

**DRAFT  
ENVIRONMENTAL ASSESSMENT**

**Lynn Creek West Recreational Development Plan**

**JOE POOL LAKE, TARRANT COUNTY, TX**



*Prepared for*

**Joe Pool Lake Project Office**

**August 2011**



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## 1.0

## INTRODUCTION

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### 1.1

### BACKGROUND

In 1994, United States Army Corps of Engineers (USACE) and the Trinity River Authority (TRA) entered into a contract giving TRA operational responsibility for Lynn Creek Park, Lloyd Park, Britton Park, Estes Park and Pleasant Valley Park. In 2000, Congress passed legislation allowing the contract and lease to be transferred from TRA to the City of Grand Prairie (City). The City currently holds the 784 acre public recreation lease for Lynn Creek Park from the USACE. The City is proposing to begin development of a currently undeveloped portion of Lynn Creek Park located on federal land at Joe Pool Lake. The plan of development is referred to in this document as Lynn Creek West Recreational Development Plan (LCWRDP). The federal land in question is owned by the USACE, but is leased by the City. This type of park development would be compatible with the federal land classifications in the USACE Master Plan for Joe Pool Lake, Design Memorandum No. 11 dated February 1981. This document is being prepared to address impacts to the environment that would result from implementing the proposed development being considered by the City, in accordance with the National Environmental Policy Act of 1969, as amended, and as defined in federal regulations at 40 CFR Parts 1500-1508. This Environmental Assessment (EA) publicly discloses the environmental consequences of the USACE approving the plans for construction of the proposed action.

### 1.2

### STUDY AREA DESCRIPTION AND LOCATION

Joe Pool Lake was constructed by the USACE as a multiple purpose reservoir for flood control, water supply, recreation, and fish and wildlife purposes, and became operational in January 1986. See **Appendix A, Figure A**, for a general location map of the area in question. Joe Pool Lake has both a conservation pool and a flood control pool. The conservation pool has a surface area of approximately 7,470 acres at an elevation of 522.0 feet at mean sea level (MSL) and the flood control pool has a surface area of approximately 10,940 acres at 536.0 feet MSL. The TRA shared in the cost of constructing the reservoir and related recreational features, and currently has authority over the water supply aspect of the reservoir. Under the provisions of a lease and contract between the USACE and TRA, negotiated in 1994, the TRA assumed operational responsibility for several developed and undeveloped public park areas at Joe Pool Lake including Lynn Creek Park, Loyd Park, Britton Park, Estes Park and Pleasant Valley Park. In the 1999–2000 time period, the City expressed interest in assuming from TRA the contract and lease for operation of the park areas, and in 2000 Congress passed legislation allowing the contract and lease to be transferred to the City. This current lease between USACE and the City includes approximately 2,700 acres of federal land which includes the 784-acre Lynn Creek Park situated along the west end of the dam at Joe Pool Lake. This arrangement has worked well to serve public recreational needs as all of this land is within the corporate city limits of Grand Prairie. The portion of Lynn Creek Park lying east of Lake Ridge Parkway is operated by the City as a waterfront day use and special events park and includes approximately 100 picnic sites, boat ramps, group pavilions, and a beach. The park also includes Lynn Creek Marina which is operated by a private concessionaire under a sublease agreement with the City. The portion of Lynn Creek Park lying west of Lake Ridge Parkway and east of SH 360 is currently

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undeveloped and is the location of the proposed action assessed in this EA. In addition to the parks operated by the City, the Texas Parks and Wildlife Department (TPWD) operates the very popular 2,016-acre Cedar Hill State Park on the east shore of Joe Pool Lake. This state park is also located on USACE land and is operated by TPWD under a lease agreement with USACE.

### **1.3 PURPOSE AND NEED**

Joe Pool Lake is located in the mid-cities area of the Dallas-Fort Worth Metropolitan Statistical Area. Federal land surrounding the lake is located within the corporate city limits of several cities including Grand Prairie, Cedar Hill, and Dallas. The City of Mansfield also borders federal land on the south side of the lake. All of these cities have experienced a very high population growth rate over the past ten years. According to the U.S. Census Bureau the City of Grand Prairie, now the 16<sup>th</sup> largest city in Texas, grew from a population of 127,427 in 2000 to approximately 175,396 in 2010. During the same period, the City of Mansfield grew from a population of 28,031 to 56,368 and Cedar Hill grew from a population of 32,093 to 45,028. This high growth rate has led to high demand for recreational open space.

The population increase for the City and surrounding areas has placed a demand on existing recreational facilities and the need for additional recreational open space. Existing facilities located at Lynn Creek Park received 119,145 visitors while Lynn Creek Marina received 375,632 visitors in 2007 (USACE, 2008). Popular recreational activities include picnicking, boating, fishing, and sightseeing. The park and marina routinely reach maximum capacity during weekends over spring and summer months, especially during holiday weekends. During the past three years, the City has produced “Prairie Lights,” a holiday drive through festival drawing over 100,000 visitors during its 40-day run annually. The *City of Grand Prairie 2008 Parks, Recreation & Open Space Master Plan* (Master Plan) identified five high priority items for the residents of the City. The five priority items include: 1) aquatic based passive recreation and spray parks; 2) hike/bike/job/running and nature trails; 3) expansion of the Senior Center; 4) playgrounds; and 5) lake parks. At the lake parks, camping facilities, including cabins; trails for hiking, biking, running, and nature walks; fishing piers; water recreation facilities; swimming beaches; and extreme sports venues were identified as development opportunities. The development of the LCWRDP would help the City to meet several of their high priority items identified in their Master Plan.

## 2.0 DESCRIPTION OF ALTERNATIVES

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### 2.1 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the LCWRDP area would remain a vegetated, non-use area owned by USACE. This alternative would not support additional recreational opportunities, or alleviate increased traffic congestion problems due to population growth and public use of Lynn Creek Park for general recreation and for special events. The No-Action Alternative would also not improve emergency service mobility between SH 360 and Lake Ridge Parkway for the newly constructed “Lake Parks Operations Center for Parks, Fire, and Police” located at the northeast corner of Lakeridge parkway and Lynn Creek Road .

### 2.2 ALTERNATIVE 1 (PREFERRED ALTERNATIVE)

Under the Preferred Alternative, the LCWRDP would be a multi-phase construction assignment that would benefit surrounding community activities and growth. Planned recreational development within the project study area would be designed to facilitate multi-function recreation that would be accessed by the proposed Lynn Creek Parkway (**Appendix A, Figure B**). The recreational development plan would include an interpretive trail system, nature center, adventure sporting areas, practice fields, group lodging, pavilions, swimming areas, an amphitheater and a restaurant. In addition to the recreational uses, land north of the planned practice fields and themed special events area would be protected as a no development zone and include a native landscape buffer.

It is anticipated that the Preferred Alternative would increase recreational activities, and provide the greatest amount of recreational opportunities to include better access to Lynn Creek Park by design. The recreational developments would occur in phases as funding becomes available and include the following.

#### PHASE I

**TRAILS:** Up to 10,000 linear feet of natural surface trails are proposed to encircle the improved recreational improvements within the proposed development. The trails would avoid demolition of native hardwood trees, but would include grubbing of weedy vegetation and utilization of chipped trees as surfacing for portions of the trail. The trail layout would provide a variety of trail loops to meet varying levels of ability, as well as opportunities for native flora and fauna interpretation.

**NATIVE AREA:** Native areas are interspersed throughout the recreational improvements to maintain the natural woodland cover. Weedy vegetation and exotic species would be properly managed to encourage a greater diversity of native plant species.

**NO DEVELOPMENT ZONE:** A No Development Zone, extending from approximately 50 feet south of the toe of the dam to the northern park boundary, would be reserved to protect the dam. This area would be managed under the direction of the USACE.

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**NATIVE LANDSCAPE BUFFER:** An approximately 200-foot wide area adjacent to existing residential development would be preserved as a no development buffer zone and would be planted with native trees. This naturalized forest would provide a noise and landscape buffer for the residential developments and would discourage vehicular access from the USACE's levee into the park.

## PHASE II

**LARGE GROUP PAVILION:** This pavilion was previously approved as a part of the Pavilion and BBQ support restaurant plan. The pavilion is planned to be up to 6,600 square feet of covered shelter located immediately west of Lake Ridge Parkway with an entrance drive aligning with the existing marina entrance. A park restroom and storage room of approximately 2,000 square feet would provide support to the pavilion. A 12,550 square foot restaurant is also planned for this site to provide support to the pavilion users. Approximately 300 parking spaces are planned to serve the pavilion and restaurant. A courtesy boat dock is also planned for temporary access to the pavilion and restaurant.

**CABIN LOOP "B":** Cabin loop 'B' is proposed to be a combination of one-bedroom cabin units, two-bedroom cabin units, and four-bedroom cabin units along a looped paved road. Cabins would include individual parking spaces at each location sufficient for each unit. The cabins would be interspersed along the loop road to blend in with the existing natural landscape. One-bedroom cabins would be approximately 500 square feet in size and up to 10 units are proposed. Two-bedroom cabins would be approximately 600 square feet in size and up to 10 units are proposed. Four-bedroom cabins would be approximately 1,700 square feet in size and up to five units are proposed.

**PRACTICE FIELDS:** Up to 15 acres of the site is planned to be developed into general open space for use as community practice fields. Because this area would be grubbed, graded, and seeded with a turf grass species designed for general recreation use, a site with an existing stand of invasive cedar trees was intentionally selected.

## PHASE III

**RUSTIC LODGE:** The Rustic Lodge would be developed as a 79,000 square foot hotel-style lodge facility with up to 200 hotel rooms, conference and meeting rooms, support restaurant and bar, outdoor concession kiosk, outdoor pool and spa area, landscape, and parking.

**RESORT ENTRANCE:** Decorative native and adaptive landscape, entrance signage, and a gatehouse kiosk are planned at the entrance to the lodge off of Lynn Creek Parkway.

**SWIMMING AREA:** Portions of the existing shoreline near the resort and group pavilion would be grubbed and cleared of debris to form a beach. Beach sand would be hauled to the site to create a public beach approximately 25,000 square feet in size. Up to 20 shade shelters, with benches and picnic tables, would be installed on the beach to provide additional shade for users. A bathhouse with restroom facilities

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and showers would also be installed. This facility is estimated to be approximately 1,000 square feet with additional 45,000 square feet of parking space.

**COURTESY BOAT DOCK:** A courtesy boat dock is planned along the lake shore, adjacent to the Lodge and Group Lodging area, for temporarily holding rental canoes, kayaks, and paddleboats. The courtesy dock would only be for temporary day-use rental of non-motorized personal watercraft and would not be used for long-term storage.

#### PHASE IV

**GROUP LODGING “C”:** The group lodging area is planned for larger groups as “bunkhouse” style dormitory facilities with group sleeping bunks and central shower facilities. Chaperone sleeping quarters would be constructed adjacent to the bunk areas. Up to six bunkhouse dormitories are proposed and each unit is estimated to be 5,000 square feet in size. A central dining hall is proposed with kitchen, enclosed dining area, and service yard to serve the dormitories. Approximately 200 parking spaces would also be constructed to service the dormitories.

**LARGE GROUP PAVILION:** A community group pavilion of approximately 3,500 square feet, with picnic tables and barbecue grills, is planned for general public usage. A 1,000 square foot restroom and a 5,000 square foot maintenance/storage building for maintenance supplies and materials are also proposed. A 75-space parking lot is planned to service the pavilion.

**CABIN LOOP “A”:** Cabin loop ‘A’ is proposed to be a combination of two-bedroom cabin units and four-bedroom cabin units along a looped paved road. Cabins would include individual parking spaces at each location sufficient for each unit. The cabins would be interspersed along the loop road to blend in with the existing natural landscape. Two-bedroom cabins would be approximately 600 square feet in size and up to 30 units are proposed. Four-bedroom cabins would be approximately 1,700 square feet in size and up to 10 units are proposed.

**SUPPORT RESTAURANT:** As other park improvements are constructed, the need for additional support facilities would be required to serve basic user needs. At the southwest quadrant of the intersection of Lynn Creek Parkway and Lake Ridge Parkway, a planned support restaurant is proposed. This facility would be similar in size to the restaurant at the large group pavilion and would not be constructed until other park improvements that increase demand for support are completed. The restaurant would be up to 12,500 square feet in size with an additional 8,000 square feet of patio dining and two 1,000 square foot shelters. Approximately 250 parking spaces are also planned within this area.

**ADVENTURE SPORTS AREA:** The adventure sports area would consist of an open field with a variety of outdoor adventure activities. A meeting room of approximately 2,400 square feet is planned to serve as meeting and orientation space for the activities. Approximately 4,000 square feet would be allocated to a ropes course and an open games area for free play. Organized activities would be centrally located in the sports area. A restroom of approximately 800 square feet would be located near the meeting room.

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**TRAILS:** Up to 10,000 linear feet of natural surface trails are proposed to encircle the improved recreational improvements within the proposed development. The trails would avoid demolition of native hardwood trees, but would include grubbing of weedy vegetation and utilization of chipped trees as surfacing for portions of the trail. The trail layout would provide a variety of trail loops to meet varying levels of ability, as well as opportunities for native flora and fauna interpretation. Up to 2,500 linear feet of paved trails would also be constructed to provide access to recreational facilities and prevent undue compaction of soils.

