works<br>- Supplement No. 1 | Sep 1976<br>Dec 1981 |
| 7. | Project Buildings, Visitors' Overlook, and Access Road | Aug 1986 |
| 8. | Master Plan<br>- Supplement No. 1<br>- Supplement No. 2 | Jan 1983<br>Feb 1984<br>Mar 1989 |
| 9. | Relocations – FM Rd. 455<br>- Supplement No. 1 | Jun 1976<br>Feb 1983 |
| 10. | Relocations – FM Rd. A, Spur B, and FM 372 | Aug 1982 |
| 11. | Relocations – FM Rd. 922<br>- Supplement No. 1 | Apr 1982<br>Oct 1982 |
| 12. | Relocations – U.S. Hwy 377 | Jun 1982 |
| 13. | Relocations – Missouri Pacific Railroad | Feb 1982 |
| 14. | Relocations – Electric Transmission Lines (Cooke County Electric Co-op, Community Public Service Company, and Grayson-Collin Electric Co-op) | Mar 1976 |
| 16. | Relocations – Electric Lines (Cooke Co. Electric Co-op, Denton Co. Electric Co-op, and Texas-New Mexico Power Co.).<br>- Supplement No. 1 | Jan 1986<br><br>Jun 1986 |

| No. | Title | Date Approved |
|---|---|---|
| 17. | Relocations – Arco Pipelines | Jul 1982 |
| 18. | Relocations – Mountain Springs, Green Springs, and Bolivar Water Lines | Dec 1984 |
| 19. | Relocations – Central and Valley View Telephone Facilities | Nov 1985 |
| 20. | Relocations – General Telephone Facilities | Nov 1985 |
| 21. | Clearing and Sedimentation & Degradation Ranges | May 1983 |
| 22. | Recreation Facilities (Volume No. 1)<br>Recreation Facilities (Volume No. 2)<br>- Supplement No. 1 | Nov 1985<br>Nov 1985<br>Sep 1987 |
| 24. | Cost Allocation Report | May 1980 |
| 25. | Relocations – Ensearch Gas Pipelines | Aug 1982 |
| 26. | Relocations – Cemeteries | Nov 1982 |
| 29. | Relocations – Denton, Cooke, and Grayson County Roads<br>- Supplement No. 1 through Supplement No. 6 | Jun 1982<br>Mar 1991 |
| 30. | Relocations – Tioga Sewage Treatment Plant | Jul 1984 |
| 31. | Plugging Oil, Gas, and Water Wells<br>- Supplement No. 1<br>- Supplement No. 2 | Jun 1984<br>Nov 1984<br>Nov 1985 |
| 32. | Relocations – FM Rd. 423 at Lewisville Lake | Nov 1985 |
| 33. | Relocations – Santa Fe Railroad<br>- Supplement No. 1 | Jun 1984<br>Sep 1987 |
| 35. | Disposition Report on: Collinsville, Cooke County, and Tioga Land Fills | Jun 19986 |
| 36. | Reservoir Filling Plan | Dec 1985 |
| 37. | Disposition Report on Soil Conservation Dams | Jan 1989 |
| 40. | Additional Lands for Flood Storage Reallocation (Lewisville Lake) | Sep 1985 |
| 41. | (Revised) Reservoir Clearing Pool Raise at Lewisville Lake | Feb 1987 |
| 43. | Recreation Facilities at Hickory Creek Park (Lewisville Lake) | Nov 1987 |
| N/A | Aubrey Lake Public Meeting (30 April 1971) – Site Selection for Aubrey Lake | Apr 1971 |
| N/A | Aubrey Lake Public Meeting (27 October 1972) – Proposed Plan and Environmental Considerations | Oct 1972 |
| N/A | Aubrey Lake - Effect on Water Quality, prepared by Trinity River Authority | Feb 1973 |
| N/A | Final Environmental Impact Statement (E.I.S) – Aubrey Lake | Jan 1974 |
| N/A | Draft Supplement to Final E.I.S – Aubrey Lake | Dec 1974 |
| N/A | Aubrey Lake – Recreation Market Feasibility Study | Dec 1975 |
| N/A | Ray Roberts Lake Foundation Report – Completion of Embankment, Spillway and Outlet Works | Aug 1980 |

| No. | Title | Date Approved |
|---|---|---|
| N/A | Greenbelt Corridor (between Ray Roberts Lake and Lewisville Lake) | Apr 1985 |
| N/A | Ray Roberts Lake – Developed Wetlands | Apr 1991 |
| N/A | Ray Roberts Lake – Operation and Maintenance Manual | Sep 1991 |
| N/A | Ray Roberts Lake – Flood Emergency Plan | Feb 1993 |
| N/A | Ray Roberts Lake – Water Quality Report | May 1993 |
| N/A | Flood Insurance Study – Denton County, Texas – Unincorporated Areas – Revised | Jun 1994 |
| N/A | Ray Roberts Lake – Green Corridor – Recreation | Feb 1996 |
| N/A | Lewisville Lake Master Plan (Greenbelt Corridor) | Dec 2020 |

Source: USACE, N/A – Document does not have a Design Memorandum Number

## 1.9. PERTINENT PROJECT INFORMATION

The following table provides pertinent information regarding key reservoir elevations and storage capacity at Ray Roberts Lake.

**Table 1.2 Elevations and Water Storage Capacity**

| Feature | Elevation (Feet NGVD) | Lake Area (Acres) | Storage (Acre-Feet) | Runoff (inches) |
|---|---|---|---|---|
| Top of Dam | 665.0 | 68,500 | – | – |
| PMF Design Water Surface (2012 Study) | 667.2 | – | – | – |
| Maximum Design Water Surface (1974 Study) | 658.8 | 11,387 | 1,931,900 | 52.35 |
| Spillway Crest | 645.5 | 42,000 | 1,261,500 | 34.19 |
| Top of Flood Control Pool | 640.5 | 36,900 | 1,064,600 | 28.85 |
| Top of Conservation Pool (2008 Survey) | 632.5 | 28,646 | 788,490 | 21.36 |
| Invert Elevation (2008 Survey) | 618.0 | 18,929 | 444,702 | – |
| Streambed (2008 Survey) | 524.0 | 0 | 0 | – |

Source: USACE 2018 Ray Roberts Lake Water Control Manual

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

## 2.1. PHYSIOGRAPHIC SETTING

### 2.1.1 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. Ray Roberts Lake and its watershed is located in the Level III Cross Timbers and Texas Blackland Prairie Level III ecoregions as seen in Figure 2.1. Within the finer Level IV ecoregions, Ray Roberts Lake is located in the Grand Prairie, Eastern Cross Timbers, and Northern Blackland Prairies.

Ray Roberts Lake and its watershed are located in the Grand Prairie and Eastern Cross Timbers subdivisions of the Gulf Coastal Plain physiographic province. The Grand Prairie region is underlain by limestones and clay shales belonging to the Fredericksburg and Washita groups of the Cretaceous age. The sands, sandstones, and clay shales of the Cretaceous Woodbine formation underlie the Eastern Cross Timbers area. The Cretaceous Woodbine formation consists of 70 to 80 feet of glaconitic shale with sand lenses, underlain by about 260 feet of sandstone. The sandstone beds are highly variable, featuring cross bedding, minor shale beds, tuffaceous clay lenses, carbonaceous clay, and lignite. No faulting or other structural anomalies, other than minor bending flexures, have been noted near the dam and lake.

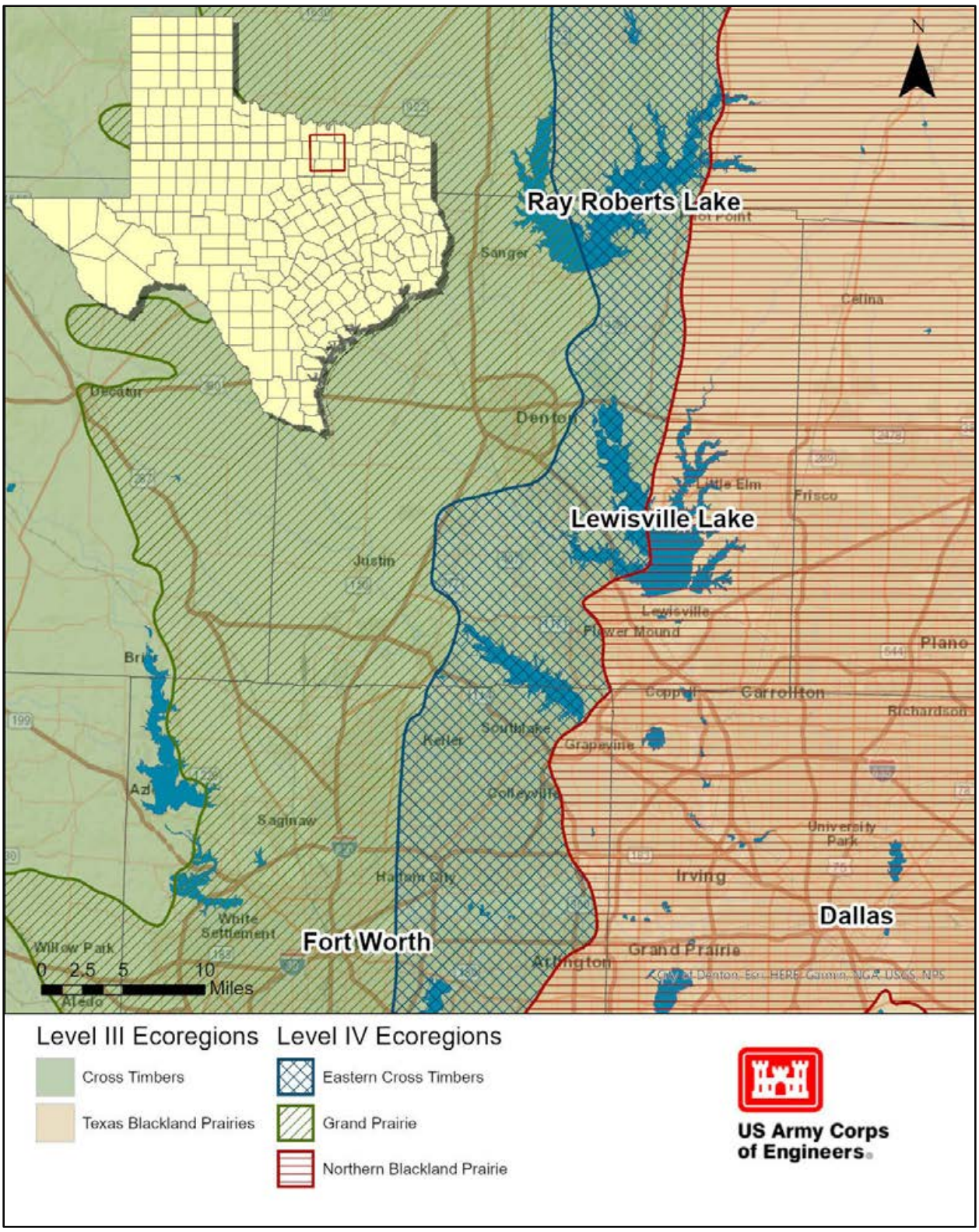


**Figure 2.1 Ray Roberts Lake within Texas Ecoregions**
Source: TPWD(2019)

Before Anglo settlement, the region was habitat for bison (*Bison bison*), pronghorn antelope (*Antilocapra Americana*), mountain lion (*Puma concolor*), bobcat (*Lynx rufus*), ocelot (*Leopardus pardalis*), black bear (*Ursus americanus*), collared peccary (*Pecari tajacu*), white tailed deer (*Odocoileus virginianus*), red wolf (*Canis lupus rufus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), badger (*Taxidea taxus*), river otter (*Lontra canadensis*), and many species of birds. Much of the original prairie and forest has been converted to cropland and pasture or cleared for urbanization, leading to a loss of habitat for native species.

### 2.1.2 Climate

Ray Roberts Lake lies in north central Texas which has a warm, temperate, continental climate with cool winters and hot, humid summers. Tropical maritime air masses from the Gulf of Mexico play a dominant role in the climate from late spring through early fall, while polar air masses determine the winter climate. The mean annual temperature in the nearby city of Denton, TX is about 65.9 degrees Fahrenheit (°F) (NOAA, 2021C). January, the coldest month, has an average temperature of 45.3°F and average minimum daily temperature of about 40.6°F. August and July, are the warmest months, with an average daily temperature of 85.5°F and have an average maximum daily temperature of 91.7°F in July and 92.7°F in August. The average length of the growing season is 258 days (NOAA, 2020B). Ray Roberts Lake lies within the USDA Plant Hardiness Zone 8A, which is determined by the winter extreme low temperatures, with 8A having normal winter lows between 10°F and 15°F (USDA, 2020).

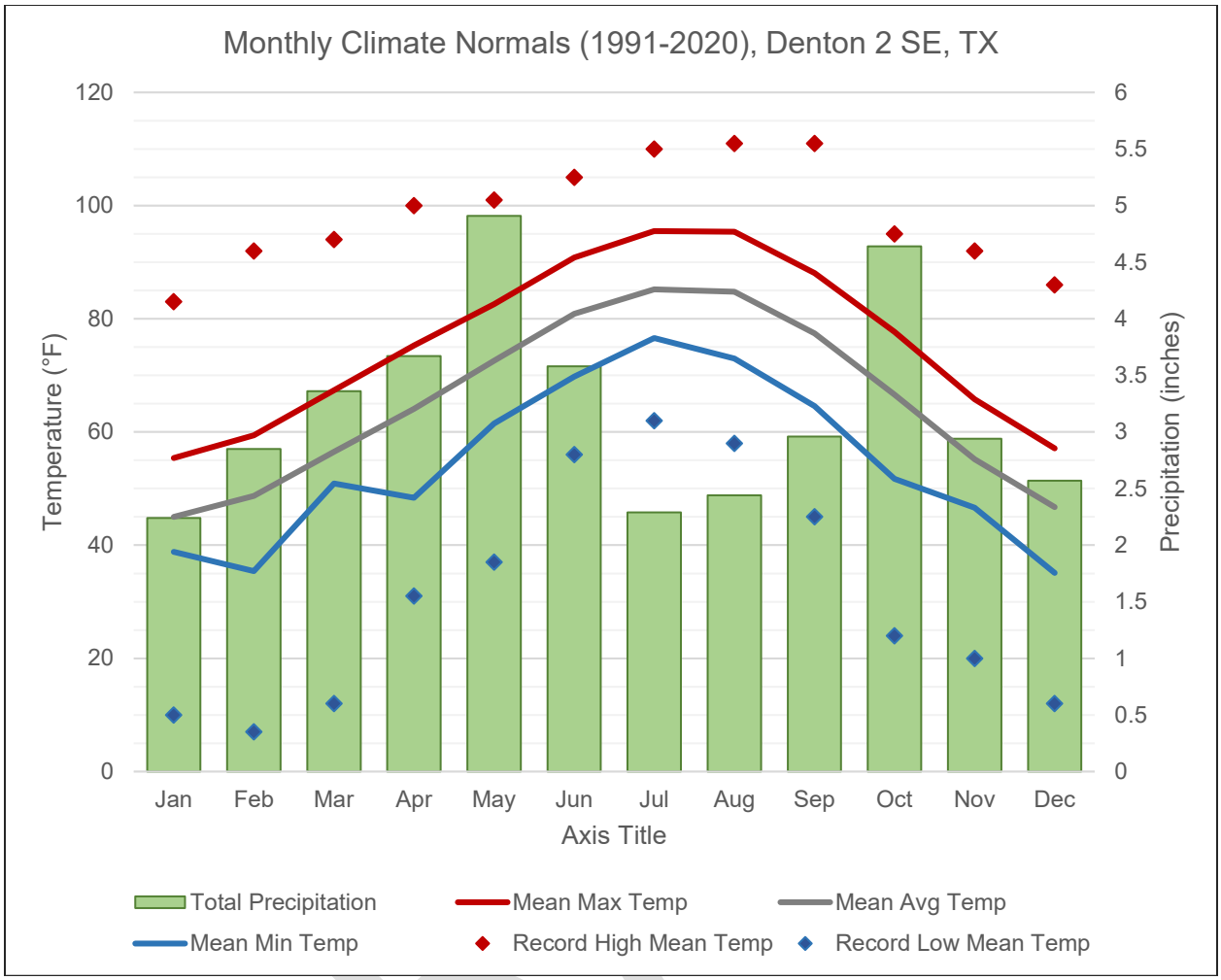


**Figure 2.2 Average Monthly Climate near Ray Roberts Lake, 1991 – 2020**
Source: NOAA, 2021A.

The normal annual precipitation is 38.44 inches with greater precipitation during spring and fall, and less precipitation during summer and winter. Because of the preponderance of tropical maritime air, heavy showers of short duration may occur at any time during the year.

The relative humidity typically ranges from 0% to 80% over the course of a year. The air is driest around the end of November-February timeframe and is most humid between June-July (USACE, 2018). The average annual evaporation rate at Ray Roberts Lake, as calculated using the measured pan evaporation multiplied by the monthly pan coefficient, is about 57 inches with the lowest evaporations rates occurring during the winter and greatest evaporation occurring during the summer (USACE, 2018).

### 2.1.3 Climate Change and Green House Gas Emissions

The U.S. Global Change Research Program (USGCRP) looks at potential impacts of climate change globally, nationally, regionally, and by resource (e.g., water resources, ecosystems, human health). Ray Roberts Lake lies within the Great Plains

region of analysis. The Great Plains region has already seen evidence of climate change in the form of rising temperatures that are leading to increased demand for water and energy and impacts on agricultural practices. Over the last few decades, the Great Plains Region has seen fewer cold days and more hot days, as well as an overall increase in total precipitation. The decrease in the cold days has resulted in an overall shortening of the frost-free season by one to two weeks.

Within this region, there has been an increase in average temperatures 1.5°F from a 1960-1970 baseline to the year 2000 (USGCRP 2014). In addition to more extreme rain events, the region is experiencing more frequent extreme heat events. The increased heat wave severity and frequency in the U.S. has been connected to human activity, with a detectable human influence in recent heat waves in the southern Great Plains Region (USGCRP, 2014). In 2011, the State of Texas experienced a heat wave and drought (that lasted through the winter of 2014). The growing season and summer of 2011 were both the hottest and driest on record. Frequent extreme heat events throughout Texas have increased substantially.

This trend of rising temperatures and more frequent extreme events such as heat waves, drought, and heavy rainfall is projected to continue into the future (USGCRP 2014). The USGCRP looks at two potential future conditions as part of its predictive modeling process. Under conditions of lower greenhouse gas (GHG) emissions, the average temperature in the Great Plains region may increase as much as 4°F by 2020, 6°F by 2050, and 8°F by 2090 from averages observed in 2000. Under conditions of higher continuous GHG emissions, the potential increase is greater in the long-term, and may be as much as 13.5°F by 2090.

Over the past 100 years (from 1921 – 2020), some of these climate trends have already been documented in the local area. Average annual precipitation has increased by approximately 10 inches in the past 100 years while having much more variability (Figure 2.3). The number of days with greater than 1 inch of precipitation has increased over that same time, demonstrating the increasing frequency of heavy storms and local flood events (Figure 2.4). Over that same period, the number of days below freezing has progressively declined (Figure 2.5). The USDA projects further shifts in climate through the 21$^{st}$ century, with the number of growing degree days changing from approximately 5,000 in 1980 to over 5,500 by 2099 under low emissions or as much as 6,500 by 2099 under higher emissions. The plant hardiness zone has already seen a shift from 7B to 8A during the 20$^{th}$ century and is projected to shift from 8A to 8B by 2099 under low emissions or to 9A by 2099 under higher emissions (USDA 2020B). These changes will affect local agricultural practices, water supply, flood management, infrastructure, recreation access and opportunities, local habitats, and threatened or endangered species – placing an increased strain on those species already pressured from reduced populations and habitat loss.

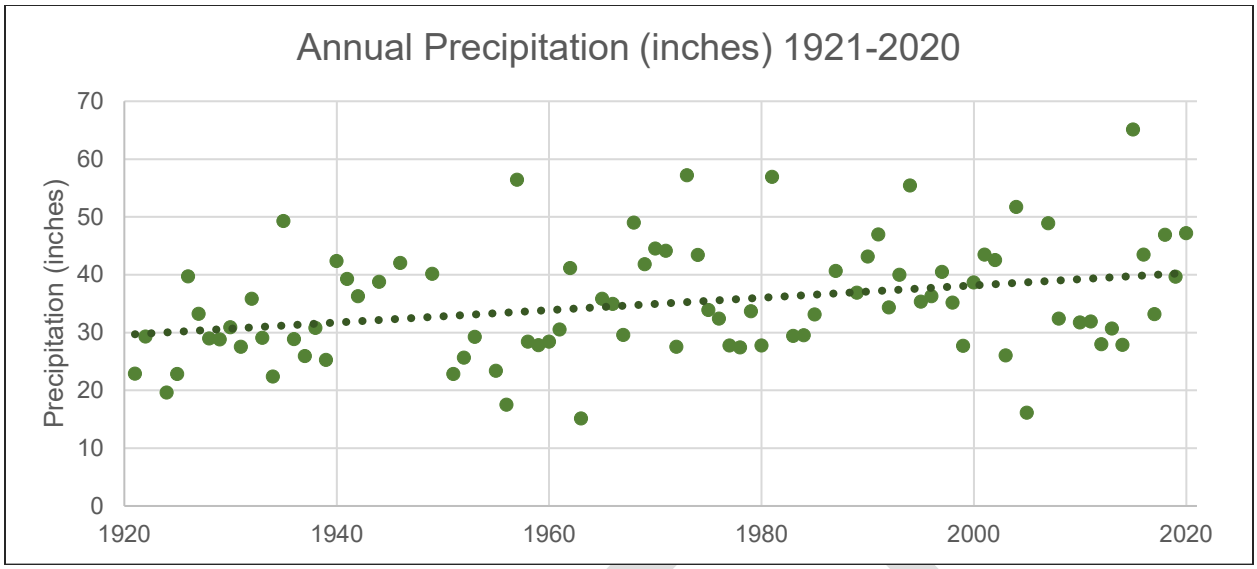


**Figure 2.3 Annual Precipitation 1921 – 2020**
Source: NOAA, 2021A

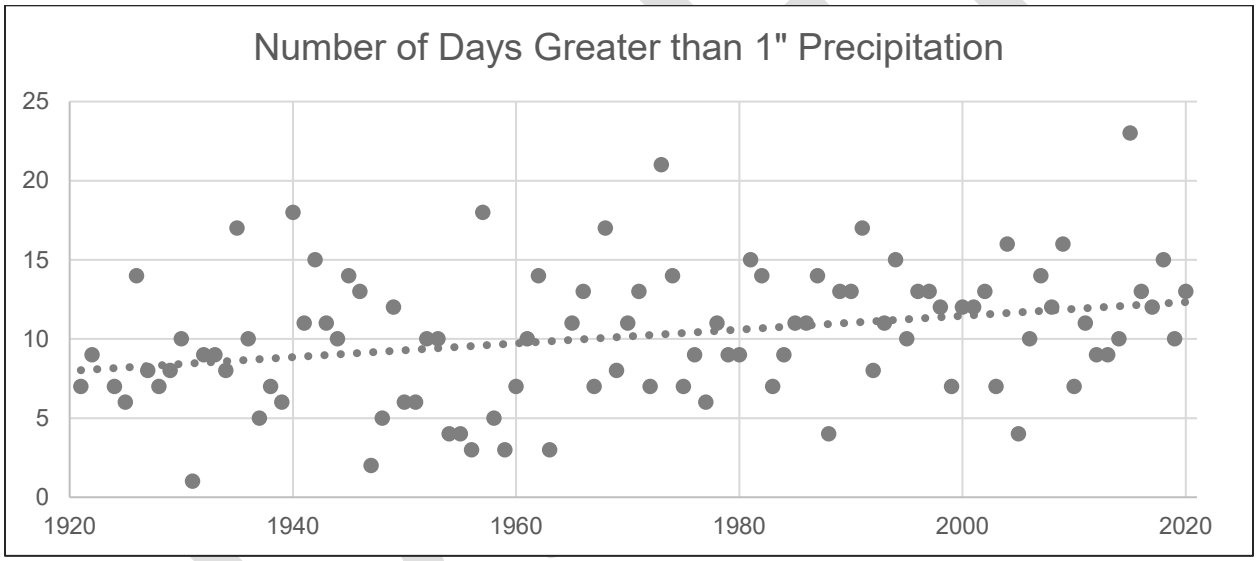


**Figure 2.4 Number of Days with Greater than 1-inch Precipitation 1921 – 2020**

Source: NOAA, 2021A

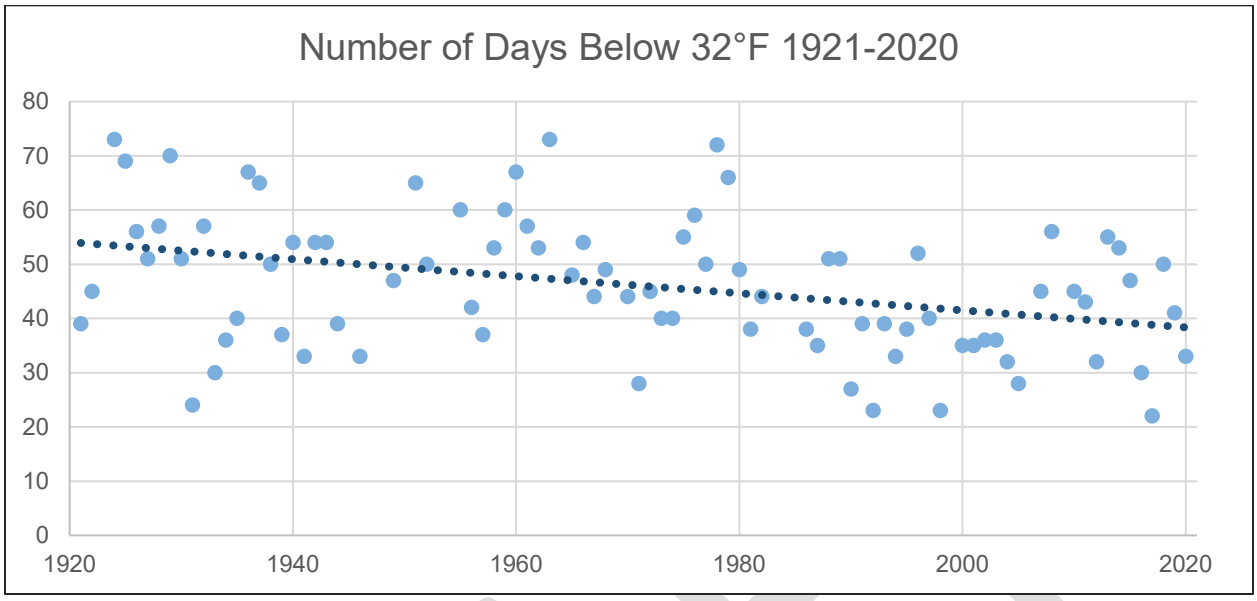


**Figure 2.5 Number of Days Below 32 °F 1921 – 2020**
Source: NOAA, 2021A

### 2.1.4 Air Quality

The U.S. Environmental Protection Agency (EPA) established nationwide air quality standards to protect public health and welfare in 1971. The State of Texas 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 ($O_3$), Carbon Monoxide (CO), Sulfur Dioxide (SO2), Nitrous Oxides ($NO_x$), particulate matter ($PM_{10}$ 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 areas.

