Draft

Environmental Assessment for the LEWISVILLE LAKE Master Plan

Trinity River Basin
Denton County, Texas

April 2020

US Army Corps of Engineers ®
Fort Worth District

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Draft FINDING OF NO SIGNIFICANT IMPACT
ENVIRONMENTAL ASSESSMENT FOR THE
LEWISVILLE LAKE MASTER PLAN
Denton County, Texas

In accordance with the National Environmental Policy Act of 1969, including guidelines in 33 Code of Federal Regulations Part 230, the Fort Worth District and the Regional Planning and Environmental Center (RPEC) of the United States (U.S.) Army Corps of Engineers (USACE) have prepared an Environmental Assessment (EA) evaluating the potential impacts associated with implementation of the proposed 2020 Lewisville Lake Master Plan (MP) would have on the natural, cultural, and human environments (the Proposed Action).

The proposed 2020 MP is a revision of the 1985 MP, as supplemented in 2004. While the supplement updated the Facilities Development Plan, Land Use Allocation Plan, natural resources mitigation, and developed Common Utility Corridors, the 1985 MP remains is the most recent comprehensive plan for Lewisville Lake. Dynamic population growth around the lake, the addition of new recreation facilities, the leasing of USACE lands to several adjacent municipalities for lake-related outdoor recreation, and an increased public awareness of the value of USACE lands as recreation open space and wildlife habitat have led to the need for a complete revision of the 1985 MP. In addition, the 1985 MP resources goals, policies, ecological principles, best management practices, cooperative directives, are no longer up to date with current USACE standards and various other environmental laws and regulations.

The proposed 2020 MP would provide guidance for stewardship of natural resources and management of long-term public access to, and use of, the natural resources of Lewisville Lake and Dam, including revised land use classifications of USACE-managed lands.

The Proposed Action is to implement the proposed 2020 MP, which includes revisions that bring the MP into compliance with USACE regulations and guidance, as well as revising land management goals for the Lewisville Lake fee owned lands. The purpose of the Proposed Action is to ensure that the management of the land, water, and recreational resources on Lewisville Lake are in compliance with current applicable environmental laws and regulations. The Proposed Action is needed because both the human and regulatory environments have substantially changed since 1985, and even since the 2004 Supplement, which has resulted in the current MP being inconsistent with USACE goals and the public needs. The Proposed Action is also needed to establish transparent management of the lake project in a manner that addresses the both the public demands for access to the lake while maintaining the mission of the USACE project.

Land and water classification changes associated with the Proposed Action would include the following:

Proposal	Description	Justification
Project Operations (PO)	The Project Operations classification was reduced from 1,170 to 1,083 acres.	The small reduction in Project Operations lands is primarily the result of the GIS measurement differential from 2004 to 2020. The 2020 classification included all Project Operations lands shown in 2004 plus two small tracts totaling 10 acres and some additional acreage located along the uncontrolled spillway discharge channel up to Fish Hatchery Road.
High Density Recreation (HDR)	The 1985 master plan included four recreation-related land classifications as follows: Recreation Intensive Use – 1880 acres Future Recreation Intensive Use – 1,320 acres. Low Density Recreation Use – 5,465 acres Future Low Density Recreation Use – 970 acres The 2004 supplement changed these classifications to either Recreation or Fish and Wildlife Management and listed 8,935 acres as Recreation lands. With very few exception all of the Recreation lands shown on the maps in the 2004 MP supplement are carried over into the 2020 MP revision as HDR lands totaling 4,780 acres. The reason that 8,935 acres is	The Recreation lands shown on the maps in the 2004 master plan supplement, minus the two exceptions noted in the column to the left are now HDR lands. These lands are needed for current and planned recreational development. It is noteworthy that there are many undeveloped acres within the HDR areas that have the potential to meet future recreation needs. Many of these undeveloped acres are located in Cottonwood Park, Sycamore Bend Park, East Hill Park, Doe Branch Park, and Hidden Cove Park.

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	shown as Recreation lands in the 2004 MP is not fully explained but may have included all recreation-related lands that were included in the 1985 MP as well as errors made in consolidating land classifications at the time. The 2004 acreage is being used as the base acreage because that is what is being used for the other land class comparisons. The 2020 MP takes into account the possible errors of the 2004 supplement and proposes 4,780 acres classified as High Density Recreation (HDR). The only acreage removed from Recreation Intensive Use status from 2004 to 2020 was approximately 75 acres in Hickory Creek Park and 10 acres of the area leased to the University of North Texas, both of which are proposed as ESA.	
Separable Recreation Lands	1,136 acres of lands are designated as Separable Recreation Lands. It is not a land classification but is required by USACE regulations to be described in project Master Plans. Separable Recreation Lands are those lands acquired only for the purpose of recreation and are otherwise not required for the	The 1,136 acres of Separable Recreation Lands existed in 2004 but were not identified as such in the 2004 Master Plan Supplement.

Proposal	Description	Justification
	successful operation of Lewisville Lake for the primary missions of flood risk management and water conservation.	
Environmentally Sensitive Areas (ESA)	Approximately 10,918 acres have been classified as ESA areas. Approximately 7,292 acres in the 2004 MP supplement were designated as an ESA overlay on another primary classification. The ESA overlay afforded the same protection as the 2020 ESA classifications, but national guidance now requires areas classified as ESA to be a stand-alone classification. Most of the acreage added to the ESA classification were formerly classified as Fish and Wildlife Management (FWM). The change to ESA provides the highest level of environmental protection in the USACE land classification system.	The 2004 ESA classification overlays did not include important east-side riparian areas, including two areas where an environmental restoration project on Hackberry Creek and Stewart Creek tributaries has been completed. Other areas added as ESA in this 2020 Plan include select portions of Hickory Creek Park, as well as an area that includes Nix and Jefferson Sloughs and the Rocky Point ESA near the north end of the old Lake Dallas Dam and the 2,704 –acre Lewisville Lake Environmental Learning Area (LLELA) that was shown as Fish and Wildlife Management. The change from FWM to ESA was based on input from LLELA management.
MRML – Low Density Recreation (LDR)	Approximately 543 acres were reclassified from a 2004 Fish and Wildlife Management classification to a MRML-LDR classification.	In 2005, USACE published a Programmatic Environmental Assessment (PEA) focused on vegetation modification activities undertaken by adjacent landowners. This PEA led to the designation of 19 Narrow Shoreline Variance Areas (NSVA) where USACE ownership ranges from less than 50 feet wide to

Proposal	Description	Justification
		approximately 100 feet wide. Landowners adjacent to the NSVA areas may apply for a written permit to mow USACE land to the water's edge. Each of the 19 NSVA areas has been reclassified from a FWM classification to a MRML-LDR classification.
MRML – Wildlife Management (WM)	The 2004 MP Supplement classified approximately 6,738 acres as Fish & Wildlife Management areas. This 2020 MP classifies 3,268 acres as MRML-WM.	The change from 6,738 acres classified for FWM purposes to 3,268 acres resulted from the conversion of 2,927 of these acres to ESA and 543 acres to MRML-LDR. Management of ESA areas allows for both the conservation of fish and wildlife habitat and for passive recreational activities as well a high level of environmental protection. Acres changed to LDR status are those areas located within Narrow Shoreline Variance Areas.
Water Surface Restricted	Approximately 79 acres of water surface has been classified as Restricted water surface where boats are not allowed.	Areas included in the 79 acres are comparatively small parcels that surround water intake structures, the USACE gate control tower, the approach to the uncontrolled spillway, and designated swimming beaches
Water Surface Open Recreation	Approximately 25,542 acres of Lewisville Lake is classified for Open Recreation area where year round or seasonal water-based recreational use is permitted.	Areas included in this water surface classification includes the majority of the lake water surface area. The exception is the areas around boat ramps, marinas, and navigational hazards.

Proposal	Description	Justification
Water Surface Designated No Wake	Approximately 1,016 acres of water surface has been classified as Designated No Wake area where vessels are not allowed to create a wake when underway.	Areas included in this water surface classification include areas surrounding boat ramps, marina areas, and two coves selected to meet the needs of paddle craft.
Common Utility Corridors	Four Common Utility Corridors were removed and the total number reduced to thirty-eight as explained in Section 6.1 of the proposed master plan. The designation of a Utility Corridor does not change the land classification of the area crossed by the corridor.	The corridors that were removed from those listed in the 2004 master plan supplement (Corridors 18, 19, 20 and 35), were no longer needed. Corridor 18 was determined to be located on private land, Corridors 19 and 20 were located on the proposed route of the Dallas North Toll Road which was not constructed at that location, and Corridor 35 was abandoned due to a realignment of city streets. The 38 remaining corridors will serve utility needs for the foreseeable future.

Note: The land classification changes described in this table are the result of changes to 44 individual parcels of land ranging from a few acres to several hundred acres. Acreages were measured using GIS technology. The acreage numbers provided are approximate.

The EA also evaluated impacts associated with the No Action Alternative. Under the No Action Alternative, the proposed 2020 MP would not be implemented. With this alternative, land use reclassifications would not occur. The operation and management of Lewisville Lake would continue as outlined in the current MP.

The EA and comments received from other agencies have been used to determine whether the Proposed Action requires the preparation of an Environmental Impact Statement (EIS). All environmental, social, and economic factors that are relevant to the recommended alternative were considered in this assessment. These include, but are not limited to, climate and climate change, environmental justice, cultural resources, air quality, visual aesthetics, prime farmland, water quality, wild and scenic rivers, wetlands, fish and wildlife, invasive species, migratory birds, recreational fisheries, and threatened and endangered species.

The implementation of the proposed 2020 Lewisville Lake Master Plan would not result in any adverse impacts to resources and would have positive impacts on land use, water resources, natural resources, threatened and endangered species, control of invasive species, cultural resources, recreation, and health and safety.

It is my finding based on the EA, that the implementation of the proposed 2020 Master Plan for Lewisville Lake would have no significant impact on the environment. Therefore, an EIS will not be prepared.

Date

Kenneth N. Reed
Colonel, U.S. Army
District Commander

ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment (EA) evaluates the potential environmental and socioeconomic impacts of the proposed implementation of the 2020 Lewisville Lake Master Plan. This EA facilitates the decision making process regarding the Proposed Action and alternatives.

SECTION 1	*INTRODUCTION* of the Proposed Action summarizes the purpose of and need for the Proposed Action, provides relevant background information, and describes the scope of the EA.
SECTION 2	*PROPOSED ACTION AND ALTERNATIVES* examines alternatives for implementing the Proposed Action and describes the recommended alternative.
SECTION 3	*AFFECTED ENVIRONMENT* describes the existing environmental and socioeconomic setting.
	ENVIRONMENTAL CONSEQUENCES identifies the potential environmental and socioeconomic effects of implementing the Proposed Action and alternatives.
	MITIGATION summarizes mitigation actions required to enable a Finding of No Significant Impact for the Proposed Action.
SECTION 4	*CUMULATIVE IMPACTS* describes the impact on the environment that may result from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions.
SECTION 5	*COMPLIANCE WITH ENVIRONMENTAL LAWS* provides a listing of environmental protection statutes and other environmental requirements.
SECTION 6	*IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES* identifies any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action should it be implemented.
SECTION 7	*PUBLIC AND AGENCY COORDINATION* provides a listing of individuals and agencies consulted during preparation of the EA.
SECTION 8	*REFERENCES* provides bibliographical information for cited sources.
SECTION 9	*ACRONYMS/ABBREVIATIONS*
SECTION 10	*LIST OF PREPARERS* identifies persons who prepared the document and their areas of expertise.
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Draft ENVIRONMENTAL ASSESSMENT

Master Plan

Lewisville Lake
Denton County, Texas

SECTION 1: INTRODUCTION

This Environmental Assessment (EA) has been prepared by the United States Army Corps of Engineers (USACE) to evaluate the implementation of the proposed 2020 Lewisville Lake Master Plan (MP). A master plan is a programmatic document that is subject to evaluation under the National Environmental Policy Act (NEPA) of 1969, (Public Law [PL] 91-190). This EA is an assessment of potential impacts that could result with the implementation of either the No Action or Proposed Action alternative and has been prepared in accordance with 33 Code of Federal Regulations (CFR) Part 230 and the Council on Environmental Quality (CEQ) Regulations (40 CFR §§1500-1508), as reflected in the USACE Engineering Regulation, ER 200-2-2.

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

The following factors may influence reevaluation of management practices and land uses:

- Changes in national policies or public law mandates;
- Operations and maintenance budget allocations;
- Recreation area closures;
- Facility and infrastructure improvements;
- Cooperative agreements with stakeholder agencies (such as Texas Parks and Wildlife Department [TPWD] and the U.S. Fish and Wildlife Service [USFWS]) to operate and maintain public lands; and
- Evolving public concerns.

The current Lewisville Lake MP was approved in 1985, supplemented in 2004, and has not be updated since. The current Lewisville Lake Master Plan is 35 years old and does not reflect ecological, socio-political, and socio-demographic changes that are

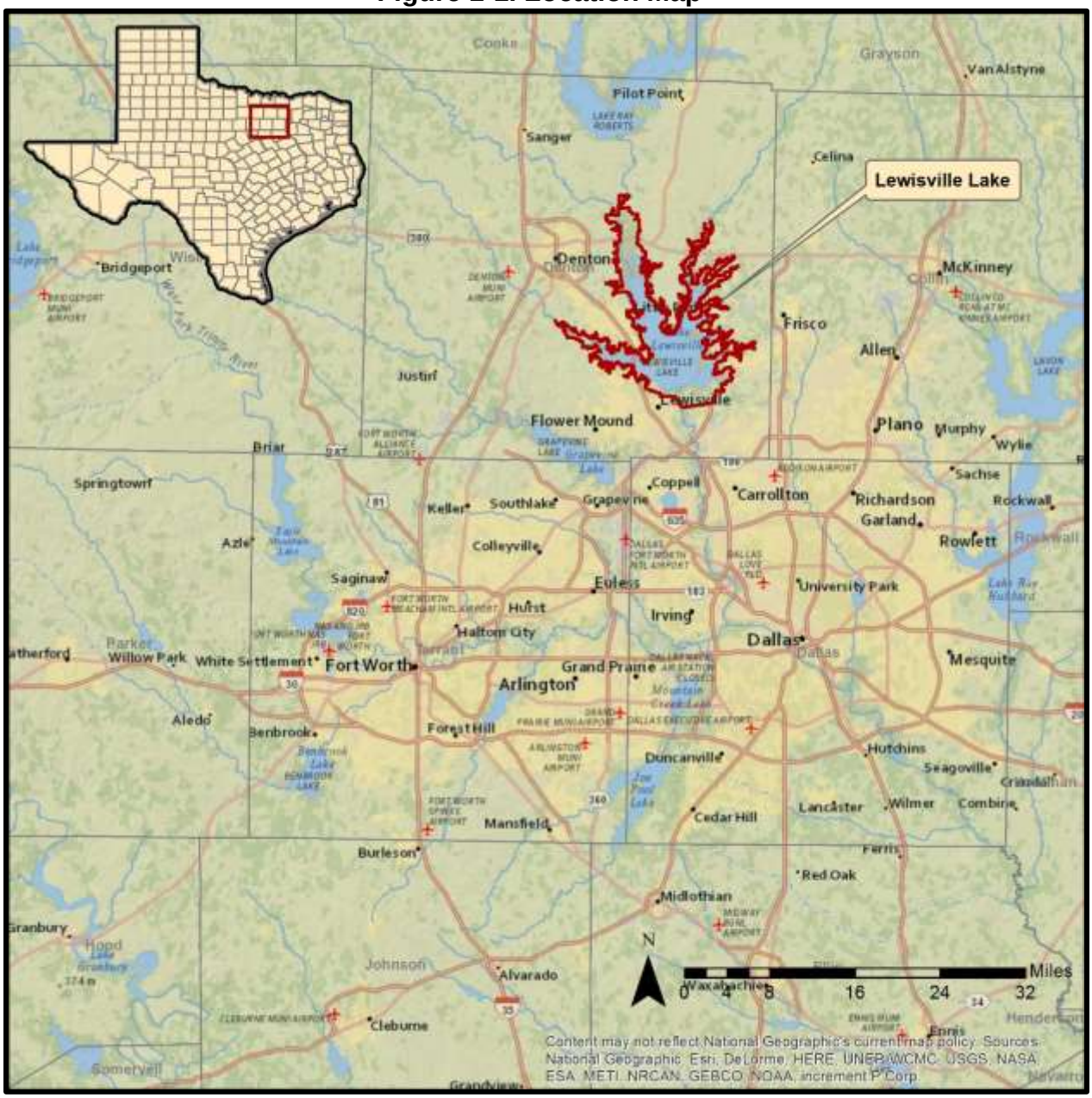
currently impacting Lewisville Lake, as well as those changes anticipated to occur through 2065. Changes in outdoor recreation trends, regional land use, population, current legislative requirements, and USACE management policy have indicated the need to revise the plan. Additionally, increasing fragmentation of wildlife habitat, national policies related to climate change and growing demand for recreational access and protection of natural resources are all factors affecting Lewisville Lake and lake's region in general. Furthermore, the 1985 MP resources goals, policies, ecological principles, best management practices, cooperative directives, are no longer up to date with current USACE standards and various other environmental laws and regulations. In response to these continually evolving trends, the USACE determined that a full revision of the 1985 plan is needed.