**AMPHITHEATER:** The amphitheater is proposed to be up to 3,200 square feet of covered stage with a 3,000-square foot support building, concession building of up to 2,000 square feet, and restrooms of approximately 2,000 square feet. Service kiosks would be dispersed within the 25,000 square feet of seating area with up to 225 shade structures. A 400-space parking lot is planned to serve the amphitheater.

**EQUESTRIAN AREA:** The equestrian area is composed of a 50-space horse trailer parking lot, an 800 square foot restroom, and a 2,000-square foot concession to serve approximately 10,000 linear feet of non-paved natural surface horse trails.

**THEMED SPECIAL EVENTS AREA:** This special-use area is planned for general usage during the active months, but can be rented for special events and larger groups. The events area would include up to 5,000 square feet of meeting room space, a 3,000 square foot playground consisting of a playscape within a safe fall zone, and a 5,000 square foot splash pad with spray fountains and a drain system. Up to eight large group pavilions of up to 3,200 square feet are planned for general usage and an additional 10 small picnic shelters of 400 square feet would be constructed around the play activities. Eight acres of playfields would be centrally located within the complex. Approximately 52,800 square feet of paved walking trail surrounding the perimeter would provide fitness and leisure exercise. Up to 300 parking spaces are planned off of an entrance drive from Lynn Creek Parkway. Portions of this improvement would be fenced to protect the improvements and prevent unauthorized entry during non-public usage periods.

The Preferred Alternative also includes the construction of a new roadway (Lynn Creek Parkway) which will provide direct access to Lynn Creek Park and the recently constructed Lake Parks Operations Center for Parks, Fire and Police. Lynn Creek Parkway would be a typical total 50-foot wide roadway. The four-lane undivided arterial roadway has four 11-foot wide lanes with two 3-foot wide bicycle lanes extending approximately 6,116 linear feet from SH 360 to Lake Ridge Parkway. The portion of roadway extending across the USACE property would be approximately 4,813 linear feet. Although this alignment would cross a greater length of USACE property, it would remain a further distance from existing nearby residences, and potentially allow for fewer disturbances during park use. The preferred alternative alignment for this roadway has received approval from the City of Grand Prairie City Council through a public hearing process. Other project improvements would include construction of a new 12-inch water pipeline from Lake Ridge Parkway to SH 360, and approximately 955 feet of bridge spanning Lynn Creek and the adjacent low areas. The maximum design speed for Lynn Creek Parkway would be 45 miles per hour (mph) and the arterial would be designed to accommodate two eastbound and two westbound lanes, to include two 3-foot wide bicycle lanes. Although the maximum design speed for Lynn

Creek Parkway would be 45 mph, the final speed limit would adhere to USACE guidelines and would be limited to 40 mph. Additional turn lanes may be necessary at the intersections at Lake Ridge Parkway and SH 360 to accommodate turning traffic. The City would also plan to include a 10-foot wide hike-and-bike trail in the roadway’s north parkway along with street lighting and landscaping. This Alternative would provide the safest travel route throughout the project area, and would allow for the City to utilize the property to the greatest extent possible.

The bridge required to span Lynn Creek would be a four-lane undivided concrete roadway and would include a 10-foot wide walkway to accommodate the proposed hike-and-bike trail mentioned above. The total estimated bridge width including the walkway and railing would be approximately 67 feet. The proposed sidewalk would provide a non-vehicular transportation connection from nearby residential subdivisions located west of the existing park. The City’s future hike-and-bike trail would tie into the bridge walkway. The proposed bridge crossing and roadway cross section are included in **Appendix B, Exhibits 7 and 8.**

The development of the Preferred Alternative would occur in phases, beginning with the proposed roadway (Lynn Creek Parkway) and soft trails, as the other phases of development cannot occur (be utilized by the public) without the existence of the road. In order to assure accurate mitigation measures, the mitigation for future phases of construction would need to be recalculated and revised (as detailed plans are implemented), and performed in phases as well (**Table 2-1**). Phasing timelines of future development would be contingent upon approved funding.

Table 2-1, Proposed Phasing

Legend	Improvement	Approximate Size (acres)	Proposed Phasing
Phase I			
N	Trails (Phase I)	1.72	2011-2015
T	No Development Zone	5.13	2011-2015
P	Native Landscape Buffer	15.67	
	Roadway	5.52	2011-2015
Phase II			
E	Large Group Pavilion	3.08	2011-2015
C	Cabin Loop ‘B’	2.32	2011-2015
R	Practice Fields	10.41	2011-2015
Phase III			
A	Rustic Lodge	2.94	2016–2020
M	Resort Entrance	0.07	2016–2020
G	Swimming Area	0.99	2016–2020
J	Boat Dock	0.29	2016–2020

Phase IV			
<b>D</b>	Group Lodging	4.24	2021–2025
<b>I</b>	Large Group Pavilion	0.78	2021–2025
<b>B</b>	Cabin Loop ‘A’	4.08	2021–2025
<b>F</b>	Support Restaurant	2.24	2021–2025
<b>L</b>	Adventure Sports	10.43	2021–2025
<b>N/O</b>	Remaining Trails	1.61	2021–2025
<b>H</b>	Amphitheater	3.66	2021–2025
<b>K</b>	Equestrian Area	0.93	2021–2025
<b>S</b>	Themed Special Events Area	11.29	2021–2025

## 2.3 ALTERNATIVE 2

The primary difference between the Preferred Alternative and Alternative 2 is a change to the proposed Lynn Creek Parkway alignment, which would likely change local traffic dynamics. However, under Alternative 2, the LCWRDP would still be a multi-phase construction assignment that would benefit surrounding community activities and growth. Planned recreational development within the project study area would be designed to facilitate multi-functional recreation that would be accessed by the proposed Lynn Creek Parkway (**Appendix A, Figure C**). The recreational development plan would continue to include an interpretive trail system, nature center, adventure sporting areas, practice fields, group lodging, pavilions, swimming areas, and a restaurant. In addition to the recreational uses, land north of the planned practice fields and themed special events area would be protected as a no development zone and include a native landscape buffer.

As designed, Alternative 2 would provide recreational activities to the greatest extent possible. The recreational developments would occur in phases and include the same facilities as described in the Preferred Alternative.

Since the other phases of the development cannot occur (be utilized by the public) without the existence of the roadway, Alternative 2 would include a 50-foot wide four-lane undivided arterial roadway similar in design to the roadway described in the Preferred Alternative. Total length of the roadway would be approximately 5,250 linear feet with approximately 3,850 linear feet extending across USACE property. This alignment would be located closest to, and potentially provide greater disturbance to adjacent homeowners near the proposed park.

## 2.4 ALTERNATIVE 3

The primary difference between the Preferred Alternative and Alternative 3 is a change to the proposed Lynn Creek Parkway alignment, which would likely change local traffic dynamics. However, under Alternative 3, the LCWRDP would still be a multi-phase construction assignment that would benefit

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surrounding community activities and growth. Planned recreational development within the project study area would be designed to facilitate multi-functional recreation that would be accessed by the proposed Lynn Creek Parkway (**Appendix A, Figure D**). The recreational development plan is proposed for multi-use recreation that would continue to include an interpretive trail system, nature center, adventure sporting areas, practice fields, group lodging, pavilions, swimming areas, and a restaurant. In addition to the recreational uses, land north of the planned practice fields and themed special events area would be protected as a no development zone and include a native landscape buffer.

As designed, Alternative 3 would provide recreational activities to the greatest extent possible. The recreational developments would occur in phases and include the same facilities as described in the Preferred Alternative.

Since the other phases of the development cannot occur (be utilized by the public) without the existence of the roadway, Alternative 3 would include a 50-foot wide four-lane undivided arterial roadway similar in design to the roadway described in the Preferred Alternative. Total length of the roadway would be approximately 6,050 linear feet with approximately 4,650 linear feet extending across USACE property. Although this alternative would impact less USACE property, it would remain closer to nearby residences for a greater distance, and potentially result in more disturbances.

## **2.5 ALTERNATIVE 4**

The primary difference between the Preferred Alternative and Alternative 4 is a change to the proposed Lynn Creek Parkway alignment, which would likely change local traffic dynamics. However, under Alternative 4, the LCWRDP would still be a multi-phase construction assignment that would benefit surrounding community activities and growth. Planned recreational development within the project study area would be designed to facilitate multi-functional recreation that would be accessed by the proposed Lynn Creek Parkway (**Appendix A, Figure E**). The recreational development plan is proposed for multi-use recreation that would continue to include an interpretive trail system, nature center, adventure sporting areas, practice fields, group lodging, pavilions, swimming areas, and a restaurant. In addition to the recreational uses, land north of the planned practice fields and themed special events area would be protected as a no development zone and include a native landscape buffer.

As designed, Alternative 3 would provide recreational activities to the greatest extent possible. The recreational developments would occur in phases and include the same facilities as described in the Preferred Alternative.

Since the other phases of the development cannot occur (be utilized by the public) without the existence of the roadway, Alternative 4 would include a 50-foot wide four-lane undivided collector roadway extending approximately 4,700 linear feet from Lake Ridge Parkway, circling toward the west and connecting back into itself approximately 800 feet southwest of the intersection with Lake Ridge Parkway. Alternative 4 would intersect Lake Ridge Parkway at the same location as the Preferred Alternative. Alternative 4 would be located entirely within the USACE property, and traffic congestion

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and parking issues would increase under this alternative. Without the roadway extending out to SH 360, nearby park events would force additional recreational traffic through adjacent neighborhoods along Lakeridge Parkway. Other project features associated with this alternative would include reconstruction of approximately 750 feet of the Lynn Creek Park access road on the east side of Lake Ridge Parkway, and potential construction of a new 12-inch water pipeline from Lake Ridge Parkway to SH 360. The proposed loop would be designed to accommodate incoming and exiting traffic; additional turn lanes may be necessary at the intersection at Lake Ridge Parkway to accommodate turning traffic. The final speed limit determination would adhere to USACE guidelines and recommended speed limits of typical recreational area service roads. The City would also plan to include a 10-foot wide hike-and-bike trail in the roadway's south parkway along with street lighting and landscaping.

## **3.0                   AFFECTED ENVIRONMENT**

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### **3.1                   PROJECT SETTING AND LAND USE**

The proposed LCWRDP would be located in Lynn Creek Park, part of Joe Pool Lake, south of Camp Wisdom Road and east of SH 360 in Grand Prairie, Texas. Joe Pool Lake is located partially in Grand Prairie, Dallas, Cedar Hill, Mansfield, and Midlothian and encompasses part of Dallas, Ellis, and Tarrant counties. It is mostly fed by Mountain Creek and Walnut Creek, which drains north into Mountain Creek leading into Mountain Creek Lake. Joe Pool Lake is one of the only lakes in Texas that drains to the north. Currently, Joe Pool Lake serves as a reservoir and public water supply for the City of Midlothian. The conservation pool has a surface area of approximately 7,470 acres at an elevation of 522.0 at MSL and the flood control pool has a surface area of approximately 10,940 acres at 536.0 MSL (**Appendix A, Figure F**). There are currently four developed parks at Joe Pool Lake: Britton Park, Cedar Hill State Park, Loyd Park, and Lynn Creek Park. All of the parks are outgrants to state or city agencies.

Lynn Creek Park is located approximately three miles south of Interstate Highway (IH) 20, off Lake Ridge Parkway, along the northwest shore of Joe Pool Lake and is leased to the City. The USACE Master Plan for Joe Pool Lake, Design Memorandum No. 11 dated February 1981 designates the park as a high use recreational area. The park encompasses approximately 784 acres. Existing development on the east side of Lake Ridge Parkway consists of restrooms, showers, two boat ramps with eight lanes, a swimming beach, a concession stand, almost 100 picnic sites, group pavilions, sand volleyball courts, and an amphitheater. Because the park is located within the Dallas/Fort Worth metroplex, public visitation places a high demand on its recreational facilities.

The proposed recreation facility would be located in an undeveloped portion of Lynn Creek Park, just west of Lake Ridge Parkway with Joe Pool Lake to the south and residential areas to the north and west of the project area. Contiguous government property surrounding Joe Pool Lake includes Lynn Creek Park and the remaining shorelines of the lake while land use to the north of the park is zoned as Single-Family One Residential District. Lynn Creek Hills Phase I and II residential areas are located to the north of the project area, and Lynn Creek Hills Phase III is located to the southwest. A land use map is included in **Appendix A, Exhibit G**.

### **3.2                   CLIMATE**

The Texas climate is varied across the state. The variability is a result of the interactions between Texas' unique geographic location and the movements of air masses, such as arctic fronts, the jet stream, subtropical west winds, tropical storms, and a subtropical high-pressure system known as the Bermuda High (Texas Water Development Board, 2007). Hurricane season makes Texas prone to varying summer rains and temperatures caused by upper level disturbances initiated from the Gulf of Mexico. The National Climatic Data Center divides Texas into 10 climate divisions. These divisions represent regions with similar climatic characteristics, such as vegetation, temperature, humidity, rainfall, and seasonal

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weather changes. The average annual precipitation for the project study area is typically between 35 and 40 inches, with the highest average monthly precipitation typically occurring in May. The average annual maximum daily temperature for the project study area is between 74 and 76 degrees Fahrenheit.