Ray Roberts Lake is located within the Metropolitan Dallas-Fort Worth Air Quality Control Region (AQCR). The DFW AQCR is in attainment for all criteria air pollutants, except for ozone (TCEQ, 2020A). The DFW non-attainment area includes 9 counties (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Wise counties). Current attainment status is classified as marginal under the 2015 eight-hour ozone NAAQS. The attainment deadline for the DFW marginal non-attainment area was August 3, 2021. That deadline has since past and now the DFW AQCR is considered to be in a non-attainment standard.

Emissions in the DFW non-attainment area come from a variety of stationary and mobile sources. Approximately 70% of the region's air pollution comes from mobile

sources such as cars, trucks, airplanes, construction equipment, and lawn equipment. The majority of pollutants emitted from motor vehicles include VOCs, $NO_x$, CO, $PM_{10}$, and $PM_{2.5}$. The largest regional sources of VOCs, $NO_x$ emissions, and ozone levels are non-road vehicles (construction equipment, airplanes, and locomotive) and on-road vehicles (cars and trucks) (TCEQ 2011).

### 2.1.5 Topography, Geology, and Soils

*Geology*

Ray Roberts Lake is located in the Eastern Cross Timbers subdivision of the North Central physiographic province. The area underlying Ray Roberts Lake consists of various cretaceous, quaternary, and fluviatile terrace formations. The area more specifically contains Woodbine, Eagle Ford, Alluvium, Austin Group, and Fluviatile Terrace Deposits Formations. These formations consist of various sandstones, shales, limestones, chalks, sands, silts, and clay mixtures.

*Topography*

Ray Roberts Lake lies in the Grand Prairie and Eastern Cross Timbers subdivisions of the Gulf Coastal Plain physiographic province. The topography of the Elm Fork Watershed consists of gently rolling hills and broad river valleys. The basin topography is steeper and rougher in the upper reaches. The terrain is more gently rolling and flatter in the lower reaches, although some varied topography does occur along the streams in the lower reaches.

*Soils*

The main soil series within Ray Roberts Lake Project Lands is the Navo Clay Loam soil, 1 to 3 percent slopes. This soil makes up 5.61% of soils found within Ray Roberts Lake project lands, it occurs in more than 80 inches thick surface layers, normally found on ridges, is moderately well drained, contains Loamy alluvium derived from limestone and shale, and is a farmland soil of statewide importance.

Soils in the lake area include Quaternary terrace deposits and flood plain deposits, consisting primarily of clay and sandy clay mixed with minor amounts of sand and gravel. The deposits reach their maximum thickness of 50 feet in the flood plain.

The NRCS Web Soil Survey (2018) reports 109 soil types occurring within Ray Roberts Lake project lands. Table 2-1 shows the acreage and farmland status associated with each soil & surface type in the detention area. The vast size and the overall different number of soils makes it impossible to make a coherent visible map for this report.

**Table 2.1 Acres of Surface Soil Types within Ray Roberts Lake Project Lands**

| Soil Type | Number of Acres | Percent Total | Farmland Status |
|---|---|---|---|
| Arenosa fine sand, 1 to 5 percent slopes | 13.4 | 0.09% | None |
| Aubrey fine sandy loam, 1 to 5 percent slopes | 417.8 | 2.68% | Statewide |
| Aubrey fine sandy loam, 5 to 12 percent slopes | 106.3 | 0.68% | None |
| Birome-Aubrey-Rayex complex, 3 to 12 percent slopes | 719 | 4.61% | None |
| Bolar clay loam, 1 to 5 percent slopes | 12 | 0.08% | Statewide |
| Callisburg fine sandy loam, 1 to 3 percent slopes | 506.4 | 3.25% | Prime |
| Callisburg fine sandy loam, 1 to 5 percent slopes, eroded | 454.8 | 2.92% | Prime |
| Callisburg fine sandy loam, 3 to 5 percent slopes | 104.4 | 0.67% | Prime |
| Callisburg fine sandy loam, 3 to 8 percent slopes, severely eroded | 327 | 2.10% | None |
| Callisburg soils, 2 to 5 percent slopes, severely eroded | 180.1 | 1.16% | None |
| Crockett fine sandy loam, 0 to 1 percent slopes | 78.2 | 0.50% | Statewide |
| Crockett fine sandy loam, 1 to 3 percent slopes | 77.2 | 0.50% | Statewide |
| Crockett fine sandy loam, 1 to 5 percent slopes, eroded | 262.5 | 1.68% | None |
| Crockett loam, 2 to 5 percent slopes, eroded | 467.8 | 3.00% | None |
| Crosstell fine sandy loam, 1 to 3 percent slopes | 99.7 | 0.64% | None |
| Crosstell fine sandy loam, 2 to 5 percent slopes, eroded | 293.2 | 1.88% | None |
| Elbon soils, frequently flooded | 214.2 | 1.37% | None |
| Fairlie and Houston Black clays, 1 to 3 percent slopes | 7.7 | 0.05% | Prime |
| Frio clay loam, 0 to 1 percent slopes, occasionally flooded | 14.6 | 0.09% | None |
| Frio silty clay, 0 to 1 percent slopes, occasionally flooded | 1.9 | 0.01% | Prime |
| Frio silty clay, frequently flooded | 299.6 | 1.92% | None |
| Frio soils, 0 to 1 percent slopes, frequently flooded | 26.7 | 0.17% | None |
| Gasil fine sandy loam, 1 to 3 percent slopes | 399.5 | 2.56% | Prime |
| Gasil fine sandy loam, 1 to 5 percent slopes, eroded | 122.8 | 0.79% | None |

| Soil Type | Number of Acres | Percent Total | Farmland Status |
|---|---|---|---|
| Gasil fine sandy loam, 3 to 8 percent slopes | 284.5 | 1.83% | None |
| Gasil fine sandy loam, 5 to 8 percent slopes, eroded | 34.8 | 0.22% | None |
| Gasil loamy fine sand, 1 to 5 percent slopes | 123 | 0.79% | Prime |
| Gasil loamy fine sand, 5 to 8 percent slopes | 30.1 | 0.19% | None |
| Gasil soils, 2 to 5 percent slopes, eroded | 27.6 | 0.18% | None |
| Gowen clay loam, frequently flooded | 15.2 | 0.10% | None |
| Gowen clay loam, occasionally flooded | 6.7 | 0.04% | None |
| Gowen fine sandy loam, 0 to 1 percent slopes, rarely flooded | 21.5 | 0.14% | Prime |
| Gowen soils, frequently flooded | 340 | 2.18% | None |
| Heaton loamy fine sand, 1 to 5 percent slopes | 2.9 | 0.02% | Statewide |
| Heaton loamy fine sand, 1 to 8 percent slopes | 54.1 | 0.35% | Statewide |
| Heiden clay, 1 to 3 percent slopes | 12.1 | 0.08% | Prime |
| Heiden clay, 3 to 5 percent slopes | 15.1 | 0.10% | Prime |
| Hensley loam, 1 to 5 percent slopes | 7 | 0.04% | None |
| Justin fine sandy loam, 1 to 3 percent slopes | 303 | 1.94% | Prime |
| Justin fine sandy loam, 3 to 5 percent slopes | 30.6 | 0.20% | Prime |
| Kaufman clay, 0 to 1 percent slopes, frequently flooded | 25.8 | 0.17% | None |
| Konsil fine sandy loam, 1 to 3 percent slopes | 80.9 | 0.52% | Prime |
| Konsil fine sandy loam, 2 to 5 percent slopes | 333.8 | 2.14% | Prime |
| Konsil fine sandy loam, 3 to 8 percent slopes | 61 | 0.39% | None |
| Konsil fine sandy loam, 5 to 8 percent slopes | 223.9 | 1.44% | None |
| Konsil fine sandy loam, 5 to 8 percent slopes, eroded | 4.5 | 0.03% | None |
| Konsil loamy fine sand, 1 to 5 percent slopes | 47.1 | 0.30% | Prime |
| Konsil loamy fine sand, 5 to 8 percent slopes, eroded | 4.2 | 0.03% | None |
| Lewisville clay loam, 1 to 3 percent slopes | 2.3 | 0.01% | Prime |
| Lewisville clay loam, 1 to 5 percent slopes | 329.3 | 2.11% | Prime |
| Lewisville clay loam, 5 to 8 percent slopes | 58.1 | 0.37% | None |
| Lewisville silty clay, 3 to 5 percent slopes, eroded | 3.7 | 0.02% | None |
| Lindale clay loam, 1 to 3 percent slopes | 263.6 | 1.69% | Prime |
| Lindy loam, 1 to 5 percent slopes | 14.4 | 0.09% | Prime |
| Mabank fine sandy loam, 0 to 1 percent slopes | 51.8 | 0.33% | Statewide |
| Mabank fine sandy loam, 1 to 5 percent slopes | 14.3 | 0.09% | Statewide |

| Soil Type | Number of Acres | Percent Total | Farmland Status |
|---|---|---|---|
| Mabank fine sandy loam, 1 to 5 percent slopes, eroded | 29.5 | 0.19% | Statewide |
| Mabank loam, 0 to 1 percent slopes | 5.6 | 0.04% | Statewide |
| Mabank loam, 1 to 3 percent slopes | 126.1 | 0.81% | Statewide |
| Maloterre-Aledo complex, 3 to 12 percent slopes | 50.8 | 0.33% | None |
| Medlin clay, 3 to 5 percent slopes, eroded | 151.3 | 0.97% | None |
| Medlin clay, 5 to 8 percent slopes | 103.6 | 0.66% | None |
| Medlin-Sanger clay, 5 to 15 percent slopes | 179.4 | 1.15% | None |
| Medlin-Sanger stony clay, 5 to 15 percent slopes | 337.5 | 2.17% | None |
| Mingo clay loam, 1 to 3 percent slopes | 25.7 | 0.16% | Statewide |
| Navo clay loam, 1 to 3 percent slopes | 874.9 | 5.61% | Statewide |
| Navo clay loam, 3 to 5 percent slopes | 169 | 1.08% | Statewide |
| Normangee and Crockett soils, 3 to 8 percent slopes, severely eroded | 24.2 | 0.16% | None |
| Normangee clay loam, 1 to 3 percent slopes | 556.9 | 3.57% | None |
| Normangee clay loam, 1 to 5 percent slopes, eroded | 184.6 | 1.18% | None |
| Normangee clay loam, 4 to 8 percent slopes | 62.5 | 0.40% | None |
| Normangee soils, 3 to 8 percent slopes, severely eroded | 60.5 | 0.39% | None |
| Normangee-Urban land complex, 1 to 4 percent slopes | 3.5 | 0.02% | None |
| Pits | 13.4 | 0.09% | None |
| Pits, quarries, 0 to 45 percent slopes | 32.8 | 0.21% | None |
| Ponder loam, 0 to 1 percent slopes | 68 | 0.44% | Prime |
| Ponder loam, 1 to 3 percent slopes | 242 | 1.55% | Prime |
| Pulexas soils, frequently flooded | 140.8 | 0.90% | None |
| Purves clay loam, 1 to 3 percent slopes | 2.1 | 0.01% | None |
| Purves clay loam, 3 to 5 percent slopes | 29 | 0.19% | None |
| Sanger clay, 1 to 3 percent slopes | 118.3 | 0.76% | Prime |
| Sanger clay, 3 to 5 percent slopes | 119.6 | 0.77% | Prime |
| Sanger clay, 3 to 5 percent slopes, eroded | 5.4 | 0.03% | None |
| Sanger clay, 5 to 8 percent slopes | 21.7 | 0.14% | None |
| Sanger stony clay, 3 to 12 percent slopes | 304.9 | 1.96% | None |
| Sanger-Urban land complex, 1 to 5 percent slopes | 2.4 | 0.02% | None |
| Silawa loamy fine sand, 2 to 5 percent slopes | 200.5 | 1.29% | Prime |

| Soil Type | Number of Acres | Percent Total | Farmland Status |
|---|---|---|---|
| Silstid loamy fine sand, 0 to 5 percent slopes | 130.5 | 0.84% | None |
| Silstid loamy fine sand, 1 to 5 percent slopes | 227.4 | 1.46% | None |
| Silstid loamy fine sand, 5 to 8 percent slopes | 8.2 | 0.05% | None |
| Slidell clay, 1 to 3 percent slopes | 16.8 | 0.11% | Prime |
| Slidell-San Saba complex, 1 to 3 percent slopes | 6.8 | 0.04% | Prime |
| Somervell gravelly loam, 1 to 5 percent slopes | 24.9 | 0.16% | None |
| Speck clay loam, 1 to 3 percent slopes | 29 | 0.19% | None |
| Tinn clay, 0 to 1 percent slopes, rarely flooded | 454.4 | 2.92% | Prime |
| Tinn clay, frequently flooded | 8.3 | 0.05% | None |
| Tinn soils, 0 to 1 percent slopes, frequently flooded | 592 | 3.80% | None |
| Trinity clay, 0 to 1 percent slopes, occasionally flooded | 90.7 | 0.58% | None |
| Vertel clay, 3 to 5 percent slopes | 21.2 | 0.14% | None |
| Vertel clay, 5 to 12 percent slopes | 97.5 | 0.63% | None |
| Whitesboro loam, occasionally flooded | 6.4 | 0.04% | None |
| Wilson clay loam, 0 to 1 percent slopes | 325.4 | 2.09% | Statewide |
| Wilson clay loam, 1 to 3 percent slopes | 170.1 | 1.09% | Statewide |
| Wilson clay loam, 1 to 5 percent slopes | 131.3 | 0.84% | Statewide |
| Wilson clay loam, 1 to 5 percent slopes, eroded | 83.8 | 0.54% | None |
| Wilson silty clay loam, 0 to 1 percent slopes | 82.8 | 0.53% | Statewide |
| Wilson silty clay loam, 1 to 3 percent slopes | 170.9 | 1.10% | Statewide |
| Zilaboy soils, frequently flooded | 629 | 4.04% | None |
| **Total Acres:** | 15,587 | | |

NRCS 2021. Please note that there is a difference between total acreages listed by the NRCS and USACE due to the difference of mapping techniques and water surface elevations used to map out those acreages.

*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. However, the lands

represented by these soil types have not been used for farming since the lands were acquired prior to the initiation of construction of Ray Roberts Lake in May 1982.

### 2.1.6 Water Resources

*Surface Water*

The Elm Fork of the Trinity River originates in eastern Montague County, Texas and flows in southeasterly directions for approximately 110 miles through Cooke, Denton, and Dallas Counties to its confluence with the West Fork of the Trinity River in the City of Dallas. The watershed lies in the north central portion of Texas extending across the state between north latitudes 33°44′ and 32°42′ and west longitudes 96°43′ and 97°50′. The watershed is comprised of parts of Montague, Cooke, Grayson, Collin, Wise, Tarrant, Denton, and Dallas Counties. The watershed of Elm Fork of the Trinity River is about 80 miles long along its axis and has a maximum width of 60 miles, and the total drainage area is 2,577 square miles of which 1,660 square miles are upstream from Lewisville Dam. Ray Roberts Lake controls 692 square miles of the drainage area, or 42% of the drainage area above Lewisville Dam. The watershed of Ray Roberts is about 25 miles long along its axis and the maximum width is about 50 miles. It is predominately in Cooke County, but also drains portions of Montague, Grayson, and Denton Counties.

Ray Roberts Dam is located on the Elm Fork of the Trinity River at river mile 60.0. The river drops from an elevation of about 1,210 feet at its source to 524 feet at the Ray Roberts Dam site. The Elm Fork continues to drop to elevation 387 feet at its confluence with the West Fork in Irving, Texas. The average slope of the stream bed is 7.5 feet per mile, and the average slope downstream of Ray Roberts Dam is 2.5 feet per mile.

The principal tributaries contributing to the Elm Fork of the Trinity River are the right bank tributaries, Denton Creek, Hickory Creek, and Clear Creek; and the left bank tributaries are Isle Du Bois Creek and Little Elm Creek. Ray Roberts Dam is slightly downstream of the mouth of Isle Du Bois Creek, a major left bank tributary. Wolf Creek, Indian Creek, Timber Creek, Jordan Creek, Range Creek, and Buck Creek combine to form Isle Du Bois Creek. Spring Creek and the Elm Fork of the Trinity River are on the right arm of the lake. Downstream of Ray Roberts Lake, Little Elm Creek drains the left bank, while Clear Creek, Hickory Creek, and Denton Creek are major right bank tributaries.

*Wetlands*

Waters of the United States are defined within the Clean Water Act (CWA), and jurisdiction is addressed by the USACE and United States Environmental Protection Agency (USEPA). 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). Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and

duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Typically, the National Wetlands Inventory (NWI) established by US Fish and Wildlife Service (USFWS) is used to identify wetland types in a project area. However, the available dataset for the Ray Roberts project area was mapped prior to impoundment and does not reflect the current conditions. Therefore, NWI was not used to identify and calculate wetland acreage with the fee boundary of the project. Instead, the Ecological Mapping System (EMS) developed by Texas Parks and Wildlife (TPWD) was used. Using the TPWD's EMS mapping, wetlands are delineated as swamps, and the lake is shown as open water. Figure 2.3 displays the ecological habitat types at Ray Roberts Lake based on EMS including wetland habitat types.

**Table 2.2 Total Acres of Wetland and Open Water at Ray Roberts Lake**

| Wetland Type | Acres |
|---|---|
| **Swamp** | 135.78 |
| **Open Water** | 28,396.72 |
| **TOTAL ACRES of Water Resources** | 28,532.5 |

NOTE: Acreages differ from land and water surface calculations due to TPWD using a single snapshot of the water surface that may not reflect the actual conservation pool. Source: TPWD 2020B.

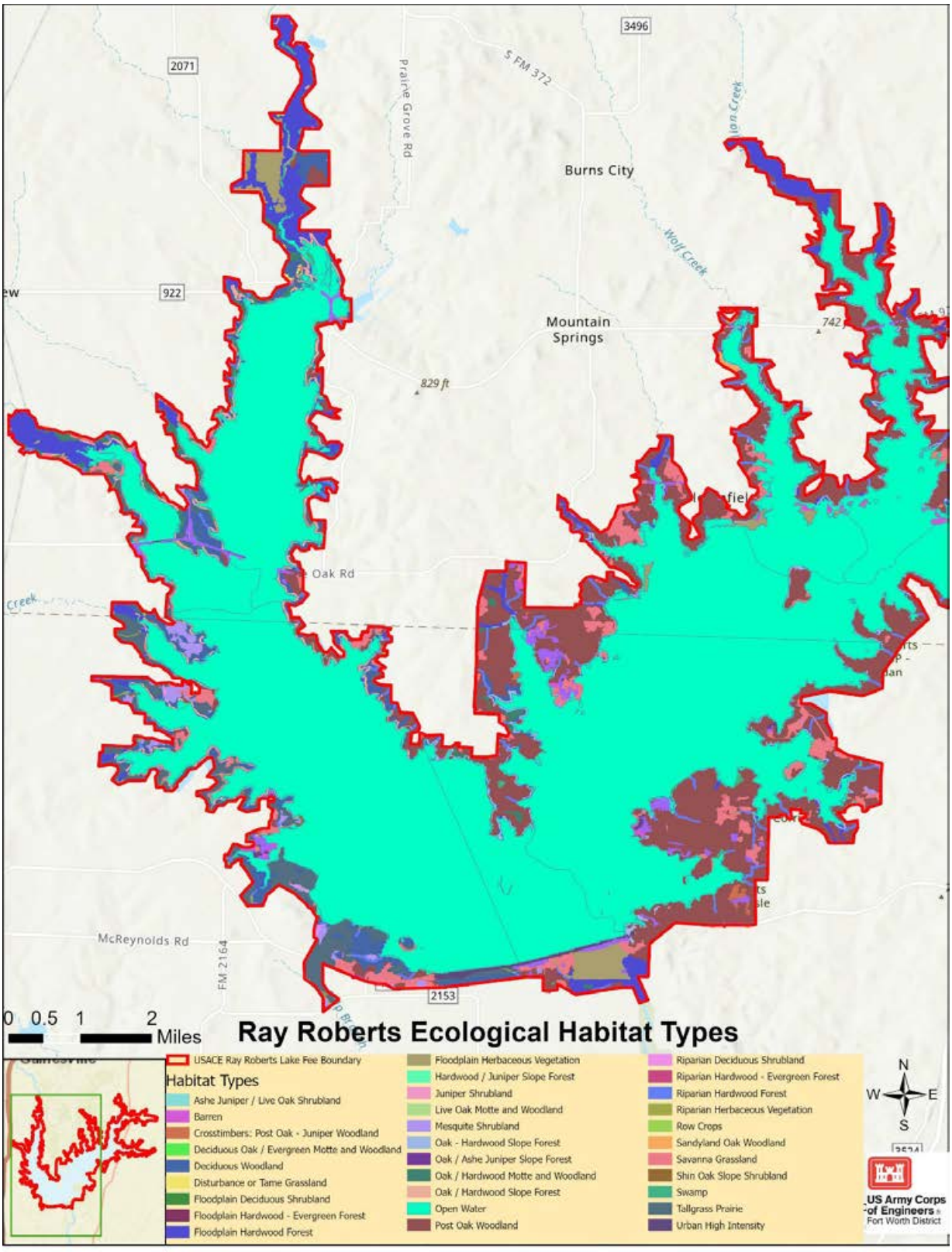


**Figure 2.6 Ecological Habitat Types at Ray Roberts 1 of 2 (West)**
Source: TPWD 2020.

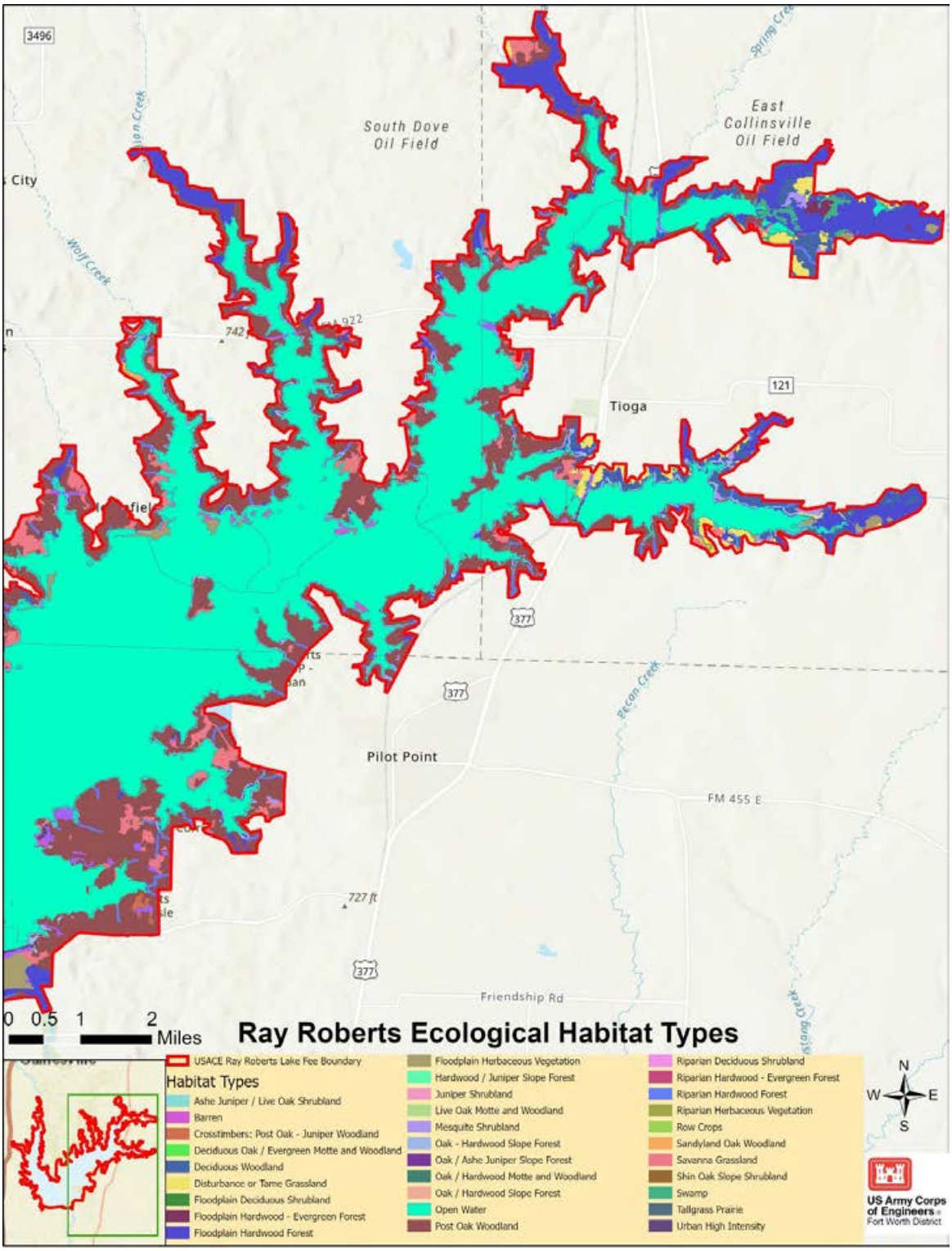


**Figure 2.7 Ecological Habitat Types at Ray Roberts 2 of 2 (East)**
Source: TPWD 2020.

*Groundwater*

Deep below Ray Roberts Lake lies the Trinity aquifers. The Trinity Aquifer extends across much of the central and northeastern portion of Texas. This major aquifer is composed of several smaller aquifers contained within the Trinity Group including the Antlers, Glen Rose, Paluxy, Twin Mountains, Travis Peak, Hensell, and Hosston.