1.1 DESCRIPTION OF LEWISVILLE LAKE

Lewisville Dam is located at river mile 30.0 on the Elm Fork of the Trinity River, a tributary of the Trinity River in the Trinity River Basin. Lewisville Lake is located 2.4 miles northeast of Lewisville and 22 miles northwest of Dallas in Denton County, Texas (see Figure 1-1). The total drainage area above Lewisville Dam is 1,660 square miles. Construction on Lewisville Dam began on November 28, 1948, with deliberate impoundment beginning on November 1, 1954. The project was completed in August of 1955.

The City of Dallas constructed the original lake, Lake Dallas, in the 1920s. The Garza Dam on the Elm Fork of the Trinity River was completed in 1927 and water storage began in 1928. However, because the water storage capacity of the original Lake Dallas was reduced significantly by siltation, the USACE began construction of Lewisville Dam in 1948. The original Congressional authority for the construction of Lewisville Lake is contained in the River and Harbors Act approved on March 2, 1945 (PL 14, 79th Congress, 1st Session). This Act was modified by PL 84-329 in 1955 to change the name of the dam from Garza-Little Elm to Lewisville. The original Lewisville Lake was authorized for flood control and water conservation purposes, with other associated purposes that include fish and wildlife management, recreation, and hydroelectric power generation.

Figure 1-1. Location Map



Congressional authority for the modification of Lewisville Lake, including the construction of Ray Roberts Lake (formerly Aubrey Lake), is contained in the River and Harbor Act of 1965 (PL 89-298) in accordance with the total plan of improvement for the Trinity River as presented in House Document 276 (89th Congress, 1st Session). The authorized development plan included flood control storage in Ray Roberts to permit reallocation of an equivalent amount of storage in the existing downstream Lewisville Lake from flood control to water supply. The authorized plan provided for raising the conservation pool level in Lewisville Lake from 515.0 National Geodetic Vertical Datum of 1929 (NGVD29) to elevation 522.0 NGVD29 to increase its water supply yield. The reduced flood control capacity in Lewisville Lake is provided in upstream Ray Roberts

Lake in the same frequency of protection at Ray Roberts Lake for the area below Lewisville Lake. Consequently, the flood protection level for the area was not reduced.

1.2 PURPOSE OF AND NEED FOR THE ACTION

The purpose of the Proposed Action is to ensure that the management of the land, water, and recreational resources on Lewisville Lake are in compliance with current applicable environmental laws and regulations. The Proposed Action is needed because both the human and regulatory environments have substantially changed since 1985, and even since the 2004 Supplement, which has resulted in the current MP being inconsistent with USACE goals and the public needs. The Proposed Action is also needed to establish transparent management of the lake project in a manner that addresses the both the public demands for access to the lake while maintaining the mission of the USACE project.

1.3 SCOPE OF THE ACTION

This EA was prepared to evaluate existing conditions and potential impacts of proposed alternatives associated with implementation of the 2020 MP. The alternative considerations were formulated with special attention given to revised land classifications, new resource management objectives, and a conceptual resource plan for each land classification category. Effective and early NEPA integration with the master planning process can significantly increase the usefulness of the 2020 MP to the decision maker.

SECTION 2: DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 MASTER PLAN DEVELOPMENT

USACE guidance for master plan development recommends the establishment of resource goals and objectives for purposes of development, conservation, and management of natural, cultural, and man-made resources at a project. Goals describe the desired end state of overall management efforts, whereas resource objectives are specific task-oriented actions necessary to achieve the overall 2020 MP goals. Goals and objectives are guidelines for obtaining maximum public benefits while minimizing adverse impacts on the environment and are developed in accordance with 1) authorized project purposes; 2) applicable laws and regulations; 3) resource capabilities and suitabilities; 4) regional needs; 5) other governmental plans and programs; and 6) expressed public desires.

In the course of preparing the proposed 2020 Lewisville Lake MP, USACE identified five management goals. These goals are discussed in detail in the proposed 2020 MP, at Chapter 3, *Resource Goals and Objectives*.

The goals for proposed 2020 Lewisville MP include the following:

- Goal A: Provide the best management practices (BMPs) to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.
- Goal B: Protect and manage project natural and cultural resources through sustainable environmental stewardship programs.

- Goal C: Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining project natural resources.
- Goal D: Recognize the unique qualities, characteristics, and potentials of the project.
- Goal E: Provide consistency and compatibility with natural objectives and other state and regional goals and programs.

In addition to the above goals, USACE management activities are also 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 on the environment; bring 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.

The proposed 2020 Master Plan has identified objectives to meet each of these goals, and organized them by topic: recreation; natural resources; visitor information, education, and outreach; general management; and cultural resources. Specific resource objectives to accomplish these goals can be found in Chapter 3, *Resource Objectives*, of the proposed 2020 MP.

It is also worth noting that just as the regulatory, social, and natural resources environments have changed since 1985, so too has the analytical environment. In many cases, current spatial analysis result in revisions of areas under consideration. The proposed 2020 MP aims to update these values as determined accurate via current technologies. For example, while the lake surface area stated in 1985 was 29,980 acres, current GIS analysis has calculated the area to be 27,175 acres.

While dam operations and water management are major elements of the USACE management at Lewisville Lake, neither of these elements are addressed in the proposed 2020 MP, and thus will not be discussed further in this EA. Water management, which includes flood control management and dam operations, is

established in the Trinity River Basin Master Reservoir Regulation Manual and the Lewisville Lake Water Control Manual.

2.2 ALTERNATIVE 1: NO ACTION

Under the No Action Alternative, the USACE would not implement the proposed 2020 MP. Instead the USACE would continue to manage Lewisville Lake's natural resources as set forth in the 1985 MP. The 1985 MP would continue to provide the only source of comprehensive management guidelines and philosophy. However, the 1985 MP is out of date and does not reflect the current ecological, socio-political, or socio-demographic conditions of Lewisville Lake or those that are anticipated to occur through 2065.

The No Action alternative, while it does not meet the purpose of or need for the Proposed Action, serves as a benchmark of existing conditions against which federal actions can be evaluated, and, therefore, is included in this EA pursuant to CEQ regulations 40 CFR § 1502.14(d).

2.3 ALTERNATIVE 2: PROPOSED ACTION

Under the Proposed Action, the USACE proposes to adopt and implement the 2020 MP, which guides and articulates USACE responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop land, water, and associated resources. The 2020 MP would replace the 1985 MP, and 2004 Supplement MP, and provide an up-to-date management plan that follows current federal laws and regulations, while also being reflective of public input and recreational preferences. The proposed 2020 MP aims to sustain Lewisville Lake's natural resources and provide recreational experiences for the next 25 years. The Proposed Action would meet regional goals associated with good stewardship of land, water, and recreational resources; address identified recreational trends; and allow for continued use and development of project lands without violating national policies or pubic laws.

The proposed 2020 MP would classify all federal land at Lewisville Lake above conservation pool elevation 522.0 NGVD29 into management categories. These management categories would define appropriate uses of federal property to ensure the protection of natural resources and environmental stewardship while also allowing maximum public enjoyment of the lake's resources.

The proposed land classification categories are defined as follows:

- Project Operations (PO): Lands required for the dam, spillway, switchyard, levees, dikes, offices, maintenance facilities, and other areas used solely for the operation of Lewisville Lake.
- High Density Recreation (HDR): Lands developed for the intensive recreational activities for the visiting public including day use and campgrounds. These areas could also be for commercial concessions and quasi-public development.
- Environmentally Sensitive Areas (ESA): Areas where scientific, ecological, cultural, or aesthetic features have been identified.

- Multiple Resource Management Lands (MRML): Allows for the designation of a predominate use with the understanding that other compatible uses may also occur on these lands.
  - MRML Low Density Recreation (LDR): Lands with minimal development or infrastructure that support passive recreational use (primitive camping, fishing, hunting, trails, wildlife viewing, etc.).
  - MRML Wildlife Management (WM): Lands designated for stewardship of fish and wildlife resources.
- Surface Water (SW): Applies to surface water zones.
  - Restricted (R): Water areas restricted for Lewisville Lake operations, safety, and security.
  - Designated No-Wake (NW): Water areas to protect environmentally sensitive shoreline areas and recreational water access areas from disturbance and areas to protect public safety.
  - Open Recreation (OR): Water areas available for year-round or seasonal water-based recreational use.

Table 2-1 shows the proposed classifications changes and acres contained in each classification; Table 2-2 shows the water surface classifications, and Table 2-3 provides the rationale for the proposed reclassification. Please refer to pages 2-19 in the proposed 2020 MP Appendix A for the maps with the proposed land classifications.

Table 2-1. Proposed Lewisville Lake Land Classifications

Prior Land Classifications (2004)	Acres		New Land Classifications	Acres
Project Operations	1,170		Project Operations	1,083
Recreation	8,935[2]		High Density Recreation	4,780[3]
Fish and Wildlife Management	6,738			
			Separable Recreation Lands[4]	1,136
Environmentally Sensitive Areas (as an overlay on certain Fish & Wildlife and Recreation lands)	7,292		Environmentally Sensitive Areas	10,918
			Multiple Resource Management - Low Density Recreation	543
			Multiple Resource Management – Wildlife Management	3,268
Permanent pool	28,980		Permanent pool	27,175[5]
Flowage Easement	5,213		Flowage Easement	8,712
Conservation Easement	500			475

***Note**: [1]The new land classification acreage figures were measured using GIS technology and may vary from prior, similar classifications, and from official land acquisition records. Also, with the exception of the

Project Operations classification, there is no direct relationship between the prior land classifications and the new land classifications.

[2]The 8,935 acre number was copied from the 2004 MP supplement. Although not stated in the 2004 supplement, it is assumed that this number included the cumulative acreage of recreation-related lands identified in the 1985 MP.

[3]The 4,780 acres figure includes 1,136 acres of Separable Recreation Lands acquired for the Ray Roberts Lake State Park – Greenbelt Corridor.

[4]Separable Recreation Lands is not a land classification but is required by USACE regulations to be described in project Master Plans. Separable Recreation Lands are those lands acquired only for the purpose of recreation and are otherwise not required for the successful operation of Lewisville Lake for the primary missions of flood risk management and water conservation. The acreage of Separable Recreation Lands is included in the acreage totals for High Density Recreation lands. The 1,136 acres of Separable Recreation Lands existed in 2004 but were not identified as such in the 2004 Master Plan Supplement.

[5]As measured during the 2007 Sedimentation Survey conducted by TWDB.

Table 2-2. Proposed Lewisville Lake Surface Water Classifications

Proposed Classification	Acreage
Water Surface: Restricted	79
Water Surface: Designated No-Wake	1,016
Water Surface: Open Recreation	25,542
Total (Conservation Pool)	**26,637**

Note: Acreages were measured using GIS technology and may vary from the official land acquisition records. Acreage varies depending on changes in lake levels, sedimentation and shoreline erosion.

The Proposed Action would meet regional goals associated with good stewardship of land and water resources, would meet regional recreation goals, would address identified recreational trends, and would allow for continued use and development of project lands without violating national policies or pubic laws.

Table 2-3. Rationale for the Proposed Land Reclassification

Proposal	Description	Justification
Project Operations (PO)	The Project Operations classification was reduced from 1,170 to 1,083 acres.	The small reduction in Project Operations lands is primarily the result of the GIS measurement differential from 2004 to 2020. The 2020 classification included all Project Operations lands shown in 2004 plus two small tracts totaling 10 acres and some additional acreage located along the uncontrolled spillway discharge channel up to Fish Hatchery Road.
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	otherwise not required for the successful operation of Lewisville Lake for the primary missions of flood risk management and water conservation.	
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		ranges from less than 50 feet wide to approximately 100 feet wide. Landowners adjacent to the NSVA areas may apply for a written permit to mow USACE land to the water's edge. Each of the 19 NSVA areas has been reclassified from a FWM classification to a MRML-LDR classification.
MRML – Wildlife Management (WM)	The 2004 MP Supplement classified approximately 6,738 acres as Fish & Wildlife Management areas. This 2020 MP classifies 3,268 acres as MRML-WM.	The change from 6,738 acres classified for FWM purposes to 3,268 acres resulted from the conversion of 2,927 of these acres to ESA and 543 acres to MRML-LDR. Management of ESA areas allows for both the conservation of fish and wildlife habitat and for passive recreational activities as well a high level of environmental protection. Acres changed to LDR status are those areas located within Narrow Shoreline Variance Areas.
Water Surface Restricted	Approximately 79 acres of water surface has been classified as Restricted water surface where boats are not allowed.	Areas included in the 79 acres are comparatively small parcels that surround water intake structures, the USACE gate control tower, the approach to the uncontrolled spillway, and designated swimming beaches
Water Surface Open Recreation	Approximately 25,542 acres of Lewisville Lake is classified for Open Recreation area where year round or seasonal water-based recreational use is permitted.	Areas included in this water surface classification includes the majority of the lake water surface area. The exception is the areas around boat ramps, marinas, and navigational hazards.

Proposal	Description	Justification
Water Surface Designated No Wake	Approximately 1,016 acres of water surface has been classified as Designated No Wake area where vessels are not allowed to create a wake when underway.	Areas included in this water surface classification include areas surrounding boat ramps, marina areas, and two coves selected to meet the needs of paddle craft.
Common Utility Corridors	Four Common Utility Corridors were removed and the total number reduced to thirty-eight as explained in Section 6.1 of the proposed master plan. The designation of a Utility Corridor does not change the land classification of the area crossed by the corridor.	The corridors that were removed from those listed in the 2004 master plan supplement (Corridors 18, 19, 20 and 35), were no longer needed. Corridor 18 was determined to be located on private land, Corridors 19 and 20 were located on the proposed route of the Dallas North Toll Road which was not constructed at that location, and Corridor 35 was abandoned due to a realignment of city streets. The 38 remaining corridors will serve utility needs for the foreseeable future.

Note: The land classification changes described in this table are the result of changes to 44 individual parcels of land ranging from a few acres to several hundred acres. Acreages were measured using GIS technology. The acreage numbers provided are approximate.

SECTION 3: AFFECTED ENVIRONMENT AND CONSEQUENCES

This section of the EA describes the natural and human environments that exist at the project and the potential impacts of the No Action (Alternative 1) and Proposed Action (Alternative 2), outlined in Section 2.0 of this document. Only those issues that have the potential to be affected by any of the alternatives are described, per CEQ regulation (40 CFR § 1501.7 [3]). Some topics are limited in scope due to the lack of direct effect from the Proposed Action on the resource or because that particular resource is not located within the project area. For example, no body of water in the Lewisville Lake watershed is designated as a Federally Wild or Scenic River, so this resource would not be discussed.

Impacts (consequence or effect) can be either beneficial or adverse and can be either directly related to the action or indirectly caused by the action. Direct effects are caused by the action and occur at the same time and place (40 CFR § 1508.8 [a]). Indirect effects are caused by the action and are later in time or further removed in distance but are still reasonably foreseeable (40 CFR § 1508.8 [b]). As discussed in this section, the alternatives may create temporary (less than 1 year), short-term (up to 3 years), long-term (3 to 10 years following the master plan revision), or permanent effects.

Whether an impact is significant depends on the context in which the impact occurs and the intensity of the impact (40 CFR § 1508.27). The context refers to the setting in which the impact occurs and may include society as a whole, the affected region, the affected interests, and the locality. Impacts on each resource can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis, the intensity of impacts would be classified as negligible, minor, moderate, or major. The intensity thresholds are defined as follows:

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

The proposed 2020 MP thoroughly details both the project setting and the intended end state of the resources with the implementation of the MP. Unless otherwise noted, the following discussion summarizes the current conditions and proposed action impacts as described in the proposed 2020 MP. The citation for each resource is included here, to assist in rapidly identifying more detailed information.

3.1 LAND USE

Lewisville Dam and Lake are a multi-purpose project used for flood control, water supply, hydropower, fish and wildlife, and recreation. The project is a unit of the Trinity River Basin System, which consists of eight USACE lakes and various channel improvements and levees operated to provide flood protection along the Trinity River. Lewisville Dam and Lake operates in conjunction with Ray Roberts Dam and Lake on the Elm Fork of the Trinity River to provide flood risk management for the lower Elm Fork Trinity River and the main stem Trinity River through Dallas and downstream. The total project area at Lewisville Lake encompasses 47,137 acres including the Lewisville Lake Environmental Learning Area (LLELA) to the south and the Greenbelt to the north. Of this total area, 46,001 acres were acquired in fee simple title by USACE, while a total of 8,712 acres were acquired for a perpetual Flowage Easement. When the pool elevation is at the normal or conservation pool elevation of 522.0 NGVD29, the lake has a surface area of 27,175 acres based on a 2007 volumetric survey. The lands acquired for the Greenbelt consist of 475 acres of conservation easement to protect the natural integrity of the area as well as 1,136 acres as fee simple title.

Table 3-1 describes the current land use classification in the Project Area. While the existing plan also categorizes land use for surface water, the management is done flexibly according to current drawdown measures. Surface water management areas include swimming, outlet and intake structures, low speed boating areas, uncleared areas, boat channel, shallow areas, low pool hazards, and the City of Denton Water Intake Cove.

Table 3-1. 2004 Land Use Classifications

Land Use Classification	Acreage	Description
Recreation	8,935	Facilities provided to accommodate visitors in concentrated numbers as required to make a whole recreation unit. Management practices leading to habitat improvement for the benefit of wildlife are encouraged. No hunting or agricultural uses are permitted.
Fish and Wildlife Management	6,738	Designated habitat for fish and wildlife. Vehicles are not allowed. Lands are generally available for selected low-density recreation activities such as hiking, hunting, fishing, nature study, nature photography, wildlife observation, and other related activities. Includes the ESA overlay and Common Utility Corridors[1].
Project Operations	1,170	Lands designated to provide for safe, efficient operation of the project for those authorized purposes other than recreation and fish and wildlife. This includes the land on which project operational structures are located.