### **3.3 GEOLOGY AND SOILS**

The underlying bedrock consists of the Eagle Ford formation, which consists of shale, sandstone, and limestone (Bureau of Economic Geology, 1987). The Eagle Ford clays form the gently undulating prairie land extending from northern McLennan County, west of West Station, to northern Grayson, between Sherman and Pottsboro, where it turns eastward down the Red River basin through Fannin, Lamar, and Red River counties (Dumble, 1893). The eastern boundary of the Eagle Ford formation is the Austin limestone escarpment, which is along an approximate line drawn through West, McLennan County; Abbott, a point two miles east of Hillsboro, and Files Valley, Hill County; Mountain Peak and Midlothian, Ellis county; Cedar Hill, Dallas, a point two miles east of Farmer's Branch, Dallas County; Frankford, Lebanon, Rock Hill, and Celina, Collin County; and Elm View, Mormon Grove, and Sherman, Grayson County. From Sherman, the border continues northward four miles, where it turns southeast and crosses Choctaw Creek, six miles east of Sherman (Dumble, 1893).

The Eagle Ford has its chief and greatest development northward, gradually decreasing in thickness to the south (Walcott, 1901). Its extent is continuous across the State. In the northern or Red River section, where this formation has its greatest development, it consists primarily of blue and black laminated bituminous clays, accompanied in places by large septaria and occasional thin, arenaceous laminae. Southward they become thinner and more arenaceous (Walcott, 1901).

The proposed project would be constructed within the Houston Black-Navo-Heidin Soils Association. These soils consist of gently sloping upland clays and loams. Seven major soil types are found within the project study area: 1) Navo clay loam with one to three percent slopes; 2) Wilson clay loam with zero to two percent slopes; 3) Ferris clay with five to twelve percent slopes, eroded; 4) Silawa fine sandy loam with three to eight percent slopes; 5) Frio silty clay, frequently flooded; 6) Bastsil fine sandy loam with zero to three percent slopes; and 7) Heiden clay with one to three percent slopes (NRCS, 2010a).

The NRCS (2010a) provides farmland classifications, which identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978. Two soil types within the project study area are considered prime farmland: 1) Bastsil fine sandy loam with zero to three percent slopes, and 2) Heiden clay with one to three percent slopes. Bastsil fine sandy loam consists of a deep and well drained permeable soil suited for cropland production such as peanuts, grain sorghum, small grain crops and improved pastures of bermudagrass and kleingrass. Heiden clay consists of well drained and slowly permeable soil suited for cropland production such as grain sorghum and cotton, but commonly used for pasture and hay production (NRCS, 2010a).

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Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation. Hydric soils may indicate potential wetlands, which could be regulated under the USACE jurisdiction. Two hydric soils are present in Tarrant County, but no hydric soils are found within the project study area (NRCS, 2010b).

### **3.4 WATER RESOURCES**

#### **3.4.1 Waters of the U.S., including Wetlands**

The USACE regulates, under the authority of Section 404 of the Clean Water Act, the discharge of dredged and fill material into all waters of the U.S., including wetlands. Nontidal waters of the U.S. are generally described as rivers and streams including the smallest of tributaries, any impoundments on those rivers and streams (*i.e.*, ponds and lakes), and any wetlands adjacent to those features. Wetlands are defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, mudflats, wet meadows, playa lakes, and similar areas. In the absence of adjacent wetlands, the limits of USACE jurisdiction extend to the ordinary high-water mark (OHWM) of waters of the U.S. When adjacent wetlands are present, the limits of jurisdiction extend beyond the OHWM to the limit of the adjacent wetlands. The OHWM is the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area. Determination of the presence or absence of waters of the U.S. within the proposed Lynn Creek Parkway was performed by Jones and Ridenour Inc. in a Preliminary Wetlands Determination (PWD). An additional desktop review for potential waters of the U.S. for the remaining study area was performed by PBS&J in October 2010. (**Appendix E**).

During the PWD, two jurisdictional streams were observed within the project area: Lynn Creek, an intermittent stream, and an unnamed, ephemeral tributary of Lynn Creek. Both streams drain into Joe Pool Lake during rain events. No fringe wetlands were observed to be associated with the identified, on-site streams. During the desktop review, five streams, one pond, and Joe Pool Lake were indentified. No wetlands were identified during the desktop review.

Section 10 of the Rivers and Harbors Act of 1899 states that navigable waters of the U.S. are those waters that are subject to the ebb and flow of the tide and/or are presently being used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Navigable waters include lakes and other on-channel impoundments of navigable rivers. Under Section 10, the USACE regulates

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any impacts, or work that has the potential to affect a navigable water body. No navigable water bodies are located within the study area.

### **3.4.2 Water Quality**

The entire project study area is found within the Trinity River Basin, which drains a total area of 17,913 square miles of Texas and stretches from the Red River to the Gulf of Mexico. Water quality information for this section of the Trinity River Basin was obtained from the Texas Commission on Environmental Quality (TCEQ, 2008). The TCEQ divides river basins into segments, with water quality data given for each segment. All surface waters within the project study area drain into Segment 0838 (Joe Pool Lake) of the Trinity River Basin. Joe Pool Lake, an impoundment of Mountain Creek, includes the area from Joe Pool Dam in Dallas County up to the normal pool elevation of 522 feet. This segment of the Trinity River Basin is not listed in TCEQ's Draft 2008 Texas 303(d) list. Water quality data is not available for Lynn Creek, or its tributaries, and is not classified as impaired by TCEQ (2008).

Temporary construction activities have the potential to adversely affect water quality, especially near stream crossings. Such activities, if not properly controlled, could cause an increase in turbidity and sediments that are potentially damaging to aquatic ecosystems. Potentially harmful construction activities include land clearing operations, roadway preparation, and other construction related operations.

The greatest potential for adverse impacts to surface water exists during the construction phase of the project due to the quantity of soil disturbed. This project would disturb more than 5 acres of land; therefore, compliance with the TPDES General Permit (Stormwater Discharges from Construction Sites guidelines for large construction projects [TXR 150000]) for Construction Activities is required. This program seeks to control erosion and sedimentation from construction projects by means of the promulgation of a Stormwater Pollution Prevention Plan (SWPPP) which must be written by the project engineer or contractor and implemented prior to the start of construction. The program consists of both management and structural Best Management Practices (BMPs) such as the use of vegetated road shoulders, in order to reduce the chance for pollutants to enter any receiving waters. These controls are required to be put in place to slow the flow of water from the site and minimize the transport of soil particles from the site during construction. In order to comply with the regulations, the project engineer or contractor is required to submit a Notice of Intent (NOI) to the TCEQ prior to beginning construction. Following the completion of construction and attaining final stabilization on all portions of the site, a Notice of Termination (NOT) must be submitted.

### **3.4.3 Floodplain**

The City is a participating member of the National Flood Insurance Program (NFIP) and is required to regulate any development in designated flood prone areas. Any work within a Federal Emergency Management Agency (FEMA) designated floodplain requires a Floodplain Permit. The City Floodplain Administrator will review the permit and associated documentation (*e.g.* Elevation Certificate, Conditional Letter of Map Revision, Letter of Map Amendment, etc.) to determine if the development

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will have an adverse impact on adjacent property owners, will not decrease the flood carrying capacity of the watercourse, and will not create a situation that is dangerous during flooding events.

## **3.5 BIOLOGICAL RESOURCES**

### **3.5.1 Wildlife and Fish**

The project study area lies within the Texas biotic province as described by Blair (1950). The Texas province represents an ecotone between the forests of the Austroriparian province of the southeastern U.S. and the grasslands and plains of the Kansan and Balconian provinces of the west. The Texan biotic province has no endemic vertebrate species, but includes species characteristics of surrounding provinces. Rivers and tributaries passing through the Texan biotic province (Trinity, Sabine, Red, Colorado, Brazos, and Guadalupe rivers) support riparian forests important to the western dispersal of Austroriparian species, while patches of grasslands and prairies represent the easternmost ranges for many western species. Mammals typical of this province include the Virginia opossum (*Didelphis virginiana*), eastern mole (*Scalopus aquaticus*), fox squirrel (*Sciurus niger*), Louisiana pocket gopher (*Geomys breviceps*), fulvous harvest mouse (*Reithrodontomys fulvescens*), white-footed mouse (*Peromyscus leucopus*), hispid cotton rat (*Sigmodon hispidus*), eastern cottontail (*Sylvilagus floridanus*), and swamp rabbit (*Sylvilagus aquaticus*). Animals typical of grasslands of this province include the thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), hispid pocket mouse (*Chaetodipus hispidus*), deer mouse (*Peromyscus maniculatus*), and black-tailed jackrabbit (*Lepus californicus*). Typical anuran species to this province are the Hurter's spadefoot (*Scaphiopus holbrookii hurteri*), Gulf Coast toad (*Bufo valliceps*), Woodhouse's toad (*Bufo woodhousii*), gray treefrog (*Hyla versicolor/chrysosecelis*), green treefrog (*Hyla cinerea*), bullfrog (*Rana catesbeiana*), southern leopard frog (*Rana sphenoccephala*), and eastern narrow mouth toad (*Microhylla carolinensis*) (Blair, 1950).

Although the various biotic provinces were originally separated on the basis of terrestrial animal distributions, Hubbs (1957) has shown that the distribution of freshwater fishes within the state generally corresponds with the terrestrial-vertebrate province boundaries.

Fish are prominent in the trophic structure of most streams, being the largest and most conspicuous of the ecosystems' resident consumers. Extensive environmental changes in an area can lead directly or indirectly to changes in the feeding habits of fish. However, changes in available feeding levels are not necessarily detrimental, unless the organism's feeding habits are very specialized. Food habits of fish vary with season, food availability and life-cycle stages. For example, the diet of most young fish consists of microscopic plants and animals including algae, protozoans, and crustaceans found on plants, in bottom material or suspended in the water column. As fish develop and attain sexual maturity, feeding adaptations develop, and the diets of some species become very restricted. Some fish are herbivorous, while others (*e.g.* bass) are strictly carnivorous. Most of the sunfish and catfish are omnivorous.

The headwater segments of the feeder tributaries probably host minnows (*Notropis* spp.), mosquitofish (*Gambusia affinis*), topminnows (*Fundulus* spp.), darters (*Etheostoma* spp.), and younger members of

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larger species. In pooled areas, it would be typical for the fish community to be heavily dominated by sunfish that are probably widely distributed in area streams when sufficient water is present. Joe Pool Lake may support various varieties of gamefish such as the largemouth bass (*Micropterus salmoides*), white bass (*Morone chrysops*), white crappie (*Pomoxis annularis*), channel catfish (*Ictalurus punctatus*), and bluegill (*Lepomis macrochirus*) (Hubbs et al, 2008; Chilton, 1997).

### 3.5.2 Aquatic Vegetation

The aquatic habitats identified within the project area are primarily associated with ephemeral and intermittent streams. The vegetation typically associated with these features is typically consistent with that of the surrounding terrestrial environment. Changes in plant community structure, individual plant habit, and individual plant morphology may change due to marginally increased soil moisture; however, overall plant community composition remains the same.

National Wetlands Inventory (NWI) mapping on 1:24,000 topographic maps prepared by the United States Fish and Wildlife Service (USFWS) indicate wetland features located within the project area (USFWS, 1992). Such features include palustrine emergent wetlands that are seasonally and temporarily flooded and a palustrine unconsolidated bottom permanently flooded impoundment. Lynn Creek is also mapped on the NWI map as a riverine, intermittent streambed. If wetland features are confirmed at a later time, they may be considered under the jurisdiction of the USACE. If these areas meet the criteria necessary to define them as jurisdictional wetlands pursuant to Section 404 of the Clean Water Act, specific activities (*e.g.* placement of fill) within these habitats may be subject to regulation.

### 3.5.3 Terrestrial Vegetation

The project study area occurs along the ecotonal boundary between the Cross Timbers and Prairies vegetation area to the west, and the Blackland Prairies vegetation area to the east, as described by Gould (1975). A description of the typical conditions within each of these vegetation areas is described below. This particular region is listed in “The Vegetation Types of Texas” (McMahan et al., 1984) as being urban land.

The project study area comprises four different vegetation types: Upland Woods, Mixed Hardwood Savannah, Riparian Woods, and Grassland. These vegetative communities are described below. A vegetation map is included in **Appendix A, Figure H**.

**Upland Woods:** The dominant species found in this community includes sugarberry (*Celtis laevigata*), eastern red cedar (*Juniperus virginiana*), pecan (*Carya illinoensis*), winged elm (*Ulmus alata*), gum bumelia (*Bumelia lanuginosa*), shumard oak (*Quercus shumardii*), American elm (*Ulmus americana*), yaupon (*Ilex vomitoria*), Chinese privet (*Ligustrum sinense*), Hercules club (*Zanthoxylum clava-herculis*), elbow-bush (*Forestiera pubescens*), red mulberry (*Morus rubra*), possumhaw (*Ilex decidua*), roughleaf dogwood (*Cornus drummondii*), southern dewberry (*Rubus trivialis*), panicum (*Panicum oligosanthos*), ground-cherry (*Physalis* spp.), chervil (*Chaerophyllum tainturieri*), great ragweed (*Ambrosia trifida*),

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Carolina snailseed (*Cocculus carolinus*), mustang grape (*Vitis mustangensis*), Virginia wild rye (*Elymus virginicus*), saw greenbrier (*Smilax bona-nox*), and poison ivy (*Toxicodendron radicans*). The project study area has approximately 134.38 acres of the upland woods vegetation community.