The Trinity Aquifer is one of the most extensive and highly used groundwater resources in Texas. Although its primary use is for municipalities, it is also used for irrigation, livestock, and other domestic purposes. Some of the state's largest water level declines, ranging from 350 to more than 1,000 feet, have occurred in counties along the Interstate 35 corridor from McLennan County to Grayson County. These declines are primarily attributed to municipal pumping, but they have slowed over the past decade as a result of increasing reliance on surface water.

In general, groundwater quality in the Trinity Aquifer is fresh but very hard in the outcrop. Total dissolved solids (TDS) increase from less than 1,000 milligrams per liter in the east and southeast to between 1,000 and 5,000 milligrams per liter, or slightly to moderately saline, as the depth of the aquifer increases. Sulfate and chloride concentrations also tend to increase with depth.

*Hydrology*

The Elm Fork Trinity River watershed is subject to three general types of flood-producing rainfall: thunderstorms, frontal rainfall, and tropical cyclones. The topography, soils and typical rainfall patterns of the watershed lead to rapid runoff and sharp crested flood hydrographs. Floods occur frequently and at almost any time of year. Generally, the highest 24-hour and monthly precipitation periods have occurred during major thunderstorms. However, there are some instances of heavy precipitation resulting from local thunderstorms. Generally, the Elm Fork Trinity River large floods are long-duration type having two or more peaks spaced as close as ten days apart. However, it is possible that large peak and volume floods could occur in about a two-week duration.

Ray Roberts Dam and Lake are an integral part of the USACE plan for flood control and water conservation in the Trinity River Basin. The plan presently consists of eight major USACE flood control projects – Benbrook Dam, Bardwell Dam, Grapevine Dam, Joe Pool Dam, Lavon Dam, Lewisville Dam, Navarro Mills Dam, and Ray Roberts Dam. The eight USACE dam projects in the Trinity River system work in concert to control approximately 1,591,300 acre-feet (ac-ft) of flood control area. Specifically, Ray Roberts Lake has a flood control pool capable of storing 36,990 surface acres at elevation 640.5 feet above sea level. Once the water elevation reaches 645.5 feet NGVD29 and fills an additional 6,000 surface acres of storage space, water overtops the spillway and is uncontrollably released downstream. The pool of record occurred on March 30, 1987 with an elevation of 644.44 feet NGVD29.

*Water Quality*

Texas Commission on Environmental Quality (TCEQ) sets and implements standards for surface water quality to improve and maintain the quality of water in the state, based on various beneficial use categories for the water body. The Texas Integrated Report of Surface Water Quality, which is a requirement of the Federal Clean Water Act Sections 305(b) and 303(d), evaluates the quality of surface waters in Texas and identifies those that do not meet uses and criteria defined in the Texas Surface Water Quality Standards (TSWQS). The Texas Integrated Report describes the status of Texas' natural waters based on historical data and assigns waterways to various categories depending on the extent to which they attain the TSWQS.

Existing water quality within Ray Roberts Lake is affected by rainfall and associated stormwater flows originating from residential, commercial, and industrial point and nonpoint sources from properties upstream of the dam and reservoir. These stormwater flows have increased over time as a result of increased urbanization and development, increasing the risk for pollution from runoff. Sedimentation from within the watershed tends to increase turbidity and decrease dissolved oxygen levels, as will lower rainfall especially during summer months. Both turbidity and low oxygen levels can negatively affect aquatic life due to reduced photosynthesis at lower depths and decreased oxygen, greatly affecting animal life.

The 2020 Texas Integrated Report - Texas 303(d) List (TCEQ, 2020B) does not identify a segment within Ray Roberts Lake as to exceeding TSWQS nor in the waters below the dam that is within the USACE Fee Boundary.

The Texas Department of State Health Services (DSHS) Seafood and Aquatic Life Group purpose is to address and prevent/reduce any disease-causing agent from occurring that can be transferred from aquatic life to humans within the State of Texas. As of April 2022, The DSHS has not issued any fish consumption advisories for Ray Roberts Lake, nor for Elm Fork of the Trinity River below Ray Roberts Dam within USACE Fee Owned Property.

### 2.1.7 Hazardous Materials and Solid Waste

There are no hazardous or solid waste advisories for the within Ray Roberts federal fee boundary. Nor has DSHS issued any DSHS fish consumption advisory warnings within the same area.

As a part of USACE SWF lake annual environmental compliance assessment, members of USACE inspect various areas (leases, easements, and parks) at Ray Roberts that are known to potentially emit or store hazardous materials on an annual basis as part of USACE efforts to be in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This assessment is completed through a USACE formal process known as the Environmental Review Guide for Operations (ERGO). Upon completion of the assessment if any compliance findings occur then formal remedial actions will take place.

### 2.1.8 Health and Safety

Ray Roberts Lake's authorized purposes include flood risk management, water supply, fish and wildlife management, and recreation. Compatible uses incorporated in project operation management plans include conservation and fish and wildlife habitat management components. The USACE and TPWD have 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. Ray Roberts Lake also has solid waste management plans in place for camping and day use areas that are maintained by the respective partners that hold the lease.

## 2.2. ECOREGION AND NATURAL RESOURCE ANALYSIS

### 2.2.1 Natural Resources

Operational civil works projects administered by USACE are required, with few exceptions, to prepare an inventory of natural resources. The basic inventory required is referred to within USACE regulations (ER and EP 1130-2-540) as a Level One Inventory. This inventory includes the following: vegetation in accordance with the National Vegetation Classification System through the sub-class level; assessment of the potential presence of special status species including but not limited to Federal and state listed endangered and threatened species, migratory species, and birds of conservation concern listed by the USFWS; land (soils) capability classes in accordance with NRCS soil surveys; and wetlands, which are previously discussed in Section 3.2. In addition to the data from the Level One Inventories, a Wildlife Habitat Appraisal Procedure (WHAP) was conducted.

TPWD's Wildlife Habitat Appraisal Procedure (WHAP) was used to assist in the preparation of the 2021 MP. The assessment was conducted October 5-8, 2020 at Ray Roberts Lake by a multi-agency team from TPWD, USFWS, SWF Operations, and the Regional Planning and Environmental Center. A total of 87 data collection sites were selected using aerial photography and knowledge of the Ray Roberts Lake staff. The four major habitat types that were selected and assessed were marsh, riparian/bottomland hardwood forests (BHF), upland forests, and grasslands. The WHAP assessment report can be found in Appendix C of this Plan.

The WHAP assessment revealed that the two most abundant habitat types surveyed were upland forests and grasslands. However, the two habitat types that scored the highest on average were grassland and riparian/BHF. It was determined that the areas with greatest site potential to total score were those below Ray Roberts Dam west of Greenbelt Corridor Rd. (both sides of the river), north of FM 3002, and east of Co Rd 231, and the area immediately north of Ray Roberts Marina.

### 2.2.2 Vegetation

Ray Roberts Lake is located within the Cross Timbers and in Texas Blackland ecological regions. The Cross Timbers Ecoregion encompasses approximately 26,000 square miles in north and central Texas and is the primary ecoregion of northcentral Texas. It can be further divided into four vegetative sub-regions: Eastern Cross Timbers, Fort Worth Prairie, Lampasas Cut Plain, and Western Cross Timbers. Areas of Denton County, where Ray Roberts Lake is located, include both the Eastern Cross Timbers and Fort Worth Prairie vegetative sub-regions of the Cross Timbers Ecoregion. The Texas Blackland Prairie is divided into distinct Northern and Southern regions. Ray Roberts Lake is located in the Northern Blackland Prairie, which stretches over 300 miles from Sherman in the north to San Antonio in the south. Prairie vegetation includes various grasses and forbs, while the bottomland hardwood forests is predominantly oak and other hardwood trees. Elevations range from approximately 95 to 850 NGVD.

The common grass and forb species for the Cross Timber Ecoregion include little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardi*), buffalograss (*Bouteloua dactyloides*), big muhly (*Muhlenbergia lindheimeri*), eastern gamagrass (*Tripsacum dactyloides*), and sideoats grama (*Bouteloua curtipendula*). Slopes and upland forests support mesquites (*Prosopis laevigata*) and several cedars and junipers (*Juniperus spp*.), and have become more prevalent due to the absence of regular fires. What areas that are not prairies and dominated by junipers, post oaks (*Quercus stellate*) and blackjack oaks (*Quercus marilandica*). These oak forests are incredibly dense in tree count and are diversified with other tree species like pecan (*Carya illinoinensis*), black walnut (*Juglans nigra*), little walnut (*Juglans microcarpa*), American sycamore (*Platanus occidentalis*), eastern cottonwood (*Populus deltoides*), plateau liveoak (*Quercus fusiformis*), bur oak (*Quercus macrocarpa*), Americna elm (*Ulmus americana*), Texas persimmon (*Diospyros texana*), honey mesquite (*Prosopis glandulosa*), lance-leaf sumac (*Rhus lanceolate*), and Mexican plum (*Prunus mexicana*).

The Texas Blackland Prairies Ecoregion originally contained a diverse range of prairie species including little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardi*), yellow Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), eastern gamagrass (*Tripsacum dactyloides*), tall dropseed (*Sporobolus compositus*), asters (*Symphyotrichum* spp.), prairie bluet (*Stenaria nigricans*), prairie clovers (*Dalea spp.*), and coneflowers (*Echinacea spp*.). Bottomland hardwood forests are not as prevalent, but where they occur contain bur oak (*Quercus macrocarpa*), Shumard oak (*Quercus shumardii*), post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), green ash (*Fraxinus pennsylvanica*), pecan (*Carya illinoinensis*), cedar elm (*Ulmus crassifolia*), American elm (*Ulmus americana*), winged elm (*Ulmus alata*), sugar hackberry (*Celtis laevigata*), and eastern cottonwood (*Populus deltoides*). Some slopes and upland forests support honey mesquite (*Prosopis glandulosa*) and several cedars and junipers (*Juniperus spp*.) that have become more prevalent due to the absence of regular fires.

These two regions like so many other ecological regions in Texas have 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; completion 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.

Two of the most populous metropolitan areas of Texas are located in part of the Cross Timbers and Texas Blackland Prairie Ecoregions. The close proximity to urban and suburban landscapes has led to many plants escaping into wild plant communities, some of which have dramatically altered the ecosystems where they have spread. Common landscape plants which are aggressive colonizers and commonly escape cultivation include privet (*Ligustrum spp.*), Chinaberry (*Melia azedarach*), Heavenly bamboo (*Nandina domestica*), Pincushions (*Scabiosa atropurpurea*), Chinese Tallow (*Triadica sebifera*), and Tree of Heaven (*Ailanthus altissima*). Several grasses have also been identified as aggressive and/or invasive including Bermuda grass (*Cynodon dactylon*), Bahiagrass (*Paspalum notatum*), and Johnsongrass (*Sorghum halepense*). Giant Salvinia (*Salvinia molesta*) and water hyacinth (*Eichhornia crassipes*) are invasive aquatic plants and have been spreading aggressively in many USACE reservoirs. Several native plants have also become problematic due to human activities including mesquite (*Prosopis glandulosa*), whitebrush (*Aloysia grati*), yaupon (*Ilex vomitoria*), and several species of juniper (*Juniperus spp*.) (TPWD 2012).

### 2.2.3 Fisheries and Wildlife Resources

Ray Roberts Lake provides habitat for an abundance of fish and wildlife species. Predominant fish species in the lake are largemouth bass (*Micropterus salmoides*), channel catfish (*Ictalurus punctatus*), white crappie (*Pomoxis annularis*), and white bass (*Morone chrysops*). Other less prominent species include black, yellow, and striped bass; carp; blue and hybrid catfish; gar; and sunfish.

Many of the undeveloped open spaces provide habitat for wildlife including mountain lions (Puma concolor), coyotes (*Canis latrans*), bobcats (*Lynx rufus*), eastern cottontail rabbit (*Sylvilagus floridanus*.), fox squirrel (*Sciurus niger*), nine-banded armadillo (*Dasypus novemcinctus*), striped skunks (*Mephitis mephitis*), and raccoons (*Procyon lotor*). The area also provides habitat for a diverse range of birds and acts as a stopover for migratory birds.

### 2.2.4 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 a species officially recognized by USFWS as being 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 formally submitted to Congress for official listing as threatened or endangered. 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.

The USFWS's Information for Planning and Consultation (IPaC) database (2022) lists the threatened and endangered species, and trust resources that may occur within the Ray Roberts Lake Federal Fee Boundary (see USFWS Species List and the IPAC Report in Appendix C of the 2022 MP). Based on the IPaC report, there are 2 federally listed species that could be found within Ray Roberts Lake: least tern and whooping crane (USFWS 2020). A list of these species is presented in Table 2.3. No Critical Habitat has been designated within or near Ray Roberts Lake. The species identified as Threatened, Endangered or Candidate Species by TPWD that are not federally listed are included in Appendix C of the 2022 Master Plan as well as a list of Species of Greatest Conservation Need (SGCN) for the Cross Timbers and Texas Blackland Prairie Ecoregions.

**Table 2.3 Federally Listed Threatened & Endangered Species with Potential to Occur at Ray Roberts Lake**

| Common Name | Scientific Name | Federal Status | State Status |
|---|---|---|---|
| Monarch Butterfly | *Danaus plexippus* | Candidate | Not Listed |
| Whooping Crane | *Grus amricana* | Endangered | Endangered |

The Master Plan revision does not entail wind energy aspects, therefore the red knot (*Calidris canutus rufa*) and piping plover (*Charadrius melodus*) were intentionally left out in the above table. As such, the red knot and piping plover will not be addressed any further concerning possible impacts to the species.

The monarch butterfly (*Danaus plexippus*) is listed as a candidate wherever it is found (USFWS, 2021). It is an orange butterfly with black stripes and white dots on its wings, whose span can be up to 5cm (NatureServe, 2021). Its breeding habitat consists primarily of milkweed species (*Asclepias sp.*), which its larvae feed exclusively on. During North American migration, the monarch butterfly can be found anywhere flowers are blooming. The Ray Roberts Lake fee boundary contains an abundance of blooming flowers, including milkweed, which is critical to egg laying. The combination of habitat and numerous recent sittings confirms that this species is common to the area during migrating.

The whooping crane habitat consists of marshes, shallow lakes, lagoons, salt flats, grain and stubble fields, and barrier islands (AOU 1983, Matthews and Moseley 1990 and NatureServe 2016). Pockets of habitat for this species are present on Ray Roberts Lake project land but these areas are used as a stopover during their annual migrations. When the species is migrating, sighting for the species is rare at the lake and therefore they are considered a rare occurrence at Ray Roberts Lake.

Texas Parks and Wildlife Department's (TPWD 2020A) Annotated County Lists of Rare Species database records the threatened and endangered species that may occur on Ray Roberts Lake project lands (see Appendix C of the 2020 MP for the full report).

*Texas Natural Diversity Database*

The Texas Natural Diversity Database (TXNDD) (2020), administered by TPWD, manages and disseminates information on occurrence of rare species, native plant communities, and animal aggregations in Texas to help guide project planning efforts. TXNDD provided information for the following U.S. Geological Survey (USGS) quadrangles that encompass Ray Roberts project lands: Green Valley, Pilot Point, Collinsville, Mountain Springs, and Valley View. This information is summarized in the next three paragraphs.

1) Near the Ray Roberts Lake project lands, several locations were identified by the TXNDD to contain unique communities and species. Among these communities were those that contain bald eagle (*Haliaeetus leucocephalus*) as well as the Little Bluestem – Indiangrass Series (*Schizachyrium scoparium – Sorghastrum nutans series*) mixed plant community can be found.
2) There are formal recordings of bald eagle (*Haliaeetus leucocephalus*) being detected from various locations on the project lands at Ray Roberts Lake with the last formal recording occurring in 1993, however there are numerous informal observations since then. It prefers to nest in tall trees near lakes, rivers, creeks, bays, marshes, swamps, and coastal areas. These areas must then be able support enough fish, waterfowl, and small game for its diet (NatureServe 2019). Because of this information and of the recent sightings, the occurrence of this species on Ray Roberts Lake project lands is considered common.
3) The TXNDD reports and the data collected from the survey confirms that pockets of Little Bluestem-Indiangrass Series mixed plant community can be found on the

project lands at Ray Roberts Lake; thus, the occurrence of this community on project lands is considered a common occurrence.

### 2.2.5 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 2.4 lists many of the invasive and exotic species found at Ray Roberts Lake. Other species are currently being researched for their invasive characteristics.

**Table 2.4 Invasive and Noxious Native Species Found at Ray Roberts Lake**

| Common Name | Scientific Name | Native/Non-Native |
|---|---|---|
| **Birds** | | |
| Cattle Egret | *Bubulcus ibis* | Non-native |
| Cowbirds | *Molothrus ater* | Native |
| Eurasian Collared Dove | *Streptopelia decaocto* | Non-native |
| European Starling | *Sturnus vulgaris* | Non-native |
| House Sparrow | *Passer domesticus* | Non-native |
| **Fish** | | |
| European Carp | *Cyprinus carpio* | Non-native |
| **Mammals** | | |
| Nutria | *Myocastor coypus* | Non-native |
| Wild Boar | *Sus scrofa* | Non-native |
| **Insects** | | |
| Emerald Ash Borer | *Agrilus planipennis* | Non-native |
| Red Imported Ant | *Solenopsis invicta* | Non-native |
| Western Honeybee | *Apis mellifera* | Non-native |
| **Plants** | | |
| Bastard Cabbage | *Rapistrum rugosum* | Non-native |
| Bermuda Grass | *Cynodon spp.* | Non-native |
| Bushclovers | *Lespideza spp.* | Non-native |
| Callery Pear | *Pyrus calleryana* | Non-native |
| Chinaberry | *Melia azedarach* | Non-native |
| Chinese Pistache | *Pistacia chinensis* | Non-native |

| Common Name | Scientific Name | Native/Non-Native |
|---|---|---|
| Chinese Privet | *Ligustrum sinense* | Non-native |
| Chinese Tallow | *Triadica sebifera* | Non-native |
| Giant Reed | *Arundo donax* | Non-native |
| Glossy Privet | *Ligustrum lucidum* | Non-native |
| Heavenly Bamboo | *Nandina domestica* | Non-native |
| Hydrilla | *Hydrilla verticillata* | Non-native |
| Japanese Brome | *Bromus japonicus* | Introduced |
| Japanese Honeysuckle | *Lonicera japonica* | Non-native |
| Johnson Grass | *Sorghum halepense* | Non-native |
| King Ranch Bluestem | *Bothriochloa ischaemum var. songarica* | Non-native |
| Lilac Chaste Tree | *Vitex agnus-castus* | Non-native |
| Multiflora Rose | *Rosa multiflora* | Non-native |
| Quihoi Privet | *Ligustrum quihoi* | Non-native |
| **Reptiles** | | |
| Mediterranean Gecko | *Hemidactylus turcicus* | Non-native |
| **Mollusks** | | |
| Asian Clam | *Corbicula fluminea* | Non-native |
| Zebra Mussels | *Dreissena polymorpha* | Non-native |

Because of the large expanse of metropolitan areas located in the Cross Timbers and Texas Blackland Prairie ecoregions, it has led to a greater number of invasive species than most other regions of the state. Free-ranging pets (cats and dogs, in particular) have made a significant impact on populations of small mammals, reptiles, and birds.

Other invasive animals include several species of introduced fish (including released baitfish and “aquarium dumping”). Invasive mollusks including zebra mussels (*Dreissena polymorpha*) are an ongoing threat to native aquatic species and infrastructure due to their ability to infest and expand rapidly. Asian clams (*Corbicula fluminea*) and decollate snails (*Rumina decollate*) are common in waterways throughout Texas and often out-compete native mollusks.

Although native, cowbirds (*Molothrus ater*) have become problematic due to their expanding range associated with agriculture and human development and are considered a nuisance. Honey mesquites (*Prosopis glandulosa*) and junipers/cedars are also native but are spreading aggressively in native prairies where their aggressive growth was historically kept in check by periodic wildfires and grazing. The close proximity to urban landscaping has led to many common landscape plants becoming aggressive colonizers and are now invasive at Ray Roberts Lake.

Emerald ash borer (*Agrilus planipennis*) was recently discovered in northern Tarrant County and Dallas County and recently spotted just downstream of Ray Roberts

Lake along Lewisville Lake. It is now a potential invasive species of concern for the entire Dallas-Fort Worth Metropolitan Area.

### 2.2.6 Aesthetic Resources

Ray Roberts 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). Because Ray Roberts Lake is located near several large cities, people come from local urban communities to enjoy the scenic and naturalistic views offered at the lake. Some areas have been designated as Wildlife and Vegetative 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 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. Unauthorized removal of trees and other vegetation could result in a fine. Additionally, reasonable measures must be taken to ensure that damage to the natural landscape from invasive species and catastrophic wildfire are minimized. Vegetative management, mowing permits, debris removal, and other shoreline issues are addressed in the shoreline policy.

## 2.3. CULTURAL RESOURCES

### 2.3.1 Initial Archeological Survey

As part of the planning and construction of the dam and lake, the USACE conducted an initial archeological survey and documented the findings in the 1983 Master Plan. In 1980, the USACE contracted with Environment Consultants, Inc. of Dallas, TX to accomplish a cultural resources survey of the area to be affected by the project's construction. A number of research goals were to be accomplished: (1) develop a cultural-historical synthesis; (2) identify synchronic settlement systems and diachronic settlement pattern change; (3) reconstruct a demographic curve for both prehistoric and historic periods; (4) identify types and periods of region exchange of goods; (5) clarify the nature of the prehistoric social systems within the area; (6) identify regularities of early historic settlement and identify the origin of these early settlers; (7) identify patterns of historic landscape evolution in the area and reconstruct the early landscape; and (8) identify the changing patterns of historic land use.

The cultural resources survey of the Ray Roberts Lake area resulted in the locating and recording of a total of 355 sites of either archeological, historical, or architectural interest in the project area. Of these sites, 90 contained only prehistoric

material, 238 contained only historic material, and 27 contained material from both periods.

Of the 117 sites with prehistoric material, 40 appear as single-component sites and 22 were initially evaluated as multi-component. 55 could not be classified at early stage of study. Of the 265 historical sites, 142 are solely archeological in nature. 102 contain standing structures with possible archeological materials, there are 5 bridge remains, 14 cemeteries, and 2 are structures with associated cemeteries.

In addition to defining archeological sites by appropriate dates, they are often classified by possible use or by identifying the major activity ongoing at the site. Smaller sites are generally associated with the procurement of food or raw materials. Lithic procurement sites may contain broken cobbles, possibly used to test the materials being collected. Food collecting or musseling stations contain those lithic materials needed for the task at hand. Hunting stations are often characterized by a number of tool types, including, but by no means limited to, projectile points, knives and scrapers. Some of these types of camps were repeated utilized, thus appearing in size to be used by many individuals for longer periods of time. Base camps would be generally larger, supporting the activities of larger numbers of individuals for longer periods of time.

### 2.3.2 Prehistoric

The earliest well-documented evidence of human occupation in North Central Texas dates to about 12,000 years before present (B.P.). Prehistory is divided generally into three broad time periods: Paleo-Indian (12,000-8,500 B.P.), Archaic (8,500-1,250 B.P.), and Late Prehistoric (1,250-300 B.P.).

Evidence for Paleo-Indian period occupation is relatively rare in North Central Texas and is known primarily from distinctive projectile point styles dating to this time period found in surface collections or in mixed multi-component sites. The most important Paleo-Indian site in the region was discovered in the outlet channel at Ray Roberts Lake. The Aubrey Clovis Site (41DN479) is buried between 7-9 meters below the Holocene floodplain surface, and several concentrations of Clovis artifacts and associated faunal remains were excavated there as part of the Ray Roberts data recovery efforts. Evidence suggests that the region was occupied by small groups of highly mobile hunter-gatherers that traveled over very large territories. Traditionally thought of as big-game hunters of mammoth and bison, more recent evidence indicates Paleo-Indians exploited a much broader range of animal and plant resources.

The Archaic period is divided into Early (8,500-6,000 B.P.), Middle (6,000-3,500 B.P.), and Late (3,500-1,250 B.P.) sub periods. During this long time period, a generalized hunting and gathering subsistence strategy is indicated. Trends through time suggest increasing population density and decreasing group mobility within smaller territories. Sites with Late Archaic components are well represented in the Ray Roberts Lake area and in North Central Texas generally.

The Late Prehistoric Period (1,250-300 B.P.) is marked by the presence of the bow and arrow and pottery. During the early portion of this time span, subsistence strategies remained similar to those of the preceding Late Archaic. By around 800 B.P., there is limited evidence for maize horticulture and more sedentary occupations in some North Central Texas sites. After around 600 B.P., there is widespread evidence for an increase in bison hunting. Pottery from Ray Roberts Lake sites includes limited amounts of plain and decorated grog-tempered specimens in the Caddo ceramic tradition. It is unclear whether this pottery was made locally or represents trade with East Texas Caddo groups. Plain, shell-tempered pottery is the most common ceramic type found at Ray Roberts Lake sites and is thought to show connections with southern plains groups to the north and west. This shell-tempered pottery is generally thought to date to the late portion of the Late Prehistoric period (after ca. 600 B.P.) when bison hunting became more important.

### 2.3.3 Historic

Local tradition holds that Native Americans of the Wichita and Caddo Nations inhabited the Ray Roberts Lake area prior to the arrival of the first white settlers in the early 1840s. The first large colonization of the Denton County region occurred after W.S. Peters of St. Louis obtained a land grant from the Republic of Texas in 1841. The majority of these early settlers were farmers operating small family farms growing mainly wheat and corn. When Denton County was created out of Fannin County in 1846, the estimated population was only 150. The population grew steadily between the 1840s and 1870s. The arrival of the railroads in the early 1870s allowed farmers access to markets and led to a major increase in the number of farms. Most of the historic resources at Ray Roberts Lake include the archeological remains of house sites and farmsteads dating from the late 19th century through the mid-20th century, although a few sites dating to the late 1840s or early 1850s have been recorded and investigated.

### 2.3.4 Previous Investigations at Ray Roberts Lake

The initial archeological investigation at Ray Roberts Lake was a reconnaissance survey by Southern Methodist University in 1973 that recorded 27 archeological sites. This was followed in the early 1980s with studies by Environmental Consultants, Inc., during which 131 sites were recorded and test excavations were conducted at 22 sites. The most extensive investigations at Ray Roberts were conducted in 1986 and 1987 by the University of North Texas (UNT). These included additional surveys and test excavations at both prehistoric and historic period sites. UNT's work culminated in extensive data recovery investigations at 11 prehistoric sites and 20 historic period sites.