Note: 1. Common Utility Corridors are defined as areas where utilities could be or have been placed. These corridors were designed to be as unobtrusive as possible on surrounding habitat and to follow existing roads or utility easements where possible.

Refer to Chapter 6, *Land Use Allocation Plan*, of the 2004 MP Supplement for further details concerning what these land classifications entails.

3.1.1 Alternative 1: No Action

Under the No Action Alternative, USACE will not implement the proposed 2020 MP, and thus the land use management will not be updated to current needs and demands. The operation and maintenance of USACE lands at Lewisville Lake will continue as outlined in the existing MP to the existent that current and future laws and regulations will permit. Management will continue to lag behind the current and future recreational needs and public preferences. As the regulatory environment continues to change, management at Lewisville Lake will diverge from the plan. This divergence will create a patchwork of management requirements that will be inefficient for Lewisville Lake staff to implement. The management will also increasingly lack transparency to the public, or alternately create more of a burden to staff to communicate how the lake management differs from that in the management plan. Implementation of the No Action Alternative will have moderate, adverse, short and long term impacts on land use within and on USACE Lewisville Lake project lands due to conflicting guidance and management of USACE lands.

3.1.2 Alternative 2: Proposed Action

The objectives for revising the Lewisville Lake MP were to describe current and foreseeable land uses, taking into account expressed public opinion, regional trends, and USACE policies that have evolved to meet day-to-day operational needs. The proposed reclassifications in the 2020 MP were developed to help fulfill regional goals associated with good stewardship of land and water resources that will allow for continued use and development of project lands.

The land previously designated as Project Operations will be wholly reclassified as Project Operations, with minimal functional change to land use management.

While ESA is technically a new management classification, the bulk of the proposed 10,918 acres of ESA land is from the previous FWM land under the 2004 MP's ESA overlay. Therefore, the proposed management for most of this land will also be consistent with current management. The proposed ESA was developed based on a combination of quantitative habitat evaluation, presence of cultural resources, and public input. Additional descriptions of each ESA is available in Section 5.5 of the 2020 MP. The proposed ESA does include 3,262 acres that was not previously within the ESA overlay. The majority of new acreage for proposed ESA land is from the 2,393-acre LLELA that is classified as FWM under the 2004 MP This designation is proposed based on input from LLELA management which results in long term, beneficial impacts on land use within USACE Lewisville Lake MP fee use lands as natural areas would be protected for continued conservation and outdoor recreation. An additional 85 acres would be changed from Recreation to ESA in areas where no recreation infrastructure development has taken place that currently supports high quality or unique habitat.

One of the most substantial changes to the land use terminology concerns the recreation categories. The 2004 land class of Recreation, would be replaced with two different classes, HDR and MRM-LDR. This revision still focuses the management on

recreational uses, but will also allow USACE to manage lands with more granularity, with development concentrated in high-density designated spaces, like the proposed 4,780 acres designated for HDR. These lands generally include established parks for camping and fishing. The 543 acres proposed under MLM-LDR to be reclassified from FWM, still preserving the majority of the Lewisville Lake area as an open space oasis in the DFW Metroplex while affording low impact outdoor recreation opportunities.

On the waters of Lewisville Lake, the proposed 2020 MP will add established surface was use categories in addition to the current ad hoc management of the lake. The formal establishment of 79 acres of restricted, 1,016 acres of no wake, and 25,542 acres of open recreation to the water surface, respectively, will allow for delineated, and safer management of the lake's waters when the lake is at conservation pool. These classifications will help to improve safety of those recreating on and around Lewisville Lake. This will be done by restricting boat access and speeds around certain parts of the lake, as well as establishing areas that boating can occur in. The Lewisville Lake office will still maintain the authority to make ad hoc adjustments as needed by lake level, which will prevent the proposed classifications from being overly rigid or even ineffectual in various lake level conditions.

The removal of the four Common Utility Corridors to thirty-eight corridors as explained in Section 6.1 of the proposed master plan will have negligible positive short and long term impacts on land use within Lewisville Lake. The positive impacts comes removing the land class designation from Common Utility Corridor to that of the surrounding land classification. Their removal will not increase the usage of nearby corridors.

The majority of the land use classifications proposed in the 2020 MP will maintain the functional management that is currently occurring. While the terminology updates appear substantial, they have been proposed after considerable public input, and seek to maintain the values the public holds highest at Lewisville Lake. Additionally, the land reclassifications provide a balance between public use, both intensive and passive, and natural resources conservation. Therefore, the implementation of the Proposed Action will have minor, long term beneficial impacts to land use as the proposed land classes and utility corridors further refine areas for appropriate activities.

3.2 WATER RESOURCES

Neither the existing nor the proposed MP address groundwater, water quality, water level management, or water conservation, and therefore these aspects of water resources are being considered qualitatively in this EA primarily for the potential for indirect effects of the proposed 2020 MP. This level of analysis also frames the discussion of the affected environment as being limited to information needed to provide the context of the potential impact.

Surface Water

The headwaters of the Elm Fork of the Trinity River begin in eastern Montague County in North Central Texas and flow 110 miles south and southeast through Cooke, Denton, and Dallas counties to its confluence with the West Fork of the Trinity River in

the City of Dallas. Lewisville Lake is a roughly 29,000-acre reservoir created by the U.S. Army Corps of Engineers by impounding the waters of the Elm Fork of the Trinity River, plus the waters of Stewart, Panther, Cottonwood, Doe Branch, Little Elm, Pecan, and Hickory Creeks.

The Elm Fork watershed is comprised of parts of Montague, Cooke, Grayson, Collin, Wise, Tarrant, Denton, and Dallas counties. It is about 80 miles long and has maximum width of 60 miles. The watershed contains a total area of 2,577 square miles, of which 1,660 square miles drain into Lewisville Lake and 968 square miles are downstream of Ray Roberts Dam (TWDB 2007).

Lewisville Lake, as it is today, is the result of impounding two separate lakes. Lake Dallas was the original lake which was built in 1929 by the City of Dallas for flood control and the area's main water source. In order to meet water demands of a growing community, the U.S. Army Corps of Engineers began construction of a new dam in 1948, which was completed in 1955. The two lakes were formed into one by breaching the Lake Dallas dam, and the new reservoir was named Lewisville Lake.

Lewisville Lake reaches a depth of 67 feet at normal conservation pool elevation of 522.0 NGVD29 with water levels fluctuating from four to eight feet annually in normal years. Lewisville Lake has an average depth of 25 feet and contains numerous shallow areas with exposed and submerged trunks which add to the danger for boats and other recreational watercraft. Although the lake water is generally murky, water quality is good.

Per the 2007 Volumetric and Sedimentation Survey conducted by the Texas Water Development Board (TWDB), Lewisville Lake has a total reservoir capacity of 598,902 acre-feet (ac-ft) and encompasses 27,175 acres at the conservation pool elevation. In addition, Lewisville Lake has approximately 250 miles of shoreline surrounded by roughly 9,000 acres of project lands.

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.

The designated uses for Lewisville Lake are flood control, water supply, aquatic habitat, and contact recreation. According to the 2020 TCEQ report, Lewisville Lake nor any waters directly within USACE fee owned properties were listed as impaired except for the Clear Creek portion of the Greenbelt connection between Lewisville and Ray Roberts Lake. Clear Creek TSWQS impairment is for bacteria in the water.

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 (DHS 2019). As of December 2019, no fish consumption advisories have been issued for Lewisville Lake or the Trinity River within the Lewisville Lake Federal Fee Boundary by the Texas Department of State Health Services Texas DSHS (2019).

Hydrology

The Elm Fork of the Trinity River sub-watershed is subject to three general types of flood-producing rainfall events: thunderstorms, frontal rainfall, and tropical cyclones. The topography, soils, and typical rainfall patterns of the watershed lead to rapid and sharp crested flood hydrographs. Floods occur frequently and can occur at any time of year. Generally, the highest 24-hour and monthly precipitation periods have occurred during major thunderstorm events. However, there are some instances where heavy precipitation results from localized thunderstorms or rain events. 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. With the exception of Denton Creek, all of these principal tributaries are located upstream of Lewisville Lake.

The Lewisville Dam and Lake Project is 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, known as Benbrook Dam, Bardwell Dam, Grapevine Dam, Lewisville Dam, Lavon Dam, Lewisville Dam, Navarro Mills Dam, and Ray Roberts Dam. The eight USACE dam projects in the Trinity River system control approximately 1,591,300 acre-feet (ac-ft) of flood control area. Lewisville Lake controls 1,658 square miles of drainage area. Specifically, Lewisville Lake has a conservation pool capable of storing 27,175 ac-ft between elevation 522.0 and 481.0 NGVD29. Once the water elevation reaches 532.0 NGVD29 and fills an additional 11,993 ac-ft of storage space, water overtops the spillway and is uncontrollably released downstream. The pool of record occurred on May 31, 2015 with an elevation of 536.94 NGVD29.

Groundwater

Deep below Lewisville Lake lies the Trinity and Woodbine aquifers. The Trinity Aquifer extends across much of the central and northeastern portion of Texas and 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.

The Woodbine is a minor aquifer located in northeast Texas. The aquifer overlies the Trinity Aquifer and consists of sandstone interbedded with shale and clay that form three distinct water-bearing zones. The Woodbine Aquifer reaches 600 feet in thickness in subsurface areas, with an aquifer that serves as a water supply resource to the region. Historically, abundant springs and seeps were documented along with artesian pressures as early as the late 1800s by the first drillers to penetrate the Eagle Ford Shale and encounter the Woodbine. Wells drilled throughout the region were free

flowing at hundreds of gallons per minute (gpm) for many years until increased groundwater withdrawal reduced artesian conditions. After the construction of multiple surface water reservoirs, and increased surface water supply options, the reduced use of groundwater has resulted in a partial return of higher water levels and artesian pressures in the Woodbine. The Woodbine is confined to semi-confined beneath the Eagle Ford Shale.

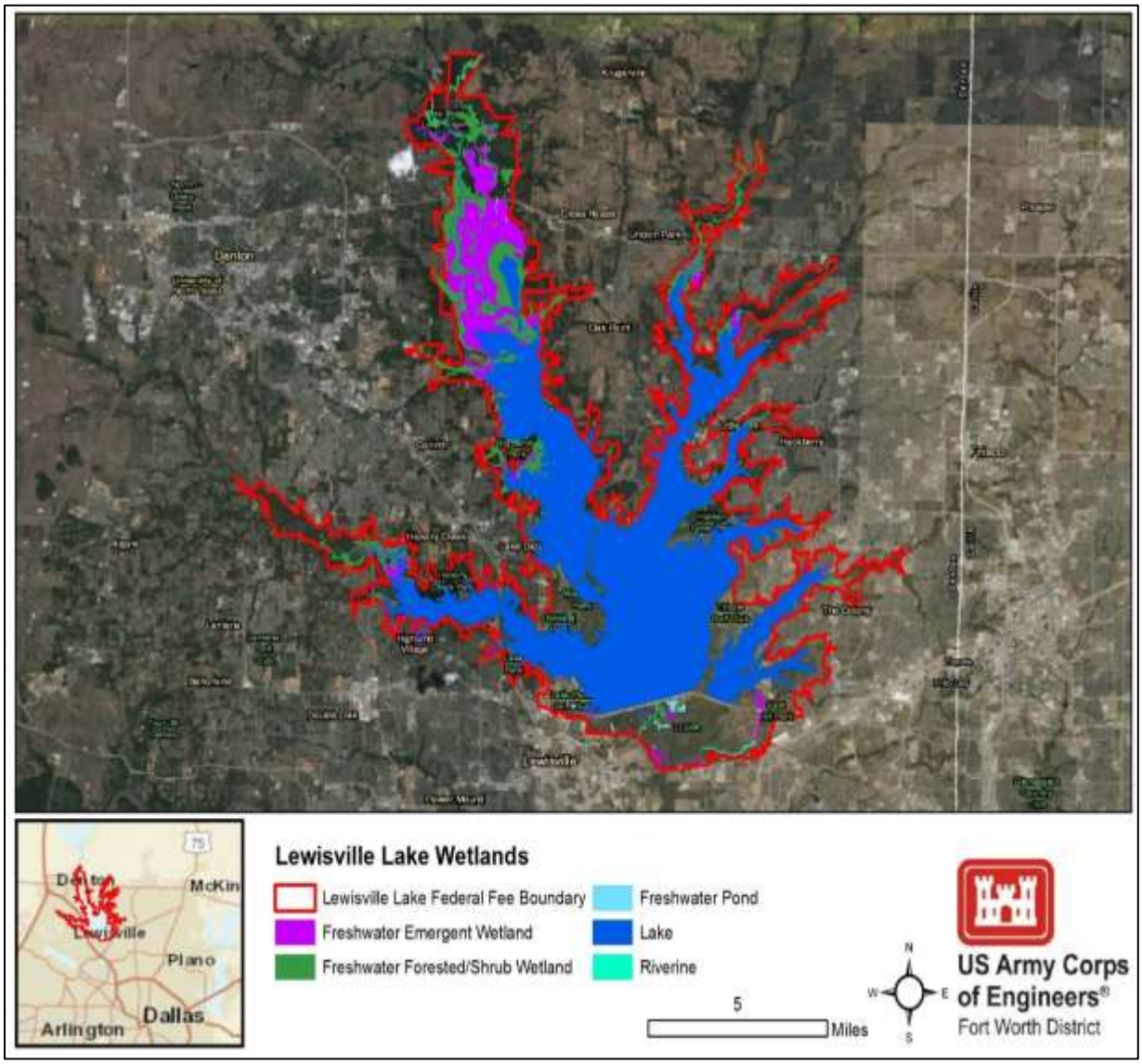
Wetlands

Wetland classifications presented are derived from the National Wetlands Inventory, which was established by USFWS to aid in conservation efforts by collecting nationwide wetland distribution and type information (USFWS 2018). Within the Lewisville Lake project lands, wetlands generally occur near the rivers and flatter areas in the northwestern arm of the lake. Table 3-2 lists the acreages of various types of wetlands present at Lewisville Lake and Figure 3-1 displays the distribution of wetland types found within Lewisville Lake project lands.

Table 3-2. Wetlands within Lewisville Lake Project Lands

Wetland Type	Total Acres
Freshwater Emergent Wetland	2,834.9
Freshwater Forested/Shrub Wetland	4,278.8
Freshwater Pond	121.8
Lake	19,823.8
Riverine	1,220.1
Total	**28,279.4**

Figure 3-1. Distribution of Wetland Types within Lewisville Lake Project Lands



3.2.1 Alternative 1: No Action

There will be no impacts on water resources as a result of implementing the No Action Alternative, since there will be no change to the existing Master Plan. There are no known water resource related problems that the 1985 MP and 2004 Supplement are helping to increase nor maintain.

3.2.2 Alternative 2: Proposed Action

The reclassifications and resource management objectives required for implementing the proposed 2020 Lewisville MP the Proposed Action will allow land management and land uses to be adjusted for current and reasonable foreseeable future changes in water resources. For example, the increase of 3,470 acres to ESA lands (primarily from 2,927 acres of FWM and 85 acres from Recreation) would help stabilize soils through the promotion of native habitat. In turn, the habitat would help buffer and filter storm runoff before making its way into the lake. Minor, beneficial

impacts to water quality may be realized during storm events as the natural areas may help to reduce erosion and subsequent water turbidity. The establishment of a total 10,918 acres of ESA lands and 3,268 acres of WM lands that will result in more upland areas and wetlands being protected from erosion and sedimentation. Resource objectives makes it mandatory that all decision making processes take into consideration their impacts to Lewisville Lake watershed, lake water supply, and water quality.

Additionally, 1,016 acres of surface waters are proposed to be classified as Designated No Wake. These areas are near shorelines where wave action can increase erosion. This proposed Designated No Wake classification would be expected to help prevent further erosion and water turbidity.

Therefore implementation of the proposed 2020 MP will have negligible positive short and long term impacts on water resources within and on USACE project lands.

3.3 CLIMATE, CLIMATE CHANGE, AND GREENHOUSE GASES

Lewisville Lake lies in the north central part of the state of Texas. The region 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 prevailing winds over the watershed are from the south during the spring, summer, and fall months, while northerly winds prevail during the winter months. The mean annual temperature in the nearby city of Denton is about 65 degrees Fahrenheit. January, the coldest month, has an average minimum daily temperature of about 33 degrees (U.S Climate Data, 2019). August, the warmest month, has an average maximum daily temperature of about 96 degrees. The average length of the growing season is 246 days (Cedar Lake Ventures Inc. 2019).

The normal annual precipitation is 38 inches with precipitation levels being higher in the late-spring, early-summer months, peaking in May-June and lowest in December-January and July-August (U.S Climate Data, 2019). 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 83% over the course of a year. The air is driest around the end of November-February timeframe and is most humid between June-July. The average annual evaporation rate at nearby Grapevine Lake, as calculated using the measured pan evaporation multiplied by the monthly pan coefficient, is about 83 inches with the lowest evaporations rates occurring during the winter and greatest evaporation occurring during the summer (USACE 2018).

Climate Change and Greenhouse Gases

Federal agencies are required to consider Green House Gas (GHG) emissions and climate change in environmental assessments in accordance with NEPA. On August 1, 2016, the CEQ issued final guidance on the consideration of GHG emissions and climate change in NEPA reviews; however, Executive Order (EO) 13783 directed the CEQ to rescind that guidance. At the same time, case law in the Ninth Circuit Court still requires climate change analysis: “The impact of greenhouse gas emissions on climate

change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct" (Center for Biological Diversity vs. the National Highway Traffic Safety Administration, 538 F.3d 1172, 1217 (9th Cir., 2008). Consistent with case law, an analysis of climate change impacts was conducted for this EA.