**Mixed Hardwood Savannah:** The dominant species found in this community includes sugarberry, eastern red cedar, pecan, winged elm, honey locust (*Gleditsia triacanthos*), gum bumelia, Osage orange (*Maclura pomifera*), American elm, honey mesquite (*Prosopis glandulosa*), Mexican plum (*Prunus mexicana*), Hercules club, soapberry (*Sapindus saponaria*), red mulberry, ground-cherry, chervil, great ragweed, Carolina snailseed, horsetail (*Conyza canadensis*), woolly croton (*Croton capitatus*), black-eyed Susan (*Rudbeckia hirta*), common broomweed (*Amphiachyrus dracunculoides*), narrowleaf baccharis (*Baccharis neglecta*), johnsongrass (*Sorghum halepense*), King Ranch bluestem (*Bothriochloa ischaemum*), silver bluestem (*Bothriochloa laguroides*), spotted beebalm (*Monarda punctata*), musk thistle (*Carduus nutans*), broomsedge bluestem (*Andropogon virginicus*), indiagrass (*Sorghastrum nutans*), and purpletop (*Tridens flavus*). Approximately 59.14 acres of mixed hardwood savannah exist within the project study area.

**Riparian Woods:** The dominant species found in this community includes Osage orange, cedar elm (*Ulmus crassifolia*), American elm, sugarberry, eastern red cedar, Shumard oak, pecan, honey locust, cottonwood (*Populus deltoides*), black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), soapberry, possumhaw, roughleaf dogwood, Virginia wild rye, sea oats (*Chasmanthium latifolium*), rattlebox (*Sesbania vesicaria*), great ragweed, poison ivy, saw greenbrier, common greenbrier (*Smilax rotundifolia*), and Japanese honeysuckle (*Lonicera japonica*). The project study area has approximately 61.24 acres of riparian woods.

**Grassland:** This vegetative community is found in association with existing ROW on USACE property, and grazing areas on the property adjacent to SH 360 and Webb Lynn Road. The dominant species found in this community includes sugarberry, honey mesquite, giant ragweed horsetail, woolly croton, black-eyed susan, common broomweed, narrowleaf baccharis, johnsongrass, King Ranch bluestem, silver bluestem, spotted beebalm, musk thistle, broomsedge bluestem, indiagrass, and purpletop. This vegetation community as observed within the project area would not be considered a nativeland grassland. Approximately 61.14 acres of grasslands exist within the project study area.

In order to assess the existing value of the biological community, the Wildlife Habitat Appraisal Procedure (WHAP), as developed by Texas Parks & Wildlife Department, was employed. This evaluative method allowed for the quantitative measure of future habitat impacts, and determination of mitigation requirements. Using the WHAP methodology, habitat impacts and compensation credits are quantified using habitat units. Habitat units are calculated by multiplying habitat quality by habitat quantity (TPWD, 1995). In order to determine acreage requirements necessary to compensate for project losses, a WHAP analysis would need to be performed on proposed mitigation sites to determine the site's habitat units to see if they are less than, equal to, or greater than the site for which you are mitigating. If the two sites are comparable, then a 1:1 ratio is the value determination. If the mitigation site is found to be of lower or

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higher quality, then the compensation ratio would need to be either higher or lower (respectively) than a 1:1 ratio.

The WHAP method allows for the evaluation of sites within each vegetative community that are present within the project area. Several individual WHAP evaluations were performed within each vegetative community present within the proposed project area. The total number of WHAPs performed within each community was based on the total percentage of the community to be impacted. Scoring of points in a WHAP is an evaluative process; therefore, the need to analyze multiple locations within each vegetative community is essential in determining an average score that accurately represents each community. In order to provide comparative analysis to the results shown above, the highest, and lowest possible values for any site evaluation using the WHAP is 0.95 and 0.03, respectively.

It was determined that the project study area comprises four different vegetation types: Upland Woods, Mixed Hardwood Savannah, Riparian Woods, and Grassland. Dominant plant species within the upland woods habitat type include sugarberry, eastern red cedar, pecan, and multiple oak species. Dominant plant species within the mixed hardwood savannah habitat type include sugarberry, eastern red cedar, honey locust, King Ranch bluestem, and silver bluestem. Dominant plant species within the riparian woods habitat type include sugarberry, green ash, cedar elm, Osage orange, black willow, sea oats, and poison ivy. Dominant plant species within the grassland habitat type include King Ranch bluestem, johnsongrass, silver bluestem, and honey mesquite.

The results of the WHAP analysis are shown in **Table 3-1**. As shown in this table, all vegetative communities except for the Grasslands are near the median in habitat quality. **Table 3-2** shows the quantity in acres and the weighted average WHAP scores for each habitat type within each of the proposed development areas (refer the reader to the appropriate map or figure showing the coding and location of proposed development areas).

Table 3-1, Average WHAP Scoring

	<b>Upland Woods</b>	<b>Mixed Hardwood Savannah</b>	<b>Riparian Woods</b>	<b>Grassland</b>
<b>WHAP Evaluations</b>	15	4	4	3
<b>Total Point Score</b>	638	160	200	98
<b>Average Habitat Quality Score</b>	0.43	0.4	0.5	0.33

Table 3-2, WHAP Weighted Averages

<b>Proposed Improvements</b>	<b>Upland Woods (acres)</b>	<b>Mixed Hardwood Savannah (acres)</b>	<b>Riparian Woods (acres)</b>	<b>Grassland (acres)</b>	<b>Maximum Total Acres Potentially Impacted (not proposed)</b>	<b>Weighted Average Habitat Quality</b>
Roadway	8.49	0.00	1.08	1.47	11.04	0.43
A	2.94	0.00	0.00	0.00	2.94	0.43
B1	2.04	0.00	0.00	0.00	2.04	0.43
B2	2.04	0.00	0.00	0.00	2.04	0.43
C	2.32	0.00	0.00	0.00	2.32	0.43
D	4.24	0.00	0.00	0.00	4.24	0.43
E	3.08	0.00	0.00	0.00	3.08	0.43
F	2.24	0.00	0.00	0.00	2.24	0.43
G	0.35	0.00	0.61	0.00	0.96	0.47
H	2.15	0.00	1.49	0.00	3.64	0.45
I	0.13	0.00	0.65	0.00	0.78	0.50
J	0.00	0.00	0.27	0.00	0.27	0.50
K	0.93	0.00	0.00	0.00	0.93	0.43
L	6.28	0.00	1.81	0.01	8.1	0.45
R/S	10.58	24.46	0.00	0.06	35.1	0.42
<b>Totals</b>	<b>47.81</b>	<b>24.46</b>	<b>5.91</b>	<b>1.54</b>	<b>79.72</b>	

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### 3.5.4 Threatened and Endangered Species

The following section addresses the federally listed threatened or endangered species known to occur in Dallas and Tarrant counties. There are 6 federally listed species listed on the USFWS database for Dallas and Tarrant Counties (**Appendix F**). These species include six birds. **Table 3-3** presents the current status of the federally listed endangered or threatened species within Dallas and Tarrant counties. Brief natural histories and habitat requirements for each listed species follow Table 3-3. In addition to the federally listed species there are 11 state listed species that have the potential to occur within Tarrant and Dallas Counties and are identified in Appendix F but not discussed further in this document.

Table 3-3: Federally Listed Threatened and Endangered Species

Species	Scientific Name	USFWS
Bald Eagle	<i>Haliaeetus leucocephalus</i>	DM
Black-capped Vireo	<i>Vireo atricapillus</i>	E
Golden-cheeked Warbler	<i>Dendroica chrysoparia</i>	E
Interior Least Tern	<i>Sterna antillarum athalossos</i>	E
Piping Plover	<i>Charadrius melodus</i>	E, T
Whooping Crane	<i>Grus americana</i>	E, EXPN

Source: USFWS, federally listed as threatened and endangered species of Texas, November 4, 2010.

E = Endangered. Species in danger of extinction throughout all or a significant portion of its range.

T = Threatened. Species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

DM = Delisted Taxon, Recovered, Being monitored first 5 years.

EXPN = Experimental Population

#### *Bald Eagle*

The Bald Eagle is a large bird of prey found primarily along seacoasts, large lakes, and rivers. Bald Eagles nest in tall (40–120 feet) trees or high cliff sides near water. The Bald Eagle ranges over much of the U.S. and Canada. In Texas, wintering and nesting activity occurs mainly near large, freshwater impoundments with standing timber located in or around the water (Mabie, 1989). Habitat loss and egg thinning due to DDT were the main reasons for the decline of the species. The Bald Eagle was officially delisted on June 28, 2007 from the endangered species list. The nearest known location of habitat is located southeast of the project study area at an undetermined distance. Potential habitat may occur near Joe Pool Lake or the lake may be used as stop over habitat during migration. However, no Bald Eagle occurrences have been recorded and are unlikely to occur in the study area.

#### *Black-capped Vireo*

The Black-capped Vireo is a small songbird with an olive back, whitish chest, yellow flanks, and yellowish wing bars. The male has a glossy black cap which contrasts its white spectacles. The female differs having a slate gray head. They are winter residents of the western coast of Mexico and nest in

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Texas from April to July in dense thickets and shrubs such as shin oak (*Quercus sinuata* var. *breviloba*) Reasons for decline include loss of habitat through overgrazing and fires. Another major problem is brood parasitism by Brown-headed Cowbirds (*Molothrus ater*). The nearest known location of Black-capped Vireo occurrences is approximately two miles southeast of the study area. The study area could be used as a stopover for resting/foraging purposes during migratory events. A pedestrian survey was conducted for the Black-capped Vireo's preferred habitat of dense shin oak motts within the study area and no habitat was identified.

#### *Golden-cheeked Warbler*

The Golden-cheeked Warbler is a small songbird with a black crown and back. It has a golden cheek which is completely outlined in black which is only interrupted by a black eye line. The female is duller, with olive underparts and missing the intense black throat. Habitat consists of mature Ashe juniper and oak woodlands of the Edwards Plateau. It nests in mature junipers preferring ravines and canyons. They nest in Texas from March to July and spend the winter in Mexico and Central America. A pedestrian survey was conducted for the Golden-cheeked Warbler's preferred habitat of densely crowned, Ashe juniper and oak woodlands within the study area and no habitat was identified. Although habitat for the species was not identified within the study area, the proposed study area could be used as a stopover for resting/foraging purposes during migratory events.

#### *Interior Least Tern*

The Interior Least Tern is a small shorebird listed as endangered on both the federal and state lists. Historically, the Interior Least Tern nested and bred in Texas on sand bars and beaches along the Canadian, Red, and Rio Grande river systems. Today they are found along Prairie Dog Fork, and parts of the mainstream Red River (Campbell, 1995). This bird breeds from April to August. Preferred habitat for breeding is sparsely vegetated sandbars along rivers, sand and gravel pits, and lakes or reservoir shorelines.

#### *Piping Plover*

The Piping Plover is a small, ringed (dark, narrow, breast band) migratory shorebird that inhabits the Atlantic and Gulf coasts and lakes and rivers of the Northern Great Plains. Piping Plovers winter in Texas and prefer sandflats, algal flats, beaches, spoil islands, and sparsely vegetated mudflats. Debris such as driftwood and seaweed are used for roosting. Habitat loss and human disturbance are the main reason for decline. There are no known or recorded occurrences near the study area.

#### *Whooping Crane*

The Whooping Crane is a large, white crane with a dagger-like yellow bill, and reddish facial skin. In flight, the long extended black legs and neck, as well as black-tipped wings are characteristic. Whooping Crane habitat consists of large wetland areas, river bottoms, potholes, prairies, and croplands. Their diet

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includes crustaceans, mollusks, frogs, minnows, rodents, small birds, and berries. The only self-sustaining population of Whooping Cranes breed in Wood Buffalo National Park in northern Alberta, Canada and winters at Aransas National Wildlife Refuge in Texas, and nearby public and private lands. Whooping Cranes could be expected only as an occasional fall migrant within the study area (Kutac and Curan, 1994).

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### **3.6 NOISE AND GENERAL AESTHETICS**

The park offers a picturesque setting of Joe Pool Lake and riparian woodlands. The park area is generally quiet, with exceptions of passing boats within the lake and vehicular traffic on adjacent roadways. Existing traffic volumes for Lake Ridge Parkway is 15,426 vehicles per day (vpd), SH 360 northbound is 18,850 vpd, and eastbound Webb Lynn Road is 4,155 vpd. Typically, weekends create more noise than weekdays due to increased visitation and traffic.

### **3.7 CULTURAL RESOURCES**

In accordance with the National Historic Preservation Act of 1966, as amended (PL-96-515), and the National Environmental Act of 1969 (PL-90-190), AR Consultants, Inc. completed a 100 percent pedestrian survey of the proposed study area in March of 2010.