### 2.3.5 Recorded Cultural Resources

Currently, 382 archeological sites have been recorded at Ray Roberts Lake. Two of these archeological sites, the Johnson (41DN248) and Jones (41DN250) homesteads, are listed on the National Register of Historic Places (NRHP). Of the

remaining 380 archeological sites, 27 have been determined eligible for NRHP and 353 have been determined ineligible.

### 2.3.6 Long-term Objectives for Cultural Resources

As funding allows, a Cultural Resources Management Plan (CRMP) will be developed and incorporated into the Operational Management Plan in accordance with EP 1130-2-540. The purpose of the CRMP is to provide a comprehensive program to direct the historic preservation activities and objectives at Ray Roberts Lake. Completion of a full inventory of cultural resources at Ray Roberts Lake is a long-term objective that is needed for compliance with Section 110 of the National Historic Preservation Act (NHPA). Any newly recorded sites must be evaluated to determine their eligibility for the NRHP. In accordance with Section 106 of the NHPA, any proposed ground-disturbing activities or projects, such as those described in this master plan or as may be proposed in the future by others for right-of-way easements, will require cultural resource surveys to locate and evaluate historic and prehistoric resources. Resources determined eligible for the NRHP must be protected from proposed project impacts, or the impacts must be mitigated. All future cultural resource investigations at Ray Roberts Lake must be coordinated with the State Historic Preservation Officer and federally recognized Tribes to ensure compliance with the National Historic Preservation Act, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act

## 2.4. DEMOGRAPHIC AND ECONOMIC ANLALYSIS

### 2.4.1 Overview

The following information covers the current demographic and economic data for counties near Lake Ray Roberts (Zone of Interest). This basic information gives a snapshot of the current population and looks at growth trends for the area.

### 2.4.2 Zone of Interest (Region Served)

Lake Ray Roberts is located in Denton, Cooke, and Grayson Counties in North Central Texas. The zone of interest for the socioeconomic analysis of Lake Ray Roberts is defined as Collin, Cooke, Dallas, Denton, Grayson, Montague, Tarrant and Wise Counties in Texas.

### 2.4.3 Population

The total population for the zone of interest in 2019 was estimated at approximately 6.7 million, as shown in Table 2-5. Approximately 39% of the zone of interest's total population is within Dallas County and 31% is withing Tarrant County. Collin County makes up 15%, Denton County 12%, Grayson County 2%, Wise County 1% and Cooke and Montague with less than 1% each. The zone of interest accounts for approximately 24% of the population for Texas.

The zone of interest's population is projected to increase by about 5.4 million people by 2050, and annual growth rate of 1.9%. Most of the growth is projected to occur in Denton County, which is projected to grow by $1.5 million people in 2050, an annual growth rate of 3.4%, Collin County, projected to grow by 1.5 million people, an annual growth rate of 3.0%, Dallas County, projected to grow by 1.3 million people, an annual growth rate of 1.3%, Grayson County, projected to grow by 21 thousand people, an annual growth rate of 0.5% and Tarrant County, projected to grow by just over 1.1 million people, and annual growth rate of 1.4%. Wise County is projected to grow by 11 thousand people, an annual growth rate of 0.5%. Cooke County and Montague County are projected to lose population.

**Table 2.5 2000 and 2019 Population Estimates and 2050 Projections**

| Geographic Area | 2000 Population Estimate | 2019 Population Estimate | 2050 Population Projection |
|---|---|---|---|
| Texas | 20,851,820 | 28,260,856 | 47,342,105 |
| Collin County | 491,675 | 973,977 | 2,456,914 |
| Cooke County | 36,363 | 40,041 | 39,873 |
| Dallas County | 2,218,899 | 2,606,868 | 3,869,605 |
| Denton County | 432,976 | 833,822 | 2,332,629 |
| Grayson County | 110,595 | 131,014 | 152,114 |
| Montague County | 19,117 | 19,489 | 15,349 |
| Tarrant County | 1,446,219 | 2,049,770 | 3,196,603 |
| Wise County | 48,793 | 66,290 | 77,081 |
| Zone of Interest | 4,804,737 | 6,721,271 | 12,140,168 |

Sources: 2000 Estimates - U.S. Census Bureau, 2000 Decennial Census; 2019 Estimate – U.S. Census Bureau, 2019 ACE 5 Year Survey; 2050 Projections - Texas State Data Center

The distribution of the population by gender is shown in Table 2-6. For the zone of interest, the population is 49% male and 51% female, as compared to an almost 50% male and 50% female distribution for the state. All of the remaining counties are very similar to near 49%/51% distributions between male and female.

**Table 2.6 2018 Population by Gender**

| Geographic Area | Total Population | Male | Female |
|---|---|---|---|
| Texas | 28,260,856 | 14,034,009 | 14,226,847 |
| Collin County | 973,977 | 479,151 | 494,826 |
| Cooke County | 40,041 | 19,871 | 20,170 |
| Dallas County | 2,606,868 | 1,285,388 | 1,321,480 |
| Denton County | 833,822 | 410,114 | 423,708 |
| Grayson County | 131,014 | 63,944 | 67,070 |
| Montague County | 19,489 | 9,460 | 10,029 |
| Tarrant County | 2,049,770 | 1,002,709 | 1,047,061 |

| Geographic Area | Total Population | Male | Female |
|---|---|---|---|
| Wise County | 66,290 | 33,406 | 32,884 |
| Zone of Interest | 6,721,271 | 3,304,043 | 3,417,228 |

Source: American Community Survey 5 Year Estimate, US. Census Bureau

Figure 2.2 shows the population by age group expressed as a percent of total population for Texas, the zone of interest and Cooke, Denton, and Grayson Counties, where the lake is located. While the percentages are roughly similar for most of the age groups, it can be seen that there is a slightly larger percentage of 25- to 34-year-olds, 35- to 44-year-olds, and 45- to 54-year-olds in the zone of interest compared to Texas, with almost 15%, 14%, and 13% of the zone of interest's population in these age groups, respectively. The zone of interest also shows larger percentages in the under 5 years age group (8%) and the 5- to 9-year-old age group (7%), and 10- to14 year-old group (8%) when compared to the state.

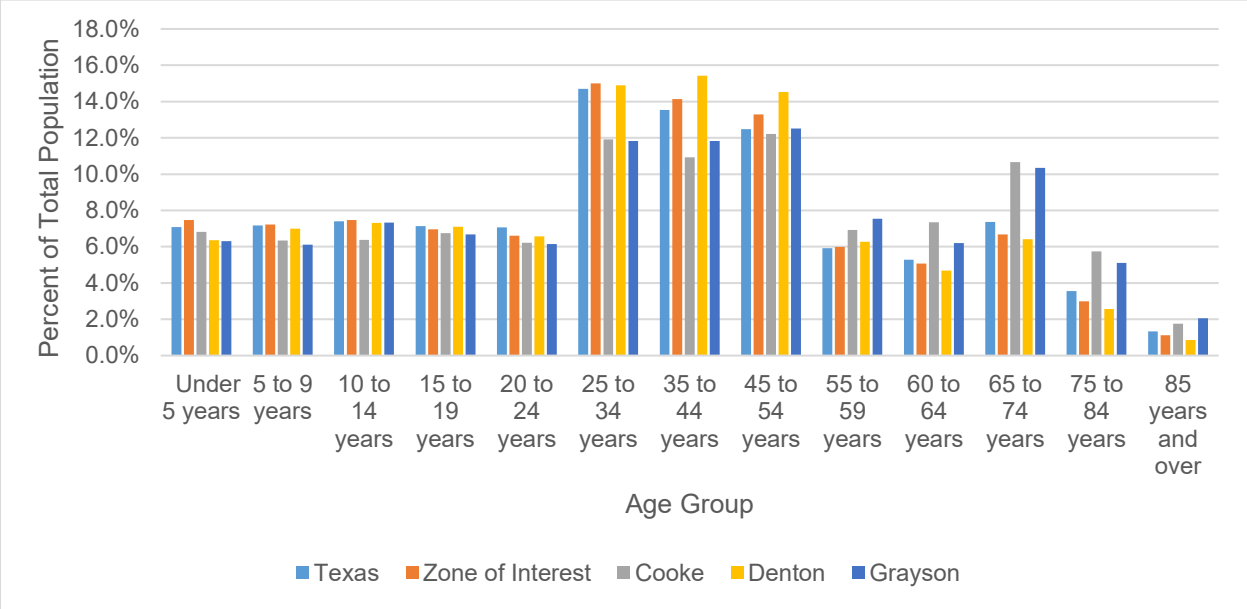


**Figure 2.8 – Percent of Population by Age Group, 2019 (U.S. Bureau of the Census, American Community Survey, 5 Year Estimate)**

The 2019 population by race and Hispanic origin is shown in Table 2-7. In the zone of interest, approximately 44% of the population is White, 30% are Hispanic or Latino, 16% Black, 7% Asian, and 2% two or more races, with each of the other races making up less than 1% each of the total population. The zone of interest has a higher percentage of Blacks, and Asian than the state, but a lower percentage of Hispanic or Latino. For the state, 42% are White, 39% are Hispanic or Latino, 12% Black, 5% Asian, and 2% two or more races, with each of the remaining races making up less than 1% each.

## Table 2.7 Population by Race and Hispanic Origin

| Geographic Area | Total | White | Black | American Indian and Alaska Native | Asian | Native Hawaiian and Other Pacific Islander | Hispanic or Latino | Some other race | Two or more races |
|---|---|---|---|---|---|---|---|---|---|
| **Texas** | 28,260,856 | 11,856,336 | 3,328,707 | 71,081 | 1,340,554 | 21,739 | 11,116,881 | 44,465 | 481,093 |
| **Collin County** | 973,977 | 554,789 | 93,804 | 3,261 | 146,966 | 622 | 148,696 | 2,542 | 23,297 |
| **Cooke County** | 40,041 | 30,166 | 1,121 | 278 | 344 | 24 | 7,269 | 54 | 785 |
| **Dallas County** | 2,606,868 | 759,485 | 580,189 | 5,411 | 162,770 | 1,014 | 1,047,434 | 4,810 | 45,755 |
| **Denton County** | 833,822 | 494,029 | 79,871 | 3,045 | 72,148 | 629 | 160,933 | 1,191 | 21,976 |
| **Grayson County** | 131,014 | 98,801 | 6,871 | 1,355 | 2,062 | 12 | 17,577 | 177 | 4,159 |
| **Montague County** | 19,489 | 16,720 | 131 | 159 | 0 | 0 | 2,138 | 0 | 341 |
| **Tarrant County** | 2,049,770 | 957,676 | 330,853 | 6,154 | 110,144 | 3,802 | 590,485 | 4,441 | 46,215 |
| **Wise County** | 66,290 | 50,878 | 845 | 236 | 338 | 121 | 12,822 | 2 | 1,048 |
| **Zone of Interest** | 6,721,271 | 2,962,544 | 1,093,685 | 19,899 | 494,772 | 6,224 | 1,987,354 | 13,217 | 143,576 |

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

### 2.4.4 Education and Employment

Table 2.8 shows the highest educational attainment for the 2019 population 25 years of age and older. In the zone of interest, 22% of the population had earned a high school diploma or equivalent, 21% had some college, but no degree, and 24% had earned a Bachelor's degree. Approximately 13% held a graduate degree or higher and 7% had earned an Associate's degree. Only 7% of the population had attended school between the 9th and 12th grades but did not earn a diploma. About 7% of the population had less than a 9th grade education. The area interest educational attainment is representative of the state overall. For Texas, 25% had earned a high school diploma or equivalent, 22% had some college but no degree, and 20% has a Bachelor's degree. About 10% had a graduate degree or higher, and 7% had an Associate's degree. Only 8% had 9 to 12 years of education but without degree, and 8% had less than 9 years of education.

**Table 2.8 2019 Population Estimate by Highest Level of Educational Attainment, Population 25 Years of Age and Older**

| Educational Attainment | Texas | Collin County | Cooke County | Dallas County | Denton County | Grayson County | Montague County | Tarrant County | Wise County | Zone of Interest |
|---|---|---|---|---|---|---|---|---|---|---|
| Population 25 years and over | 18,131,554 | 638,328 | 27,025 | 1,669,564 | 547,409 | 88,311 | 13,632 | 1,314,012 | 44,452 | 4,342,733 |
| Less than 9th grade | 1,482,952 | 21,157 | 1,352 | 185,885 | 18,245 | 808 | 808 | 85,902 | 2,609 | 319,439 |
| 9th to 12th grade, no diploma | 1,475,007 | 18,294 | 2,414 | 159,003 | 22,790 | 1,139 | 1,139 | 96,589 | 3,924 | 310,626 |
| High school graduate (includes equivalency) | 4,525,099 | 95,753 | 8,507 | 377,558 | 97,623 | 5,130 | 5,130 | 314,880 | 15,461 | 941,479 |
| Some college, no degree | 3,918,815 | 122,178 | 6,715 | 326,932 | 120,316 | 3,087 | 3,087 | 292,589 | 10,949 | 907,312 |
| Associate's degree | 1,309,005 | 46,793 | 2,398 | 94,661 | 41,566 | 1,161 | 1,161 | 99,985 | 3,506 | 299,266 |
| Bachelor's degree | 3,534,714 | 212,007 | 3,800 | 332,957 | 165,827 | 1,579 | 1,579 | 284,540 | 6,042 | 1,019,038 |
| Graduate or professional degree | 1,885,962 | 122,146 | 1,839 | 192,568 | 81,042 | 728 | 728 | 139,527 | 1,961 | 545,573 |

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

Figure 2.3 shows the 2019 employment by sector expressed as a percent of total employment for the area of interest and the number of employment by sector for Texas, the area of interest and the constituent counties is presented in Table 2.9. For the area of interest, 19% of the employment is in the educational, health care and social assistance services sector, followed by 13% in professional, scientific and management, 11% in retail trade. About 9% of the employment is in each of finance, insurance, real estate and arts, entertainment, recreation, and accommodations. This indicates over 62% of total employment are in the services sector. About 9% are in manufacturing, 8% in construction, and 7% in transportation and warehousing. The remaining sectors represent 5% or less each of total employment.

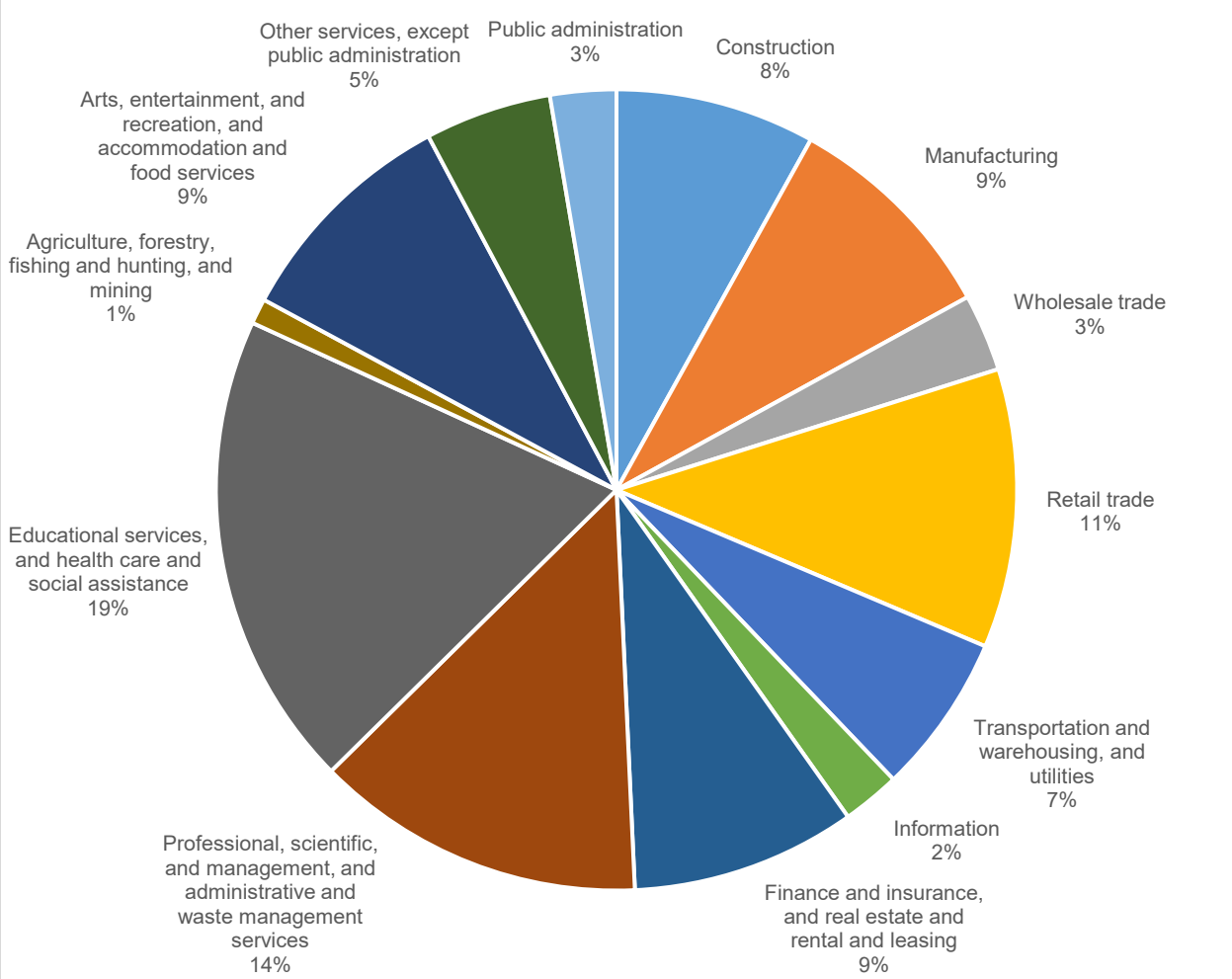


**Figure 2.9 Percent Employment by Sector for Area of Interest (2019)**

## Table 2.9 Employment by Sector (2019)

| Employment Sector | Texas | Collin County | Cooke County | Dallas County | Denton County | Grayson County | Montague County | Tarrant County | Wise County | Zone of Interest |
|---|---|---|---|---|---|---|---|---|---|---|
| **Civilian employed population 16 years and over** | 13,253,631 | 509,180 | 19,303 | 1,305,009 | 453,391 | 60,989 | 8,132 | 1,017,012 | 30,152 | 3,403,168 |
| **Agriculture, forestry, fishing and hunting, and mining** | 397,032 | 4,349 | 1,558 | 9,133 | 4,190 | 980 | 1,052 | 11,329 | 2,265 | 34,856 |
| **Construction** | 1,137,958 | 26,036 | 1,181 | 137,272 | 24,451 | 5,555 | 536 | 76,911 | 2,456 | 274,398 |
| **Manufacturing** | 1,125,176 | 42,228 | 3,030 | 107,817 | 36,763 | 7,574 | 814 | 103,274 | 2,725 | 304,225 |
| **Wholesale trade** | 378,542 | 14,663 | 360 | 39,295 | 15,488 | 1,318 | 158 | 33,955 | 977 | 106,214 |
| **Retail trade** | 1,507,002 | 57,786 | 1,802 | 140,355 | 53,955 | 7,887 | 1,044 | 116,633 | 3,704 | 383,166 |
| **Transportation and warehousing, and utilities** | 777,044 | 17,444 | 955 | 85,121 | 25,398 | 3,020 | 351 | 85,083 | 2,743 | 220,115 |
| **Information** | 227,928 | 19,280 | 196 | 28,953 | 12,580 | 696 | 109 | 17,411 | 447 | 79,672 |
| **Finance and insurance, and real estate and rental and leasing** | 884,408 | 59,731 | 723 | 113,413 | 49,239 | 3,763 | 483 | 80,102 | 1,418 | 308,872 |
| **Professional, scientific, and management, and administrative and waste management services** | 1,524,750 | 88,753 | 1,141 | 187,301 | 61,857 | 4,937 | 333 | 107,980 | 1,992 | 454,294 |
| **Educational services, and health care and social assistance** | 2,863,828 | 101,977 | 3,655 | 232,477 | 93,677 | 13,543 | 1,651 | 201,816 | 5,740 | 654,536 |
| **Arts, entertainment, and recreation, and accommodation and food services** | 1,216,771 | 41,627 | 3,055 | 125,254 | 42,220 | 5,858 | 668 | 97,063 | 2,317 | 318,062 |
| **Other services, except public administration** | 684,780 | 22,969 | 1,006 | 69,968 | 21,387 | 3,416 | 541 | 52,637 | 2,118 | 174,042 |
| **Public administration** | 528,412 | 12,337 | 641 | 28,650 | 12,186 | 2,442 | 392 | 32,818 | 1,250 | 90,716 |

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

The civilian labor force for the area of interest makes about 26% of the civilian labor force for the entire state, as shown in Table 2-10. The unemployment rate for the zone of interest was 4.5%, lower than the state overall, which had an unemployment rate of 5.1%. The constituent counties ranged from 3.7% in Collin County to 5.4% in Montague County.

**Table 2.10 Civilian Labor Force, Employment and Unemployment (2019)**

| Geographic Area | Civilian Labor Force | Number Employed | Number Unemployed | Unemployment Rate |
|---|---|---|---|---|
| **Texas** | 13,962,458 | 13,253,631 | 708,827 | 5.1% |
| **Collin County** | 528,839 | 509,180 | 19,659 | 3.7% |
| **Cooke County** | 20,211 | 19,303 | 908 | 4.5% |
| **Dallas County** | 1,370,333 | 1,305,009 | 65,324 | 4.8% |
| **Denton County** | 471,606 | 453,391 | 18,215 | 3.9% |
| **Grayson County** | 63,897 | 60,989 | 2,908 | 4.6% |
| **Montague County** | 8,594 | 8,132 | 462 | 5.4% |
| **Tarrant County** | 1,067,061 | 1,017,012 | 50,049 | 4.7% |
| **Wise County** | 31,526 | 30,152 | 1,374 | 4.4% |
| **Zone of Interest** | 3,562,067 | 3,403,168 | 158,899 | 4.5% |

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

### 2.4.5 Households, Income, Poverty

Table 2-11shows the number and size of households for Texas and the zone of interest. The zone of interest has approximately 2.4 million households, which makes up about 24% of the number of households statewide. About 39% of the households are in Dallas County (928,000), about 30% are in Tarrant County (708,000), 15% in Collin County (341 thousand), and 12% in Denton County (290,000). The average household size for the area of interest is 2.82 persons, with the constituent counties ranging from 2.45 to 2.92. These are generally similar to the state overall, with 2.85 persons per household.

**Table 2.11 Number of Households and Average Household Size (2019)**

| Geographic Area | Total Households | Average Household Size |
|---|---|---|
| Texas | 9,691,647 | 2.85 |
| Collin County | 341,163 | 2.84 |
| Cooke County | 15,351 | 2.57 |
| Dallas County | 928,341 | 2.78 |
| Denton County | 290,229 | 2.83 |

| Geographic Area | Total Households | Average Household Size |
|---|---|---|
| Grayson County | 48,454 | 2.65 |
| Montague County | 7,800 | 2.45 |
| Tarrant County | 708,252 | 2.86 |
| Wise County | 22,369 | 2.92 |
| Zone of Interest | 2,361,959 | 2.82 |

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

Median household income and per capita income are shone in Table 9. While the median household income for the zone of interest was not available, for the constituent counties, it ranged from $52 thousand in Montague County to $97 thousand in Collin County. By comparison, the state's median household income was $62 thousand. Three of the constituent counties were below the state, and four had higher median household incomes.

The per capita income for the zone of interest was approximately $35 thousand, higher than the state's per capita income of $31 thousand. Four counties had per capita incomes below the state's per capita income, and four were at or above, which is similar to the median household incomes.

**Table 2.12 Median and Per Capita Income (2019)**

| Geographic Area | Median Household Income | Per Capita Income |
|---|---|---|
| Texas | $61,874 | $31,277 |
| Collin County | 96,913 | 44,548 |
| Cooke County | 60,202 | 30,704 |
| Dallas County | 59,607 | 32,653 |
| Denton County | 86,913 | 41,153 |
| Grayson County | 54,815 | 28,011 |
| Montague County | 51,765 | 28,096 |
| Tarrant County | 67,700 | 33,292 |
| Wise County | 64,536 | 29,418 |
| Zone of Interest | N/A | 35,479 |

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

Percentages of families and persons falling below the poverty level is shown in Table 2-13. The percent of all families for the zone of interest was not available, but for the constituent counties, it ranged from 4.4% in Collin County to 12.1% in Dallas County. Only Dallas County had a higher percentage than the state overall, Montague County was similar and the remainders below the state's percentage

Approximately 12% of all persons in the zone of interest had incomes below the poverty level, lower than the states percentage of 15%. Collin, Cooke, Denton, Grayson, Tarrant and Wise Counties were below the state percentage while Dallas and Montague higher percentage of persons below the poverty level than the state.

**Table 2.13 Percentage of Families and People Whose Income in the Past 12 Months is Below the Poverty Level (2019)**

| Geographic Area | All Families | All People |
|---|---|---|
| Texas | 11.3% | 14.7% |
| Collin County | 4.4% | 6.3% |
| Cooke County | 9.3% | 12.8% |
| Dallas County | 12.1% | 15.4% |
| Denton County | 4.6% | 7.6% |
| Grayson County | 9.9% | 13.1% |
| Montague County | 10.8% | 15.6% |
| Tarrant County | 8.9% | 11.9% |
| Wise County | 8.2% | 10.7% |
| Zone of Interest | N/A | 11.9% |

U.S. Bureau of the Census, American Community Survey, 5 Year Estimate

## 2.5. RECREATION FACILITIES, ACTIVITIES, AND NEEDS

The initial development of outdoor recreation facilities at Ray Roberts Lake was addressed in the 1983 Master Plan, Design Memorandum (DM) No. 1C. This document laid out a plan for the comprehensive management of the lake's lands and water surface including plans for a significant investment in outdoor recreation facilities.

USACE's role in outdoor recreation at Ray Roberts Lake consists of managing roads and trails, fishing along waterways and adjacent to the stilling basin area below the dam, management of the water surface as it relates to boating activity and managing general access to lands that are not managed by TPWD. TPWD's role in managing parks, trails, and activities is described in Chapter 5. See Chapter 6 for more details about Ray Roberts Lake's hunting program.