EO 13834, as well as the President's Climate Action Plan (CAP) set forth requirements to be met by federal agencies. These requirements range from preparing general preparedness plans to meeting specific goals to conserve energy and reduce GHG emissions. The USACE has prepared an Adaptation Plan in response to the EOs and CAP. The Adaptation Plan includes the following USACE policy statement:

> *It is the policy of USACE to integrate climate change preparedness and resilience planning and actions in all activities for the purpose of enhancing the resilience of our built and natural water-resource infrastructure and the effectiveness of our military support mission, and to reduce the potential vulnerabilities of that infrastructure and those missions to the effects of climate change and variability*.

The USACE manages project lands and recreational programs to advance broad climate change resilience and carbon sequestration, as set forth in EO 13834 and related USACE policy.

Predicted Climate Change

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). Lewisville Lake is 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 have 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 rainfall, extreme heat events have also been increasing. Most of the increases of heat wave severity in the U.S. are likely due to human activity, with a detectable human influence in recent heat waves in the southern Great Plains (USGCRP, 2014). In particular, in 2011, the State of Texas experienced a heat wave and drought. The growing season and summer were both the hottest and driest on record. Extreme heat events in Texas have also been occurring substantially more frequently.

This trend of rising temperatures and more frequent extreme events such as heat waves, drought, and heavy rainfall is predicted 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.

3.3.1 Alternative 1: No Action

The continual implementation of the 1985 MP will not result in any change in management of Lewisville Lake project land nor anything that will currently and in the future contribute to climate, climate change, and greenhouse gases. Implementation of the 1985 MP and 2004 Supplement will have no impact (beneficial or adverse) on existing or future climate conditions. Current policy EO 13834 and 13783, and related USACE policy requires project lands and recreational programs be managed in a way that advances broad national climate change mitigation goals including, but not limited to, climate change resilience and carbon sequestration. These policies will continue to be implemented under the No Action Alternative.

3.3.2 Alternative 2: Proposed Action

The proposed 2020 MP does not recommend any activities that will result in a change (beneficial or adverse) in GHG emissions; therefore adoption and implementation of the proposed Lewisville Lake MP will have no impact on the existing climate of the study area nor will it exacerbate future climate conditions. Management under the 2020 MP will also follow current policy to meet climate change goals as described for the No Action Alternative. Ground disturbing activities that arise from guidance from this document will go through the NEPA and design process prior to implementation. It is during that time, that impacts to the climate will be analyzed for those ground disturbing activities.

3.4 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 and concentrations of various air contaminants including primary and secondary standards for six criteria pollutants: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO_2), Nitrogen Oxide (NO), particulate matter (PM_{10} and $PM_{2.5}$), and Lead (Pb). If 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.

Lewisville 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 O3. 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 is August 3, 2021.

3.4.1 Alternative 1: No Action

The continual implementation of the 1985 MP will not result in any changes to current and reasonably foreseeable future air quality in the region. No new increase in vehicular traffic, mass permanent vegetation removal, or the building of mass industrial

facilities occur. The No Action Alternative will remain compliant with the Clean Air Act because the MP includes only guidelines and does not incorporate actions which produce criteria pollutants as explained in the previous sentence.

3.4.2 Alternative 2: Proposed Action

As with the No Action Alternative, the 2020 MP will not result in any change to current and reasonably foreseeable air quality in the region. The Proposed Action does not propose any actions (i.e. ground disturbing activities) that directly or indirectly produce criteria pollutants (i.e. total emissions is 0); therefore, this action is compliant with the Clean Air Act and State Implementation Plan and is not subject to a conformity determination. Negligible air quality benefits may be realized through the proposed classification of 10,918 acres of ESA and 3,268 acres of WM. These areas contain natural vegetation communities that filter and sequester air pollutants.

3.5 TOPOGRAPHY, GEOLOGY, AND SOILS

Topography

Topography describes the physical characteristics of the lands such as slope, elevation, and general surface features. Lewisville Lake and its tributaries are located in the Blackland Prairie, East Cross Timbers, Grand Prairie, and West Cross Timbers subdivisions of the Gulf Coastal Plain physiographic province. The topography throughout the basin is predominantly gently rolling. Basin topography varies from level or gently rolling in the lower reaches to broken prairie in the north and northwestern reaches. Some rough land occurs along the streams in the lower reaches.

The Elm Fork of the Trinity River drops from an elevation of about 1,210 feet NGVD29 at its source to 435 feet NGVD29 at the Lewisville Dam site. The average slope of the stream bed is 7.5 feet per mile, and the average slope downstream of Lewisville dam is 1.6 feet per mile.

Geology

The Upper Trinity River Basin is situated within the West Gulf Coastal Plain section of the Coastal Plain physiographic province. The physiography of the area is primarily controlled by surficial geologic material. The regional geology of the Upper Trinity River Basin reflects the various depositional phases and environments that took place during three periods of pre-historical geologic times. The oldest layers, exposed in the northwestern reaches of the basin consist of marine and near shore sand, shale, and limestone layers (bedrock). Younger layers, consisting of near shore sand and marine shale and limestone are exposed at the surface over most of the Upper basin. The younger sediments, which dip gently toward the east and southeast, were deposited unconformably (i.e., missing a layer or layers of the entire regional geologic sequence) over the northwest-dipping older layers after a period of lifting and erosion. The sediments in the Lewisville Lake area are youngest, a result of the processes of weathering and erosion of the older rocks during more recent times. These sediments, composed of unconsolidated sand, gravel, silt, and clay, make up the alluvial deposits (water-laid) of the Trinity River floodplain and its major tributaries (Ulery et al. 1993).

Primary Formations

Primary bedrock formations occurring at the dam site are the Eagle Ford and Woodbine groups. The bedrock layers in the reservoir area dip southeastward at a gradient of 50 to 60 feet per mile. This is greater than the slope of the land surface, and results in the encounter of progressively younger beds when proceeding in a southeastward direction. Historically, the Eagle Ford group was not subdivided into various member formations at the dam site. For previous project purposes, the Eagle Ford was originally considered a single entity. However, based on more recent mapping in the region of north central Texas, the Eagle Ford Shale is divided into three ascending units: the Tarrant, the Britton, and the Arcadia Park formations. At the dam site, the Woodbine formation has been segregated into the upper Lewisville beds and the lower Dexter Sands. No major structural faulting or folding is known at the dam site or in the reservoir area.

Soils

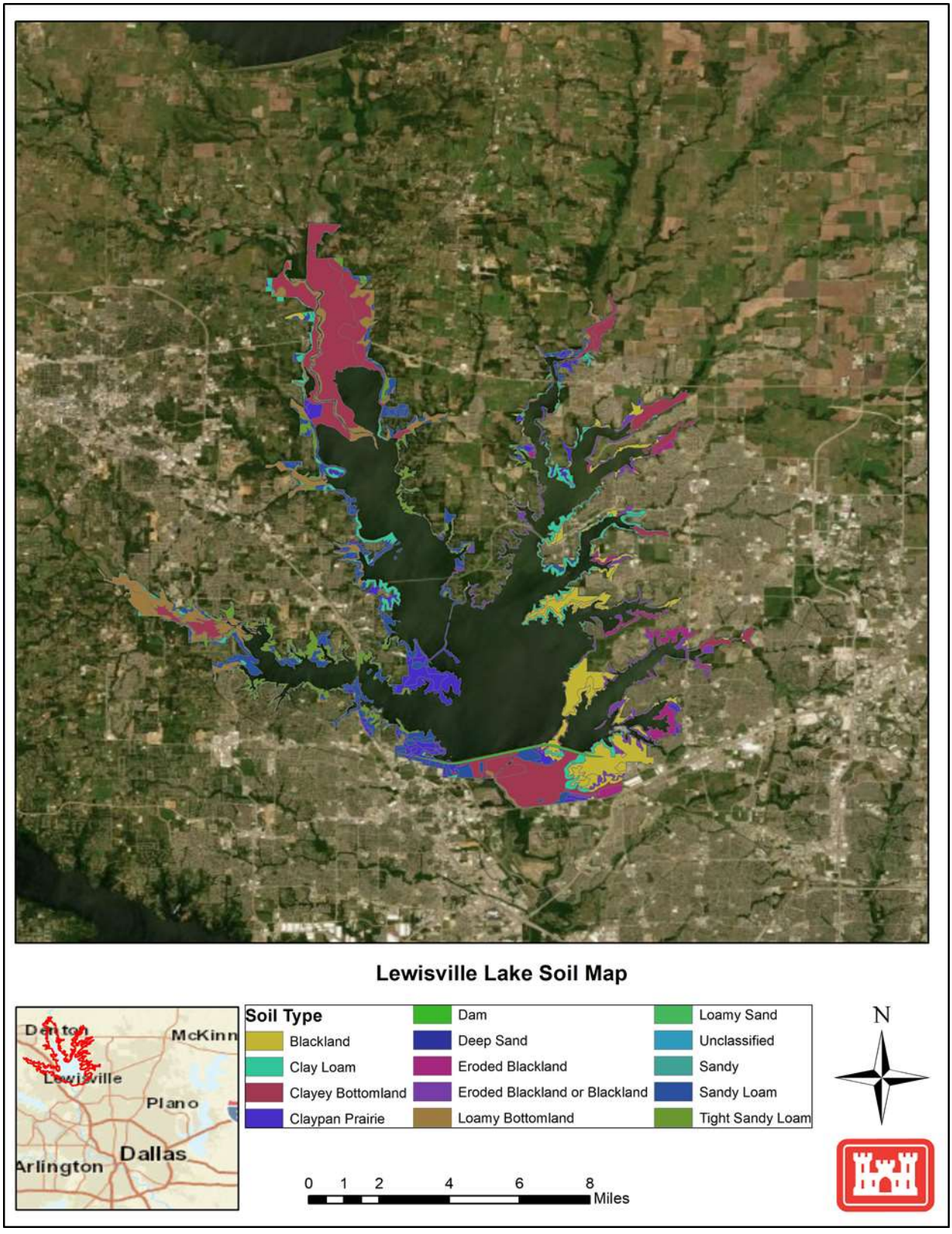
Many different soils occur in the Lewisville Lake vicinity. Residual soils east of the Elm Fork overlaying the Eagle Ford formation are predominately clay soils. Soils west of the Elm Fork overlying the Woodbine formation are somewhat sandy. The sandy soils are fairly shallow and overlie clay-based subsoil with a deep profile to bedrock.

The Natural Resource Conservation Service (NRCS) Web Soil Survey (2018) reports that there are twelve different types of soils that contribute to the diversity and abundance of terrestrial and aquatic vegetation on Lewisville Lake project lands. Table 3-3 shows the acreage associated with each soil type and Figure 3-2 shows the location of each soil type.

Table 3-3. Total acres of each Soil Type Found within Lewisville Lake Project Lands

Soil Type	Number of Acres
Blackland	2,747.03
Clay Loam	1,648.61
Clayey Bottomland	6,116.75
Claypan Prairie	1,672.02
Deep Sand	12.2
Eroded Blackland	761.53
Eroded Blackland or Blackland	1,170.05
Loamy Bottomland	2,185.54
Loamy Sand	56.22
Sandy	0.61
Sandy Loam	2,820.57
Tight Sandy Loam	1,489.66
Total	20,680.79

Figure 3-2. Location of Various Soil Types Found within Lewisville Lake Project Lands



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 Lewisville Lake and Dam in November 1948.

3.5.1 Alternative 1: No Action

The No Action Alternative does not involve any activities that will contribute to changes in existing conditions, so there will be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on topography, geology, soils, or prime farmland as a result of implementing the No Action Alternative.

3.5.2 Alternative 2: Proposed Action

The proposed 2020 MP takes into consideration of the various topographical, geological, and soils aspects of USACE Lewisville Lake project lands. The reduction of Project Operations land (from 1,170 acres to 1,083 acres) and Recreation land (8,935 acres to 4,780 acres) and the increase of ESA (from 7,292 acres to 10,918 acres) lands will help to increase the long term preservation and stabilization of the soils within USACE Lewisville Lake project lands. In addition resource objectives makes it mandatory that erosion control and sedimentation issues are being monitored and alternatives be developed and implemented to resolve those issues. The removal of the 4 Common Utility Corridors will not have any impact on topography, and geology. However, the continued and future use of the remaining utility corridors will condense disturbances associated with utility operations to limited areas, further reducing soil exposure to erosive wind and water forces. The establishment of ESA and WM land classes as well as the implementation of resource objectives discussed in Chapter 3 of the 2020 MP, the proposed action would have minor, positive, long-term impacts on soil conservation.

3.6 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 in accordance with the USFWS Classification of

Wetlands and Deepwater Habitats of the United States, which were previously discussed in Section 3.2. In addition to the data from the Level One Inventories, a Habitat Assessment was conducted on October 16-20, 2017 at Lewisville Lake by an interagency team of biologists, foresters, and USACE park rangers using the TPWD's Wildlife Habitat Appraisal Procedure (WHAP) to help inform land classification proposals for the 2020 MP. A total of 84 data collection sites were selected using aerial photography and knowledge of the Lewisville Lake staff. The four major habitat types that were selected and assessed were Upland Forest, Marsh, Riparian/Bottomland Hardwood Forest, and Grassland. The WHAP assessment report is included as Appendix C of the 2020 MP. Additional details and results of the WHAP surveys can be found in Section 5.5 of the 2020 MP.

The WHAP assessment revealed that the two most abundant habitat types surveyed were upland forests and riparian/BHF. However, the two habitat types that scored on average the highest were marshes and grassland habitats. Four areas were identified to as having a concentration of high scoring habitats. These areas include the lands below the lake dam, Hickory Creek branch, Little Elm Fork branch, and the Elm Fork of the Trinity River branch.

Large scale conservation management efforts have been in progress at Lewisville Lake. Several of these sites were surveyed within Lewisville Lake Environmental Learning Area (LLELA) and Lewisville Aquatic Ecosystem Research Facility (LAERF) as part of this effort. Overall, seven riparian/BHF sites, ten upland forest sites, and two grassland sites received scores over 0.70, exhibiting medium to high quality habitat. Eight of these points are located below the lake dam and largely represent the conservation and restoration efforts completed to date and are likely to increase in habitat value as restoration efforts continue.

The Texas Conservation Action Plan (TCAP) 2012 and the accompanying Texas Blackland Prairies Ecoregion Handbook (Handbook), published by TPWD in August 2012, were used in the preparation of the 2020 MP. The TCAP and Handbook were invaluable in identifying Species of Greatest Conservation Need (SGCN), rare plant communities, regional conservation issues, and a suite of conservation actions needed to reduce negative effects on SGCN and rare plant communities.

Vegetation

Lewisville Lake is located within the Texas Blackland Prairies and Cross Timbers ecological regions. The Texas Blackland Prairies is a distinct ecoregion located in central Texas. The largest section of the ecoregion is mostly south to north trending, starting at San Antonio and nearly reaching the Oklahoma border north and northeast of Dallas. The other part of the Texas Blackland Prairies trends southwest to northeast, starting southeast of San Antonio. This smaller, more southeastern located part of the ecoregion is commonly called the Fayette Prairie. The entire Texas Blackland Prairies ecoregion covers roughly 19,500 square miles (see Figure 3-3.).

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 Lewisville Lake is located, include both the Eastern Cross Timbers and Fort Worth Prairie vegetative sub-regions of the Cross Timbers ecoregion.