Archeological investigations had been previously conducted east and southeast of the study area. Southern Methodist University (SMU) conducted an archeological survey (1979 and 1980) of the proposed Lakeview Lake which is now Joe Pool Lake. Twenty-five historic and seventeen prehistoric sites were recorded along Mountain and Walnut Creeks. Further research and testing was conducted during 1979 and 1980 by SMU on six prehistoric sites. Further historical research was conducted by Journey et al (1988) utilizing ethnoarchaeological investigations (AR Consultants, Inc., 2010).

According to the 2010 investigation by AR Consultants, Inc., multiple sites were previously discovered in the area that is now Joe Pool Lake; however, three cultural materials were discovered during the Lynn Creek Parkway survey in the upland setting and no buried cultural materials were found in the Lynn Creek floodplain. The residence that was shown on the 1920 soil map and 1959 U.S. Geological Survey (USGS) map (preliminary investigation) has been removed, and the only evidence of occupation of the area is exterior use areas. Site 41TR57, a historic cemetery, occurs within the study area and has been contained within a chain-link exclusion fence. This area would be avoided by development and no development would take place within 100 feet of the fence boundary. Two new historic sites were identified within the project area during the 2010 investigation. However, due to poor contextual integrity, it has been determined that these sites are not worthy of consideration of inclusion on the National Register of Historic Places because of their recent age, disturbance, and not being associated with any significant event or person. As a result, no further cultural resource investigations were warranted.

### **3.8 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTES**

A review of historical records and literature searches revealed no known hazardous, toxic, and radioactive wastes to occur within the park area (**Appendix G**). On-site investigation visits did not reveal potential hazardous, toxic, or radioactive wastes.

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### **3.9 AIR QUALITY**

The EPA established the General Conformity Rule in Title I, Section 176 of the Clean Air Act (CAA). The regulatory citations for the General Conformity Rule can be found in Title 40 of the Code of Federal Regulations Part 51, Subpart W and in Title 30 of the Texas Administrative Code (30 TAC) 101.30. These rules mandate that the federal government not engage, support, provide financial assistance for licensing or permitting, or approve any activity not conforming to an approved CAA implementation plan in coordination with and as part of the National Environmental Policy Act process. USACE approval of the Proposed Action through an anticipated FONSI would require that the General Conformity Rule be addressed.

The CAA also required the adoption of National Ambient Air Quality Standards in order to protect public health, safety, and welfare from the known or anticipated effects of criteria pollutants (sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, ozone, and lead). LCWRDP is located in Tarrant County, which is part of the Dallas-Fort Worth (DFW) eight-hour serious nonattainment area for ozone and its precursors, nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC). In Tarrant County the current approved CAA implementation plan is the Revisions to the State Implementation Plan (SIP) for the Control of Ozone Air Pollution, Dallas-Fort Worth Eight-Hour Ozone Nonattainment Area dated May 23, 2007. In determining conformity with the DFW SIP, direct and indirect NO<sub>x</sub> and VOC emissions resulting from the Proposed Action must be estimated and compared to the de minimis threshold of 50 tons per year (TPY) per pollutant.

Impacts to air quality by the Proposed Action that have the potential to meet or exceed the threshold of significance established for this resource will require further analysis and will be addressed in Section 6.12.

### **3.10 RECREATION**

There are currently four developed parks at Joe Pool Lake: Cedar Hill State Park, Britton Park, Loyd Park, and Lynn Creek Park. Each park provides local citizens with various opportunities for recreation. Popular recreational activities include picnicking, boating, fishing, and sightseeing. The parks and marinas routinely reach maximum capacity during weekends over spring and summer months, especially during holiday weekends. Cedar Hill State Park is a 1,826-acre recreational area that provides hike/bike trails, a marina, camping, and group facilities. This facility is operated by TPWD. Britton Park is a small area and only provides a boat ramp, parking, and fishing. Loyd Park is a 791-acre recreational area with restrooms, campsites, cabins, swimming beach, equestrian trails, hike/bike trails, fishing pier, boat ramp, and a softball field. Lynn Creek Park is a 784-acre recreational area with restrooms, showers, two boat ramps with eight lanes, a swimming beach, a concession stand, almost 100 picnic sites, group pavilions, sand volleyball courts, and an amphitheater. During the past three years, the City has produced “Prairie Lights,” a holiday drive through festival drawing over 100,000 visitors during its 40-day run annually at Lynn Creek Park. Britton Park, Loyd Park, and Lynn Creek Park are all operated by the City. Table 3-4 identifies the usage of Britton Park, Loyd Park, and Lynn Creek Park for FY2010.

Table 3-4, FY2010 Usage of Britton Park, Loyd Par, and Lynn Creek Park

<b>PARK</b>	<b>VISITORS</b>	<b>VEHICLES</b>	<b>BOATS</b>
Lynn	215,641	58,998	2,816
Loyd	148,969	40,923	2,583
Britton	4,631	1,299	1,299
<b>Total</b>	<b>369,241</b>	<b>101,220</b>	<b>6,684</b>

\*Data was not available for Cedar Hill State Park

### 3.11 SOCIOECONOMICS

Joe Pool Lake is located in Dallas and Tarrant counties. The project area is located in Tarrant County in the City. The 2010 Census data has the most recent population and race counts. However, the most current economic and other social characteristic data for the counties and the City is from the 2009 American Community Survey 1-year Estimates. For census tracts, the most current economic and other social characteristic data is from the 2005-2009 American Community Survey 5-Year Estimates.

Dallas County encompasses 908 square miles with a population of 2,218,899 in 2000 and 2,368,139 in 2010, a 6.7 percent increase. In 2000, Dallas County was comprised primarily of White persons (44.3 percent), followed by Hispanic or Latino (29.9 percent), Black or African American (20.1 percent), and the remainder being other races (American Indian, Asian, and other races) comprising 5.7 percent. In 2010, the estimated composition of Dallas County changed to being primarily comprised of Hispanic or Latino persons (38.3 percent), White (33.1 percent), Black or African American (21.9 percent), and other races (6.7 percent). The average household size increased from 2.71 in 2000 to 2.83 in 2009. The average family size also increased in size from 3.34 persons in 2000 to 3.55 in 2009. The median household income increased by 6.3% from 2000 (\$43,324) to 2009 (\$46,048) and the percent of families living below the poverty level increased from 10.6 percent in 2000 to 19.0 percent in 2009. In 2000 and 2009, the dominant industries within the county were educational, health and social services (14.8 and 16.5 percent, respectively) followed by professional, scientific, management, administrative, and waste management services (12.9 and 13.8 percent, respectively). From 2000 to 2009, manufacturing decreased from 11.9 percent to 8.7 percent, retail trade stayed about the same (11.5 percent to 11.2 percent, respectively), and construction increased from 8.5 percent to 11.1 percent.

Tarrant County encompasses 897 square miles with a population of 1,446,219 in 2000 and 1,809,034 in 2010, a 25.1 percent increase. In 2000, Tarrant County was comprised primarily of White persons (61.9 percent), followed by Hispanic or Latino (19.7 percent), Black or African American (12.6 percent), and other races (American Indian, Asian, Native Hawaiian and other races) with 5.8 percent. In 2010, the percentage of ethnicity changed with White (51.8 percent), Hispanic or Latino (26.7 percent), Black or African American (14.5 percent), and other races being 7.0 percent. The average household size increased from 2.67 in 2000 to 2.81 in 2009. The average family size also increased from 3.22 persons in 2000 to 3.38 persons in 2009. The median household income increased from \$46,179 in 2000 to \$53,720 in 2009

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and the percent of families living below poverty level increased from 8.0 percent in 2000 to 11.0 percent in 2009. In 2000 and 2009, the dominant industries within the county were educational, health and social services (16.1 and 17.9 percent, respectively). From 2000 to 2009 manufacturing decreased from 14.0 percent to 11.5 percent, retail trade decreased from 12.5 percent to 12.0 percent, and other industries including professional, scientific, management, administrative, and waste management services and finance and insurance, and real estate and rental and leasing all stayed less than 11.5 percent.

The City encompasses 81.5 square miles with a population of 51,449 in 2000 and 53,156 in 2010, a 3.3 percent increase. In 2000, the City was comprised primarily of White persons (47.2 percent), followed by Hispanic or Latino (33.0 percent), Black or African American (13.5 percent), and other races (American Indian, Asian, Native Hawaiian and other races) with 24.5 percent. In 2010, the percentage of ethnicity changed with White (25.8 percent), Hispanic or Latino (18.7 percent), Black or African American (51.4 percent), and other races being 4.1 percent. The average household size increased from 2.71 in 2000 to 3.18 in 2009. The average family size also increased from 3.34 persons in 2000 to 3.70 persons in 2009. The median household income increased from \$46,816 in 2000 to \$49,542 in 2009 and the percent of families living below poverty level from increased 8.7 percent in 2000 to 11.8 percent in 2009. In 2000, the dominant industry was manufacturing at 16.5 percent; however, it decreased to 12.5 percent in 2009. From 2000 to 2009, educational, health and social services increased from 13.6 to 15.3 percent; retail trade decreased from 12.5 to 9.3 percent; and other industries including professional, scientific, management, administrative, and waste management services and finance and insurance, and real estate and rental and leasing, all stayed less than 10 percent.

The census tracts in the project area were revised for the 2010 census. The project area was located in Tarrant County census tract 1115.18 since the 2000 census but it was divided into three smaller tracts (1115.47, 1115.48, and 1115.49) for the 2010 census. The project area is also located adjacent to Dallas County census tract 164.11. The population of these tracts was 11,243 in 2000 and 37,979 in 2010, a 238 percent increase. In 2000, these tracts were comprised primarily of White persons (59.6 percent), followed by Hispanic or Latino (18.3 percent), Black or African American (14.5 percent), and other races (American Indian, Asian, Native Hawaiian and other races) with 17.1 percent. In 2010, the percentage of ethnicity changed with White (32.0 percent), Hispanic or Latino (22.8 percent), Black or African American (29.4 percent), and other races being 3.2 percent.

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## 4.0

## ENVIRONMENTAL CONSEQUENCES

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### 4.1 PROJECT SETTING AND LAND USE

#### 4.1.1 No-Action Alternative

The entire Lynn Creek Park is currently designated as high density recreation, but is not currently being utilized as such. Under the “No-Action” Alternative, Lynn Creek Park would continue to be maintained with recreation on the east side only and the undeveloped park area on the west side would remain in its current state. There would not be designated land use changes for any alternative. The west side would continue to receive little public recreation use. Current access to the west side area is limited to pedestrian traffic.

#### 4.1.2 Alternative 1 (Preferred Alternative)

While the designated landuse classification would not change with any alternative, the undeveloped land west of Lake Ridge Parkway (proposed LCWRDP) would change from its currently undeveloped state to a high intensity, multi-use recreational area. The proposed Lynn Creek Parkway would bisect the project study area to create a 50-foot-wide four-lane undivided arterial roadway impacting approximately 4,813 linear feet (5.52 acres) of USACE property. Land north of proposed Lynn Creek Parkway and adjacent to Lake Ridge Parkway would be practice fields and a themed special events area. Land south of proposed Lynn Creek Parkway and west of Lake Ridge Parkway would have lodging, campsites, and a group pavilion; passive uses including a nature center, interpretive trails, and wildlife conservation; equestrian area; adventure sports area, and amphitheater. See **Appendix A, Figure B** for proposed locations of development. A buffer would exist between the project and single-family homes to the north. Approximately 94.2 acres of USACE property would be impacted by the Preferred Alternative. Land use and the setting would change, but the resulting LCWRDP would benefit the community by reducing traffic congestions and increasing recreational opportunities.

#### 4.1.3 Alternatives 2, 3, and 4

While the designated landuse classification would not change with any alternative, the undeveloped land west of Lake Ridge Parkway would change from its currently undeveloped state to a high intensity, multi-use recreational area. Lynn Creek Parkway would be in different locations for each Alternative 2, 3, and 4, and the planned recreational facilities would change accordingly to facilitate access and use (**Appendix A, Figure C, D, and E**). Alternatives 3 and 4 would decrease the amount of contiguous land available for proposed themed special events area and would eliminate the no development zone and native landscape buffer (due to roadway placement).

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## **4.2 CLIMATE**

As currently designed, this project is proposed to be a high intensity, multi-use recreational area consisting of Lynn Creek Parkway, practice fields, a themed special events area, lodging, campsites, a group pavilion, a nature center, interpretive trails, wildlife conservation areas, an equestrian area, an adventure sports area, and an amphitheater. As with any other projects of this nature, it could not be expected to have any temporary, permanent, or cumulative adverse effects on climatic weather patterns in the region with respect to temperature, humidity, rainfall, or typical seasonal weather changes.

## **4.3 GEOLOGY AND SOILS**

### **4.3.1 No-Action Alternative**

Under the No-Action Alternative, the undeveloped land would remain in its present state with no impacts to soils and/or geology.

### **4.3.2 Alternative 1 (Preferred Alternative)**

The Preferred Alternative is not expected to impact the underlying Eagle Ford formation due to the absence of deep trenching or scraping activities associated with the proposed park and roadway development.

The Preferred Alternative would reduce the exposed surface area for seven major soil types within the study area. However, not all of the exposed surface area for each soil type found within the study area would be impacted. Proposed facilities would be individually constructed and would reduce the amount of surface area impacted.