The following factors contribute to the importance of Ray Roberts Lake as a recreational area:

- Located at the northern edge of the Dallas-Fort Worth Metroplex, approximately 40 miles from downtown Dallas and downtown Fort Worth and 30 miles from DFW International Airport.
- Easily accessed by nearby highways
- Provides full-service campgrounds and day-use areas
- Access to water-based recreation at marinas, boat ramps, and swim beaches
- Provides hiking and equestrian trails

- Many natural areas provide opportunities for bird watching and other wildlife viewing
- State parks are managed by TPWD

### 2.5.1 Zone of Influence

Lake Ray Roberts is located in Denton, and Cooke Counties in North Central Texas. The zone of interest for Lake Ray Roberts is defined as Collin, Cooke, Dallas, Denton, Montague, Tarrant and Wise Counties in Texas. Most visitors to Ray Roberts Lake come from the zone of influence and is one of many options for recreators within the larger DFW metropolitan area.

### 2.5.2 Recreation Areas and Facilities

Recreation areas at Ray Roberts Lake are managed my TPWD under a lease agreement with the USACE. The lake provides camping, picnic sites and shelters, group shelters, boat ramps, swimming beaches, playgrounds, many miles of trails, and more. A full list of amenities, maps, rules and regulations, hours, fees, reservation instructions, and other important information on are the TPWD Ray Roberts Lake State Park website.

### 2.5.3 Recreational Analysis - Trends

The 2018 Texas Outdoor Recreation Plan (TORP) published by TPWD is a comprehensive recreational demand study that evaluates recreation trends and needs across Texas and in subdivided regions. Some of the information in the TORP was extracted from the National Survey on Recreation and the Environment (NSRE) and reports generated by the USFWS. Much of the data in the TORP was from a survey conducted in 2017 titled “Texas Residents’ Participation in and Attitudes Toward Outdoor Recreation by Responsive Management (Survey) on behalf of TPWD. Ray Roberts Lake provides many recreation opportunities that help to meet the recreation needs identified in the TORP. The 2012 TORP was also referenced to compare the results and see how recreational trends have been changing.

The TORP indicated the rates of participation for various outdoor activities in Texas, Ray Roberts Lake located in TORP Region 6. Across the entire state and also in Region 6, walking for pleasure is the most popular outdoor activity, while the next most popular being picnicking, cookouts, and other gatherings. The top ten areas of participation for outdoor recreation are indicated in Figure 2.14. Ray Roberts Lake provides an array of opportunities for walking for pleasure; picnicking, cookouts, and gatherings; sightseeing; wildlife viewing and photography; fishing; and swimming in the lake – providing most of the top 10 areas of participation for outdoor recreation activities in the state and region.

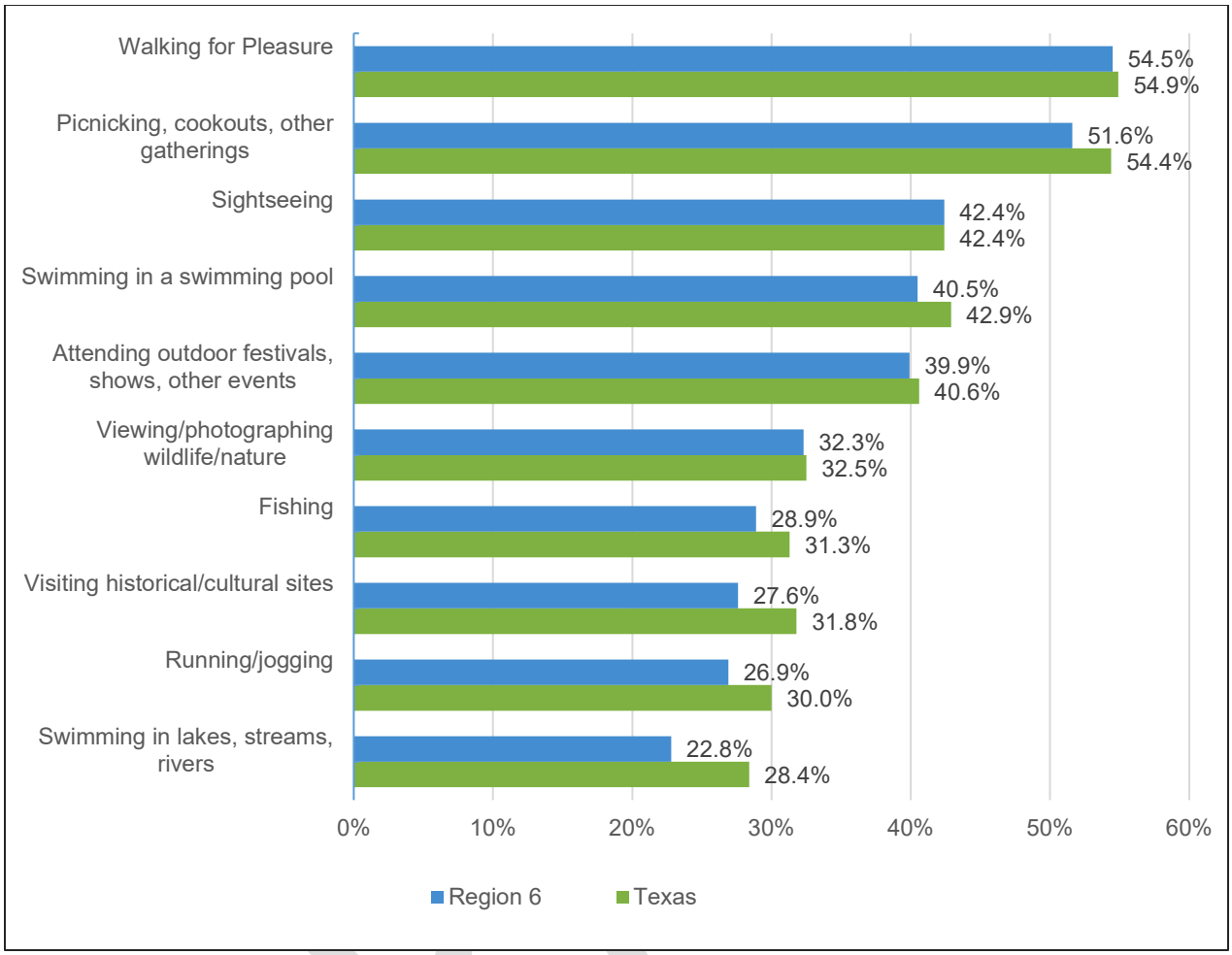


**Figure 2.10 Top 10 Areas of Participation for Outdoor Recreation Activities**
Source: TPWD TORP 2018

Asked "which outdoor recreation opportunities does your community currently lack or would like to see more of in your community," the top answer across the state and region was trails/places to hike/bike, and the next highest response was pools/swimming facilities (other than lakes). The top ten responses are indicated in Figure 2.9. Ray Roberts Lake provides an array of trails and paths for hiking, biking, and equestrian recreation, many are maintained by TPWD. The USACE provides and promotes natural resource-based recreation at lakes projects, and Ray Roberts Lake provides many of the top ten that community members would like to see more of in the community.

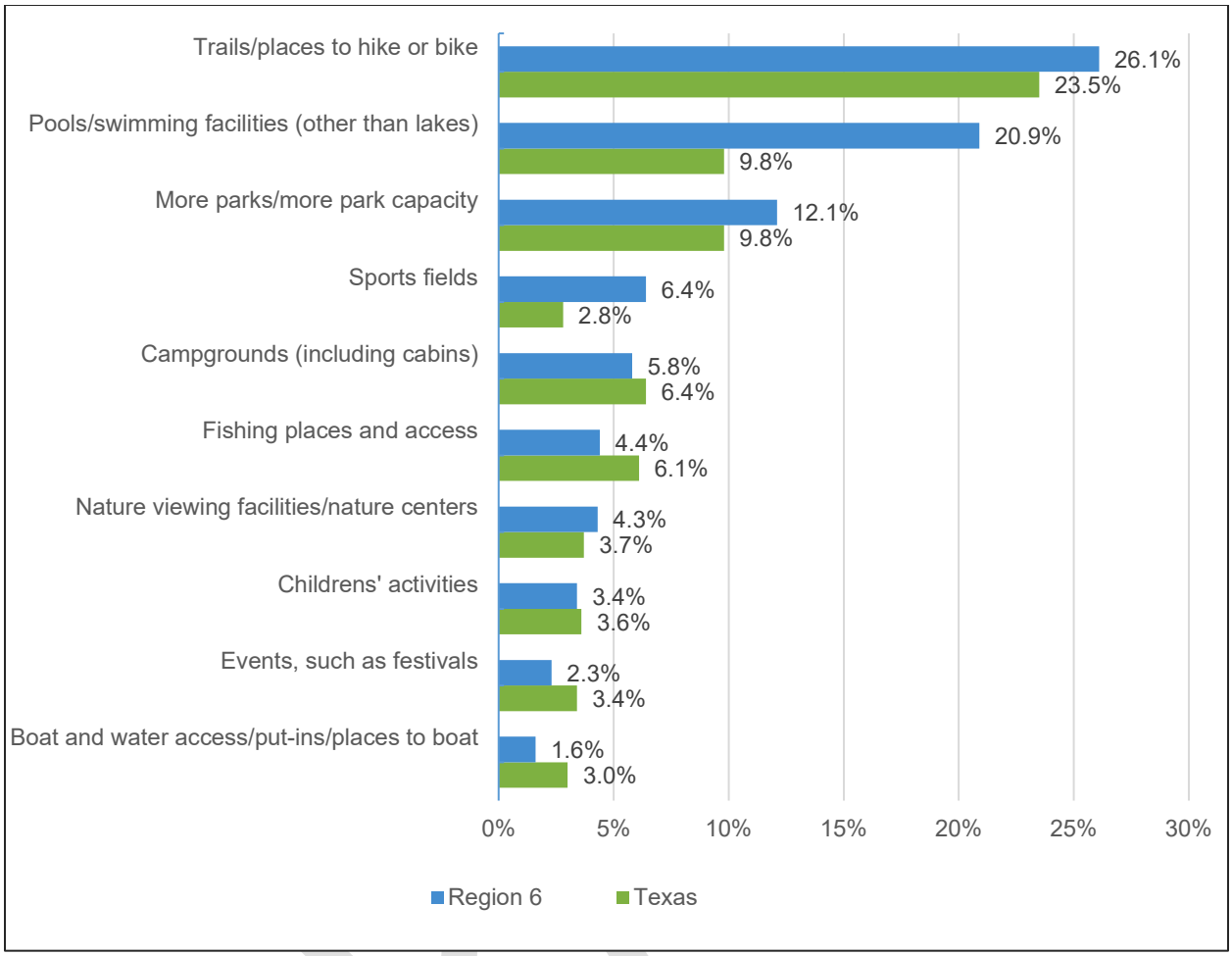


**Figure 2.11 "Which outdoor recreation opportunities does your community currently lack or would like to see more of in your community?"**
Source: TPWD TORP 2018

Additional findings from the Survey found that 34 percent of Texas residents and 27 percent of Region 6 residents have visited a state park during the past 12 months. Furthermore, 58 percent of Texas residents and 53 percent of Region 6 residents have visited a local park in the past 6 months (local park was defined as 30 minutes from respondents' home and not a state or national park). Within Region 6, 50 percent of survey respondents have visited a local park at least 5 times in the last 12 months, while 98 percent have visited a local park at least once in the past 12 months. Asked "which features or facilities do your local parks currently lack, or would you like to see more of at your local parks," the overwhelming response was more restroom facilities at 20.7 percent across Region 6 and 20.5 percent across Texas. The top ten responses to that survey question are indicated in Figure 2.16.

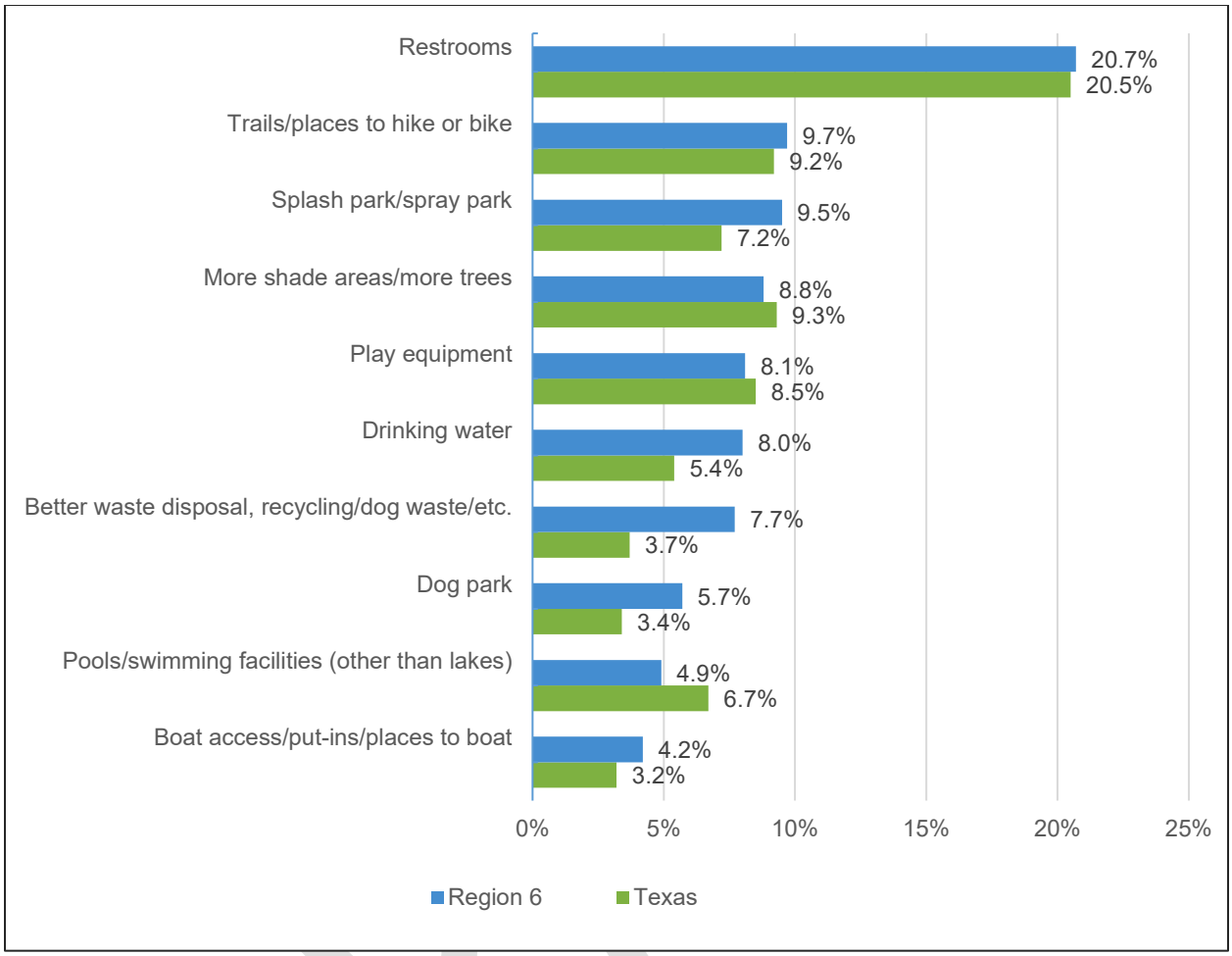


**Figure 2.12 "Which features or facilities do your local parks currently lack, or would you like to see more of at your local parks?"**
Source: TPWD TORP 2018

In accordance with historical visitation rates and recent outdoor recreation trends documented in the 2012 and 2018 TORP, camping in developed and primitive settings has declined significantly since 2000. In contrast, the TORP documented an increase in demand for day trip activities including hiking/walking for pleasure; picnicking, cookouts, or other gatherings; sightseeing; swimming in pools; attending outdoor festivals, shows, or events; and viewing/photographing wildlife/nature. The recreation activity most people say their community lacks is hiking/biking trails, swimming pool facilities, more park capacity, and more sports fields; with the demand for swimming pool facilities and more sports fields being much higher in the Region 6 than the entire state. In response to trends documented in the TORP, USACE will endeavor to improve access to some swim beaches and to develop trails in or adjacent to park areas as funding permits and work with TPWD to further enhance and improve recreation opportunities. USACE encourages partnerships with agencies who lease and manage parks to respond to increasing demands and build on the current quality of USACE parks for present and future visitors. Comments from the public mirrored the demand published in the TORP, as there were many comments from the public showing interest in additional trails at Ray Roberts Lake.

The TORP documented a dramatic increase in the demand for motor homes and travel trailers, but it did not make the top-ten areas of participation or top-ten lacking recreation opportunities. Public comments also showed interest in new motor home and travel trailer facilities, as well as upgrades and improvements for larger vehicles and improvements to hookups including electrical, water, and internet/Wi-Fi connectivity. USACE intends to continue to operate campgrounds and day use areas by maintaining and improving existing facilities but has no long-range plans to add additional campsites or add new motor home or recreational vehicle facilities at Ray Roberts Lake. In response to comments and the increased trend documented in the TORP, USACE will continue to monitor demand for motor home and travel trailer facilities as well as other amenities. USACE will make needed upgrades based on changes in demand as funding permits.

## 2.6. REAL ESTATE

Ray Roberts Lake was authorized October 27, 1965 with the primary missions of flood control and navigation as contained in the River and Harbor Act of 1965 (Public Law [PL] 289, 89th Congress, 1st Session). In the planning stages, it was named “Aubrey Lake” for the nearby town of Aubrey, TX, but was renamed “Ray Roberts Lake” in 1980 before construction, in honor of former U.S. Congressman Ray Roberts of Denton. Construction began May 31, 1982, and the dam was completed and operational on June 30, 1987 when deliberate impoundment began. The conservation pool was filled March 25, 1990. The generally required fee simple acquisition of the area that closely followed and encompassed the 632.5 feet NGVD29 contour. In lieu of fee simple acquisition, flowage easements were acquired in the upper reaches of most tributaries where the configuration of required lands was relatively narrow. The boundary at Ray Roberts Lake is typically fenced.

The current fee simple owned lands total 46,227 acres. In addition to the fee land acquisition, approximately 2,150 acres of flowage easement are owned up to elevation 632.5 NGVD29. 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 on flowage lands.

Ray Roberts Lake is part of a series of lakes, along with an extensive floodway system of levees, which are operated in a coordinated manner to minimize flooding along the Trinity River floodplain corridor in the Fort Worth and Dallas metroplex.

**Table 2.14 Real Estate Fee and Flowage Acreage**

| Land | Acres |
|---|---|
| **Fee Acres** | 46,227 |
| **Flowage Easement Acres** | 2,150 |

**Table 2.15 Outgrants at Ray Roberts Lake**

| Outgrant Type | Number |
|---|---|
| **Leases** | **2** |
| Park and Recreation Lease | 1 |
| Marina | 1 |
| **Easements** | **13** |
| Sewer/water/storm drain | 3 |
| Gas pipeline | 1 |
| Road | 4 |
| Electric | 5 |
| **Licenses** | **2** |
| Road | 1 |
| TPWD | 1 |
| **Consents/Other** | **12** |
| Oil/Gas Pipeline/Well | 6 |
| Barn | 1 |
| Excavation | 1 |
| Road | 4 |
| **Total Outgrants** | **29** |

### 2.6.1 Guidelines for Property Adjacent to Public Land

It is the policy of the USACE to manage the natural, cultural, and developed resources of Ray Roberts 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. Therefore, the information contained in these guidelines is designed to acquaint the adjoining landowner and other interested persons with the types of property involved in the management of Ray Roberts Lake. Adjoining landowners interested in more information should request additional information from the USACE office at Lewisville Lake.

### 2.6.2 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 USACE approval. Unauthorized trespasses may result in a Title 36 citation to appear in Federal Magistrate Court, which could subject the violator to fines or imprisonment (See Title 36 Code of Federal Regulations (CFR) 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. Where no resolution is reached, or where the encroachment is a permanent structure, the method of resolution will be determined by USACE Real Estate Division, with recommendations from Operations Division and Office of Counsel. 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.

## 2.7. PERTINENT PUBLIC LAWS

Numerous public laws apply directly or indirectly to the management of Federal land at Ray Roberts Lake. Listed below are several key public laws that are most frequently referenced in planning and operational documents.

- PL 59-209, Antiquities Act of 1906. This was 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.
- PL 74-292, Historic Sites Act of 1935. This act 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".
- Title 16 U.S. Code §§ 668-668a-d, 54 Stat. 250, Bald Eagle Protection Act of 1940, as amended. 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.
- PL 78-534, Flood Control Act of 1944. - 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.

- PL 79-526, Flood Control Act of 1946 (24 July 1946). This law amends PL78-534 to include authority to grant leases to non-profit organizations at recreational facilities in reservoir areas at reduced or nominal fees.
- PL 83-780, Flood Control Act of 1954. 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.
- PL 85-624, Fish and Wildlife Coordination Act 1958. - 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.
- PL 86-523, Reservoir Salvage Act of 1960, as amended. This act provides for (1) the preservation of historical and archeological data that might otherwise be lost or destroyed as the result of flooding or any alteration of the terrain caused as a result of any Federal reservoir construction projects; (2) coordination with the Secretary of the Interior whenever activities may cause loss of scientific, prehistoric, or archeological data; and (3) expenditure of funds for recovery, protection, and data preservation. This Act was amended by Public Law 93-291.
- PL 86-717, Forest Conservation. - This act provides for the protection of forest and other vegetative cover for reservoir areas under the jurisdiction of the Secretary of the Army and the Chief of Engineers.
- PL 87-88, Federal Water Pollution Control Act Amendments of 1961, as amended. Section 2(b)(1) of this act gives the USACE responsibility for water quality management of USACE reservoirs. This law was amended by the Federal Water Pollution Control Act Amendment of 1972, Public Law 92-500.
- PL 87-874, Rivers and Harbors Act of 1962. This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- PL 88-29, Recreation Coordination and Development Act of 1963. – This act 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, States, and other political subdivisions. It also stated that 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.

- PL 88-578, Land and Water Conservation Fund Act of 1965. This act established a fund from which Congress can make appropriations for outdoor recreation. Section 2(2) 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.
- PL 89-72, Federal Water Project Recreation Act of 1965. - This act requires that not less than one-half of 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 Head Quarters USACE (HQUSACE)/OMB implementation policy made these provisions applicable to projects completed prior to 1965.
- PL 89-90, Water Resources Planning Act (1965). 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.
- PL 89-272, Solid Waste Disposal Act, as amended by PL 94-580, dated October 21, 1976. 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 national 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.
- PL 89-665, Historic Preservation Act of 1966. 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.
- PL 90-483, River and Harbor and Flood Control Act of 1968, 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.
- PL 91-190, National Environmental Policy Act of 1969 (NEPA). – 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.

- PL 89-665, Historic Preservation Act of 1966. - 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.
- PL 91-611, The Flood Control Act of 1970. This act authorizes the project and establishes the requirement (Section 122) for evaluating the economic, social, and environmental impact of projects.
- PL 92-347, Golden Eagle Passbook and Special Recreation User Fees. This act revises Public Law 88-578, the Public Land and Water Conservation 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.
- PL 92-500, Federal Water Pollution Control Act Amendments of 1972. The Federal Water Pollution Control Act of 1948 (PL 845, 80th Congress), as amended in 1956, 1961, 1965 and 1970 (PL 91- 224), established the basic tenet of uniform State standards for water quality. Public Law 92-500 strongly affirms the Federal interest in this area. "The objective of this act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters."
- PL 92-516, Federal Environmental Pesticide Control Act of 1972. 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.
- PL 93-205, Conservation, Protection, and Propagation of Endangered Species Act of 1973, as amended. 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. This act was amended by Public Law 96-159.

- PL 93-251, Water Resources Development Act of 1974. 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 plant installations.
- PL 93-291, Archeological Conservation Act of 1974. 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.
- PL 93-303, Recreation Use Fees. This act amends Section 4 of the Land and Water Conservation 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.
- PL 93-523, Safe Drinking Water Act. 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.
- PL 93-81, Collection of Fees for Use of Certain Outdoor Recreation Facilities. This act amends Section 4 of the Land and Water Conservation 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.
- PL 94-422, Amendment of the Land and Water Conservation Fund Act of 1965. This act expands the role of the Advisory Council. Title 2 - Section 102a amends Section 106 of the 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.
- PL 95-217, Clean Water Act of 1977, as amended. This act amends the Federal Water Pollution Control Act of 1970 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.
- PL 95-341, American Indian Religious Freedom Act of 1978. 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.

- PL 95-632, Endangered Species Act Amendments of 1978. This law amends the Endangered Species Act Amendments 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.
- PL 96-95, Archeological Resources Protection Act of 1979. This act protects archeological resources and sites that are on public and tribal lands and 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.
- PL 98-63, Supplemental Appropriations Act of 1983. 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.
- PL 99-662, The Water Resources Development Act (WRDA) 1986. 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.
- PL101-233, North American Wetland Conservation Act (13 Dec 1989). 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.
- PL101-336, Americans with Disabilities Act of 1990 (ADA), 26 July 1990, 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.
- PL 101-601, Native American Graves Protection and Repatriation Act (16 November 1990), requires Federal agencies to return Native American human remains and cultural items, including funerary objects and sacred objects, to their respective peoples.
- PL 102-580, Water Resources Development Act (WRDA) of 1992 (31 Oct 1992). 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.
- PL 103-66 Omnibus Reconciliation Act-Day use fees (10 Aug 1993), authorizes the USACE to collect fees for the use of developed recreational sites and facilities, including campsites, swimming beaches and boat ramps.

- PL 104-303, WRDA 1996, 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.
- PL 104-333, Omnibus Parks and Public Lands Management Act of 1996, (12 Nov 1996). 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.
- PL106-147, Neo-tropical Migratory Bird Conservation Act (20 July 2000). This act promotes the conservation of habitat for neo-tropical migratory birds.

# CHAPTER 3 – RESOURCE GOALS AND OBJECTIVES

## 3.1. INTRODUCTION

This chapter sets forth goals and objectives necessary to achieve the USACE vision for the future of Ray Roberts Lake. The terms “goal” and “objective” are often defined as synonymous, but in the context of this Master Plan goals express the overall desired end state of the Master Plan whereas resource objectives are specific task-oriented actions necessary to achieve the overall Master Plan goals.

## 3.2. RESOURCE GOALS

The following goals are the priorities for consideration when determining management objectives and development activities. Implementation of these goals is based upon time, manpower, and budget. The objectives provided in this chapter are established to provide high levels of stewardship to USACE managed lands and resources while still providing a high level of public service. These goals will be pursued through the use of a variety of mechanisms such as: assistance from volunteer efforts, hired labor, contract labor, permit conditions, remediation, and special lease conditions. It is the intention of Ray Roberts Lake staff to provide a realistic approach to the management of all resources. The following statements, based on EP 1130-2-550, Chapter 3, express the goals for the Ray Roberts 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:

- 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.