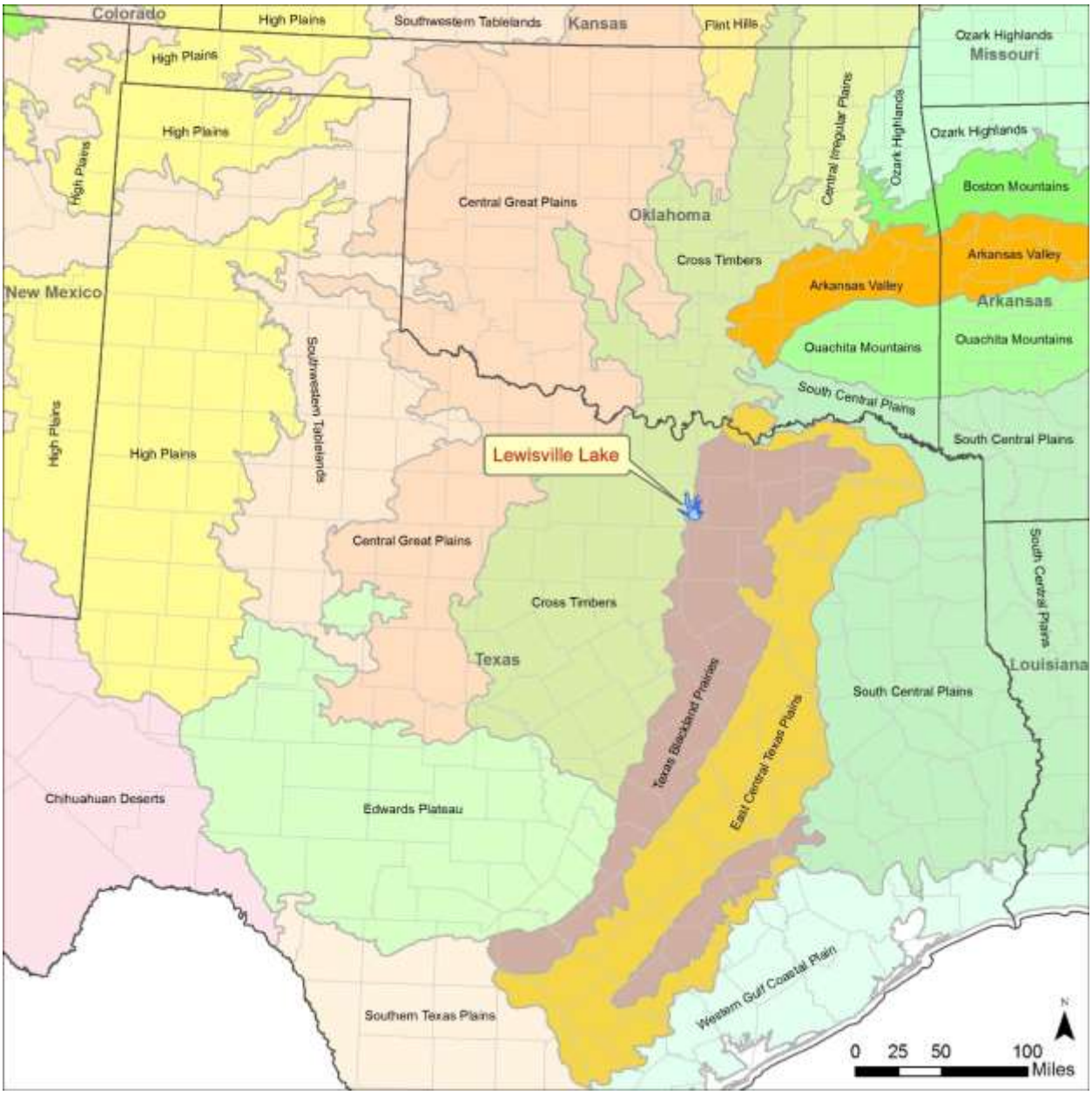
Texas Blackland Prairies

The land cover of the Texas Blackland Prairies at the beginning of the 19th century was predominately tallgrass prairie, with forest found primarily along stream courses and some uplands. The common grass and forb species include little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardi*), yellow Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), eastern gamagrass (*Tripsacum dactyloides*), tall dropseed (*Sporobulus compositus*), asters (*Aster spp.*), prairie bluet (*Stenaria nigricans*), prairie clovers (*Dalea spp.*), and coneflowers (*Echinacea spp.*). Bottomland hardwoods forest are not as prevalent, but where they occur common species include 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*), sweetgum (*Liquidambar styraciflua*), sugar hackberry (*Celtis laevigata*), and eastern cottonwood (*Populus deltoides*). 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.

Cross Timbers

Vegetation on the landscape of the Cross Timbers has undergone significant changes over the past 150 years. Early travelers through north Texas coined the name “Cross Timbers” by their repeated crossings of these timbered areas that proved to be a barrier to their travel on the open prairies to the east and west.

Figure 3-3. Ecoregions of Texas



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

Eastern Cross Timbers

In north central Texas, the Eastern Cross Timbers vegetative sub-region is a narrow strip of timbered country extending from eastern Cooke and western Grayson counties, south to near Waco, where it merges with the riverine forests of the Brazos River.

Fort Worth Prairie

The Fort Worth Prairie portion of the Cross Timbers extends as a continuous body of open grasslands, roughly 10 to 30 miles wide, from near the Red River in the north, south about 110 miles to where it ends in the wooded area along the Brazos River near the Johnson-Hill County line.

The Cross Timbers ecoregion, with its woody overstory consisting of primarily post oak (*Quercus stellata*) and blackjack oak (*Quercus marilandica*), owe its existence to the presence of sandy, slightly acidic soils. These soils allow more efficient water infiltration, permit easier penetration of tree roots, and provide more moisture to plants that do the heavier clay soils typically present in the Blackland Prairies ecoregion. In addition to the characteristic oaks, other woody species commonly found in the Cross Timbers today include hackberry (*Celtis spp.*), cedar elm, pecan, several juniper species, and mesquite. Common grass species include hairy grama (*Bouteloua hirsuta*), side-oats grama (*Bouteloua curtipendula*), tall dropseed (*Sporobolus compositus*), switchgrass (*Panicum virgatum*), Canada wild-rye (*Elymus canadensis*), and Texas winter grass (*Nassella leucotrica*) (Dyksterhuis 1948, Correl & Johnson 1970, Diggs, et al. 1999).

Fisheries and Wildlife Resources

Lewisville 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*), blue catfish (*Ictalurus furcatus*), white crappie (*Pomoxis annularis*), spotted bass (*Micropterus punctulatus*), hybrid striped bass, and white bass (*Morone chrysops*). Other less prominent species include carp, blue gill, longear sunfish (*Lepomis megalotis*), gizzard (*Dorosoma cepedianum*) and threadfin shad (*Dorosoma petenense*). Several species have been stocked periodically since 1966 with bass and catfish being the most popular. There is significant fishing pressure at the lake, since it is located within one of the most populated urban metro areas in the United States.

Many of the undeveloped open spaces provide habitat for wildlife including coyotes (*Canis latrans*), bobcats (*Lynx rufus*), eastern cottontail rabbit (*Sylvilagus floridanus.*), fox squirrel (*Sciurus niger*), nine-banded armadillo (*Dasypus novemcinctus*), striped skunks (*Mephitis mephitis*), raccoons (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), and Virginia opossum (*Didelphis virginiana*). The area also provides habitat for a diverse range of birds and acts as a stopover for migratory birds. Common bird species include many species of waterfowl (ducks), and various raptors, shore birds, and song birds. As for reptiles, there are several species of turtles, lizards, and snakes that are common to the area. Since Lewisville Lake is surrounded by the DFW Metroplex, the wildlife management and ESA lands on Lewisville Lake have great benefit to vegetative and wildlife resources of the region as to threatened and endangered species. Piping Plover (*Charadrius melodus*) and Red Knott (*Calidris*

canutus) are not an uncommon occurrence within the lake, where they use it as a stopover in their migrations.

3.6.1 Alternative 1: No Action

The No Action Alternative for Lewisville Lake does not involve any activities that will directly and immediately contribute to changes in existing conditions. Therefore, no immediate or short- term minor, moderate, or major; or beneficial or adverse impacts on natural resources will occur. However, maintaining existing land classifications will not recognize the need to protect important habitats such as prairies, wetlands, or scenic areas, which could lead to long -term moderate or major negative impacts on natural resources as a result of implementing the No Action Alternative

3.6.2 Alternative 2: Proposed Action

The implementation of the reclassifications of land management classes, improvement of resource management objectives, and the overall improvement of the proposed 2020 MP will allow natural resources within USACE Lewisville federal project lands to be better managed and accounted for. The better management will be from implementing the knowledge gained from the Wildlife Habitat Appraisal Procedure (WHAP) survey done for Lewisville Lake, which helps to establish the high quality and unique areas. The implementation of proposed land reclassifications will allow project lands to continue and further support the USFWS and the TPWD missions associated with wildlife conservation and implementation of operational practices that will protect and enhance wildlife and fishery populations and habitat. The new resource objectives also allows for natural resources to be managed with consideration of how they will be impacted from the retention of flood waters. The addition of 3,626 acres of ESA and 3,268 of MRML-WM lands, especially in prime ecological areas helps to protect natural resources from various types of adverse impacts such as habitat fragmentation. Which is what the removal of the 4 Common Utility Corridors described in section 6.1 of the proposed 2020 MP will help to do and as well as increase the acreage of habitat. In addition, all new utilities will be built along existing right-of-ways and existing Common Utility Corridors. Therefore, under the Proposed Action, there will be short- and long-term major, beneficial impacts on natural resources as a result of implementing the 2020 MP.

3.7 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 on, 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 (2020) lists the threatened and endangered species and trust resources that may occur within the Lewisville Lake project lands (see USFWS Official Species List and the Trust Resources Report in Appendix C of the 2020 MP). There are two federally-listed species and no candidate species that have the potential to utilize Lewisville Lake project lands. A list of these species is presented in Table 3-4. No Critical Habitat has been designated within or near Lewisville Lake. The species identified as Threatened, Endangered or Candidate Species by TPWD that are not federally listed are included in Appendix C of the 2020 MP as well as a list of Species of Greatest Conservation Need (SGCN) for the Cross Timbers and Texas Blackland Prairie Ecoregions.

Table 3-4. Federally Listed Endangered and Threatened Species with Potential to Occur within Lewisville Lake Project Lands

Common Name	Scientific Name	Federal Status	Occurrence
Least Tern	*Sterna antillarum*	Endangered	Seasonally Common
Whooping Crane	*Grus americana*	Endangered	Rare

Source: USFWS 2020

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. Although fairly rare, both of these species have been observed at Lewisville Lake during their migration seasons.

Least tern preferred habitat mostly consists of open waters, rivers, lakes, estuaries, marshes, and swamps. Typically nesting occurs on sandy to gravely substrates including shorelines and sandbars or other areas that are near open water. Nests are usually above the high water line and close to vegetation (USFWS 2017). Depending on lake levels, it may nest along the shorelines or on exposed sandbars at Lewisville

Lake. Because of the availability of desirable habitat and recent unofficial sightings, the specie occurrence on Lewisville Lake project lands is considered uncommon.

Whooping crane habitat consists of marshes, shallow lakes, lagoons, salt flats, grain and stubble fields, and barrier islands (AOU 1983, Matthews and Moseley 1990). Because of the sporadic unofficial sightings, the occurrences of Whooping Cranes within the boundaries of Lewisville Lake is considered rare (NatureServe 2016).

Texas Parks and Wildlife Department's (TPWD 2019) Annotated County Lists of Rare Species database record the threatened and endangered species that may occur on Lewisville project lands. Table 3-5 lists these species including their scientific name and status with TPWD.

Table 3-5: TPWD List of Threatened and Endangered Species That May Occur within Lewisville Lake Project Lands

Common Name	Scientific Name	State Status
	Birds	
White-faced Ibis	*Plegadis chihi*	Threatened
Bald Eagle	*Haliaeetus leucocephalus*	Threatened
Whooping Crane	*Grus Americana*	Endangered
Piping Plover	*Charadrius melodus*	Threatened
Interior Least Tern	*Sternula antillarum athalassos*	Endangered
	Reptiles	
Texas Horned Lizard	*Phrynosoma cornutum*	Threatened
Timber (canebrake) Rattlesnake	*Crotalus horridus*	Threatened
	Mollusks	
Sandbank Pocketbook	*Lampsilis satura*	Threatened
Louisiana Pigtoe	*Pleurobema riddellii*	Threatened
Texas Heelsplitter	*Potamilus amphichaenus*	Threatened

Source: TPWD 2019

Texas Natural Diversity Database

The Texas Natural Diversity Database (TXNDD), administered by TPWD, manages and disseminates information on the occurrence of rare species, native plant communities, and animal aggregations in Texas to help guide project planning efforts. An official request via email was made on December 16, 2019 requesting this information for the following USGS quadrangles that encompass Lewisville Lake project lands: Little Elm, Lewisville East, Lewisville West, Denton East, and Green Valley. USACE received the requested information from TXNDD on December 17, 2019. The next four paragraphs would summarize the information received.

Within the Lewisville Lake project lands, several locations were identified by the TXNDD to contain unique communities and species. Among these communities were

those that contain the Texas garter snake (*Thamnophis sirtalis annectens*) and Texas heelsplitter (*Potamilus amphichaenus*) (TXNDD 2019).

In late 1977 and 1978, Texas heelsplitter shells were detected at ten locations within Lewisville Lake project lands and living Texas heelsplitter were detected in Lewisville Lake. In 1999, Texas heelsplitter was detected again, with living individuals at one site (TXNDD 2019). The ideal habitat for the Texas heelsplitter is of flowing water with mud or sand in small to medium rivers. It may also be found in reservoirs (NatureServe 2017A) and (Howells et al., 1996).

In 2006 a Texas garter snake was positively identified in the former Lake Dallas area of Lewisville Lake (TXNDD 2019). After further investigation in NatureServe (2017B) about the preferred habitat of the species, it was found that it prefers wet, moist soils in grassy and or bushy terrain areas near rivers and streams. Because of this information, the occurrence of Texas Garter Snake occurring within Lewisville Lake project lands is considered to be common.

The TXNDD reports and the data collected from the WHAP survey confirms that pockets Mollisol Blackland Prairie mixed plant community can be found on the project lands at Lewisville Lake; thus, the occurrence of this community on project lands is considered common.

3.7.1 Alternative 1: No Action

The No Action Alternative does not involve any activities that would contribute to changes in existing conditions; therefore, no short- or long-term, major, moderate, or minor, beneficial, or adverse impacts on threatened and endangered species would be anticipated as a result of implementing the No Action Alternative.

3.7.2 Alternative 2: Proposed Action

The implementation of the proposed 2020 MP will allow for better cooperative management plans with the USFWS and TPWD that will help to preserve, enhance, and protect vegetation and wildlife habitat resources that are essential to various endangered and threatened species that may be found within USACE Lewisville federal project lands. To further management opportunities and beneficially impact habitat diversity, the reclassifications proposed in the 2020 MP include 10,918 acres as ESAs. Under this reclassification, several land parcels previously classified as Fish and Wildlife Management lands were converted to ESAs in order to recognize those areas having the highest ecological value and to ensure they are given the highest order of protection among possible land classifications. In combination with the proposed 1,016 acres of Designated No Wake Zones, the federally protected shorebirds that occur at Lewisville Lake would be expected to benefit from reduced wake induced erosion. The conversion of these lands was supported by recommendations from the USFWS, TPWD, and the surroundings cities. Resource objectives makes it mandatory that threatened and endangered species are managed by various ecosystem management principles. In addition, all new utilities will be built along existing right-of-ways and existing Common Utility Corridors. This will help to reduce future loss of natural resources that could potentially occur from placement of utility lines on project lands. Then the removal of the 4 Common Utility Corridors described in section 6.1 of the proposed 2020 MP will help to increase the acreage of threatened and endangered species habitat and reduce

their fragmentation. Any future activities that could potentially result in impacts on federally listed species will be coordinated with USFWS through Section 7 of the Endangered Species Act. Under the Proposed Action, impacts to federally threatened and endangered species would long-term, minor, and entirely beneficial. As a result, USACE has determined the proposed 2020 MP revisions will have no effect on federally threatened or endangered species that occur at Lewisville Lake.

3.8 INVASIVE SPECIES

Invasive species are any kind of living organism which, if uncontrolled, causes harm to the environment, economy, or human health. Invasive species generally grow and reproduce quickly and spread aggressively. Non-native, or exotic, species have been introduced, either intentionally or unintentionally, and can out-compete native species for resources or otherwise alter the ecosystem. Native invasive species are those species that spread aggressively due to an alteration in the ecosystem, such as lack of fire or the removal of a predator from the food chain. Table 3-6 lists invasive and exotic species that are known to occur within Lewisville Lake project lands.

Table 3-6. Invasive Species Found within Lewisville Lake Project Lands

Common Name	Scientific Name	Native/Non-native	Prevalence
Mammals			
Feral Hog	*Sus scrofa*	Non-native	Moderate
Nutria	*Myocastor coypus*	Non-native	Moderate
Mollusks			
Zebra Mussel	*Dreissena polymorpha*	Non-native	Minor
Insects			
Africanized Honeybee	*Apis spec*	Non-native	Major
Red Imported Fire Ant	*Solenopsis invicta*	Non-native	Moderate
Plants			
Purple Loosestrife	*Lythrum salicaria*	Native	Minor
Chinaberry Tree	*Melia azedarach*	Non-native	Minor
Chinese Privet	*Ligustrum sinense*	Non-native	Minor
Chinese Tallow Tree	*Triadica sebifera*	Non-native	Minor
Hydrilla	*Hydrilla verticillata*	Non-native	Minor
Johnsongrass	*Sorghum halepense*	Non-native	Minor
King Ranch Bluestem	*Bothriochloa ishaemum var. songarcia*	Non-native	Minor

Source: USACE Operations and Maintenance Business Information Link (OMBIL) 2018

In 2015, 1,655 acres were treated for invasive species. Of that total, 55 acres were treated for 4 terrestrial animals and 1,600 acres for 10 terrestrial plants. In 2016 and 2017 the number of acres treated and the number of plants and animals remained the same. For two years 105 acres were treated - 100 acres was treated for 5 terrestrial plants and 5 acres was treated for 2 terrestrial animals (USACE 2018).

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 and Lewisville Lake’s close proximity to other non-infested lakes. Although native, cowbirds (*Molothrus ater*) have become problematic due to their expanding range associated with agriculture and human development. The close proximity to urban landscaping has led to many common landscape plants becoming aggressive colonizers and become invasive at Lewisville Lake.

03.8.1 Alternative 1: No Action

The No Action Alternative does not involve any activities that will contribute to changes in existing conditions, so Lewisville Lake will continue to be managed according to the existing invasive species management practices. There will be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts from invasive species as a result of implementing the No Action Alternative.