There would be minor disturbances from the grading activities that would be associated with the construction activities. Construction activities would be limited to the immediate vicinity of project features. Best management practices such as silt fences, hay bales, and geotextile mesh would be used to minimize soil erosion. In addition, vegetative cover would be established immediately following construction activities to limit erosion. A storm water pollution prevention plan (SWPPP) would be prepared and approved before construction activities would occur.

There should only be minimal increased erosion from runoff associated the increased impervious cover as a result of construction activities. The roadway would have curbs and gutters and would tie into existing storm water drains. The recreation facilities would consist of small shelter covers, from which only direct minor erosion would occur. Any large facilities such as the rustic lodge would have to have gutters to minimize erosion from runoff. Due to the above design features being implemented, there would be minor insignificant soil erosion from runoff.

Two prime farmland soils are found within the study area. The exposed surface area of these soils would be reduced, but the soil would remain intact.

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No hydric soils are found within the study area. Therefore, no impacts to hydric soils would occur.

Due to the fact that best management practices (BMPs) would be utilized, which would result in minimal erosion, the proposed action would not result in significant impacts to geology and soils.

### **4.3.3 Alternatives 2, 3, and 4**

Alternatives 2, 3, and 4 would have similar impacts as the Preferred Alternative.

## **4.4 WATER RESOURCES**

### **4.4.1 Waters of the U.S., including Wetlands**

#### **4.4.1.1 No-Action Alternative**

Under the No-Action Alternative, there would be no impact to waters of the U.S. or Section 10 navigable waters.

#### **4.4.1.2 Alternative 1 (Preferred Alternative)**

Lynn Creek is an intermittent stream that travels from northwest to southeast throughout the study area, until it eventually drains into Joe Pool Lake. Impacts to the waters of the U.S., including wetlands, would be completely avoided during the construction of all recreation facilities. At the proposed Lynn Creek Parkway road crossing, Lynn Creek is crossed in approximately three locations due to its winding nature. The average OHWM for all three of the Lynn Creek crossings is 14 feet. The ephemeral drainage to Lynn Creek has an OHWM of two feet and would be considered as a separate individual crossing (Jones and Ridenour, Inc., 2007). All proposed construction activities for Lynn Creek Parkway would avoid temporary and permanent impacts to waters of the U.S. by spanning the creeks at the crossings. All required bridge piers would be placed outside of the OHWM. Therefore, no permit would be required. If design changes occur, and impacts to the water of the U. S. are proposed, a reevaluation of permitting requirements would be required.

Since Joe Pool Lake is not considered navigable under section 10 of the Rivers and Harbors Act, and no other navigable water bodies are found within the study area, there would be no impacts to navigable waters.

#### **4.4.1.3 Alternatives 2, 3, and 4**

Impacts to waters of the U.S., including wetlands would be completely avoided during the construction of all recreation facilities. Since all proposed construction alternatives for Lynn Creek Parkway would avoid temporary and/or permanent impacts to waters of the U.S. by spanning the creeks at the crossings and all required bridge piers would be placed outside of the OHWM, no permit for any alternative would be required.

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Since Joe Pool Lake is not considered navigable under section 10 of the Rivers and Harbors Act and no other navigable water bodies are found within the study area there would be no impacts to navigable waters.

## **4.4.2 Water Quality**

### **4.4.2.1 No-Action Alternative**

There would be no impacts to surface water quality related to the implementation of the No-Action Alternative.

### **4.4.2.2 Alternative 1 (Preferred Alternative)**

All activities are required to have a SWPPP to control erosion and sedimentation from entering water bodies. A SWPPP would be developed and implemented before construction begins. BMPs such as oil/debris separators will be installed on any bridge that crosses a water of the U.S. Other BMPs including, but not limited to silt fences, rock dams, mulching, and seeding will also be used to control erosion and sedimentation during all construction activities. The quality of waters in the state shall be maintained in accordance with all applicable provisions of the Texas Surface Water Quality Standards, including the general narrative and numerical criteria. Upon completion of the earthwork operations, disturbed areas would be restored and reseeded as deemed appropriate. Due to proper use of erosion control devices, and no placement of temporary or permanent fill into waters of the U.S., surface impacts associated with construction are not anticipated to affect Joe Pool Lake. Therefore, no permanent water quality impacts are expected as a result of the proposed project.

### **4.4.2.3 Alternatives 2, 3, and 4**

These alternatives would have similar impact to the Preferred Alternative.

## **4.4.3 Floodplain**

### **4.4.3.1 No-Action Alternative**

There would be no impacts to the floodplain related to the implementation of the No-Action Alternative.

### **4.4.3.2 Alternative 1 (Preferred Alternative)**

The Preferred Alternative would include construction activities within the 100-year floodplain. However, dredge and fill activities associated with any construction of Lynn Creek Parkway and other recreational facilities would be required to balance out or the design plan would not be approved by USACE. If cut and fill is not balanced within identified disturbed areas (construction areas) as shown on Figure B in Appendix A, then a supplemental environmental assessment would be required to disclose the impacts associated with borrow or fill areas. This would result in no net loss of flood storage of Joe Pool Lake.

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#### **4.4.3.3 Alternatives 2, 3, and 4**

These alternatives would have similar impacts to the Preferred Alternative.

### **4.5 BIOLOGICAL RESOURCES**

#### **4.5.1 Fish and Wildlife**

##### **4.5.1.1 No-Action Alternative**

There would be no impacts to fish and wildlife, or their habitat, in association with the No-Action Alternative.

##### **4.5.1.2 Alternative 1 (Preferred Alternative)**

The impacts of the proposed project on the wildlife can be divided into short-term effects resulting from physical disturbance during construction and long-term effects resulting from habitat modification. The net effect on local wildlife of these two types of impacts is usually minor. A general discussion of the construction and operation of the proposed project on terrestrial life is presented below.

Any required clearing and other construction-related activities would directly and/or indirectly affect most animals that reside or wander within the study area. Some small, low-mobility forms may be killed by the heavy machinery. These include several species of amphibians, reptiles, mammals and, if clearing and construction occurs during the breeding season, the young of many species including nesting and fledging birds. Fossorial animals (*i.e.*, those that live underground) such as mice and shrews may similarly be negatively impacted as a result of soil compaction caused by heavy machinery. Larger, more mobile species such as birds, deer, jackrabbits, and foxes may avoid the initial clearing and construction activities and move into adjacent areas outside of the project area. Wildlife in the immediate area may experience a slight loss of browse or forage material; however, similar habitats in adjacent areas would help restore the effects of this loss.

The increased noise and activity levels during construction would disturb species inhabiting the study area and immediate adjacent areas. Although normal behavior of many wildlife species would be disturbed during construction and operation, little permanent damage to the populations of organisms would result because they would be able to move in and out of the area through adjacent habitat.

Impacts to or displacement of wildlife within the study area would most likely occur in conjunction with the permanent removal of vegetation (habitat fragmentation) and disturbance in and around water features. Native vegetation provides food, cover, and breeding habitat for many resident and migrant species. Approximately five acres of riparian vegetation would be removed in association with the proposed recreational development and roadway. As such, these impacts would be minimal.

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Given the current condition of the habitat (fair quality), for the long term, the overall habitat quality within the study area should be improved through active management of mitigation areas that would be required. While there would be increased noise, traffic, and people during the day time hours of park operations, many species would still utilize the habitat during the nighttime and use the area as a corridor. Furthermore, the mitigation areas and remaining habitat would be tens of acres in size and would provide habitat even during the daylight hours.

Potential impacts on aquatic systems would mainly involve the effects of increased erosion and sedimentation. Land clearing and/or construction may result in increased suspended solids entering streams which in turn negatively affect many aquatic organisms that require relatively clear water for feeding and reproduction. Implementation of the SWPPP would further minimize any potential impacts on aquatic communities.

#### **4.5.1.3 Alternatives 2, 3, and 4**

Impacts of these alternatives would be similar to the Preferred Alternative.

### **4.5.2 Aquatic Vegetation**

#### **4.5.2.1 No-Action Alternative**

There would be no impacts to aquatic vegetation associated with the No-Action Alternative.

#### **4.5.2.2 Alternative 1 (Preferred Alternative)**

According to the wetland delineation conducted on the proposed Lynn Creek Parkway and the desktop assessment performed on the proposed recreational development area, the proposed project will not impact waters of the U.S., including wetlands. Any wetlands that may be identified during future wetland delineation efforts would need to be evaluated to determine if jurisdiction exists under Section 404 of the Clean Water Act prior to the start of construction.

#### **4.5.2.3 Alternatives 2, 3, and 4**

Alternatives 2, 3, and 4 would have the same impacts on aquatic vegetation as the Preferred Alternative.

### **4.5.3 Terrestrial Vegetation**

#### **4.5.3.1 No-Action Alternative**

There would be no impacts to vegetation if the No-Action Alternative were implemented.

#### **4.5.3.2 Alternative 1 (Preferred Alternative)**

Since the full recreation design has not been completed, exact acres of impact are unable to be determined. Therefore, the USACE will evaluate a worst case scenario (270 acres of impact) and more

likely scenario (about 79 acres) as shown in Table 4-1. Table 4-1 demonstrates the maximum area of the plan as shown on Figure B, Appendix A. During the detailed design the areas will be surveyed to further minimize impacts. The total impacts would fall between the total square footage of the facilities and the total maximum habitat area affected by the proposed improvements (approximately 69 acres).

Table 4-1, Maximum Acres of Impacts

<b>Proposed Improvements</b>	<b>Upland Woods (acres)</b>	<b>Mixed Hardwood Savannah (acres)</b>	<b>Riparian Woods (acres)</b>	<b>Grassland (acres)</b>	<b>Maximum Total Acres Potentially Impacted</b>
Roadway	8.49	0.00	1.08	1.47	11.04
A	2.94	0.00	0.00	0.00	2.94
B1	2.04	0.00	0.00	0.00	2.04
B2	2.04	0.00	0.00	0.00	2.04
C	2.32	0.00	0.00	0.00	2.32
D	4.24	0.00	0.00	0.00	4.24
E	3.08	0.00	0.00	0.00	3.08
F	2.24	0.00	0.00	0.00	2.24
G	0.35	0.00	0.61	0.00	0.96
H	2.15	0.00	1.49	0.00	3.64
I	0.13	0.00	0.65	0.00	0.78
J	0.00	0.00	0.27	0.00	0.27
K	0.93	0.00	0.00	0.00	0.93
L	6.28	0.00	1.81	0.01	8.1
R/S	10.58	24.46	0.00	0.06	35.1
<b>Totals</b>	<b>47.81</b>	<b>24.46</b>	<b>5.91</b>	<b>1.54</b>	<b>79.72</b>

#### **4.5.3.2.1 Upland Woods**

Effects to upland woodland vegetation within the project study would involve the removal of trees and other vegetation within the proposed ROW. Approximately 47.81 acres of upland woods vegetation would be impacted by this alternative through land clearing activities. Every effort would be made to preserve mature, native mast trees during construction activities.

#### **4.5.3.2.2 Mixed Hardwood Savannah**

Effects to mixed hardwood savannah vegetation within the Proposed Alternative would involve the removal of trees and other vegetation within the proposed ROW. Approximately 24.46 acres of mixed

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hardwood savannah vegetation would be impacted by this alternative. Every effort would be made to preserve mature, native mast trees during construction activities.

#### **4.5.3.2.3      *Riparian Woods***

Native riparian vegetation provides erosion inhibiting ground cover as well as habitat for a diverse number of wildlife species. Effects to vegetation within the project study area would involve the removal of trees and other vegetation within the areas proposed for recreational development and the proposed roadway easement. Approximately 5.91 acres of mature riparian vegetation would be impacted by this alternative. Every effort would be made to preserve mature, native mast trees during construction activities.

#### **4.5.3.2.4      *Grasslands***

Grasslands provide natural erosion control during rainfall events, as well as foraging acreage and travel corridors for wildlife species. Effects to vegetation within the project area would involve mowing/mechanical maintenance or removal in association with development of the recreational improvements or proposed roadway. Approximately 1.54 acres of non-native grassland would be impacted by this alternative. There are no native grasslands located within the project study area; therefore, no impacts to native grasslands would occur in association to this alternative.

### **4.5.3.3      *Alternatives 2, 3, and 4***

#### **4.5.3.3.1      *Upland Woods***

Effects to upland woodland vegetation within the project study would involve the removal of trees and other vegetation within the proposed ROW. Alternatives 2, 3, and 4 would impact approximately 33.8, 35, and 39.5 acres of upland woods vegetation, respectively.

#### **4.5.3.3.2      *Mixed Hardwood Savannah***

Effects to mixed hardwood savannah vegetation within the project study would involve the removal of trees and other vegetation within the proposed ROW. Alternatives 2, 3, and 4 would impact approximately 47.8, 51.8, and 50.8 acres of mixed hardwood savannah vegetation, respectively.

#### **4.5.3.3.3      *Riparian Woodlands***

Native riparian vegetation provides erosion inhibiting ground cover as well as habitat for a diverse number of wildlife species. Effects to vegetation within the project study area would involve the removal of trees and other vegetation within the ROW and associated easements. Alternatives 2, 3, and 4 would impact approximately 1.9, 1.9, and 0.5-acre of riparian woodlands, respectively.