## 3.3. RESOURCE OBJECTIVES

Resource objectives are 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 Fort Worth District, Ray Roberts Lake Project Office. The objectives stated in this Master Plan support the goals of the Master Plan, 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 consider public input. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in this Master Plan. Regional and State planning documents including TPWD's Texas Conservation Action Plan (TCAP) and TORP are monitored for applicability to Ray Roberts Lake. Finally, these objectives are consistent with the management objectives of Texas Parks and Wildlife Department at Cedar Hill State Park, and with the management objectives of the City of Grand Prairie at the seven distinct parcels of USACE land they manage under lease agreements with USACE.

The objectives in this master plan provide project benefits, meet public needs, and foster environmental sustainability for Ray Roberts Lake to the greatest extent possible. Implementation of the objectives will require close coordination between TPWD and the USACE and are dependent upon available funds. Table 3-1 through Table 3-5 lists the objectives for the following objective categories: recreational objectives; natural resource management objectives; visitor information, education, and outreach objectives; general management objectives; and cultural resource management objectives.

**Table 3.1 Recreational Objectives**

| Recreational Objectives | Goals | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| In cooperation with the cities of Denton, Dallas, and TPWD, evaluate the demand for improved recreation facilities and increased public access on USACE-administered public lands and water for recreational activities (i.e. camping, walking, hiking, biking, boating, fishing, wildlife viewing, etc.) and facilities (i.e. campsites, picnic facilities, overlooks, all types of trails, boat ramps, courtesy docks, interpretive signs/exhibits, and parking lots). | * | | * | | |
| Monitor the condition and quality of day use and campground facilities within leased areas including, but not limited to the following: roads, sewer hook ups, potable water systems, electrical service, concrete or asphalt recreational vehicle pads, tent pads, restrooms, trails, pavilions, and park entrances. | * | | * | | |
| Monitor public use levels (with a special focus on boating congestion and marina capacity) and evaluate potential impacts from overuse and crowding. Take action to prevent/remediate overuse, conflict, and public safety concerns. | * | | * | | |
| Evaluate water surface classification and regulations with emphasis on designated quiet water or no-wake areas, natural resource protection, quality recreational opportunities, and public safety concerns. | * | | | | |
| Follow the Environmental Operating Principles associated with recreational use of waterways for all water-based management activities and plans. | | * | * | | * |
| Encourage lessees to increase universally accessible facilities on Ray Roberts Lake. | * | | * | | * |
| Consider flood/conservation pool elevations to address potential impact to recreational facilities (i.e. campsites, boat ramps, courtesy docks, etc.). | * | * | * | * | |
| Ensure consistency with USACE Recreation Strategic Plan. | | | | | * |
| Monitor the TCAP, the TORP, and adjacent municipality plans to insure that USACE is responsive to outdoor recreation trends, public needs and resource protection within a regional framework. All plans by others will be evaluated in light of USACE policy and operational aspects of Ray Roberts 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 |
| Consider flood/conservation pool levels to ensure that natural resources are managed in ways that are compatible | * | * | | * | |

| Natural Resource Management Objectives | Goals: | | | | |
|---|---|---|---|---|---|
| with primary project purposes of flood risk management and water supply. | | | | | |
| Coordinate with TPWD to ensure project lands are managed with preservation and conservation of natural habitat and open space as a primary objective in order to maintain availability of public open space. | * | | | * | |
| Actively manage and conserve fish and wildlife resources, especially migratory and other special status species, by implementing ecosystem management principles. Key among these principles is the use of native species adapted to the ecological region in restoration and mitigation plans. | * | * | | * | * |
| Consider watershed approach during decision-making process. | | | | | * |
| Optimize resources, labor, funds, and partnerships for protection and restoration of fish and wildlife habitats. | | * | | | * |
| Minimize activities that disturb the scenic beauty and aesthetics of the lake. | * | * | * | * | |
| Continually evaluate erosion control and sedimentation issues at Ray Roberts Lake and develop alternatives to resolve the issues. | * | * | | | * |
| Address unauthorized uses of public lands such as off-road vehicle use, trash dumping, unauthorized fires, fireworks, poaching, clearing of vegetation, 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. Implement prescribed fire as a management tool to control the spread of noxious and invasive plants and to promote the vigor of native prairie grasses and forbs. | * | * | | * | * |
| Protect and/or restore important native habitats such as the eastern cross timbers, native tallgrass prairie, 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 communities, to include actions that promote butterfly and/or pollinator habitat, migratory bird habitat, and habitat for birds listed by USFWS as Birds of Conservation Concerns. Some of these habitats may be designated as Environmentally Sensitive Areas. | * | * | * | * | * |
| Administer the Shoreline Management Program to balance private shoreline uses (such as mowing or vegetation removal requests along the Federal property boundary, or paths to the shoreline) with wildlife habitat protection and impacts to public use. | * | | * | | |
| Cooperate with the City of Denton to ensure the Range Creek Wetlands are managed and maintained. | * | * | | * | * |

| Natural Resource Management Objectives | Goals: | | | | |
|---|---|---|---|---|---|
| Actively manage natural resources to promote diverse pollinator habitat. As funding allows and in partnership with TPWD and other agencies and organizations, improve the quality and quantity of pollinator habitat at Ray Roberts Lake. | * | * | * | * | * |

*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 more opportunities for communication with lessees, agencies, special interest groups, and the general public (i.e. comment cards, updates to City Managers, web page). | * | | | * | * |
| Implement more 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, nature, cultural resources, ecology, and USACE missions. | * | * | * | * | * |
| Enhance network among local, state, and federal agencies in order to exchange lake-related information for public education and management purposes. | * | | | * | * |
| Increase public awareness of special use permits or other authorizations required for special activities, organized special events, and commercial activities on public lands and waters of the lake. | * | * | * | | |
| Capture trends concerning boating accidents and other incidents on public lands and waters and coordinate data collection with other public safety officials. | * | | * | * | * |
| In cooperation with TPWD and Denton County, promote TPWD and USACE Water Safety message and provide water safety patrols. | * | | * | * | * |
| Educate adjacent landowners on shoreline management policies and permit processes in order to reduce encroachment actions. | * | * | * | * | * |

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

**Table 3.4 General Management Objectives**

| General Management Objectives | Goal | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| Maintain the USACE boundary line to ensure it is clearly marked and recognizable in all areas to reduce habitat degradation and encroachment actions. | * | * | | * | |
| Secure sustainable funding for the shoreline management program. | * | * | * | * | * |

| General Management Objectives | Goal | | | | |
|---|---|---|---|---|---|
| Ensure consistency with USACE Campaign Plan (national level), IPlan (regional level), and OPlan (District level). | | | | | * |
| 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, in cooperation with TPWD and all stakeholders. | | | | | * |
| Carefully manage non-recreation outgrants such as utility and road easements in accordance with national guidance set forth in ER-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 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 | Goal | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| Monitor and coordinate lake development and the protection of cultural with lessees and appropriate entities. | * | * | | * | * |
| Increase public awareness and education of regional history. | | * | | * | * |
| The project office will ensure any future historical preservation is fully integrated into the Ray Roberts Lake Master Plan and the planning decision making process (Section 106 and 110 of the National Historic Preservation Act) on public lands surrounding the lake. | | * | | * | * |
| Develop partnerships that promote and protect cultural resources at Ray Roberts Lake. | | * | * | * | * |
| Stop unauthorized use of public lands as it pertains to the illegal excavation and removal of cultural resources. | | * | | * | * |
| Complete an inventory of cultural and historic resources and request funding for a Cultural Resources Management Plan (CRMP). | * | * | | * | * |

*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. At Ray Roberts Lake, the only land allocation category that applies is Operations, which is defined as those lands that are required to operate the project for the primary authorized purposes of flood risk management, hydroelectric power, and water conservation. The remaining allocations of Recreation, Fish and Wildlife, and Mitigation would apply only if lands had been acquired specifically for these purposes. The entire fee simple federal estate at Ray Roberts Lake is 46,227 acres of which 27,801 acres is inundated at conservation pool.

## 4.2. LAND CLASSIFICATION

The previous version of the Ray Roberts Lake Master Plan included some land classification criteria that were similar to the current criteria. These prior land classifications were based on predicted projected need rather than actual experience, which resulted in some areas being classified for a type of use that has not or is not likely to occur. Additionally, in the 38 years since the previous Master Plan was published and 21 years since the Master Plan Supplement, wildlife habitat values, surrounding land use, and regional recreation trends have changed giving rise to the need for revised classifications. Refer to Table 8.1 and Table 8.3 in Chapter 8 for a summary of land classification changes and the justification for the specific changes.

### 4.2.1 Current 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. At Ray Roberts Lake, there are five land classification and three subclassifications identified in USACE regulations, as well as four water designations including:

- 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 revised land and water surface classifications for Ray Roberts Lake were established after considering public comments, key stakeholder's input including elected officials, city and county governments, lessees operating on USACE land, and USACE expert assessment. Additionally, wildlife habitat values and the trends analysis provided in TPWD's TORP and TCAP were used in decision making. 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.

### 4.2.2 Project Operations

This classification includes the lands managed for operation of the dam, project office, and maintenance yards, all of which must be maintained to carry out the authorized purpose of flood risk management. In addition to the operational activities taking place on these lands, limited recreational use may be allowed for activities such as public access to the road on top of the dam. Regardless of any limited recreation use allowed on these lands, the primary classification of Project Operations will take precedent over other uses. There are 503 acres of Project Operations land specifically managed for this purpose.

### 4.2.3 High Density Recreation (HDR)

These are lands developed for intensive recreational activities for the visiting public 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 Ray Roberts Lake, prior land classifications included a number of areas under the recreation classification. Several of these areas include Isle du Bois State Park, Jordan State Park, Johnson Branch State Park, and Sanger Marina. which were developed for recreation. Using public, agency, and lessee input, the planning team revised the classification of some of these lands to reflect current and projected outdoor recreation needs and trends. At Ray Roberts Lake, there are 1,841 acres classified as High Density Recreation land. Each of the High Density Recreation areas is described briefly in Chapter 5 of this Plan.

Prior land classifications at Ray Roberts Lake identified several tracts for future high density recreation development but included them all as recreation. However, much of that land is not suitable for recreation or would be better classified to protect natural resources such as Environmentally Sensitive Areas, Wildlife Management, or Vegetation Management. Several areas of existing parks are less developed but will remain HDR, which will allow for the cities of Benbrook and Fort Worth to further develop them as needed. The Cities of Denton and Dallas have expressed plans for additional development and requested that it remain HDR to allow for expanding development.

### 4.2.4 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. This is not the same as allocated lands that are purchased for the purpose of mitigation. There are no lands at Ray Roberts Lake with this classification.

### 4.2.5 Environmentally Sensitive Areas (ESA)

These are areas where scientific, ecological, cultural, and aesthetic features have been identified. At Ray Roberts Lake several distinct areas have been classified as Environmentally Sensitive Areas (ESA), primarily for the protection of sensitive habitats or cultural resources. Each of these areas is discussed in Chapter 5 of this Plan

and illustrated on the maps in Appendix A. There are 8,632.5 acres classified as ESA at Ray Roberts Lake.

### 4.2.6 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 7,450 acres of land under this classification at Ray Roberts 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.). Under prior land classifications, numerous areas were classified to support “low use” recreation and wildlife management. The planning process resulted in most of these areas being reclassified as either LDR or Wildlife Management. In general, the relatively narrow tracts that have shoreline along the main body of the lake and are located immediately adjacent to residential areas have been reclassified as LDR. There are 1,659 acres under this classification at Ray Roberts 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, most of which are located within the flood pool of the lake. 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 5,790 acres of land included in this classification at Ray Roberts 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 of land included in this classification at Ray Roberts Lake.

*Future or Inactive Recreation*

These are lands with site characteristics compatible with High Density Recreation development but have been undeveloped or planned for very long-range recreation needs. There are no acres classified as Future or Inactive Recreation.

### 4.2.7 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 USACE or lessees with navigational or informational buoys, 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 Restricted, Designated No Wake, Fish and Wildlife Sanctuary, and Open Recreation.

*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 Ray Roberts Lake Dam as well as around the water intake towers and three designated swim beaches at Ray Roberts Lake parks. There are 6 acres of restricted water surface at Ray Roberts 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 seven boat ramps and one marina at Ray Roberts Lake where no-wake restrictions are in place for reasons of public safety and protection of property. There are 119 acres of designated no-wake water surface at Ray Roberts Lake.

*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. Ray Roberts Lake has no water surface areas 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 and marinas, 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 27,676 acres of open recreation water surface at Ray Roberts Lake.

Future management of the water surface includes working with TPWD on the maintenance of warning, information, and regulatory buoys as well as routine water safety patrols during peak use periods.

### 4.3. 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. Flowage easement lands are the only easements that exist at Ray Roberts Lake. 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 approximately 4,960 acres of flowage easements lands at Ray Roberts Lake.

# CHAPTER 5 – RESOURCE PLAN

## 5.1. RESOURCE PLAN OVERVIEW

This chapter describes in broad terms how each land classification within the Master Plan will be managed. The classifications that exist at Ray Roberts Lake are Project Operations (PO), High Density Recreation (HDR), Environmentally Sensitive Area (ESA), and Multiple Resource Management Lands (MRML) on which a predominant use is specified including Vegetative Management (VM) and Wildlife Management (WM). The water surface is also classified into sub-classifications of Restricted, Designated No Wake, and Open Recreation. The management plans describe how the project lands and water surface will be managed in broad terms. A more descriptive plan for managing these lands can be found in the Ray Roberts Lake Operations Management Plan (OMP). Acreages shown for the various land classifications were calculated using satellite imagery and 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 503 acres of lands under this classification, which are managed by the USACE. The management plan for this area is to continue providing physical security necessary to ensure sustained operations of the dam and related facilities including restricting public access in hazardous locations near the dam and spillway.

## 5.3. HIGH DENSITY RECREATION

Ray Roberts Lake has 1,841 acres classified as High Density Recreation. These lands are developed for intensive recreational activities for the visiting public including day use and campgrounds. National USACE policy set forth in ER 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 marinas, 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 following sections describe areas designated as High Density Recreation at Ray Roberts Lake.

### 5.3.1 Parks Operated by USACE

The USACE does not manage any park areas at Ray Roberts Lake. All parks and recreation areas are managed through lease or sublease to TPWD except for the Dam Overlook recreation area which is leased to the City of Denton.

### 5.3.2 Parks and/or Recreation Areas Operated by Others through Lease Agreements

Recreational outgrants are issued in the form of leases or licenses to recreational partners, referred to as grantees, at the lake. Each grantee is responsible for the operation and maintenance of their leased area, and although USACE does not provide direct maintenance within any of the leased locations, it may occasionally lend support where appropriate. The USACE reviews requests and ensures compliance with applicable laws and regulations for proposed activities in all leased and USACE-operated HDR areas. USACE works with partners to ensure that recreation areas are managed and operated in accordance with the objectives prescribed in Chapter 3 of this Plan. The following is a description of each leased park.

The USACE constructed recreation facilities at Ray Roberts Lake but the responsibility for implementing the recreation component is assigned to the cities of Dallas and Denton. The primary recreation lease is from USACE to these two entities. They sublease the recreation areas to Texas Parks and Wildlife Department who operate Ray Roberts Lake State Park.

Most of the wildlife management land at Ray Roberts is in a license issued to TPWD to conduct fish and wildlife management activities.

***Isle du Bois Unit*** – Located on the east side of the lake just north of the dam and FM 455 and two miles west of US-377, Isle Du Bois is one of the more popular recreation areas at Ray Roberts Lake. Isle du Bois is leased by TPWD and managed as a piece of the larger Ray Roberts Lake State Park. The park provides boat ramps, kayak and canoe launching, swim beaches, fishing piers, camping, showers picnic areas, playgrounds, an amphitheater, equestrian access, miles of trails, and more. The trails at Isle du Boise State Park also connect to the Greenbelt trail south of the dam. TPWD's website provides park maps with hours, amenity and facility locations, fees, rules and regulations, and reservation instructions.

***Johnson Branch Unit*** – Located near the center of the lake and approximately six miles east of I-35 via FM 3002, Johnson Branch is less visited than Isle du Bois due to its remote location, but still one of the more popular recreation areas at the lake. The park is leased by TPWD and managed as a piece of the larger Ray Roberts Lake State Park. The park provides a boat ramp, swim beach, camping, showers, picnic areas, playgrounds, an amphitheater, and miles of trails, including a dedicated off-road biking trail. TPWD's website provides park maps with hours, amenity and facility locations, fees, rules and regulations, and reservation instructions.

**Buck Creek** – Located in Grayson County on the west side of US-377 and approximately one mile south of Tioga, TPWD's lease area provides parking, restrooms, a courtesy dock, and boat ramp. TPWD's website provides additional information including rules and regulations, facilities, and fees.

**Jordan Park** – Located in Denton County approximately one mile west of Pilot Point on FM 1192, TPWD's lease area provides parking, restrooms, a courtesy dock, and boat ramp. Jordan Park also provides the Lone Star Lodge and Marina. TPWD's website provides additional information including rules and regulations, facilities, and fees.

**Sanger Park** – Located in Denton County about 3 miles east of Sanger just off FM 455, TPWD's lease area provides parking, restrooms, a courtesy dock, and boat ramp. In addition, TPWD subleases the Lake Ray Roberts Marina. TPWD's website provides additional information including rules and regulations, facilities, and fees.

**Pond Creek** – Located in Denton County just off of FM 455 and just north of the entrance to Ray Roberts Marina, TPWD's lease area provides parking, restrooms, a courtesy dock, and boat ramp. TPWD's website provides additional information including rules and regulations, facilities, and fees.

**Pecan Creek** – Located in Cooke County about 4 miles east of I-35 along FM 3002, TPWD's lease area provides parking, restrooms, a courtesy dock, and boat ramp. TPWD's website provides additional information including rules and regulations, facilities, and fees.

### 5.3.3 Marinas

***Lake Ray Roberts Marina*** – TPWD is the primary leaseholder and has a sublease for the Lake Ray Roberts Marina at Sanger Park, consisting of approximately 115 acres. Located on the west side of the lake approximately 4 miles east of I-35 with access to FM 455 and the City of Sanger, Lake Ray Roberts Marina provides marina amenities and hosts bass fishing tournaments and off of USACE property provides an RV Park and restaurant. The marina also provides two boat ramps.

***Lone Star Lodge and Marina*** – Located on the east side of Ray Roberts Lake, the Lone Star Lodge and Marina is approximately two miles west of Pilot Point and approximately three miles west of US-377. The facility provides lodging, wedding and event hosting, and renting boats, jet skis, and kayaks to recreators. The marina also provides a boat ramp.

### 5.3.4 Trails

TPWD manages an extensive trail system and provides an interactive trail map on their website. Their maps show the location of parking, amenities, and lake access. The trail system at Ray Roberts Lake also connects to the Greenbelt Corridor from the Ray Roberts Dam heading south to Lewisville Lake, along the Elm Form of the Trinity River. Hiking, camping, biking, horse riding, geocaching, rollerblading, and access to fishing are all popular activities on the trails. Recreators should check TPWD's website and maps to determine where the activities are permitted.

## 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 Ray Roberts Lake under this classification. USACE lands at Ray Roberts 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 (ESA)

ESAs are areas where significant scientific, ecological, cultural or aesthetic features have been identified to be protected or preserved. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the Endangered Species Act, the National Historic Preservation Act, or applicable state statues. These areas must be managed to ensure they are not adversely impacted. Typically, limited or no high intensity, developed recreation is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration and management or wildlife management. These areas are typically distinct parcels located within another, and perhaps larger, land classification area. There are 8,633 acres at Ray Roberts Lake under this classification. These acres are managed in cooperation with TPWD and the cities of Dallas and Denton for the protection of the unique resources. Management actions that may be implemented include planting suitable native vegetation, tillage restrictions, the use of prescribed burns, targeted herbicide treatments of invasive species, and other management practices. Areas which are part of specific separable recreation lands will continue to be available for recreation to include hiking, wildlife viewing, and other less intensive recreation.

A Wildlife Habitat Appraisal Procedure (WHAP) was conducted May 5-9, 2020 by USACE staff. The WHAP is a tool developed by TPWD to evaluate the quality of habitat for wildlife, giving each point a rating based on a set criteria (see Appendix C of the EA). This assessment was used, in part, to assist in determining which areas should be classified as ESA. Other factors, including public and stakeholder comment, the presence of cultural resources, presence of species of conservation concern, and visual esthetics were also included in the selection of ESA areas. These areas are to be protected from intense development or disturbance from future land use actions such as utility or road easements. Passive public use such as natural surface trails, bank fishing, and nature study are appropriate for these areas.

At Ray Roberts Lake, 23 areas totaling approximately 8,633 acres were classification as ESAs. Each of these areas are numbered on the land classification maps in Appendix A. Table 5.1 provides a listing, brief description, and management priorities for the ESA areas, including habitat type, acreage, WHAP scores and a location description.

**Table 5.1 ESA Listing**

| ESA# | Acres | Location and Description |
|---|---|---|
| 1 | 563.8 | Culp Branch Wildlife Management Area. This 563.8-acre ESA primarily encompasses lands on both sides of the perched spillway on the west side of the Ray Roberts dam and north of FM 455 and is made up of mostly high-quality native remnant prairie. With the lack of fire or other management tools this area is becoming overgrown with woody vegetation but has very high potential for managing native prairie at Ray Roberts Lake. Most of this area was originally identified as a low-intensity park area that included approximately 201 acres of Separable Recreation Lands. At the request and concurrence of TPWD, a 2001 Master Plan Supplement was processed to change the land classification of the area to Multiple Resource Management Lands for low density recreation and wildlife management purposes. Changing the 2001 land classification of the Culp Branch area to ESA status recognizes the high-quality native remnant prairie habitat and is compatible with TPWD's management philosophy to conserve the prairie while continuing to allow existing low density recreation opportunities including hunting, bank fishing, nature study, hiking and similar activities. Recently the Lake staff, TPWD, and NRCS conducted a burn on the property potentially bringing back some of the native prairie remnants. Management for native prairie will continue with assistance from the aforementioned agencies. The ESA classification includes an island adjacent and northeast of the Culp Branch area. |
| 2 | 3.8 | Adjacent to FM 455. This is a 3.8-acre peninsula of moderate quality native tall grass prairie located between the spillway and the Ray Roberts Marina. This area is co-managed by the TPWD Wildlife Division for hunting. Future management would include prescribed burns to enhance the native remnant prairie present there. Passive use of the area for natural surface trails are appropriate. |
| 3 | 24.4 | Pocket Prairie. This small pocket prairie is approximately 24.4 acres and supports a very high diversity tall grass prairie species and has a high wildlife habitat value. Passive use of the area for natural surface trails are appropriate. The area is managed jointly by USACE and TPWD. |
| 4 | 216.5 | Lois Road. This 216.5-acre ESA is made up of mostly good quality riparian woodlands and upland Eastern Cross Timbers woodland habitat and has a high value for wildlife. This area is co-managed by USACE and TPWD for hunting and wildlife viewing. Future use may include low impact trail development for hiking and interpretive use. |
| 5 | 151.1 | Switzer Road. This 151.1-acre tract is of moderate quality tall grass prairie habitat is co-managed by USACE and TPWD. Future use may include soft surface trails for hunting access and wildlife viewing. |

| ESA# | Acres | Location and Description |
|---|---|---|
| 6 | 376.6 | Pond Creek. This 376.6-acre area includes moderate quality upland Eastern Cross Timbers hardwoods and riparian woodlands and is currently managed jointly by USACE and TPWD. Future use of this area includes hunting, wildlife viewing and soft surface hiking trails. |
| 7 | 101.7 | Valley View (BNSF Train Derailment). This 101.7acre area is comprised of riparian woodlands, upland tall-grass prairie, and herbaceous wetlands entering the lake from Indian Creek. No future use planned at this time, but soft surface trails may be planned in the future. There is a large encroachment within this area that is being mowed for hay but there is no public access to this area. This area is managed by USACE and TPWD for hunting and wildlife viewing. |
| 8 | 40.0 | Triangle Road. This 40.0-acre undeveloped tract of upland Eastern Cross Timbers hardwoods and riparian woodlands including a small pond adjacent to the west shore of the lake is good quality wildlife habitat. Future uses may include a low impact trail. The area is co-managed by USACE and TPWD. |
| 9 | 1,121.0 | Elm Fork. This relatively large riparian corridor totaling 1,121.0 acres within the Elm Fork of the Trinity River is made up of mostly riparian woodlands and herbaceous wetlands providing exceptional wildlife habitat. Future use in this area will consist of mostly soft surface trails. Currently the area is used by hunters, hikers, and wildlife viewers. The area is co-managed by USACE, TPWD, and the City of Denton. |
| 10 | 6.6 | Bevers Hill Road. This small 6.6-acre tract supports a native remnant tall-grass pocket prairie and a small pond providing great habitat for wildlife. Future use should be limited to low impact trails. The area is managed by USACE and TPWD. |
| 11 | 239.7 | Johnson Branch Unit South. This 239.7-acre peninsula within the Johnson Branch Unit of Ray Roberts State Park is a large heavily wooded riparian woodland and Eastern Cross Timbers tract that supports high quality wildlife habitat. Along the Kirkwood Branch this area exhibits exceptional habitat diversity. The higher elevations support the Eastern Cross Timbers while lower elevations are riparian/bottomland woodlands. Future uses should be limited to low impact trails. The area is managed by TPWD State Parks Division. |
| 12 | 53.7 | Johnson Branch Unit North (Jones Farm). This 53.7-acre tract is a tallgrass prairie area with moderate wildlife habitat. Tallgrass prairie is becoming rarer in North Central Texas and the protection of this area has precedent. The Jones Farm is included within this ESA and is the site of an historical place which needs protection. Future uses should include low impact trails. The area is managed by TPWD State Parks. |

| ESA# | Acres | Location and Description |
|---|---|---|
| 13 | 59.8 | Lick Creek. This 59.8-acre tract of high-quality bottomland and riparian hardwoods follows the Lick Creek mainstem. This tract has high quality wildlife habitat and serves an important water quality function along Lick Creek. Future uses may include low impact hiking, wildlife viewing, and hunting. |
| 14 | 140.8 | Walnut Creek. This 140.8-acre area takes in the main riparian corridor of Walnut Creek. This area is highly diverse and has high quality riparian and bottomland woodlands which support the mainstem of Walnut Creek and serves as an important water quality function. The area also supports a pond and small pockets of native tallgrass prairie. This area is of significant value to waterfowl, shorebirds, and neotropical migrant songbirds. Future uses may include future low impact trail development and facilities, which would facilitate wildlife viewing and photography. The area is managed by USACE and TPWD. |
| 15 | 335.6 | Wolf Creek. This large area consists of approximately 335.6 acres, and it is comprised of mostly mature riparian forest and bottomland hardwoods intermixed with some upland Eastern Cross Timbers habitat. It is a large contiguous band of high-quality habitat for numerous species of wildlife including neo-tropical migrant songbirds and waterfowl. Future use would be low intensity trail development. The area is managed jointly by USACE and TPWD. |
| 16 | 662.6 | Indian Creek. This large contiguous area consists of approximately 662.6 acres and it is comprised of mostly mature riparian forest and bottomland hardwoods intermixed with some upland Eastern Cross Timbers habitat. It is a significantly large area consisting of high-quality habitat for numerous species of wildlife including neo-tropical migrant songbirds and waterfowl. Future use would be low intensity trail development. The area is managed jointly by USACE and TPWD. |
| 17 | 2,617.4 | Range Creek and Isle DuBois Creek (Collinsville). This very large heavily wooded bottomland hardwood and riparian woodland area comprises of 2,617.4-acre on Range Creek and Isle DuBois Creek is excellent wildlife habitat and serves to filter storm water runoff from adjacent agricultural lands. Future development should be limited to low impact soft surface trails. The area is managed by USACE and TPWD. |
| 18 | 1,238.2 | Buck Creek (Tioga). This 1,238.2-acre heavily wooded area is located totally within the Buck Creek watershed. The woodlands are mature and very diverse and are interspersed with small patches of native tallgrass prairie providing excellent wildlife habitat. Future development could include development of soft surface trails, hunting and wildlife viewing. |

| ESA# | Acres | Location and Description |
|---|---|---|
| 19 | 252.2 | Isle DuBois North. This area totaling 252.2 acres is a relatively large, shoreline area supporting mature stands of upland Eastern Cross Timbers woodland. This area is excellent wildlife habitat and also serves to preserve open space and provide a visual buffer within the Isle DuBois State Park. Future uses may include continued hiking, equestrian and potential biking trail development. This is managed by TPWD State Parks. |
| 20 | 75.4 | Wolf Island. This island totaling 75.4 acres is a moderately large island supporting mature stands of upland Eastern Cross Timbers woodland. This remote area is excellent wildlife habitat and serves as a good area for stop-over habitat of neotropical migrant songbirds. This is managed by USACE and TPWD. |
| 21 | 81.1 | Isle Dubois South. This 81.1-acre tract separated by the Ray Roberts Park Road is outstanding wildlife habitat consisting of both Eastern Cross Timbers woodland and native tall-grass prairie. TPWD State Parks manages this area extensively with prescribed burns to preserve the native prairie. This area is managed by TPWD State Parks. |
| 22 | 257.7 | Overlook Area. This relatively large tract of Eastern Cross Timbers woodlands is approximately 257.7 acres which supports a healthy population of a relatively rare tree species in North Central Texas, black hickory. Habitat value is high in this area along FM 455 and adjacent to the Ray Roberts Dam. Future use may consist of soft surface trails and wildlife viewing. Some of this area is included in Ray Roberts State Park but this ESA is also managed by USACE and the City of Denton. |
| 23 | 12.8 | Elm Fork Park. This 12.8-acre area encompasses a small un-named tributary that supports both riparian woodland species and upland Eastern Cross Timbers woodland species providing high quality wildlife habitat. Future use may include soft surface trails and wildlife viewing with interpretation. This ESA is managed by TPWD State Parks and USACE. |

## 5.6. MULTIPLE RESOURCE MANAGEMENT LANDS

Multiple Resource Management Lands (MRML) at Ray Roberts Lake are organized into three sub-classifications. These sub-classifications are Low Density Recreation, Wildlife Management, and Vegetative Management. The following is a description of each sub-classification's resource objectives, acreages, and description of use.