3.8.2 Alternative 2: Proposed Action

The implementation of the reclassifications of land management classes, improvement of resource management objectives, and the overall improvement of the proposed 2020 MP will allow invasive species within USACE Lewisville federal project lands to be better managed and accounted for. The better management will be from implementing the knowledge gained from the Wildlife Habitat Appraisal Procedure (WHAP) survey done for Lewisville Lake, which helps to identify high value and unique areas that needs further protection from invasive species so as to protect their value and uniqueness that invasive species may destroy or degrade. The addition of 3,626 acres of ESA and 3,268 acres of MRML-WM lands, especially in prime ecological areas helps to protect natural resources from various types of adverse impacts such as habitat fragmentation which increases the spread of invasive species and these areas also receive more invasive species management efforts. The resource objectives also makes for the mandatory of the spread of invasive species as well as to take action to prevent and/or reduce the spread of these species. The removal of the 4 Common Utility Corridors, will help to further reduce the spread of invasive species by removing avenues of entry that they can be introduced and spread. Therefore, under the Proposed Action, there will be short- and long-term minor, beneficial impacts on invasive species as a result of implementing the 2020 MP.

3.9 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

Cultural History Sequence

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 the Lewisville Lake area, and is known primarily from distinctive projectile point styles dating to this time period found in surface collections or in mixed multi-component sites. It is likely that intact Paleo-Indian camp sites may be buried deeply beneath Holocene floodplain alluvium, as was the case with the Aubrey Clovis site upstream on the Elm Fork Trinity River. 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 Lewisville 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 Lewisville Lake sites includes 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 Lewisville 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.

Historic

Local tradition holds that Native Americans of the Wichita and Caddo Nations inhabited the Lewisville Lake area prior to the arrival of the first white settlers in the early 1840s. The first large colonization occurred after W.S. Peters of St. Louis obtained a land grant from the Republic of Texas in 1841. The first “Peters Colony” contract included the Lewisville Lake area. 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. Cotton farming became an important agricultural

activity in the Blackland Prairie region and tenant farming was a major social institution. Most of the historic resources at Lewisville 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 earlier Peters Colony occupation have been recorded.

Previous Investigations

The initial archeological investigations at Lewisville Lake were conducted between 1948 and 1950 by the River Basin Surveys. During that period, 27 sites were recorded, and three sites (41DN5, 41DN6, 41DN12) were tested. Plans to enlarge the lake led to additional survey in 1986 and 1987 by the University of North Texas (UNT), followed by test excavations at 23 prehistoric and 16 historic sites. In 1988, UNT performed data recovery excavations at five prehistoric (41DN20, 41DN26, 41DN27, 41DN372, 41DN381) and three historic (41DN401, 41DN404, 41DN429) sites. Limited survey work since then has added to the number of known archeological sites.

Recorded Cultural Resources

Currently, 161 archeological sites have been recorded at Lewisville Lake. One of these archeological sites (Cranston Pottery Kiln - 41DN16) and the historic Old Alton Bridge are listed on the National Register of Historic Places (NRHP). Of the remaining 160 archeological sites, ten have been determined eligible for NRHP and 136 have been determined ineligible. Fourteen of the recorded sites have not yet been evaluated for NRHP eligibility.

Cultural Resources Management at Lewisville Lake

As funding allows, a Cultural Resources Management Plan (CRMP) shall 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 Lewisville Lake. Completion of a full inventory of cultural resources at Lewisville Lake is a long-term objective that is needed for compliance with Section 110 of the National Historic Preservation Act (NHPA). All currently known and 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, would 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 Lewisville Lake must be coordinated with the State Historic Preservation Officer and federally-recognized Tribes to insure compliance with the National Historic Preservation Act, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act.

3.9.1 Alternative 1: No Action

There will be no additional short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on cultural, historical, or archaeological resources as a result of

implementing the No Action Alternative, as there will be no changes to the existing Master Plan.

3.9.2 Alternative 2: Proposed Action

The implementation of the reclassifications of land management classes, improvement of resource management objectives, and the overall improvement of the proposed 2020 MP will allow cultural, historical, and archaeological resources within USACE Lewisville federal project lands to be better managed and accounted for. Based on previous surveys at Lewisville Lake, the required reclassifications, existing utility corridors, resource objectives, and resource plan will not change current cultural resource management plans or alter areas where these resources exist. All future activities will be coordinated with the State Historic Preservation Officer and federally recognized Tribes to ensure compliance with Section 106 of the NHPA, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act. Therefore, no significant adverse impacts on cultural, historical, or archaeological resources will occur as a result of implementing the 2020 MP. Beneficial impacts may occur as a result of the 2020 MP as lands classified as PO, ESA, or WM would generally protect any historic properties within those lands against ground disturbing activities.

3.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Located totally within Denton County, the primary zone of interest (ZOI) for socioeconomic analysis of Lewisville Lake is defined as those counties that surround the lake, which are Denton, Dallas, Tarrant, and Collin counties, in North Central Texas. The population, education level, employment rates, income, and household characteristics of the area are discussed in detail in Section 2.4 of the 2020 MP and are incorporated herein by reference (USACE, 2020).

Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by President Clinton on 11 February 1994. It was intended to ensure that proposed federal actions do not have disproportionately high and adverse human health and environmental effects on minority and low-income populations and to ensure greater public participation by minority and low-income populations. It requires each agency to develop an agency-wide environmental justice strategy. A Presidential Transmittal Memorandum issued with the EO states that “each federal agency shall analyze the environmental effects, including human health, economic and social effects, of federal actions, including effects on minority communities and low-income communities, when such analysis is required by the NEPA 42 U.S.C. section 4321, et seq.”

EO 12898 does not provide guidelines as to how to determine concentrations of minority or low-income populations. However, analysis of demographic data on race and ethnicity and poverty provides information on minority and low-income populations that could be affected by the proposed actions. The U.S. Census American Community Survey provides the most recent estimates available for race, ethnicity, and poverty. Minority populations are those persons who identify themselves as Black, Hispanic,

Asian American, American Indian/Alaskan Native, Pacific Islander, or Other. Poverty status is used to define low-income. Poverty is defined as the number of people with income below poverty level, which, according to the U.S. Census Bureau, was $24,588 for a family of four in 2017. A potential disproportionate impact may occur when the minority in the study area exceeds 50 percent or when the percent minority and/or low-income in the study area are meaningfully greater than those in the region.

Protection of Children

EO 13045 requires each federal agency "to identify and assess environmental health risks and safety risks that may disproportionately affect children" and "ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks." This EO was prompted by the recognition that children, still undergoing physiological growth and development, are more sensitive to adverse environmental health and safety risks than adults. The potential for impacts on the health and safety of children is greater where projects are located near residential areas. Per Table 3-7, the U.S. Census estimates show that persons under 18 years of age living in poverty range from 28.3 percent of the population in Dallas County, 23.9 percent in the State of Texas, 20.7 percent in Tarrant County, and 10.0 percent each in Denton and Collin counties (U.S. Census Bureau 2016).

Dallas, Tarrant, and Collin counties all have a larger minority population percentage than the State of Texas, while Denton County is less. In Tarrant, the percentage of the population living is poverty and the percentage of children under the age of 18 living in poverty is less than both the State of Texas and Dallas County. Both these percentages are substantially lower in Denton, and Collin counties.

Table 3-7. Minority/Poverty Percentages for State of Texas and Counties in ZOI

	Minority Population (Percent)	All Ages in Poverty (Percent)	Under 18 in Poverty (Percent)
Texas	23.0	16.7	23.9
Dallas County	37.1	18.6	28.3
Tarrant County	27.6	14.4	20.7
Denton County	20.5	08.7	10.0
Collin County	25.3	07.1	10.0
Zone of Interest Average Total	**27.6**	**12.2**	**16.1**

Sources: 2016 U.S. Census Bureau Statistics

3.10.1 Alternative 1: No Action

The continual implementation of the 1985 MP will result in the existing beneficial socioeconomic impacts to continue, as visitors will continue to come to the lake from surrounding areas. In addition to camping, many visitors purchase goods such as

groceries, fuel, and camping supplies locally, eat in local restaurants, stay in local hotels and resorts, play golf at local golf courses, and shop in local retail establishments. These activities will continue to bring revenues to local companies, provide jobs for local residents, and generate local and state tax revenues. There will be no disproportionately high or adverse impacts on minority or low-income populations or children with the implementation of the No Action Alternative.

3.10.2 Alternative 2: Proposed Action

The continual implementation of the 1985 MP the land reclassifications, resources objectives, and resource plan reflect changes in land management and land uses that have occurred since 1985 and 2004. Lewisville Lake offers a variety of recreational opportunities for visitors. It is beneficial to the local economy through direct and indirect job creation and local spending by visitors. Beneficial impacts will be similar to the No Action Alternative. There will be no adverse impacts on economy in the area and no disproportionately high or adverse impacts on minority or low-income populations or children as a result of the Proposed Action.

3.11 RECREATION

Because six of the eight reservoirs in the Upper Trinity River system are located within the DFW Metroplex, the majority of the visitors to Lewisville Lake come from within a 30 mile radius, thus from Denton, Dallas, Tarrant, and Collin counties. These visitors are a diverse group of people with a wide variety of interests. Examples of visitors include campers who utilize the USACE- and city operated campgrounds around the reservoir; adjacent residents; recreational boaters, anglers who fish for recreation or participate in fishing tournaments; marina customers who utilize the marina on the reservoir; and day users who picnic, hike, bike, swim, and bird watch. Recreational facilities, activities, and needs are discussed in detail in Section 2.5 of the 2020 MP.

The USACE operates two recreation areas around Lewisville Lake, an additional seventeen areas are operated by local cities, and two by community organizations. For further information on these facilities refer to Section 2.5, *Recreation Facilities, Activities, and Needs*, of the proposed 2020 MP. The recreation areas are leased to non-federal partners referred to as grantees. Each grantee is responsible for the operation and maintenance of their leased area; USACE does not provide direct maintenance within any of the leased locations, but 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 High Density Recreation areas.

3.11.1 Alternative 1: No Action

Under the No Action Alternative, there will be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on recreational resources, as there will be no changes to the existing MP.

3.11.2 Alternative 2: Proposed Action

The USACE proposes to continue to lease recreation lands at Lewisville Lake to non-federal partners, who are anticipated to maintain and improve existing facilities with potential plans for future expansion.

Lewisville Lake is beneficial to the local visitors and also offers a variety of free recreation opportunities. Even though the amount of acreage available for High Density Recreation will decrease (8,935 acres to 4,780 acres) as well as the creation of 543 acres for MRML-Low Density Recreation (MRML-LDR) with implementation of the 2020 Master Plan, these land reclassifications reflect changes in land management and land uses that have occurred since 1985 and 2004 at Lewisville Lake as well as errors made in consolidating land classifications at the time. The classification of MRML-LDR lands took into consideration areas where USACE ownership ranges from less than 50 feet wide to approximately 100 feet wide as a part of the Narrow Shoreline Variance Areas (NSVA) program, this designation allows adjacent landowners to apply for a written permit to mow USACE land to the water's edge. The reclassification of these lands will have no effect on current or projected public use. Nor will the reclassification of 2,704 – acres from FWM to ESA for the Lewisville Lake Environmental Learning Area (LLELA). Passive recreational activities would still be allowed as they are now and within LLELA like hiking, fishing, kayaking, running and other passive recreational activities. A small area within LLELA is proposed as HDR for future development of a nature center or similar facility. The resource objectives makes it mandatory that all decisions made in regards to the lake take into consideration their impacts to recreation and monitored should adjustments be needed. Therefore, under the Proposed Action, there would no adverse, short- or long-term impacts on recreation as numerous recreation opportunities would remain around Lewisville Lake to accommodate various outdoor based recreation activities.

3.12 AESTHETIC RESOURCES

Lewisville Lake and surrounding federal lands offer public, open space value and scenic vistas that are unique to the region. This is especially true in the Lewisville Lake Environmental Area (LLELA) and the Greenbelt. Natural Resources Management objectives will continue to minimize activities which will disturb the scenic beauty and aesthetics of the lake.

3.12.1 ALTERNATIVE 1: No Action

There will be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on visual resources as a result of implementing the No Action Alternative, as there will be no changes to the existing MP.

3.12.2 ALTERNATIVE 2: Proposed Action

Lewisville Lake currently plays a pivotal role in availability of parks and open space in Denton County and the greater Dallas-Fort Worth Metroplex. The amount of acreage classified for Recreation (8,935) would reduce from to 4,780 acres for High Density Recreation and 543 acres for MRML-Low Density Recreation with implementation of the 2020 Master Plan. These land reclassifications reflect changes in land management and land uses that have occurred since 1985 and 2004 at Lewisville Lake as well as errors made in consolidating land classifications at the time. The conversion of these lands would have no effect on current or projected public use or visual aesthetics as

views from natural and recreation areas would remain in place. Furthermore, the increase in the acreage of land classified as ESAs by 3,626 acres and the 3,268 acres of MRML – Wildlife Management will protect lands that are aesthetically pleasing and available for passive recreation activity Lewisville Lake and limit future development. All new utilities will be built along existing right of ways and existing Common Utility Corridors to limit aesthetics impacts to natural landscapes. Additionally, proposed resource objectives places an emphases on increasing public education on recreation, nature, cultural resources, and ecology resources at Lewisville Lake. Therefore, under the Proposed Action, there would be no short- and long-term minor, adverse impacts to aesthetic resources as a result of implementing the 2020 MP.

3.13 HAZARDOUS MATERIALS AND SOLID WASTE

This section describes existing conditions within the Lewisville Lake area with regard to potential environmental contamination and the sources of releases to the environment. Contaminants could enter the Lewisville Lake environment via air or water pathways. The highways and roads, marinas, and private residences in the vicinity of the lake could also provide sources of contaminants. There are 4 marinas at Lewisville Lake that provide boat fueling service. These fuel docks are regulated by the USCG with regard to spill containment and cleanup requirements. There have been no major releases of boating fuel to the lake in the past 5 years (USACE 2020). There are also numerous public campgrounds and recreation areas/parks around the lake that could contribute small amounts of hazardous materials and waste to the watershed. Illegal trash dumping on project lands by individuals and businesses is a persistent problem. USACE and area law enforcement officials work cooperatively to apprehend those responsible for illegal trash dumping.

Golf courses and numerous private residences and commercial facilities also surround the lake shores, and fertilizer and pesticide/herbicide use at those locations could contribute minor amounts of hazardous materials to the lake. Public trash and garbage pickup and disposal is provided for all properties around Lewisville Lake by commercial solid waste removal contractors (USACE 2020).

3.13.1 Alternative 1: No Action

There will be no short- or long-term, minor, moderate, or major, beneficial, or adverse impacts on hazardous, toxic, radioactive, or solid wastes as a result of implementing the No Action Alternative, as there will be no changes to the existing MP.

3.13.2 Alternative 2: Proposed Action

The implementation of the proposed 2020 MP will allow for the management of hazardous and solid waste to be managed along with various other resource management goals, which will then allow for a directed and unified approach to managing them. The land reclassifications required to revise the Master Plan will be compatible with Lewisville Lake hazardous and toxic waste and solid waste management practices. Therefore there will be short- and long-term, negligible, beneficial impacts on hazardous, toxic, radioactive, or solid wastes as a result of implementing the 2020 MP.

3.14 HEALTH AND SAFETY

As mentioned earlier in this document, Lewisville Lake's authorized purposes include hydropower, flood risk management, water conservation, and recreation. Compatible uses incorporated in project operation management plans include conservation and fish and wildlife habitat management components. The USACE, with some assistance from the TPWD and USFWS, has established public outreach programs to educate the public on water safety and conservation of natural resources. In addition to the water safety outreach programs, the project has established recreation management practices in place to protect the public. These include safe boating and swimming regulations, safe hunting regulations, and speed limit and pedestrian signs for park roads. Lewisville Lake also has solid waste management plans in place for camping and day use areas. Lewisville Lake has personnel in place to enforce these policies, rules, and regulations during normal park hours.

3.14.1 Alternative 1: No Action

Under the No Action Alternative, the Lewisville Lake MP will not be revised. No significant adverse impacts on human health or safety will be anticipated.

3.14.2 Alternative 2: Proposed Action

The implementation of the proposed 2020 MP would result in the classification of Restricted Surface Water (79 acres) and Designated No-Wake areas (1,016 acres). These classifications maintain and in some cases, improve boating, non-motorized recreation, and swimming safety near the Lewisville Lake Dam, water intake structures, and key recreational water access areas such as boat ramps and designated swimming areas.

The project would continue to have reporting guidelines in place should water quality become a threat to public health. Existing regulations and safety programs throughout the Lewisville Lake project area would continue to be enforced to ensure public safety. The resource objectives makes it mandatory that various factors that impacts human safety at the lake are monitored and that actions are taken to address, eliminate or reduce those factors. Additionally the objectives places an emphases on educating the public on water safety and on flood risk management efforts at Lewisville Lake. Therefore, under the Proposed Action, there will be short- and long-term minor, beneficial impacts on health and safety as a result of implementing the 2020 MP.

3.16 SUMMARY OF CONSEQUENCES AND BENEFITS

Table 3.8 provides a tabular summary of the consequences and benefits for the No Action and Proposed Action alternatives for each of the 15 assessed resource categories.