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#### **4.5.3.3.4 Grasslands**

Grasslands provide natural erosion control during rainfall events, as well as foraging acreage and travel corridors for wildlife species. Effects to vegetation within the project area would involve mowing/mechanical maintenance or removal in association with development of the recreational improvements or proposed roadway. Alternatives 2, 3, and 4 would impact approximately 5.3, 5, and 1.3 acres of non-native grassland, respectively. There are no native grasslands located within the project study area; therefore, no impacts to native grasslands would occur in association with any of these Alternatives.

### **4.5.4 Threatened and Endangered Species**

#### **4.5.4.1 No-Action Alternative**

There would be no impacts to Threatened, Endangered, or Rare species related to the implementation of the No-Action Alternative.

#### **4.5.4.2 Alternative 1 (Preferred Alternative)**

A search of the TPWD Natural Diversity Database records indicated that there were no documented sightings of any federal or state-listed endangered, threatened, or rare species within the study area.

A transient Bald Eagle could use Joe Pool Lake and the study area for feeding or resting during migration. However, as the project would not require the removal of mature trees, and there have been no documented sightings of Bald Eagles in the study area, there would be no effects to Bald Eagles as a result of implementing this alternative.

There is no habitat for the Black-capped Vireo or Golden-cheeked Warbler within the study area; therefore no adverse effects to these two species during construction or operation of the proposed recreation facility are expected. These species could utilize the study area for stopover or foraging during transitional migration, but the proposed project would not affect these types of activities.

The study area does not contain suitable habitat for the Interior Least Tern, Piping Plover or Whooping Crane; therefore, their occurrence in the project study area would be unlikely and no effects are anticipated.

#### **4.5.4.3 Alternatives 2, 3, and 4**

Impacts for these alternatives would be similar to the Preferred Alternative.

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## **4.6 NOISE AND GENERAL AESTHETICS**

### **4.6.1 No-Action Alternative**

The park area would remain in its current state and the area would continue to receive little public recreation use. The only noise generated would be that of vehicles traveling Lake Ridge Parkway and traffic in the east side of Lynn Creek Park and boat operation on the lake.

### **4.6.2 Alternative 1 (Preferred Alternative)**

During construction, temporary noise impacts would result during utilization of construction equipment. Equipment would include bulldozers, motor graders, dump trucks, water trucks, concrete trucks, loaders, backhoes, trackhoes, trenchers, rollers, compactors, lay down machines, air compressors, power generators, arc-welders, chainsaws, air guns, power tools, and similar equipment. Hours of operation of construction equipment may vary, but would occur between 8:00 am and 5:00 P.M. weekdays, with minimum weekend work.

Normal park operation and maintenance activities would also generate noise on an occasional basis. Areas along roadsides and around all facilities would be mowed as growth necessitates. During growing season, park facility areas would usually be mowed every two to three weeks and roadsides about every four weeks, all dependent upon rainfall and funding. Refuse receptacles would be collected in refuse trucks once per week or whenever necessary.

Visitation of the completed park is anticipated to be fairly high, particularly during the spring and summer months. Noise generated from normal recreational activities would be expected and may include operation of vehicles, boats, personal watercraft, radios, televisions, and other noises associated with outdoor recreational facilities.

Noise-sensitive receptors are those locations where activities could be affected by increased noise levels and include locations such as residences, motels, churches, schools, parks, and libraries. Existing noise levels would be determined for the outdoor living area at sensitive receptors. There would be buffers to help reduce noise impacts from Lynn Park Parkway including the no development zone and the native landscape buffer; however, it is anticipated that residences located adjacent to the park would experience additional recreation related noises during normal park hours from the themed special events area and practice fields. Special events could range from fireworks shows to live bands and have to be approved and permitted by the City and USACE. Special events are normally only allowed during park hours.

The current view shed within the study area and from adjacent land owners is fallow field (grasslands), brush thicket, Lake Ridge Parkway, the Oasis Marina and Joe Pool Dam. As you get closer to the water, trees get larger and you may have a view of the lake itself. This is especially true when traveling up or down Lake Ridge Parkway. After the proposed recreational development is constructed, when traveling

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up or down Lynn Creek Parkway, or viewing from adjacent property, the west side would resemble the east side of Lynn Creek Park with roadways and recreational development.

The construction of Lynn Creek Parkway is expected to be completed in 2011/2012. The roadway is expected to generate approximately 11,000 daily trips in the build-out year (2025). Analysis year (2009) traffic volumes are estimated to be 5,439 daily trips. It is estimated that most of the traffic in this area would be passenger vehicles with several larger vehicles at times as construction continues and the area surrounding Joe Pool Lake continues to expand. This traffic would result in increased noise traffic during peak hours. Due to development in this area, the proposed road should help relieve overall traffic congestion and travel times within the Lynn Creek Park area and therefore has the potential to reduce traffic noise by reducing overall duration of time required for travel. The Traffic Impact Analysis is provided in **Appendix H**.

The existing tract includes perimeter fencing along the west and north boundaries of the USACE property, with gated access at selected locations. In order to decrease vagrancy and destruction of property during construction, this perimeter fence will remain in place during and after construction of the proposed roadway. A temporary barrier fence will be erected on the western boundary within the proposed ROW of Lynn Creek Parkway and extend down to the existing creek an adequate distance to prevent unauthorized vehicular access into the park. The contractor will be responsible to maintain the fence and control vehicular access for authorized vehicles only during the entire construction phase of the roadway improvements project at the east and west gated entries. The construction plans will include smooth wire fencing to be installed along the north and south ROW of the proposed roadway at the Oncor utility easement. Access gates with approved locks will be installed for Oncor, USACE and City usage. The existing native vegetation beyond the ROW will remain, and serve as a significant vehicular barrier. The City of Grand Prairie Lake Parks Division will continue to monitor other potential vehicular access points during construction and address the locations with selective native tree and vegetation plantings, milsap boulders, auto barrier posts and/or USACE approved barrier fencing. As recreation facilities are developed in the future, vehicular access will be controlled by gates, naturalized plantings and fencing to prevent unauthorized access to open space areas.

#### **4.6.3 Alternatives 2, 3, and 4**

Potential impacts would be similar to those of the Preferred Alternative above. Alternative 2 would result in the highest potential for noise impacts due to the close proximity to residences. In addition, the visual impacts would be increased from the conversion of riparian woodlands to roadway and the elimination of a no development zone between the planned recreational facilities and residences. Alternative 3 would result in noise and visual impacts due to the close proximity of the western portion of the proposed Lynn Creek Parkway to residences and the removal of riparian woodlands. Alternative 4 would result in noise and visual impacts that are more consolidated than the other Alternatives, as the area proposed for construction would be located primarily to the south and east of nearby residences. Although a specific noise and traffic analysis was not performed for these alternatives, they are not anticipated to show

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substantial variance from the proposed alternative with regard to traffic volumes or noise impacts (Alternatives 2 and 3). Noise levels associated with Alternative 4 would be most likely be less than the other Alternatives due to the need for a decreased speed limit associated with a closed loop roadway.

## **4.7 CULTURAL RESOURCES**

### **4.7.1 No-Action Alternative**

The No-Action Alternative would not result in impacts to cultural resources.

### **4.7.2 Alternative 1 (Preferred Alternative)**

AR Consultants, Inc. completed a 100 percent pedestrian survey of the proposed Alternative in March of 2010. No sites eligible for inclusion on the National Register of Historic Places were discovered during the survey in the upland setting or in the Lynn Creek floodplain. The lack of prehistoric sites is attributed to the low biotic diversity and distance to perennial water. Prehistoric sites are more likely to occur east of the project area, where the present day Joe Pool Lake is located. A residence is shown on the 1920 Soil Map and 1959 USGS map, but has been removed for unknown reasons (AR Consultants, Inc., 2010). It has been determined that this site is not worthy of consideration of inclusion on the National Register of Historic Places because of its recent age, disturbance, and not being associated with any significant event or person. Site 43TR237, a newly discovered historic site, was recorded within the study area during the 2010 investigation; however, due to poor contextual integrity, it has been determined that this site is also not worthy of consideration of inclusion on the National Register of Historic Places or as a State Archeological Landmark because of its recent age, disturbance, and not being associated with any significant event or person.

No sites eligible for inclusion on the National Register of Historic Places were discovered during the survey in the upland setting or in the Lynn Creek floodplain. Site 41TR57, a historic cemetery, occurs within the study area and has been contained within a chain-link exclusion fence. This area would be avoided by development and no development would take place within 100 feet of the fence boundary. No impacts to cultural resources are anticipated in association with the Preferred Alternative and no further cultural resource investigations were warranted.

The State Historical Preservation Office (SHPO) has been coordinated with in accordance with Section 106 of the National Historic Preservation Act. The SHPO has concurred with the findings and no further coordination is necessary (**Appendix K**).

### **4.7.3 Alternatives 2, 3, and 4**

Impacts for these alternatives would be similar to the Preferred Alternative.

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## **4.8 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTES**

### **4.8.1 No-Action Alternative**

There are currently no-known hazardous, toxic, or radioactive wastes in the project area, and therefore no impacts would result of the No-Action Alternative.

### **4.8.2 Alternative 1 (Preferred Alternative)**

No hazardous sites were found within or adjacent to the Preferred Alternative study area. If hazardous materials are encountered during construction, all construction activities in the immediate area would cease and accidental discovery procedures would be implemented in accordance with all applicable federal, state, and local environmental laws and regulations.

### **4.8.3 Alternatives 2, 3, and 4**

No hazardous sites were found within or adjacent to the Preferred Alternative, 2 or 3 study area. If hazardous materials are encountered during construction, all construction activities in the immediate area would cease and accidental discovery procedures would be implemented in accordance with all applicable federal, state, and local environmental laws and regulations.

## **4.9 AIR QUALITY**

Air quality impacts would be considered below the threshold of significance if direct and indirect NO<sub>x</sub> and VOC emissions are below the serious nonattainment major source threshold of 50 TPY per pollutant.

### **4.9.1 No-Action Alternative**

Implementation of the No-Action Alternative would provide no relief for regional roadway traffic congestion and associated transportation impacts to air quality. No construction or operations and maintenance emissions would result from implementation of the No-Action Alternative; and no air quality impacts would occur above the threshold of significance; therefore, no further analysis is required.

### **4.9.2 Alternative 1 (Preferred Alternative)**

Short-term air quality impacts from implementation of the Preferred Alternative include unavoidable, temporary construction emissions including products of combustion from construction equipment and truck traffic as well as particulate emissions from soil disturbance. Long-term air quality impacts from implementation of the Preferred Alternative include operations and maintenance emissions from visitors, park staff, and grounds keeping activities. Best management practices would be implemented to the extent practical to reduce dust particles from entering the air during construction activities. Implementation of the Preferred Alternative would provide relief for regional roadway traffic congestion and associated transportation impacts to air quality.

LCWRDP construction and operations and maintenance emissions are summarized in Table 4-2 with calculations provided in Appendix K. Total emissions for each calendar year of the Preferred Alternative would be below the threshold of significance and would conform to the DFW SIP; therefore, a comprehensive general conformity determination is not required and no further air quality impact analysis is required.

Table 4-2, Estimated Potential Emissions Summary

Year	Total Emissions (TPY)	
	NO <sub>x</sub>	VOC
2011	7.9717	1.2146
2012	26.7259	4.5417
2013	13.5543	3.4914
2014	20.0244	13.6321
2015	17.5062	13.8804
2016	22.8553	15.6241
2017	26.5329	17.3290
2018	29.3059	19.8186
2019	18.2248	16.2373
2020	10.8949	13.5834
2021	19.8700	17.2264
2022	20.9346	19.4580
2023	15.7912	18.5791
2024	27.4044	23.9532
2025	23.8483	23.1780
<b>Threshold</b>	<b>50</b>	<b>50</b>

### 4.9.3 Alternatives 2, 3, and 4

The primary difference between the Preferred Alternative and Alternatives 2, 3, and 4 is a change to the proposed Lynn Creek Parkway alignment. Nevertheless the LCWRDP would remain a multi-phase construction assignment with direct and indirect emissions comparable to those of the Preferred Alternative; therefore, a comprehensive general conformity determination is not required and no further air quality impact analysis is required.

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## **4.10 RECREATION**

### **4.10.1 No-Action Alternative**

Park visitors would continue to have limited access to Lynn Creek Park from SH 360. The existing facilities would remain and park visitors could only access Lynn Creek Park from Lake Ridge Parkway. There would continue to be an overcrowding of park facilities during peak use.

### **4.10.2 Alternative 1 (Preferred Alternative)**

The four developed parks at Joe Pool Lake: Cedar Hill State Park, Britton Park, Loyd Park, and Lynn Creek Park are each utilized on a regular basis by residents near the project study area. From March through the end of July and holiday weekends each park sees an increase in use, including full capacity of campsites and lodges. This demand on the existing parks may deter use by some visitors due to overcrowding. The LCWRDP would help to alleviate the congestion of park traffic at the existing parks while providing additional recreation opportunities to families in the surrounding area. While construction of LCWRDP might pull some visitors from existing parks, the variety of different activities and settings would allow visitors to have a greater choice. Lynn Creek Parkway is expected to generate approximately 11,000 daily trips in the build-out year (2025), as compared to the analysis year (2009) traffic volumes of 5,439 daily trips.