### 5.6.1 MRML – Low Density Recreation

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 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 in close proximity to 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. There are 1,659 acres of MRML – Low Density Recreation at Ray Roberts Lake.

### 5.6.2 MRML – Wildlife Management

These are lands designated primarily for the stewardship of fish and wildlife resources but are open to passive recreation use such as natural surface trails, hiking, and nature study. There are currently 5790 acres under this classification, which are managed by TPWD.

### 5.6.3 MRML – Vegetative Management

These are lands that have native vegetative types considered to be sensitive and needing special classification to ensure protection or management. Efforts to date have required clearing of woody species on select parcels that are good candidates for prairie restoration. Some of these areas are periodically burned to promote the native grasses and forbs already present on the sites. Other parcels were selected that were contiguous to Environmentally Sensitive Areas but were deemed less unique or valuable than those ESAs. Currently there are no acres classified for the primary use of Vegetative Management.

### 5.6.4 MRML – Future/Inactive Recreation Areas

These are 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. There are no acres classified under this sub-classification at Ray Roberts Lake.

## 5.7. WATER SURFACE

At conservation pool level of 632.5 NGVD29 there are 27,801 acres of surface water. Classifying 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 classified using the following classifications:

- Restricted
- Designated No-Wake
- Fish and Wildlife Sanctuary
- Open Recreation

Some areas are designated with buoys which are managed by the USACE with close coordination with the TPWD. These buoys help mark hazards, swim beaches, boats keep-out and no-wake areas. The following water surface classifications are designated at Ray Roberts Lake.

### 5.7.1 Restricted

Restricted areas are around swim beaches, public water supply intakes and near the USACE gate control tower on the dam. Vessels are not allowed to enter Restricted water surface. Water surface zoned as Restricted totals approximately 6 acres at Ray Roberts Lake.

### 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 marinas, boat ramps, and swim beaches. There are eight boat ramp areas at Ray Roberts Lake where no-wake restrictions are in place for public safety and protection of property. Future management of these areas rests with the USACE and TPWD. Specific measures to be taken include placement of buoys, placement of signs near boat ramps, and describing the areas on maps available to the public. Growing interest in kayaks and paddle boats indicates a possible future need for designated no-wake areas where kayaks or paddle boats can be operated without competing with motorized vessels. USACE is open to the concept of paddle trails and will work with TPWD and interested parties to fulfill this need. Currently, approximately 119 total acres of Ray Roberts Lake is designated for No-wake.

### 5.7.3 Fish and Wildlife Sanctuary

Fish and Wildlife Sanctuary areas are managed with annual or seasonal restrictions to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning. There are no water surface acres under this classification at Ray Roberts Lake.

### 5.7.4 Open Recreation

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. 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 and TPWD regulations and water safety laws of Texas. The USACE encourages all boaters and swimmers to wear their lifejackets at all times and to learn to swim well. Approximately 27,676 acres of Ray Roberts Lake is classified for Open Recreation.

### 5.7.5 Future Management of the Water Surface

Future management of the water surface includes the maintenance of warning, information, and regulatory buoys as well as routine water safety patrols during peak use periods. Currently, water safety patrols are conducted by TPWD and USACE Park Rangers.

### 5.7.6 Recreational Seaplane Operations

Seaplane restrictions are part of Title 36 Code of Federal Regulations. At Ray Roberts Lake and other USACE lakes across the nation, areas where recreational seaplane operations are prohibited were established through public meetings and environmental assessments circa 1980. The seaplane policy for USACE Fort Worth District is found in the Notice to Seaplane Pilots (see Appendix E), which lays out the general restrictions as well as lake-specific restrictions for seaplane operation. Due to potential hazards from sub-surface tree stumps and fluctuating water levels; seaplane operations at Ray Roberts Lake are generally prohibited in all areas.

# CHAPTER 6 – SPECIAL TOPICS/ISSUES/CONSIDERATIONS

## 6.1. COMPETING INTERESTS ON THE NATURAL RESOUCES

Ray Roberts Lake is a large, multi-purpose project with numerous authorized purposes. The authorized purposes accommodate the needs of federal, state, and municipal users which have developed over time and have contractual rights that must be honored. The benefits provided by virtue of authorized purposes are critical to the local and regional economies and are of great interest to the public. Aside from operating the reservoir to meet the needs of those entities with contractual rights, there are many competing interests for the utilization of federal lands including recreational users, adjacent landowners, those who own mineral rights, utility providers, and all entities that provide and maintain public roads. A growing population and increasing urbanization places additional stresses on these competing interests through increased demand for water resources and recreation spaces as well as diminishing quality and space for natural habitat and open spaces. Balancing the interests of each of these groups to ensure that valid needs are met while at the same time protecting natural and cultural resources is a challenge. The purpose of this Plan is to guide management into the foreseeable future to ensure responsible stewardship and sustainability of the project's resources for the benefit of present and future generations.

## 6.2. UTILITY CORRIDORS

USACE policy encourages the establishment of designated corridors on project lands, where feasible, to serve as the preferred location for future outgrants such as easements for roads or utility lines. After obtaining public input and examining the location of existing roads and utility lines on project lands, USACE determined that utility corridors would be designated at Ray Roberts Lake.

The following 19 utility corridors have been designated across USACE land at Ray Roberts Lake with each corridor incorporating and/or running parallel to an existing easement. These corridors are shown on the maps in Appendix A. Future use of these corridors, where the corridor is limited to or incorporates an existing easement, would in most cases require prior approval of those entities that have legal rights to the easement. There are existing easements at Ray Roberts Lake that have not been designated as utility corridors. These non-corridor easements may be used for placement of additional utilities by the grantee holding the easement, but only for purposes which directly serve the grantee or are of direct benefit to the Government. Expansion or widening of existing non-corridor easements will generally not be permitted.

In summary, the following best management practices shall be applied in the future use of the 19 corridors:

- In accordance with USACE policy at Chapter 17 of EP 1130-2-550, Non-Recreation Outgrant Policy, avoid placement of utilities on USACE land unless there is no feasible alternative route.
- Use existing easements before using additional space.
- Efficiently use the designated corridor space to allow the maximum number of utilities possible to occupy the space. Reduced cost is not a reason to occupy more space.
- Underground utilities shall be installed by boring at all creek crossings, and where feasible, across the full extent of designated corridors. Bore pits shall be a minimum of 100 feet from the centerline of creeks, depending on site conditions, may need to be placed farther than 100 feet, and may need to be placed off UCACE land.
- Overhead electric and communication lines must meet minimum sag height requirements to be specified by the USACE.
- Natural resources damaged or destroyed within corridors shall be mitigated per USACE requirements.
- Current and future identified cultural resources will be protected.
- Any future road, highway, railroad, or utility expansions or modifications will need to be approved by the USACE and is subject to further environmental review.

**Table 6.1 Utility Corridors at Ray Roberts Lake (see map in Appendix A)**

| Corridor Number | Description |
|---|---|
| Corridor 1 | This corridor follows the route of FM 3002, W Lone Oak Rd. across Ray Roberts Lake and along Chisam Rd. south of FM 3002 in Cooke County. New utilities will be placed as close as possible to existing roads or utilities. This corridor is restricted to the FM 3002 right-of-way not to exceed 100 feet from the center of FM 3002 as well as a 70-foot-wide strip of federal land measured from the federal boundary and across Chisam Rd., including Chisam Rd. Future use of this corridor is restricted to sub-surface boring. No bore pits will be permitted within riparian or other sensitive habitat and bore pits will be placed off USACE property unless no feasible alternative exists. The length of this corridor is approximately 11,100 feet along FM 3002 and the width is 200 feet. The Chisam Rd portion is approximately 875 feet in length and 70 feet wide. |
| Corridor 2 | This corridor starts at FM 3002 and continues north along County Rd 231 in Cooke County until intersecting the USACE fee boundary line. Future use of this corridor would be restricted to underground utilities placed within or as close as possible to the limits of the existing road easement, on either side of the road. The total width of the corridor will not exceed 70 feet, including the space occupied by the road. The length of the corridor is approximately 5,500 feet. |
| Corridor 3 | This corridor follows County Rd 231 in Cooke County north of Spring Creek cove. Future utilities in this corridor must be placed on the east side of FM 231 between the road and federal boundary, within or as close as possible to the limits of the existing road easement, not to exceed 100 feet in width, including the road easement. The length of this corridor is approximately 2,500 feet. |
| Corridor 4 | This corridor is in two parts, although the entire corridor lies along FM 922 in Cooke County. For both portions, this corridor is restricted to the existing road right-of-way not to exceed 100 feet from the center of the road, parallel to either side of the FM 922 right-of way. Future use of this corridor is restricted to sub-surface boring, and no bore pits will be permitted on USACE property in order to protect the riparian habitat along FM 922. The length of the western section of the corridor is approximately 1,100 feet, and the width is 200 feet. The length of the eastern section is approximately 4,600 feet and the width is 200 feet. |
| Corridor 5 | This corridor begins at FM 922 and follows Northshore Lane in Cooke County to the northeast until intersecting with the USACE fee boundary line. Future use of this corridor is restricted to sub-surface boring, and no bore pits will be permitted on USACE property in order to protect the riparian habitat. This corridor is restricted to the existing road right-of-way not to exceed 100 feet from the center of the road. The length of this corridor is approximately 1,660 feet and 200 feet in width. |

| Corridor Number | Description |
|---|---|
| Corridor 6 | This corridor is along E Lone Oak Rd. (FM Hwy 3002) in Cooke County north of Johnson Branch Park. Future utilities in this corridor must be placed within or as close as possible to the limits of the existing road easement. The corridor is restricted to the existing road right-of-way not to exceed 100 feet from the center of the road. The length of this corridor is approximately 1,580 feet and the width is 200 feet. |
| Corridor 7 | This corridor follows FM 922 in Cooke County and crosses USACE property at Wolf Creek. Future utilities in this corridor must be placed within or as close as possible to the limits of the existing road easement. The corridor is restricted to the existing road right-of-way not to exceed 100 feet from the center of the road. Future use of this corridor is restricted to sub-surface boring, and no bore pits will be permitted on USACE property in order to protect the riparian habitat along FM 922. The length of this corridor is approximately 1,930 feet and the width is 200 feet. |
| Corridor 8 | This corridor lies along County Rd 215 in Cooke County and crosses Indian Creek. Future utilities in this corridor must be placed within or as close as possible to the limits of the existing road easement, not to exceed 100 feet in width, including the road. Future use of this corridor is restricted to sub-surface boring, and no bore pits will be permitted on USACE property in order to protect the riparian habitat along County Rd 215. The length of this corridor is approximately 1,530 feet and the width is 100 feet. |
| Corridor 9 | This corridor follows FM 922 in Cooke County and crosses Indian Creek. Future utilities in this corridor must be placed within or as close as possible to the limits of the existing road easement. The corridor is restricted to the existing road right-of-way not to exceed 100 feet from the center of the road. Future use of this corridor is restricted to sub-surface boring, and no bore pits will be permitted on USACE property in order to protect the riparian habitat along FM 922. The length of this corridor is approximately 3,800 feet and the width is 200 feet. |
| Corridor 10 | This corridor follows FM 922 where it crosses Isle du Bois Creek near the Cooke County/Grayson County line. Future utilities in this corridor must be placed within or as close as possible to the limits of the existing road easement. The corridor is restricted to the existing road right-of-way not to exceed 100 feet from the center of the road. Future use of this corridor is restricted to sub-surface boring, and no bore pits will be permitted on USACE property in order to protect the riparian habitat along FM 922. The length of this corridor is approximately 3,980 feet and the width is 200 feet. |

| Corridor Number | Description |
|---|---|
| Corridor 11 | This corridor follows County Rd 226 (also known as Jordan Creek Rd) in Grayson County. Future utilities in this corridor must be placed within or as close as possible to the limits of the existing road easement. The total width of the corridor will be 50 feet from the center of the roadway, 100 feet in total, including the space occupied by the road. Future use of this corridor is restricted to sub-surface boring, and no bore pits will be permitted on USACE property in order to protect the riparian habitat. The length of this corridor is approximately 1,500 feet. |
| Corridor 12 | This corridor follows Horseshoe Rd. in Grayson County and crosses Range Creek near the wetland complex that was constructed for wildlife management purposes. Future utilities in this corridor must be placed within or as close as possible to the limits of the existing road easement. The total width of the corridor will be 35 feet from the center of the roadway, 70 feet in total, including the space occupied by the road. Future use of this corridor is restricted to sub-surface boring, and no bore pits will be permitted on USACE property in order to protect the riparian habitat. The length of this corridor is approximately 2,930 feet and the width is 70 feet. |
| Corridor 13 | This corridor follows the Union Pacific Railway along the east side of Ray Roberts Lake in Grayson County. Future utilities in this corridor must be placed within or as close as possible to the limits of the existing railroad easement. The corridor is restricted to the existing railroad right-of-way not to exceed 100 feet from the center of the railroad easement. Future use of this corridor is restricted to sub-surface boring; no bore pits will be permitted within riparian or other sensitive habitat; and bore pits will be placed off USACE property unless no feasible alternative exists. The length of this corridor is approximately 19,200 feet and 200 feet in width. |
| Corridor 14 | This corridor follows Buck Creek Rd. in Grayson County. Future utilities in this corridor must be placed within or as close as possible to the limits of the existing road easement. The total width of the corridor will be 35 feet from the center of the roadway, 70 feet in total, including the space occupied by the road. Future use of this corridor is restricted to sub-surface boring, and no bore pits will be permitted on USACE property in order to protect the riparian habitat along the road. The length of this corridor is approximately 1,350 feet. |

| Corridor Number | Description |
|---|---|
| Corridor 15 | This corridor is in two parts, both within the Buck Creek arm of the lake in Grayson County. The first part lies along Howell Rd./Maier Rd., crossing Buck Creek. The second part includes the length of Baker Road between Howell Rd./Maier Rd. and the USACE boundary. The total width of the corridor will be 80 feet from the center of the roadway, 140 feet in total, including the space occupied by the road. For both portions, future use of this corridor is restricted to sub-surface boring, and no bore pits will be permitted on USACE property in order to protect the riparian habitat along the roads. The length of the section of the corridor along Howell Rd/Mailer Rd. is approximately 2,300 feet and the width is 160 feet, while the length of the section along Baker Rd. is approximately 550 feet and the width is 160 feet. |
| Corridor 16 | This corridor is being defined in expectation of future expansion of US 377 and additional utilities in addition to the existing power line to the east of US 377. Corridor 16 follows US 377 where it crosses USACE property at two locations. The northern portion crosses the Range Creek Arm and is approximately 5,610 feet long, and the southern portion crosses the Buck Creek arm and is approximately 4,080 feet long. The width of the northern portion is 80 feet from the center of the roadway, and future utilities will be placed as close as possible to the road easement. Future utilities within this northern portion will be restricted to sub-surface boring, and no bore pits will be permitted on USACE property. The width of the southern portion is 80 feet to the west and 200 feet east of the center of the roadway. Future utilities will be placed on the east side of US 377 as close as possible to the road easement or existing utilities. High voltage transmission lines can be placed above ground following USACE guidance and regulations, while all other utilities will be restricted to sub-surface boring, and no bore pits will be permitted on USACE property. |
| Corridor 17 | This corridor is composed of two sections, both following Emberson Ranch Road where crossing USACE property to the west of US 377. The western section is approximately 1,015 feet, and the eastern section is approximately 1,585 feet in length. The width of the corridor is 40 feet from the center of the roadway, 80 feet in total, including the space occupied by the road. |
| Corridor 18 | Corridor 18 follows Patton Road from the boundary line going west until intersecting US 377 and the northern portion of Corridor 16. The length of the corridor is approximately 1,630 feet in length, and the width is 35 feet from the center of the roadway, 70 feet in total, including the space occupied by the road. |

| Corridor Number | Description |
|---|---|
| Corridor 19 | This corridor follows FM 455 starting at the boundary just east of the spillway and continues west just before reaching the dam. Future utilities in this corridor must be placed within or as close as possible to the limits of the existing road easement. Crossing the spillway is limited to sub-surface boring. The length of the corridor is approximately 4,600 feet, and the width of the corridor is 60 feet from the center of the roadway, 120 feet in total, including the space occupied by the road. |

## 6.3. SHORELINE MANAGEMENT POLICY

On December 13, 1974 the USACE published a regulation, ER 1130-2-406, in the Federal Register entitled “Civil Works Projects: Lakeshore Management.” This regulation was published as Part 327.30 of Chapter III, Title 36 of the Code of Federal Regulations. A subsequent change to the regulation was published in the Federal Register on October 31, 1990, incorporating the results of recent legislation and changing the name to “Shoreline Management at Civil Works Projects.” The focus of this regulation is to establish national policy, guidelines, and administrative procedures for management of certain private uses of Federal lands administered by USACE. A key requirement in the regulation is that private shoreline uses, as defined in the regulation, are not allowed at lakes where no such private uses existed as of December 13, 1974. No private shoreline uses such as private docks have been permitted since the changes to the Federal Register, and as such, private docks will not be allowed on Ray Roberts Lake.

The private uses described in the regulation primarily include privately-owned floating facilities such as floating boat docks, fixed or movable piers, and vegetation modification activities such as plantings, mowing, and selective removal of shrubs and trees to the extent that exclusive benefits accrue to an individual or group and the general public is denied use of public lands or waters. Not included in the above definition are certain limited private activities that do not provide exclusive benefits to an individual or group, nor preclude general public use. These limited private activities may be allowed at Ray Roberts Lake by written shoreline use permit for reasons of public safety, erosion control, benefits to wildlife, or to provide reasonable pedestrian access to the shoreline. USACE regulations at ER 1130-2-406 requires the preparation of a Shoreline Management Policy Statement (SMPS). In response to this requirement a SMPS was prepared for Ray Roberts Lake in 1975.

## 6.4. NATIVE POLLINATOR HABITAT CONSERVATION

The USACE received comments from TPWD and the public wanting the Plan to take additional steps to preserve native pollinator habitat, which has been greatly reduced in the DFW area. Ray Roberts Lake contains diverse and ecologically unique grasslands, prairies, and other natural areas containing pollinator habitat. The most unique or sensitive areas were designated as Environmentally Sensitive Areas, while other areas were designated as Vegetative Management and Wildlife Management Areas, depending on other management objectives for those areas. These designations

and management practices will help to preserve native pollinator habitat at Ray Roberts Lake.

## 6.5. PUBLIC HUNTING PROGRAM

TPWD manages the Ray Roberts Lake Public Hunting Lands (PHL) under a license agreement with the USACE. The Ray Roberts PHL, located in Denton, Cooke, and Grayson counties, covers approximately 40,850 total acres consisting of lake water surface, upland areas, wetlands and flooded timber areas. The objective of the Texas Parks and Wildlife Department for the Ray Roberts PHL to maintain native wildlife populations and habitats. The four major habitat types on the Ray Roberts PHL are Blackland Prairie, Upland Post Oaks, Bottomland Hardwoods, and a variety of wetlands. Ray Roberts Lake PHL are some of the most popular hunting areas in Texas, due mostly to their location within the DFW metroplex and relatively few other public hunting alternatives in the region.

Public hunting is permitted for feral hogs, dove, quail, woodcock, gallinules, rails, snipe, waterfowl, frogs, rabbits, hares, and squirrels. Hunters should refer to the Outdoor Annual Hunting and Fishing Brochure outlining legal means of take and seasons. An Annual Public Hunting (APH) permit, formally known as the Type II permit must be purchased in order to hunt these lands. The Ray Roberts PHL includes a management area that is designated as a waterfowl sanctuary located on the Northwest side of Ray Roberts Lake, in which no waterfowl hunting is allowed. Ray Roberts PHL are only accessible through access points designated by Texas Parks and Wildlife (Ray Roberts PHL Unit #501). TPWD provides maps to access points, hunting areas, boat ramps, restricted areas, and provides other important information on their website. Currently, the Ray Roberts PHL is a day use only with no entrance fees. Camping is not permitted in the PHL but is available at nearby at Johnson Branch and Isle Du Bois, Ray Roberts Lake State Park.

## 6.6. SPECIFIC (SEPARABLE) RECREATION LANDS

Certain lands were acquired specifically for recreation at Ray Roberts Lake, for use as developed public use areas for intensive recreation activities by the visiting public, including areas for concessions and quasi-public development, as well as multiple low-density recreation activities and operational needs. The 1983 Master Plan included these specific recreation lands within the following land use allocations: Recreation – Intensive Use, Recreation – Low Density Use, and Project Operations. Much of this land is not conducive to highly developed recreation due to varied topography and limited access. Other areas contain unique or sensitive resources which are more valuable for public recreation as trails, for wildlife viewing, and for scenic views. Those areas containing the most unique or sensitive resources have been classified as ESAs within this Plan. Other areas less conducive to intensive recreation have been classified as LDR. Because these lands were acquired specifically for recreation, the USACE prioritizes recreation access in these areas by providing trails, parking, and public access points as well as working with partners including TPWD and

the cities of Dallas and Denton to provide recreation opportunities. The Specific Recreation Lands are shown as a hatch overlay on the maps in Appendix A.

## 6.7. RAY ROBERTS LAKE PLANNING AND ZONING DISTRICTS

Members of the public have asked questions regarding the Master Plan's part of local planning or zoning ordinances. Ray Roberts Lake zoning restrictions were instituted by Denton, Cooke, and Grayson Counties for areas around Ray Roberts Lake. In addition, Denton County is part of the North Central Texas Council of Governments (NCTCOG) which also provides additional regional planning and development services for the Dallas-Fort Worth Metropolitan Area. Cooke and Grayson Counties are also part of the Texoma Council of Governments (TCOG) which provides regional planning and development services for its region. The USACE Ray Roberts Master Plan is intended to guide the management of federally owned and managed property at Ray Roberts Lake and includes TPWD and other partners in managing those federal lands, whereas those county zoning ordinances apply to private properties within those respective counties. The USACE considers public planning documents from NCTCOG and TCOG to consider how they might affect public access and regional recreation needs. The Ray Roberts Lake Master Plan is completely unrelated to the Ray Roberts Lake zoning ordinances in Denton, Cooke, and Grayson Counties or any planning guidelines from NCTCOG and TCOG, and the Master Plan does not apply to what property owners can do on their own properties around Ray Roberts Lake.

# 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 Ray Roberts 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 Ray Roberts Lake to ensure that future management actions are both environmentally sustainable and responsive to public outdoor recreation needs in a region which is experiencing rapid population growth. The following milestones provide a brief look at the overall process of revising the Ray Roberts Lake Master Plan.

The USACE began planning to revise the Ray Roberts Lake Master Plan in the fall of 2019. The objectives for the Master Plan revision are to (1) revise land classifications to reflect changes in USACE land management policies since 1972, (2) prepare new resource objectives, and (3) revise the Master Plan to reflect new agency requirements for Master Plan documents in accordance with ER 1130-2-550, Change 7, January 30, 2013 and EP 1130-2-550, Change 5, January 30, 2013.