Table 3-8. Summary of Consequences and Benefits

Resource	Change Resulting from Revised Master Plan	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Land Use	No effect on private lands. Emphasis is on protection of wildlife and environmental values on USACE land and maintaining current level of developed recreation facilities.	Fails to recognize recreation trends and regional natural resource priorities.	Recognizes recreation trends and regional natural resource priorities identified by ODWC, TPWD, and public comment.	Land classification changes and new resource objectives fully recognize passive use recreation trends and regional environmental values such as protection of Cross Timbers forests.
Water Resources Including: Surface Water, Groundwater, Wetlands, and Water Quality	Small change to recognize value of wetlands.	Fails to recognize the water quality benefits of good land stewardship and need to protect wetlands.	Promotes restoration and protection of wetlands and good land stewardship.	Specific resource objective promotes restoration and protection of wetlands.
Climate, Climate Change, and Greenhouse Gases	Minor change to recognize need for sustainable, energy efficient design.	Fails to promote sustainable, energy efficient design.	Promotes land management practices and design standards that promote sustainability.	Specific resource objectives promote national climate change mitigation goal. LEED standards for green design, construction, and operation activities would be employed to the extent practicable.
Air Quality	No change	No effect	No effect	No added benefit
Topography, Geology, Soils, and Prime Farmland	Minor change to place emphasis on good stewardship of land and water resources.	Fails to specifically recognize known and potential soil erosion problems.	Encourages good stewardship that would reduce existing and potential erosion.	Specific resource objectives call for stopping erosion from overuse and land disturbing activities.
Natural Resources	Moderate benefits through land reclassification and resource objectives.	Fails to recognize ESAs, and regional priorities calling for protection of wildlife habitat.	Gives full recognition of sensitive resources and regional trends and priorities related to natural resources.	Reclassification of lands included 10,918 acres of ESA and an increase in lands emphasizing wildlife management.

Resource	Change Resulting from Revised Master Plan	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Threatened and Endangered Species	Minor change to recognize both federal and state-listed species.	Fails to recognize current federal and state-listed species.	Fully recognizes federal and state-listed species as well as SGCN listed by TPWD and Rare species listed by TPWD.	The master plan sets forth the most recent listing of federal and state-listed species and addresses on-going commitments associated with USFWS Biological Opinions.
Invasive Species	Minor change to recognize several recent and potentially aggressive invasive species.	Fails to recognize current invasive species and associated problems.	Fully recognizes current species and the need to be vigilant as new species may occur.	Specific resource objectives specify that invasive species shall be monitored and controlled as needed.
Cultural Resources	Minor change to recognize current status of cultural resources.	Included cursory information about cultural resources that is inadequate for future management and protection.	Recognizes the presence of cultural resources and places emphasis on protection and management.	Reclassification of lands included 10,918 acres of ESA and specific resource objectives were included for protection of cultural resources.
Socioeconomics and Environmental Justice	No change	No effect	No effect	No added benefit
Recreation	Moderate benefits to outdoor recreation programs.	Fails to recognize current outdoor recreation trends.	Fully recognizes current outdoor recreation trends and places special emphasis on trails.	Specific management objectives focused on outdoor recreation opportunities and trends are included.
Aesthetic Resources	Minor benefits through land reclassification and resource objectives.	Fails to minimize activities that disturb the scenic beauty and aesthetics of the lake.	Promotes activities that limit disturbance to the scenic beauty and aesthetics of the lake.	No added benefit Specific management objectives to minimize activities that disturb the scenic beauty and aesthetics of the lake.

Resource	Change Resulting from Revised Master Plan	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Hazardous, Toxic, and Radioactive Wastes	Minor to moderate benefits to HTRW issues by limiting HDR usage on ESA and WM areas.	Fails to recognize current HTRW problems associated with incompatible recreation use on WM areas.	Fully recognizes compatible use activities and limits those recreational activities that would be detrimental to the designated land use classifications.	Specific management objectives focused on outdoor recreation opportunities and trends that are compatible with the designated land used classifications and limits those that are not.
Health and Safety	Minor change to promote public safety awareness.	Fails to emphasize public safety programs.	Recognizes the need for public safety programs.	Includes specific management objectives to increase water safety outreach efforts. Also, classifies 79 acres of water surface as restricted and designated no-wake for public safety purposes.

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SECTION 4: CUMULATIVE IMPACTS

The most severe environmental degradation may not result from the direct effects of any particular action, but from the combination of effects of multiple, independent actions over time. As defined in 40 CFR 1508.7 (CEQ Regulations), a cumulative effect is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

By Memorandum dated June 24, 2005, from the Chairman of the CEQ to the Heads of Federal Agencies, entitled "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis", CEQ made clear its interpretation that "…generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions…" and that the "…CEQ regulations do not require agencies to catalogue or exhaustively list and analyze all individual past actions." This cumulative impacts analysis summarizes expected environmental impacts from the combined impacts of past, current, and reasonably foreseeable future activities affecting any part of the human or natural environments impacted by the Proposed Action.

4.1 PAST IMPACTS WITHIN THE ZONE OF INTEREST

Lewisville Lake was originally authorized by the Flood Control Acts of 1941 and late in 1944. Construction of the Lewisville Lake Dam began on November 28, 1948 and was completed in August 1955. Deliberate impoundment began on November 1, 1954. The total project area at Lewisville Lake encompasses 47,137 acres, including the 27,175 (based on 2007 Volumetric Survey) acres of surface water at normal pool elevation of 522.0 NGVD29. The entire 46,001 acres were acquired in fee simple title by USACE with perpetual Flowage Easements on an additional 8,712 acres up to elevation 537.0 NGVD29. Since the building of Lewisville Dam, the area around Lewisville Lake has seen great transformation, from mostly an agrarian area with ranch homes in abundance to now being fully urbanized with a few tall apartment complexes dotting the region.

Within Lewisville Lake there has been 3 projects that have modified the structures and operations Lewisville Lake for the purpose of improving the environment in the public interest. These projects are governed by Section 1135 of the 1986 Water Resources Development Act, as amended and are summarized below.

- Stewart Creek. This 268-acre parcel of land is located on the east side of the lake and includes the headwaters of Stewart Creek located on USACE fee property. The area consists of a riparian corridor and is adjacent to residential development upstream. Protection and potential restoration of the area are a priority maintaining the area as a visual and esthetic buffer are important for this area. The area is managed by USACE. The project involved construction of shallow marsh areas and restoration of riparian hardwoods. The restoration work involved construction of several wetland cells and the planting of old agricultural

fields with several species of bottomland hardwood trees. Frisco envisions maintaining natural surface trails and wildlife observation facilities on the leased premises when a lease is promulgated.

- Hackberry Creek. This 25-acre area is located on the headwaters of Hackberry Creek where it enters Lewisville Lake on the west side of FM 423. This location was included in the Frisco Section 1135 Environmental Restoration Project. The work along Hackberry Creek consisted of construction of shallow wetland cells that were planted with beneficial aquatic plants.

- Greenbelt Corridor and City of Denton Wetland Complex. This area of 3,124 acres north of HWY 380 encompasses periodically flooded areas of the Elm Fork of the Trinity River. It includes mature bottomland hardwoods, mature riparian corridor, and constructed shallow water wetlands managed by the City of Denton. TPWD manages the narrow portion of this area known as the Greenbelt Corridor.

Lewisville Lake was initially built to provide a stable supply of water and for flood control. The flood damages prevented in the Elm Fork Trinity River basin by Lewisville Dam and Lake during fiscal year 2015 were estimated to be $3,616,516,200. The cumulative damages prevented since the completion of the project in 1955 through 2015 are $35,276,767,800, and the average is $578 million per year. Lewisville Lake has a spillway that once waters reaches to the top it will uncontrollably spill over into the downstream area. Homes and businesses downstream may be flooded by this water as well as from the cumulated water from other creeks, rivers, and lakes. However, homes and businesses that do not cross the flowage easements are not as likely to be flooded around Lewisville Lake.

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

Future management of the 5,746 acres of Flowage Easement Lands at Lewisville Lake includes routine inspection of these areas to ensure that the Government's rights specified in the easement deeds are protected. In almost all cases, the Government acquired the right to prevent placement of fill material or habitable structures on the easement area. Placement of any structure that may interfere with the USACE flood risk management and water conservation missions may also be prohibited.

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. NCTCOG's Mobility 2040 plan was used as a reference document for this Master Plan. Items recommended for implementation in the Mobility 2040 plan that are of significance to the area surrounding Lewisville Lake include the following:

- Construct new road for I-35E, a regionally important arterial roadway, with a to be determined date (TBD)
- Repair FM 423, a regionally important arterial roadway, with a TBD date

- Repair FM 720, a minor arterial roadway, with a TBD data
- Construct new road for US 380, a regionally important arterial roadway, with a TBD date

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.

Ongoing and future construction activities on Lewisville Lake Dam and associated structures includes embankment modifications such as seepage collection systems and earthen berms. Additional modifications to the concrete river outlet structure is also occurring.

Due to safety concerns, there will be no LLELA visitor access within the construction site east of the river in 2020. This will include fishermen using the east bank access and hiker use of the Bittern Marsh Trail. The City of Lewisville staff will continue maintenance of the Bittern Marsh Trail throughout construction, but it will not be available to visitors. All other LLELA hiking trails will remain open for the majority of the dam modification construction, and most programs and activities will continue with minor modifications.

Embankment work on the dam is scheduled for completion in February 2021, barring weather delays. The second and third contracts are for work on the auxiliary spillway at the far-east end of the dam, and for restoration of borrow areas associated with the first two contracts. Both of these projects are expected to be completed in early 2027.

4.3 ANALYSIS OF CUMULATIVE IMPACTS

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

4.3.1 Land Use

A major impact would occur if any action is inconsistent with adopted land use plans or if an action would substantially alter those resources required for, supporting, or benefiting the current use. Land use around Lewisville Lake has experienced little

change since it is almost all urbanized. Under the No Action Alternative, land use would not change. Although the Proposed Action would result in the reclassification of project lands, the reclassifications were developed to help fulfill regional goals associated with good stewardship of land resources that would allow for continued use of project lands.

Section 6.1 of the 2020 Master Plan also identifies the location of existing Common Utility Corridors as well as those proposed to be removed (4 in total). The purpose of utility corridors is to condense the footprint and associate impacts of any future roads and utilities crossings on USACE lands. The removal is not anticipated to have cumulative impacts on land use in the region. Therefore, cumulative impacts on land use within the area surrounding Lewisville Lake, when combined with past and proposed actions in the region, are anticipated to be negligible.

4.3.2 Water Resources

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

4.3.3 Climate, Climate Change and GHG

Under the Proposed Action, Lewisville Lake project management plans and monitoring programs would be reflect the changes in land classifications and resource objectives. In the event that GHG emission issues become significant enough to impact the current operations at Lewisville Lake, the 2020 Master Plan and all associated documents would be reviewed and revised as necessary. Therefore, implementation of the 2020 Master Plan, when combined with other existing and proposed projects in the region, would result in negligible cumulative impacts on climate, climate change, and GHG.

4.3.4 Air Quality

There are a few major highway and roadway projects that are scheduled near the zone of interest for Lewisville Lake; therefore, increasing the amount of new emissions that could potentially affect air quality within the region. The Proposed Action would not adversely impact air quality within the area. Vehicle traffic along park and area roadways and routine daily activities in nearby communities contribute to current and future emission sources; however, the impacts associated with the reclassification of lands would be negligible. Seasonal prescribed burning could occur on Lewisville Lake and would have minor, short-term, adverse impacts on air quality; however, these seasonal burns would be scheduled to limit air quality impacts in accordance with local and state regulations. Implementation of the 2020 Master Plan, when combined with

other existing and proposed projects in the region, could result in negligible cumulative impacts on air quality.

4.3.5 Topography, Geology, and Soils

A major impact would occur if the action exacerbates or promotes long-term erosion, if the soils are inappropriate for the proposed construction and would create a risk to life or property, or if there would be a substantial reduction in agricultural production or loss of Prime Farmland soils. Cumulative impacts on topography, geology, and soils within the area surrounding Lewisville Lake, when combined with past and proposed actions in the region, are anticipated to be negligible.

4.3.6 Natural Resources

By implementing the 2020 MP, the required reclassifications, resource objectives, and resource plan would allow land management and land uses to be compatible with the goals of good stewardship of natural resources. The Proposed Action would allow project lands to continue supporting USFWS, TPWD, and LLELA missions associated with wildlife conservation and implementation of operational practices that would protect and enhance wildlife and fishery populations and habitat. In addition, the Proposed Action would be compatible with conservation principles and measures to protect migratory birds as mandated by EO 13186. Long-term, beneficial impacts on natural resources could occur as a result of implementing the reclassifications outlined in the 2020 MP. Therefore, implementation of the 2020 MP, when combined with other existing and proposed projects in the region, would result in minor to moderate beneficial cumulative impacts on natural resources in the Lewisville Lake area.

4.3.7 Threatened and Endangered Species

Under the Proposed Action, the USACE would continue cooperative management plans with USFWS, TPWD, and LLELA to preserve, enhance, and protect wildlife habitat resources. To further management opportunities and beneficially impact habitat diversity, the reclassifications, resources objectives, and resource plan proposed in the 2020 MP include 10,918 acres as ESAs and 3,268 acres as MRML- Wildlife Management Lands. Therefore, implementation of the 2020 MP, when combined with other existing and proposed projects in the region, would result in minor to moderate beneficial, cumulative impacts for threatened and endangered species as the natural areas at the lake provide some of the last, large patches of natural habitat in the region.

4.3.8 Invasive Species

The Proposed Action would have beneficial impacts on native species as a result of programs such as the Lewisville Lake hunting program, which encourages hunters to harvest feral hogs during legal seasons. Lewisville Lake currently also implements the Lewisville Lake Invasive Species Management program and would continue to do so regardless of the Proposed Action. Therefore, implementation of the 2020 Master Plan, when combined with other existing and proposed projects in the region, would not result in adverse cumulative impacts on native species as a result of invasive species control efforts. Beneficial cumulative impacts would occur on native species through implementation of the 2020 Master Plan and other programs within the region supported by agencies such as TPWD and USFWS.

4.3.9 Cultural, Historical, and Archaeological Resources

The Proposed Action would not affect cultural resources or historic properties, as the master plan revision does not involve any ground disturbing activities. However, ESA and WM lands provide additional protection against ground disturbances. Additionally, the existing utility corridors would restrict any future pipelines, roads, or other infrastructure to already disturbed areas, further limiting impacts on cultural resources. Therefore, this action, when combined with other existing and proposed projects in the region, would not result in adverse cumulative impacts on cultural resources or historic properties.

4.3.10 Socioeconomics and Environmental Justice

The Proposed Action would not result in the displacement of persons (minority, low-income, children, or otherwise) as a result of implementing the reclassifications, resources objectives, and resource plan proposed in the 2020 MP. Therefore, the effects of the Proposed Action on environmental justice and the protection of children, when combined with other ongoing and proposed projects in the Lewisville Lake area, would have no cumulative effect.

4.3.11 Recreation

Lewisville Lake provides regionally significant outdoor recreation benefits including a variety of free recreation opportunities. Even though the amount of acreage available for High Density Recreation and Low Density Recreation will decrease as a result of implementing the reclassifications, resources objectives, and resource plan proposed in the 2020 MP, these changes reflect changes in land management and historic recreation use patterns that have occurred since 1985 at Lewisville Lake as well as errors made in consolidating land classifications at the time. The conversion of these lands would have no effect on current or projected public use. Therefore, the Proposed Action, when combined with other existing and proposed projects in the region, would result in negligible to minor beneficial cumulative impacts on area recreational resources as Lewisville Lake would continue to provide large outdoors spaces for recreation activities.

4.3.12 Aesthetic Resources

No adverse impacts on aesthetic resources would occur as a result of implementing the reclassifications and resources objectives proposed in the 2020 MP. The Proposed Action, especially the classification of ESAs, in conjunction with other projects in the region, would result in minor beneficial cumulative impacts on the aesthetic resources in the Lewisville Lake area as these areas would receive increased protection in a region experiencing substantial urban development.

4.3.13 Hazardous Materials and Solid Waste

No hazardous material or solid waste concerns would be expected with implementation of the 2020 Master Plan; therefore, when combined with other ongoing and proposed projects in the Lewisville Lake area, there would be no cumulative effects on hazardous materials and solid waste.

4.3.14 Health and Safety

No health or safety risks would be created by the Proposed Action. The effects of implementing the 2020 Master Plan, when combined with other ongoing and proposed projects in the Lewisville Lake area, would have no cumulative effect. Existing water safety rules and law enforcement would continue into the future.

SECTION 5: COMPLIANCE WITH ENVIRONMENTAL LAWS

This EA has been prepared to satisfy the requirements of all applicable environmental laws and regulations, and has been prepared in accordance with the CEQ's implementing regulations for NEPA, 40 CFR Parts 1500 – 1508, and the USACE ER 200-2-2, *Environmental Quality: Procedures for Implementing NEPA*. The revision of the Lewisville Lake 2020 MP is consistent with the USACE's Environmental Operating Principles. The following is a list of applicable environmental laws and regulations that were considered in the planning of this project and the status of compliance with each:

Fish and Wildlife Coordination Act of 1958, as amended – The USACE initiated public involvement and agency scoping activities to solicit input on the Lewisville Lake 2020 MP revision process, as well as identify reclassification proposals, and identify significant issues related to the Proposed Action. Information provided by USFWS and TPWD on fish and wildlife resources has been utilized in the development of the 2020 MP.

Endangered Species Act of 1973, as amended – Current lists of threatened or endangered species were compiled for the revision of the 2020 MP. There would be no adverse impacts on threatened or endangered species resulting from the revision of the 2020 MP. However, beneficial impacts, such as habitat protection, could occur as a result of the revision of the Lewisville Lake 2020 MP. The analysis for this was done in section 3.7 of the EA.

Executive Order 13186 (Migratory Bird Habitat Protection) – Sections 3a and 3e of EO 13186 direct federal agencies to evaluate the impacts of their actions on migratory birds, with emphasis on species of concern, and inform the USFWS of potential negative impacts on migratory birds. The 2020 MP revision would not result in adverse impacts on migratory birds or their habitat. Beneficial impacts could occur through protection of habitat as a result of the 2020 MP revision. The analysis for this was done in section 3.6 of the EA.

Migratory Bird Treaty Act – The Migratory Bird Treaty Act of 1918 extends federal protection to migratory bird species. The non-regulated "take" of migratory birds is prohibited under this act in a manner similar to the prohibition of "take" of threatened and endangered species under the Endangered Species Act. The timing of resource management activities would be coordinated to avoid impacts on migratory and nesting birds.

CWA of 1977 – The Proposed Action is in compliance with all state and federal CWA regulations and requirements and is regularly monitored by the USACE and TCEQ for water quality. A state water quality certification pursuant to Section 401 of the CWA is not required for the 2020 MP revision. There would be no change in the existing

management of the reservoir that would impact water quality. The analysis for this was done in section 3.2 of the EA.

National Historic Preservation Act (NHPA) of 1966, as amended – Compliance with the NHPA of 1966, as amended, requires identification of all properties in the project area listed in, or eligible for listing in, the NRHP. All previous surveys and site salvages were coordinated with the Texas State Historic Preservation Officer. Known sites are mapped and avoided by maintenance activities. Areas that have not undergone cultural resources surveys or evaluations would need to do so prior to any earthmoving or other potentially impacting activities. The analysis for this was done in section 3.9 of the EA.

Clean Air Act of 1977 – The USEPA established nationwide air quality standards to protect public health and welfare. Existing operation and management of the reservoir is compliant with the Clean Air Act and would not change with the 2020 MP revision. The analysis for this was done in section 3.4 of the EA.

Farmland Protection Policy Act (FPPA) of 1980 and 1995 – The FPPA's purpose is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. There are Prime Farmland and farmland of state importance on Lewisville Lake project lands, but these would not be significantly impacted. The analysis for this was done in section 3.5 of the EA.

Executive Order 11990, as amended, Protection of Wetlands – EO 11990 requires federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in executing federal projects. The Proposed Action complies with EO 11990. The analysis for this was done in section 3.2 of the EA.

Executive Order 11988, as amended, Floodplain Management – This EO directs federal agencies to evaluate the potential impacts of proposed actions in floodplains. The operation and management of the existing project complies with EO 11988. The analysis for this was done in section 3.2 of the EA.

Executive Order 13751, Invasive Species – This EO directs executive departments and agencies to take steps to prevent the introduction and spread of invasive species, and to support efforts to eradicate and control invasive species that are established. The Proposed Action complies with EO 13751. The analysis for this was done in section 3.8 of the EA.

CEQ Memorandum dated August 11, 1980, Prime or Unique Farmlands – Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The Proposed Action would not impact Prime Farmland present on Lewisville Lake project lands. The analysis for this was done in section 3.5 of the EA.

Executive Order 12898, Environmental Justice – This EO directs federal agencies to achieve environmental justice to the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review. Agencies are required to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

The revision of the 2020 MP would not result in a disproportionate adverse impact on minority or low-income population groups. The analysis for this was done in section 3.10 of the EA.

SECTION 6: IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

NEPA requires that federal agencies identify "any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented" (42 U.S.C. § 4332). An irreversible commitment of resources occurs when the primary or secondary impacts of an action result in the loss of future options for a resource. Usually, this is when the action affects the use of a nonrenewable resource or it affects a renewable resource that takes a long time to renew. The impacts for this project from the reclassification of land would not be considered an irreversible commitment because subsequent MP revisions could result in some lands being reclassified to a prior, similar land classification. An irretrievable commitment of resources is typically associated with the loss of productivity or use of a natural resource (e.g., loss of production or harvest). No irreversible or irretrievable impacts on federally protected species or their habitat is anticipated from implementing revisions to the Lewisville Lake MP.

SECTION 7: PUBLIC AND AGENCY COORDINATION

In accordance with 40 CFR §§1501.7, 1503, and 1506.6, the USACE initiated public involvement and agency scoping activities to solicit input on the 2020 Master Plan revision process, as well as identify reclassification proposals, and identify significant issues related to the Proposed Action. The USACE began its public involvement process with a public scoping meeting to provide an avenue for public and agency stakeholders to ask questions and provide comments. Public scoping meetings were respectively held on 2 and 4 July 2017 at the Armed Forces Reserve Center, 1860 Summit Avenue, Lewisville Texas and at 400 Lobo Lane, Little Elm, Texas. The USACE, Fort Worth District, placed advertisements on the USACE webpage, social media, and print publications prior to the public scoping meeting.

Because of the COVID-19 virus pandemic and concerns over public safety, the draft release for public comment and information meeting to present the draft of 2020 Master Plan was cancelled and replaced with an online video and other information resources that summarizes the Master Plan and posted on the Fort Worth District website. Public comments on the draft 2020 MP and EA will be accepted until June 22, 2020.

As with the first public meeting, USACE, Fort Worth District, placed advertisements on the USACE webpage, social media, and print publications. Attachment A includes, public notices, and news releases, and media coverage of the project. The EA is being coordinated with agencies having legislative and administrative responsibilities for environmental protection. A copy of the correspondence from the agencies that provided comments and planning assistance for preparation of the EA is also included in Attachment A. Please refer to Section 7.2 of the 2020 Master Plan for a summary of comments received at the public meetings.

SECTION 8: REFERENCES

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SECTION 9: ACRONYMS/ABBREVIATIONS

%	Percent
°	Degrees
BMP	Best Management Practice
BP	Before Present
CAP	Climate Action Plan
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO2e	CO2-equivalent
CWA	Clean Water Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EP	Engineer Pamphlet
ER	Engineer Regulation
ERS	Environmental Radiation Surveillance
ESA	Environmentally Sensitive Area
F	Fahrenheit
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
LLELA	Lewisville Lake Environmental Learning Area
MRML	Multiple Resource Management Lands
msl	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO	Nitrogen Oxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRRS	National Recreation Reservation Service
O_3	Ozone
OAQPS	Office of Air Quality Planning and Standards
Pb	Lead
PCB	Polychlorinated Biphenyls
PCPI	Per Capita Personal Incomes
$PM_{2.5}$	Particulate Matter Less than 2.5 Microns
PM_{10}	Particulate Matter Less than 10 Microns
ROD	Record of Decision
RPEC	Regional Planning and Environmental Center
SGCN	Species of Greatest Conservation Need
SO_2	Sulfur Dioxide

SUPER	USACE Suite of Computer Programs
TCAP	Texas Conservation Action Plan
TCEQ	Texas Commission on Environmental Quality
TCLP	Toxicity Characteristic Leaching Procedure
TPWD	Texas Parks and Wildlife Department
U.S.	United States
U.S.C.	U.S. Code
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds
WHAP	Wildlife Habitat Appraisal Procedures

SECTION 10: LIST OF PREPARERS

Marcia Hackett – Environmental Resources Planner, Regional Planning and Environmental Center: 21 years of USACE experience.

Brandon Wadlington - Biologist, Regional Planning and Environmental Center; 5 years of USACE experience.

Paul E. Roberts-Biologist, Regional Planning and Environmental Center; 5 years of USACE experience.

ATTACHMENT A: NEPA COORDINATION AND PUBLIC SCOPING

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P.O. BOX 17300
FORT WORTH, TX 76102-0300

April 22, 2020

Notice of Availability

Lewisville Lake Master Plan Revision, Lewisville Lake, Trinity River Basin, Denton County, Texas

The Fort Worth District, U.S. Army Corps of Engineers (USACE), hereby informs the public of the availability of the draft revised Lewisville Lake Master Plan. The draft revised master plan, an explanation of the revision process, and instructions for public participation in the revision are available at the following website: https://www.swf.usace.army.mil/About/Lakes-and-Recreation-Information/Master-Plan-Updates/. The website provides a brief presentation describing the revision process, a copy of the current 1985 master plan as well as a 2004 master plan supplement that includes a map of the current land use classifications. A comment form and instructions for submitting comments to USACE can be found at the website. The public involvement process will be conducted online in lieu of face-to-face workshops until the COVID-19 virus pandemic subsides. All members of the public are encouraged to submit written comments and suggestions before 22 June 2020.

Key topics to be addressed in the revised master plan include revised land classifications, new natural, cultural and recreational resource management objectives, recreation facility needs, and special topics such as utility corridors and trail opportunities. Revision of the master plan will not address in detail the technical operational aspects of the reservoir related to the water supply or flood risk management missions of the project, nor does the master plan address in detail the Shoreline Management Plan that sets forth policy and rules governing private activities such as boat docks or vegetation modification.

The master plan is a vital tool produced and used by USACE to guide the responsible stewardship of USACE-administered lands and resources for the benefit of present and future generations. Public participation is critical to the successful revision of the master plan and is strongly encouraged.

Questions on the proposed revision can be emailed to Lewisville-MP@usace.army.mil, or mailed to Don Wiese: Project Manager, CESWF-PEC-TM, U.S. Army Corps of Engineers, Regional Planning and Environmental Center, Fort Worth District, P.O. Box 17300, Fort Worth, TX 76102-0300.

Sincerely,

MCGUIRE.AMANDA.M.1399923332 Digitally signed by MCGUIRE.AMANDA.M.1399923332 Date: 2020.04.21 15:23:14 -05'00'

Amanda M. McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center

Community

Corps to host public meetings for the Lewisville Lake Master Plan revision

By **Submitted Reports** - April 11, 2017 727 0

An access road leads down the upstream side of the Lewisville Lake dam from just east of the flood gates. (Photo by Christina Ulah)

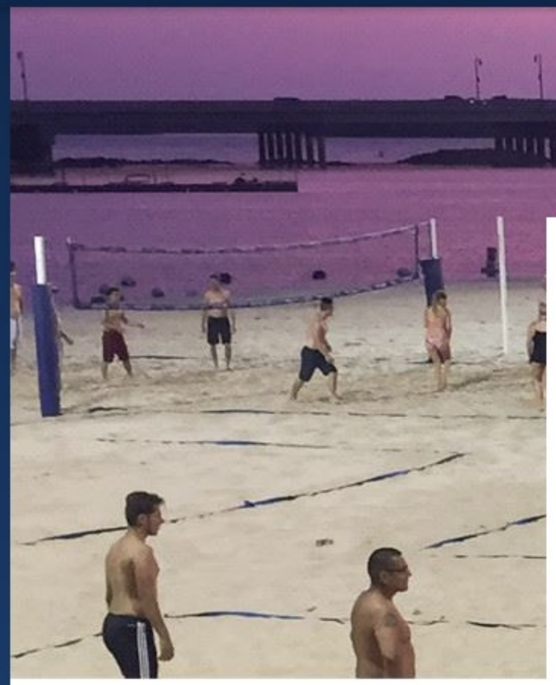
U.S. Army Corps of Engineers representatives will host public meetings on May 2 and May 4 to provide information and receive public input on an initiative to revise the Master Plan for Lewisville Lake.

The meetings will be identical and held at two separate locations for public convenience. The May 2 meeting will be held at the Armed Forces Reserve Center, 1860 Summit Avenue. The May 4 meeting will be at the Lakeside Middle School auditorium, 400 Lobo Lane. Both meetings will have a formal presentation beginning at 6 p.m., followed by an open house forum for individual one-on-one discussion with Corps representatives. The public can view maps, ask questions and provide comments about the project. Comment forms and instructions for making comments will be provided at the meeting. The formal presentation to be used at the meetings will be available shortly before the meeting on the USACE website.

The current Master Plan for Lewisville Lake was completed in June 1985 to address the land management needs stemming from the permanent increase in the normal or conservation pool elevation from 515 feet above mean sea level to 522 feet. A major supplement to the Master Plan was completed in May 2004 to address needed land classification changes and establish utility corridors. The Master Plan is in need of revision to address changes in regional land use, population, outdoor recreation trends and national USACE management policy. Key topics to be addressed in the revised Master Plan include revised land classifications, revised natural and recreational resource management objectives, utility corridors, recreation facility needs and special topics such as invasive species management. Public participation is critical to the successful revision of the Master Plan.

Questions pertaining to the proposed revision can be addressed to Donald Wiese at 817-886-1568 or donald.n.wiese@usace.army.mil.

TAGS Army Corps of Engineers Community Lewisville Lewisville 2025 Lewisville Lake Lewisville Lake Master Plan Public meetings



Little Elm News Flash

Posted on: June 1, 2017

Army Corps of Engineers set meeting on lake master plan

LITTLE ELM (April 24, 2017) Based on the close relationship Little Elm residents enjoy with Lewisville Lake, the US Army Corps of Engineers (USACE) has scheduled a public meeting in Town to share information and to gather comments in anticipation of revising the lake's master plan.

Representatives of the Fort Worth District of USACE will host the meeting on Thursday, May 4 in the auditorium of Lakeside Middle School, 400 Lobo Lane, starting at 6 p.m. The meeting will open with a presentation by USACE, followed by opportunities for attendees to ask questions, review maps and provide comments.

Residents will be asked to comment on the section of the master plan that addresses recreational, natural and cultural aspects of the lake and the lake's immediate surroundings that fall under USACE administration.

The Little Elm meeting follows an identical meeting in Lewisville on May 2. At both meetings, comment forms as well as instructions on how to submit comments following the meetings will be provided. The presentation to be used at the two meetings will be available on the USACE.

Among the topics that will not be addressed by the presentation and for which public comments are not sought are the technical operation of the lake and its maintenance; the lake's water supply; flood risk management; the Shoreline Management Plan; private docks; and vegetation modification of public land by adjacent landowners.

The current master plan is over 30 years old, and requires updating because of changes in regional land use, population, outdoor recreation trends and national USACE management policy changes. Plan revisions will address land classifications, new natural and recreational management objectives, utility corridors, recreation facility needs and invasive species management.

Questions on the process can be addressed to Donald Wiese at Donald.n.wiese@usace.army.mil or by calling 817-886-1568.

News Release Archive

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Corps to host public meetings for the Lewisville Lake Master Plan revision

Published April 6, 2017

PRINT | E-MAIL

FORT WORTH, Texas – Fort Worth District, U.S. Army Corps of Engineers representatives will host public meetings on May 2 and May 4 to provide information and receive public input on an initiative to revise the Master Plan for Lewisville Lake.

The meetings will be identical and are being held at two separate locations for public convenience. The May 2 meeting will be held at the Armed Forces Reserve Center, 1860 Summit Avenue, Lewisville, Texas. The May 4 meeting will be at the Lakeside Middle School auditorium, 400 Lobo Lane, Little Elm, Texas. Both meetings will have a formal presentation beginning at 6 p.m., followed by an open house forum for individual one-on-one discussion with Corps representatives. The public can view maps, ask questions and provide comments about the project. Comment forms and instructions for making comments will be provided at the meeting. The formal presentation to be used at the meetings will be available shortly before the meeting on the USACE website at: http://www.swf.usace.army.mil/About/Lakes-and-Recreation-Information/Master-Plan-Updates

A Master Plan is defined by the Corps as the strategic land use management document that guides the comprehensive management and development of all recreational, natural, and cultural resources throughout the life of the water resource development project. In general, it defines "how" the resources will be managed for public use and resource conservation. Revision of the Master Plan will not address in detail the technical operational aspects of the reservoir related to the water supply or flood risk management missions of the project, nor will it address the Shoreline Management Plan which governs private docks and vegetation modification of public land by adjacent landowners.

The Master Plan study area will include Lewisville Lake proper and all adjacent recreational and natural resources properties under Corps administration.

The current Master Plan for Lewisville Lake was completed in June 1985 to address the land management needs stemming from the permanent increase in the normal or conservation pool elevation from 515.0 feet above mean sea level to 522.0 feet. A major supplement to the Master Plan was completed in May 2004 to address needed land classification changes and establish utility corridors. The Master Plan is in need of revision to address changes in regional land use, population, outdoor recreation trends and national USACE management policy. Key topics to be addressed in the revised Master Plan include revised land classifications, revised natural and recreational resource management objectives, utility corridors, recreation facility needs and special topics such as invasive species management. Public participation is critical to the successful revision of the Master Plan.

Questions pertaining to the proposed revision can be addressed to: Donald Wiese, CESWF-PEC-TP, U.S. Army Corps of Engineers, Fort Worth District, P.O. Box 17300, Fort Worth, TX 76102-0300, Phone: (817) 886-1568 or email: donald.n.wiese@usace.army.mil.

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About the Fort Worth District: The Fort Worth District, U.S. Army Corps of Engineers was established in 1950. The District is responsible for water resources development in two-thirds of Texas, and design and construction at military installations in Texas and parts of Louisiana and New Mexico. Visit the Fort Worth District Web site at: www.swf.usace.army.mil and SWF Facebook at: https://www.facebook.com/usacefortworth/.

Contact
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US Army Corps of Engineers
BUILDING STRONG®

Corps to host public meetings for the Lewisville Lake Master Plan revision

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FORT WORTH, Texas – Fort Worth District, U.S. Army Corps of Engineers representatives will host public meetings on May 2 and May 4 to provide information and receive public input on an initiative to revise the Master Plan for Lewisville Lake.

The meetings will be identical and are being held at two separate locations for public convenience. The May 2 meeting will be held at the Armed Forces Reserve Center, 1860 Summit Avenue, Lewisville, Texas. The May 4 meeting will be at the Lakeside Middle School auditorium, 400 Lobo Lane, Little Elm, Texas. Both meetings will have a formal presentation beginning at 6 p.m., followed by an open house forum for individual one-on-one discussion with Corps representatives. The public can view maps, ask questions and provide comments about the project. Comment forms and instructions for making comments will be provided at the meeting. The formal presentation to be used at the meetings will be available shortly before the meeting on the USACE website at: http://www.swf.usace.army.mil/About/Lakes-and-Recreation-Information/Master-Plan-Updates

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