## 7.2. INITIAL STAKEHOLDER AND PUBLIC PRESENTATION

The first public input meeting was originally scheduled for the spring of 2020. In the interest of public health and well-being due to the COVID-19 pandemic, the public input process was changed from a face-to-face meeting to a virtual presentation detailing the specifics of the master plan revision. The presentation and public input process remained open for 45 days. The public comment period began May 11, 2020 and ran through June 26, 2020.

The presentation included a description and definition of a master plan, descriptions of the new land use classification options, and instructions for commenting on the master plan. Presentation topics included:

- Public involvement process
- Project overview
- Overview of the National Environmental Policy Act (NEPA) process
- Master Plan and current land classifications
- Instructions for submitting comments

During the public comment period, the USACE received comments from one state agency and five members of the public. While issues raised are important, some of the comments received do not pertain to land use or the goals and objectives discussed within the master plan. Issues addressed in the comments included partnership with TPWD and other agencies, natural resources, park amenities, land

classification, invasive species, a logjam within the greenbelt between Ray Roberts and Lewisville Lakes, and the Ray Roberts Zoning by local counties. All the public comments received were noted and relevant comments will be addressed as future funding and development are considered.

The first public action was a scheduled public scoping presentation providing an avenue for public and agency stakeholders to learn about the revision process and provide written comments. The public scoping virtual presentation and comment period started May 11, 2020 and ran through June 26, 2020. The presentation was available as a video link or a downloadable pdf document and conveyed information about the following topics:

- Public Involvement Process
- Project Overview
- Overview of the NEPA process
- Master Plan and current land classifications
- Instruction for Submitting Comments

Interested persons had the opportunity to comment about the project using a variety of methods, including the following:

- Filling out submitting a comment using electronic mail (e-mail)
- Writing a comment on letterhead or any choice of paper and mailing it to the District Office or Lake Office
- Printing a comment form, filling it out, and mailing it to the USACE District Office or Lake Office

In total, approximately 35 comments from one public agency and five members of the public provided comments during the public scoping comment period. Much like national forests or parks, Ray Roberts Lake is a federally owned and managed public property. It is the USACE's goal to be a good neighbor as well as steward of the public interest as it concerns Ray Roberts Lake. As such, the USACE is bound to the equal enforcement of policies and rules for this publicly held national asset. Table 7.1 provides the comments received during the initial scoping comment period for the Master Plan, as well as the USACE response.

**Table 7.1 Public Comments from Initial Public Scoping Presentation**

| Comment | USACE Response |
|---|---|
| Texas Parks and Wildlife Department (TPWD) received the May 7, 2020, public notice of the initiation process to revise the Ray Roberts Lake Master Plan (Master Plan). Information regarding the project and the previous Master Plan documents were made available on-line, and the public has been given opportunity to provide scoping comments for the Master Plan. | Concur. |

| Comment | USACE Response |
|---|---|
| The U.S. Army Corps of Engineers Fort Worth District (USACE) proposes to revise the Master Plan, which is 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 Ray Roberts Lake water resource development project. The revised Master Plan will guide the responsible stewardship of USACE-administered lands and resources for the benefit of present and future generations. | Concur. |
| The current Master Plan was completed in 1983 with a supplement published in 2001 and will be revised to address changes in regional land use, population, outdoor recreation trends, and USACE management policy. Key topics to be addressed in the revised Master Plan include revised land classifications, revised natural, cultural, and recreational resource management objectives, recreation facility needs, and topics such as invasive species management and threatened and endangered species habitat. | Concur. |
| TPWD has two roles in review of the Master Plan. As the state agency with primary responsibility for protecting the state's fish and wildlife resources and in accordance with the authority granted by Parks and Wildlife Code §12.0011, TPWD has a role in reviewing the environmental impacts of federal actions in Texas in association with the National Environmental Policy Act of 1969 (NEPA). As a state resource agency and under NEPA, TPWD's natural resource review encompasses the entire Ray Roberts Lake Project area. Because TPWD holds a lease with the USACE to operate the nine units of the Ray Roberts Lake State Park within Project lands, TPWD also has a role in reviewing the Master Plan with respect to lands within the Ray Roberts Lake State Park, as a lessee and manager of the park for public recreation. | Noted. |
| TPWD staff from our State Parks Division, Inland Fisheries Division, and Wildlife Division are interested in the proposed revision and will work with USACE throughout the revision process to assist in identifying sensitive resources and their management needs, potential fisheries protection areas, water recreation needs and access, habitat management goals, needs for trails and park improvements, terrestrial and aquatic invasive species management goals, and needs for public education such as water safety and invasive species. | Concur. |
| Because the TPWD-managed Ray Roberts Lake State Park occurs on USACE Ray Roberts Lake property, the State Parks Division is providing input regarding the land classifications within the TPWD-managed park. | TPWD will be involved in drafting any changes to the maps or other parts of the Master Plan that might affect TPWD-managed parks. |

| Comment | USACE Response |
|---|---|
| Recommendation: To accommodate potential future development for recreational access to the outdoors, TPWD recommends all units of the TPWD-managed Ray Roberts Lake State Park be classified as HDR. If USACE feels that areas within<br>the State Park units should not be classified as HDR, TPWD would like to meet with USACE staff to appropriately delineate the classifications prior to release of the draft Master Plan. | Any land classification changes within TPWD-managed parks will be coordinated with TPWD. Some areas are not conducive to High Density Recreation, while others have unique habitat to be protected and preserved. Passive recreation such as hiking and observing nature are permitted in other land classifications including Low Density Recreation, Wildlife Management, Vegetation Management, and Environmentally Sensitive Areas. Areas have been changed to LDR and ESA through coordination with TPWD but are still available for designated recreation. |
| TPWD's Wildlife Division – Wildlife Habitat Assessment Program (WHAB), with responsibility of providing input under NEPA and in coordination with TPWD's Inland Fisheries Division, offers the following for consideration in the Master Plan to minimize potential impacts to natural resources within the Project area and to guide conservation-minded recreational development. | Noted. |
| The project area is primarily within the Cross Timbers ecoregion with a smaller portion of the project occurring in the Texas Blackland Prairies ecoregion, which is east of the Cross Timbers ecoregion. The Texas Conservation Action Plan (TCAP) provides guidance toward addressing Species of Greatest Conservation Need (SGCN) and important habitats and includes a statewide handbook as well as handbooks for each ecoregion of the state. To help guide your planning efforts, information on the TCAP,<br>handbooks, and lists of SGCN can be found on TPWD's website. The TCAP identifies priority habitats as well as priority issues related to farm, ranch, and municipal land and water management issues, conservation and recreation land and water management issues, and non-native invasive species and problematic native invasive species that can impact priority species and habitats. | Concur. |

| Comment | USACE Response |
|---|---|
| In addition to the TCAP lists of SGCN by ecoregion, the TPWD online application identifying rare, threatened, and endangered species by county (RTEST) provides information regarding state-listed species and SGCN with potential to occur within each county in Texas. Please note that RTEST has undergone a significant update to reflect changes to the state-listed threatened and endangered species lists, effective March 30, 2020. A complete list of the species that were removed from and added to the state threatened and endangered species lists are available in the March 27, 2020 issue of the Texas Register (45 TexReg 2188). | Noted. Threatened and endangered species are considered for the Master Plan revision and discussed in Chapter 2. |
| TPWD maintains the Texas Natural Diversity Database (TXNDD) which tracks known occurrences of SGCN and rare habitats, and the data are available by request. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state, and absence of information in the database does not imply that a species is absent from that area. The TXNDD contains records of a native prairie community and records of the bald eagle (Haliaeetus leucocephalus), an SGCN, at Ray Roberts Lake. Lands at Ray Roberts Lake may contain other state-listed species or SGCN that have not been found or reported to the TXNDD. | Concur. Records of the bald eagle at Ray Roberts Lake do exist, and much of their potential habitat has been designated as ESA and WMA. |
| The Ecological Mapping Systems of Texas is a land classification project which provides systems, mapping subsystems, and vegetative types for Texas and may assist in the USACE efforts toward examining project lands. EMST data are available by download or through the Texas Ecosystem Analytical Mapper, an online interactive mapping tool. | Noted. |
| The iNaturalist citizen science application may provide data on plants and wildlife observed at Grapevine Lake to help guide appropriate land use classifications. | Concur. The iNaturalist website and application does provide a great resource for citizen science including observations of both common and unique species at Ray Roberts, Grapevine, and other USACE managed lakes. |
| Recommendation: TPWD recommends referring to the TCAP, RTEST, TXNDD, EMST, and iNaturalist for information regarding sensitive resources potentially occurring in the area, priority habitats, and issues affecting sensitive resources within the Cross Timbers and Texas Blackland Prairies ecoregions. | Concur. These resources have been referenced and helped to provide information regarding sensitive resources occurring in the area and within the local ecoregions. |

| Comment | USACE Response |
|---|---|
| Recommendation: In addition to addressing sensitive resources, TPWD recommends the Master Plan include natural resource inventories and monitoring goals to identify habitat changes that may occur over the life of the project and trigger adaptive management, when needed. | Concur. Such inventories and monitoring both natural and cultural resources are an important part of the life of the project but are often limited by the availability of funding. |
| Recommendation: TPWD recommends Environmentally Sensitive Area (ESA) classification for native prairies, stream and riparian corridors, scenic areas, barrens, savannas and open woodlands, oak forest and mature juniper woodlands, springs and seeps, crevices and karst openings, wetlands, and bottomland forests. TPWD also supports addressing invasive species, restoring degraded prairies, addressing encroachments or trespass, and improving recreational infrastructure and opportunity as appropriate to the meet public demand without exceeding carrying capacity of the property and its resources while balancing the stewardship of the natural resources. | The most unique and/or sensitive prairies habitats and regions have been classified as ESA, with many others being included in WM and VM areas. The USACE uses its limited resources to both manage for invasive species and restoring degraded habitats, as well as addressing trespasses and encroachments. The USACE also actively manages recreational infrastructure with the available resources. The USACE also welcomes the opportunity to work with TPWD and other agencies or organizations to meet many of these objectives. |
| Comment: TPWD is available to review and provide input regarding USACE's preliminary land use and water surface classifications as they are being developed. | Noted. |

| Comment | USACE Response |
| --- | --- |
| Floral Resources<br>Significant declines in the population of migrating monarch butterflies (Danaus plexippus) have led to widespread concern about this species and other native insect pollinator species due to reductions in native floral resources. To support pollinators and migrating monarchs, TPWD encourages the establishment of native wildflower habitats on private and public lands across the state. Please refer to publications that found on TPWD's Native Pollinator website and TPWD's Monarch Butterfly website.<br>Recommendation: TPWD recommends incorporating pollinator conservation into the Master Plan to promote and sustain the availability of floral resources throughout the growing season. TPWD encourages conservation of quality native grasslands and restoration of degraded grasslands to provide diverse floral resources for pollinators and habitat for grassland SGCN plants and wildlife. | Many important pollinators including solitary bees, wasps, flies, and butterflies, including monarch butterflies, have been observed across Ray Roberts Lake, and the USACE acknowledges that pollinator habitat as critical to their migration and survival. Pollinator conservation is an integral part of natural resource management at the USACE, and native wildflower habitats are found across Ray Roberts Lake and managed to both promote quality habitat and also deter invasive or aggressive native species from encroaching within those habitats. However, the USACE works within its limited funding and welcomes the opportunity to work with TPWD and other agencies or organizations to improve the quality and quantity of pollinator habitat at Ray Roberts Lake. |

| Comment | USACE Response |
|---|---|
| Boat Ramps<br>The 2019 Fisheries Survey Report for Ray Roberts Reservoir will be available online or by direct request from TPWD after July 31, 2020, https://tpwd.texas.gov/publications/pwdpubs/lake_survey/. USACE may use the report to review the public angler access locations and boat ramp characteristics including the elevation at the end of the boat ramps and ramp conditions. The terminus elevation approximates available boater access to the reservoir during periods of low water level. The boat ramp measurements could be used to describe the level of impact to recreation and the local economy during drought conditions and used to guide future boat ramp improvements or construction to mitigate against or prevent reduced access to the reservoir. TPWD Inland Fisheries staff considers the number of boat ramps at the lake to be adequate and in good condition. | Noted. |
| Recommendation: TPWD recommends reviewing the 2019 Fisheries Management Survey Report to aid in the Master Plan's assessment of recreational needs, identification of resource objectives, and to guide decisions regarding future improvements or construction of boat ramps. | The USACE has no plans for new or expanded boat ramps but welcomes the opportunity to work with TPWD to develop additional access points where there is adequate demand as funding is available. |
| Recommendation: TPWD recommends the plan identify if there is a need for additional boat ramps or if the lake already meets a maximum safe boating-use capacity. | Noted. |
| Invasive Species<br>Recommendation: Because the invasive zebra mussel occurs at Ray Roberts Lake, TPWD recommends the continued support of TPWD initiatives to educate the public through the posting of signage and boat ramp stencils. | Concur. |
| Recommendation: To reduce the spread of zebra mussels and other aquatic invasive species, TPWD recommends that future inter-basin transfers of raw water be avoided, if possible. | Concur. |

| Comment | USACE Response |
|---|---|
| Recommendation: Invasive species management activities involving mechanical, chemical, or biological control should be coordinated through the appropriate TPWD district fisheries management office and the TPWD aquatic habitat enhancement office. | Noted. USACE coordinates with TPWD and works closely in converting old agriculture fields to native prairies and managing invasive species. In addition, an MOU with Texas Forest Service helps with vegetation management and invasive species removal, and USDA APHIS has a national MOU with USACE to assist with feral hog removal at USACE projects if the need arises. |
| Surface Water Use Classifications<br>Comment: TPWD has not identified a need for additional or reduced “no wake” areas at Ray Roberts Lake and is satisfied with the land and surface water use classifications at Ray Roberts that maintain the status quo with the exception of the land use classifications for the TPWD state park units recommended above. | Noted. |
| TPWD encourages the USACE to retain the continued preservation of natural shoreline and limited development around the reservoir, supports initiatives to protect the shoreline and manage adjacent land uses where erosion is occurring, and encourages the use of rip-rap over the construction of bulkhead where needed. | Concur. |
| Because I will be compiling the agency letter upon TPWD review of the draft Master Plan, please continue to include me in all correspondence with other TPWD staff regarding this project. Once the Master Plan and Environmental Assessment are drafted for public review, please coordinate with the TPWD Wildlife Division WHAB program through my email as well as our project review repository at WHAB@tpwd.texas.gov. | Noted. |
| The TPWD Inland Fisheries Division contact for this project is Dan Bennett, Denison District Supervisor, at Dan.Bennett@tpwd.texas.gov. The TPWD State Parks Division contact for this project is Adam Jarrett, State Parks Region 6 Director, at Adam.Jarrett@tpwd.texas.gov. If you have any questions, please contact me at (903) 322-5001 or Karen.Hardin@tpwd.texas.gov. | Noted. |
| Thank you for the opportunity to comment on your work. We have been waiting for several years for you to open up the Greenbelt on Highway 380 that goes north to the Aubrey | The Greenbelt was included in the Lewisville Lake Master Plan. |

| Comment | USACE Response |
| --- | --- |
| Station of the Park.<br><br>PLEASE GIVE THIS YOUR NUMBER ONE PRIORITY. There was a Corp of Engineers investigation of the gigantic logjam under the bridge at Highway 380 by the Greenbelt and the conclusion was that it did not obstruct traffic. To me that was like saying "The car has four flat tires but the engine runs good so there's nothing for us to fix." Because you did not act sooner the logjam will now require either dynamite or closing off the highway and getting a large crane in there to pull the logs out. There are TREES growing on top of the logjam. Please, please get in there an fix it.<br><br>There was some poor mechanical engineering at the park on Highway 380 because no one foresaw that the river would crest when they opened up the floodgate at the dam.<br><br>I have already spoken to the Park Rangers but there is little they can do except collect entry fees as they do not have the equipment required to clean up the area. I have given my name and contact information to several people and said I will volunteer to clean up the park and there are others who will help.<br><br>Please give us back our park. | Project operations and maintenance activities are not part of the Master Plan but are included with Operations Management Plans. |
| Where would I go to get old Topo maps from before the lake was built, or just after completion? | Although this is not related to the scope of the Master Plan, links to public USGS maps were sent to this member of the public and forwarded a link to the public presentation in case they would like to know more about the master planning process. |
| I would like to see more development regarding plumbing infrastructure so as to allow sewer hookups at the state campgrounds. Currently no full hookups (water, electric, sewer) are available, only water electric. Many RVers just travel a little further north into OK as lake Murray is much more developed concerning this issue. | The Master Plan designates planning scale changes, while project-specific planning takes place in the Operations Management Plan. Most parks designated as High Density Recreation at Ray Roberts Lake are managed by TPWD, and full hookups could be added to many locations if TPWD determined |

| Comment | USACE Response |
|---|---|
| | adequate demand and infrastructure. |
| I live on fm 2153. We bought land and improved it plus built a new home knowing the Ray Roberts zoning restrictions which we think is a very good thing. We would hate to see any zoning restrictions eased. | Ray Roberts zoning restrictions were instituted by Denton, Cooke, and Grayson Counties, and any zoning changes are subject to those counties and its residents. The Ray Roberts Lake Master Plan is only for federal land owned and managed by the U.S. Corps of Engineers at Ray Roberts Lake and is completely unrelated to the Ray Roberts Lake Zoning District in Denton, Cooke, and Grayson Counties. |
| After having spent most of my life near this lake, and hiking over 700 miles in it's various sections over the past four years, I cannot help but to notice how overrun parts of Lake Ray Roberts have become with invasives. While much attention has been brought to zebra mussels, on land we have equally important issues to address. Johnsongrass, bermuda, king ranch bluestem, and other exotic grasses have choked out much of the native species to this area. Vines have overtaken some trees entirely on the Trinity River Bottom (similar to the work of Kudzu), and both Honey Locusts and Mesquite trees can be found throughout the park as well. Feral hogs have torn up several places and thrive within wildlife preservation areas, and have quite possibly become more habituated to hikers over the years. In conclusion, I hate to complain about invasives as there is still lots of native diversity at this lake, but if there was any way that invasive control practices could be more heavily administered, it would be greatly appreciated. Thank you for your consideration! | Invasive species have indeed become a significant problem across Texas, but especially in many urban and suburban parks and wilderness areas. Both the USACE and TPWD actively manage for invasive species at Ray Roberts Lake but are only able to manage based on limited resources. The USACE advocates for increased resources to manage invasive species and also welcomes the opportunity for partnering with other agencies and organizations to help manage invasive species at Ray Roberts Lake and across the region. |

## 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 included here.

# CHAPTER 8 – SUMMARY OF RECOMMENDATIONS

## 8.1. SUMMARY OVERVIEW

The preparation of the Ray Roberts Lake Master Plan followed the USACE master planning guidance in ER 1130-2-550 and EP 1130-2-550, both dated 13 January 2013. Three major requirements set forth in the guidance include (1) the preparation of contemporary resource objectives, (2) classification of project lands using the newly approved classification standards, and (3) 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 public involvement throughout the process, and consideration of regional recreation and natural resource management priorities identified by other federal, state, and municipal authorities. 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 that promotes partnerships and the success of each stakeholder involved in the management of the lands and surface waters of Ray Roberts Lake. Factors considered in the Plan were identified through public involvement and review of statewide and regional planning documents including the following:

- TPWD's TORP, 2018 and 2012
- TCAP – Cross Timbers and Texas Blackland Prairie Ecoregions
- North Central Texas Council of Governments Mobility 2045 Plan, Revised June 18, 2018
- Texoma Council of Governments
- Texoma Regional Coordinated Transportation Plan, Planning Region 22, 23 February 2017
- Integrated Water Supply Plan, 2013, TRWD
- Lake Ray Roberts Ordinance, 2009, Denton County Lake Ray Roberts Planning and Zoning
- Lake Ray Roberts Zoning Regulations, 2019, Cooke County
- Lake Ray Roberts Land Use Ordinance, 2022, Grayson County
- Dallas Park and Recreation Department Comprehensive Plan, 2016, and Master Plan, 2016
- Denton Parks, Recreation & Trails Master Plan, 2021
- TPWD's Capital Improvement Projects, 2020
- TPWD's Texas State Parks Official Guide, 2019

This Master Plan will ensure the long-term sustainability of the outdoor recreation program and natural resources associated with Ray Roberts 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 new land classification

standards. During the public involvement process USACE sought public input into whether, besides the simple change in nomenclature, a shift in land classification was desired (for example, should lands with a recreation classification be reclassified to a wildlife classification or vice versa.). Chapter 7 of the Plan describes the public input process.

Based on an evaluation of documents such as those listed in Section 8.1, development of goals and objectives, public and stakeholder comments, interviews with adjacent cities and concerned agencies, as well as subject matter experts; the planning team prepared the land reclassification proposal for Ray Roberts Lake. All changes reflect historic and projected public use and new guidance from ER 1130-2-550 and EP 1130-2-550. A summary of acreage changes from prior land classifications to the current classifications is provided in Table 8.1 and key decision points in the reclassification of project lands are presented in Table 8.2.

**Table 8.1 Changes from Prior Classification (1983) to Proposed Classification (2022)**

| Prior Land Classifications (1983 Plan) | Acres* | Proposed Land Classifications (2022) | Acres |
|---|---|---|---|
| Operations | 325 | Project Operations | 503 |
| Recreational – Intensive Use | 3,135 | High Density Recreation | 1,841 |
| -- | -- | Environmentally Sensitive Areas | 8,633 |
| Recreational – Low Density Use | 1,510 | Multiple Resource Management – Low Density Recreation | 1,659 |
| Wildlife Management | 14,246 | Multiple Resource Management – Wildlife Management | 5,790 |
| **TOTAL Land Acres** | **19,216*** | **TOTAL Land Acres** | **18,426** |
| **Prior Water Surface Classifications (1983 Plan)** | **Acres** | **Proposed Water Surface Classifications (2022)** | **Acres** |
| Permanent Pool | 29,350 | Permanent Pool | 27,801 |
| -- | -- | – Restricted | 6 |
| -- | -- | – Designated No Wake | 119 |
| -- | -- | – Open Recreation | 27,676 |
| **TOTAL Water Surface** | **29,350** | **TOTAL Water Surface** | **27,801** |

* Land classification acres and total land acres in the 1983 Master Plan includes both flowage easement and fee simple acres.
* Some acreage differences are due to improvements in mapping and measurement technology, deposition/siltation, and erosion.

There are several major differences in the acres between the 1983 Master Plan and the proposed 2022 Master Plan which are not accounted for in Table 8.1, Table 8.2, or the maps in Appendix A. These differences are due to the following:

- In the 1983 Master Plan, the land classification maps, and land classification table include both fee simple and flowage easement land without differentiating them on either the table or maps. This makes a direct comparison of land classification acres between the 1983 Plan and proposed 2022 Plan impossible.
- After the 1983 Master Plan, some flowage easement acres were converted to fee acres, and the changed acres were not included in a supplement to the original Master Plan or changes to the maps.
- After the 1983 Master Plan, some flowage easement acres were disposed of (sold), and the changed acres were not included in a supplement to the original Master Plan or changes to the maps.
- Current mapping and measuring technology have improved since the 1983 Master Plan, providing more precise measurements. The current Plan uses GIS computer software, LiDAR spatial mapping, and updated boundary surveys.
- Since the 1983 Master Plan, erosion and deposition/siltation have led to changes in the water surface acres and land acres, with some areas increasing and other areas decreasing the total acres.
- The prior land classification Recreation – Intensive Use is similar to the current HDR classification; the prior Recreation – Low Density Use is similar to the current MRML – LDR classification; and the prior Wildlife Management classification is similar to the current MRML – WMA classification. The following table shows changes from the prior classification to current but combines the similar classifications for ease of showing changed acres.

**Table 8.2 Reclassification Proposals**

| Proposal | Reclassification Description Justification |
|---|---|
| **Wildlife Management to Project Operations** | 73 acres of land that were previously classified as WMA have been reclassified as PO. This change reflects the area currently being used for maintaining project operations activities as well as safety and security. |
| **Wildlife Management to High Density Recreation** | 58 acres of land that were classified as WMA have been reclassified as HDR. This change reflects areas that have historically been used for intensive recreation as well as areas that could see additional intensive recreation amenities and facilities. Some areas have also been changed to HDR to allow the installation of hard-surface trails (such as asphalt or concrete) which are typically not permitted in other land classifications. |
| **Wildlife Management to Environmentally Sensitive Areas** | The largest change includes 6,517 acres of land from WMA to ESA. Since the ESA land classification did not exist when the previous Plan was written, all areas were considered when deciding which areas should become ESAs. The WMA areas that changed includes native prairies, bottomland hardwood and riparian corridors, upland Cross-Timber hardwood forests, wetlands, and locations frequently used by migratory birds. The change also includes the protection of known historical and cultural sites which have not been identified in the Master Plan to protect those resources. |

| Proposal | Reclassification Description Justification |
|---|---|
| **Recreational – Low Density Use (similar to LDR) to High Density Recreation** | 32 acres Recreational – Low Density Use has been reclassified to HDR due to existing intensive recreational uses and possible future changes. Some areas have also been changed to HDR to allow the installation of hard-surface trails (such as asphalt or concrete) which are typically not permitted in other land classifications. |
| **Recreational – Intensive Use (similar to HDR) to Multiple Resource Management – Low Density Recreation** | 550 acres have been reclassified from Recreational – Intensive Use to LDR. Most of these acres are not ideal for intensive recreation due to steep or changing topography. These areas include soft surface trails and public access points and will be managed for passive, less-intensive recreation. |
| **Recreational – Intensive Use (similar to HDR) to Environmentally Sensitive Areas** | 1,015 acres have been classified from Recreational – Intensive Use to ESA. Since the ESA land classification did not exist when the previous Plan was written, all areas were considered when deciding which areas should become ESAs. The HDR areas that changed included areas that were either not ideal for intensive recreation, such as steep slopes or wetlands, and those that contained prime habitat that the USACE wants to preserve including native prairies, bottomland hardwood and riparian corridors, upland Cross-Timber hardwood forests, wetlands, and locations frequently used by migratory birds. The change also includes the protection of known historical and cultural sites which have not been identified in the Master Plan to protect those resources. |

**Note:** The land classification changes described in this table are the result of changes to individual parcels of land ranging from a few acres to more than 100 acres. Acreages were measured using GIS technology. The acreage numbers provided are approximate.

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