Due to the fact that there would be no new boat ramps associated with the proposed recreational facility, there is no requirement for a Water Related Recreation Use Study as required by District Policy. There is a proposed boat dock, but there would be no ramp associated with this facility. This dock would be used for temporary day use only. Due to the fact that no ramps or additional trailer parking areas would be added, the facility would not result in significant increased boat traffic in the immediate vicinity and could actually reduce traffic congestions in other parts of the lake.

### **4.10.3 Alternatives 2, 3, and 4**

When compared to the Preferred Alternative, the planned recreational areas would be smaller with Alternatives 2, 3, and 4 due to the proposed alignments causing the site to be broken into smaller tracts.

## **4.11 SOCIOECONOMICS**

### **4.11.1 No-Action Alternative**

Local users of the Lynn Creek Marina would continue to be limited to Lake Ridge Parkway for access, and would not have further benefit in recreational activities and socioeconomic benefits.

### **4.11.2 Alternatives 1, 2, 3, and 4**

Construction of the four alternatives would not disproportionately affect any low-income or minority populations, as all populations would be impacted similarly. Dallas and Tarrant County residents would receive socioeconomic benefits by providing additional access to Joe Pool Lake and increased

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recreational opportunities. In addition, the proposed roadway would result in additional commercial development contributing to the local economy.

The proposed project would not impact white, ethnic, minority or low-income populations who principally rely on fish or wildlife subsistence, nor would it impact their current consumption of fish or wildlife. The proposed project would enhance recreational fishing opportunities to individuals unable to access the area through boating activities.

## 5.0 MITIGATION FOR THE PREFERRED ALTERNATIVE

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Impacts to USACE land in association with the proposed Lynn Creek West Recreational Development Plan are unavoidable. The development would occur in phases with immediate permanent impacts associated with construction of Phase I (soft trails and Lynn Creek Parkway). Construction of Phases II-IV would have permanent impacts, and mitigation for these phases will be conducted when impacts occur. In order to assure accurate mitigation for Phases II-IV, mitigation will be calculated as detailed plans are designed.

### 5.1 MITIGATION TYPES

The park development envisioned in the Preferred Alternative was selected to avoid and minimize adverse impacts to natural resources while still achieving the City's need to provide quality outdoor recreation opportunities and relieve traffic congestion. For the natural resources that cannot be avoided, compensatory mitigation is proposed that will implement ecosystem-based vegetation management techniques on Federal land within Lynn Creek Park as well as other park lands that USACE has leased to the City. Any area where mitigation is implemented will be classified by USACE as an Environmentally Sensitive Area to be protected from future intensive development.

Although there are practical limitations to habitat management procedures in highly urban areas, such as prescribed burning and application of herbicides or pesticides, through effective planning virtually self-sustaining native vegetation that replicates a climax state and is highly beneficial to a broad diversity of wildlife species can be achieved.

The anticipated impacts associated with the loss of vegetation/habitat in regard to the Preferred Alternative are provided in **Table 5-1**. Square footage and quantities of structures are subject to change, as design plans would be developed during the phasing in of the proposed facilities. A comparative analysis of associated restoration costs and the compensatory value associated with the loss of vegetation/habitat in regard to recreational development activities would be provided to USACE upon the final determination of actual impacts.

Table 5-1, Proposed Improvement Impacts

Proposed Improvements	Flood Event Frequency Area Impacted	Square Feet of Proposed Impacts
Roadway	5, 10, 50, 100 year	482,308
A – Rustic Lodge	100 year	128,210
B – Cabin Loop A	100 year	177,356
C – Cabin Loop B	100 year	101,238
D – Group Lodging C	5, 10, 50, 100 year	184,835
E – Enclosed Loop Pavilion	100 year	134,359
F – Support Restaurant	100 year	97,755

<b>Proposed Improvements</b>	<b>Flood Event Frequency Area Impacted</b>	<b>Square Feet of Proposed Impacts</b>
G – Swim Area	5 year	32,596
H - Amphitheater	5 year	23,772
I – Large Group Pavilion	5 year	5,058
J – Boat Dock	5 year	12,818
K – Equestrian Area	100 year	40,668
L – Adventure Sports Area	5, 10, 50, 100 year	454,402
M – Resort Entrance	100 year	2,900
N – Trails (soft)	NA	NA
O – Trails (paved)	5, 10, 50, 100 year	22,238
P – Prairie Restoration	NA	NA
Q – Native Area	NA	NA
R – Practice Fields	100 year	453,769
S – Themed Special Events Area	100 year	491,460
T – No Development Zone	NA	NA

### **5.1.1 Phase I Mitigation Efforts**

Mitigation would preferably occur in the form of on-site habitat restoration or enhancement activities associated with upland and riparian forested environments. The proposed Lynn Creek Parkway and off-street parking design would permanently impact approximately 11.24 acres of habitat, including 8.69 acres of Upland Woods habitat, 1.08 acres of Riparian Woods habitat, and 1.47 acres of Grassland habitat. The specific location of on-site habitat restoration efforts, and a detailed description of the work to be done, is provided in **Appendix J**.

### **5.1.2 Phase II-IV Mitigation Efforts**

Mitigation for Phase II-IV would also preferably occur in the form of on-site habitat restoration or enhancement activities. The methods for enhancing these communities would be similar to those outlined for Phase I, and would be determined following the final recreational development design, as needed. However, because there may be an insufficient amount of suitable habitat within the project area that is suitable for protection, restoration, or enhancement, alternative habitat improvement sites may need to be located within the overall project area. For example, appropriate habitat improvement sites, which match the type and function of the habitats within the proposed project study area, may be available at other City parks or open spaces around Joe Pool Reservoir. Potential locations for implementing future mitigation requirements are shown in **Appendix J**.

### **5.1.3 Monetary Value of Compensatory Mitigation**

Should on-site mitigation in the form of habitat restoration or enhancement be unachievable, the monetary value of the required compensatory mitigation has been calculated in the event that these values are

needed in the future to fully develop a mitigation plan. The mitigation cost analysis published in the PEA on Allowable Adjacent Landowner Activities Incorporating Ecosystem Management Practices on Federal Lands at Grapevine and Lewisville Lakes, Texas (USACE, 2005) was used to calculate the monetary value. Values under this system are determined using lake flood frequency elevations, habitat conditions, and the type of habitat impacted. The flood event elevations (frequencies) were used for Joe Pool Reservoir in this determination, as provided by USACE, Fort Worth District.

The compensatory mitigation (**Table 5-2**) is determined by multiplying the habitat condition multiplier (C-mitigation ratio) times the square foot cost of mitigation (V), times the actual square feet of impacts (SF). Habitat conditions were determined through the WHAP analysis that was performed throughout the project study area (**Appendix I**). All habitat types throughout the study corridor except grasslands, were determined to be in good condition, grasslands were considered to be poor in habitat value. Types of habitat identified in the referenced PEA were woodlands, grasslands, and savannahs. Since the proposed project area was separated into four different habitat types (riparian woods, upland woods, mixed hardwood savannah, and grassland), this document places two of the proposed projects vegetation categories (upland woods and riparian woods) under the same compensatory ratio as woodlands in the referenced PEA.

Actual acres of impacts associated with the proposed project would be reevaluated prior to construction activities to provide total impacts with greater accuracy, and therefore adjust potential mitigation costs. The submittal would also provide greater detail for native species restoration that would help offset impacts from the project. The total estimated compensatory mitigation for the proposed Alternative is \$261,949 for the proposed roadway (Lynn Creek Parkway, and \$1,255,137 for the proposed recreational improvements) (**Table 5-3**).

Table 5-2, Compensatory Mitigation for Proposed Lynn Creek Parkway

<b>Flood Event Frequencies</b>	<b>Excellent Condition (3:1 – 6:1) C x V x SF = M</b>	<b>Good Condition (2:1 – 5:1) C x V x SF = M</b>	<b>Poor Condition (1:1 – 4:1) C x V x SF = M</b>
<b>Grassland</b>			
5 Year (527 msl)	3 x \$0.05 x 0 = \$0	2 x \$0.05 x 0 = \$0	1 x \$0.05 x 2,793 = \$140
10 Year (531 msl)	4 x \$0.05 x 0 = \$0	3 x \$0.05 x 0 = \$0	2 x \$0.05 x 11,508 = \$1,151
50 Year (536 msl)	5 x \$0.05 x 0 = \$0	4 x \$0.05 x 0 = \$0	3 x \$0.05 x 18,719 = \$2,808
≥100 Year (538 msl)	6 x \$0.05 x 0 = \$0	5 x \$0.05 x 0 = \$0	4 x \$0.05 x 12,011 = \$2,402
<b>Mixed Hardwood Savannah</b>			
5 Year (527 msl)	3 x \$0.08 x 0 = \$0	2 x \$0.08 x 0 = \$0	1 x \$0.08 x 0 = \$0
10 Year (531 msl)	4 x \$0.08 x 0 = \$0	3 x \$0.08 x 0 = \$0	2 x \$0.08 x 0 = \$0
50 Year (536 msl)	5 x \$0.08 x 0 = \$0	4 x \$0.08 x 0 = \$0	3 x \$0.08 x 0 = \$0
≥100 Year (538 msl)	6 x \$0.08 x 0 = \$0	5 x \$0.08 x 0 = \$0	4 x \$0.08 x 0 = \$0
<b>Upland Woods</b>			
5 Year (527 msl)	3 x \$0.12 x 0 = \$0	2 x \$0.12 x 0 = \$0	1 x \$0.12 x 0 = \$0

<b>Flood Event Frequencies</b>	<b>Excellent Condition (3:1 – 6:1) C x V x SF = M</b>	<b>Good Condition (2:1 – 5:1) C x V x SF = M</b>	<b>Poor Condition (1:1 – 4:1) C x V x SF = M</b>
10 Year (531 msl)	4 x \$0.12 x 0 = \$0	3 x \$0.12 x 0 = \$0	2 x \$0.12 x 0 = \$0
50 Year (536 msl)	5 x \$0.12 x 0 = \$0	4 x \$0.12 x 0 = \$0	3 x \$0.12 x 0 = \$0
≥100 Year (538 msl)	6 x \$0.12 x 0 = \$0	5 x \$0.12 x 370,001 = \$222,001	4 x \$0.12 x 0 = \$0
<b>Riparian Woods</b>			
5 Year (527 msl)	3 x \$0.12 x 0 = \$0	2 x \$0.12 x 3,908 = \$938	1 x \$0.12 x 0 = \$0
10 Year (531 msl)	4 x \$0.12 x 0 = \$0	3 x \$0.12 x 13,731 = \$4,943	2 x \$0.12 x 0 = \$0
50 Year (536 msl)	5 x \$0.12 x 0 = \$0	4 x \$0.12 x 18,463 = \$8,862	3 x \$0.12 x 0 = \$0
≥100 Year (538 msl)	6 x \$0.12 x 0 = \$0	5 x \$0.12 x 31,174 = \$18,704	4 x \$0.12 x 0 = \$0

Table 5-3, Estimated Compensatory Mitigation for Recreational Improvements

<b>Flood Event Frequencies</b>	<b>Excellent Condition (3:1 – 6:1) C x V x SF = M</b>	<b>Good Condition (2:1 – 5:1) C x V x SF = M</b>	<b>Poor Condition (1:1 – 4:1) C x V x SF = M</b>
<b>Grassland</b>			
5 Year (527 msl)	3 x \$0.05 x 0 = \$0	2 x \$0.05 x 0 = \$0	1 x \$0.05 x 168 = \$8
10 Year (531 msl)	4 x \$0.05 x 0 = \$0	3 x \$0.05 x 0 = \$0	2 x \$0.05 x 57 = \$6
50 Year (536 msl)	5 x \$0.05 x 0 = \$0	4 x \$0.05 x 0 = \$0	3 x \$0.05 x 981 = \$147
≥100 Year (538 msl)	6 x \$0.05 x 0 = \$0	5 x \$0.05 x 0 = \$0	4 x \$0.05 x 515 = \$103
<b>Mixed Hardwood Savannah</b>			
5 Year (527 msl)	3 x \$0.08 x 0 = \$0	2 x \$0.08 x 0 = \$0	1 x \$0.08 x 0 = \$0
10 Year (531 msl)	4 x \$0.08 x 0 = \$0	3 x \$0.08 x 0 = \$0	2 x \$0.08 x 0 = \$0
50 Year (536 msl)	5 x \$0.08 x 0 = \$0	4 x \$0.08 x 0 = \$0	3 x \$0.08 x 0 = \$0
≥100 Year (538 msl)	6 x \$0.08 x 0 = \$0	5 x \$0.08 x 608,534 = \$243,414	4 x \$0.08 x 0 = \$0
<b>Upland Woods</b>			
5 Year (527 msl)	3 x \$0.12 x 0 = \$0	2 x \$0.12 x 64,345 = \$15,443	1 x \$0.12 x 0 = \$0
10 Year (531 msl)	4 x \$0.12 x 0 = \$0	3 x \$0.12 x 92,169 = \$33,181	2 x \$0.12 x 0 = \$0
50 Year (536 msl)	5 x \$0.12 x 0 = \$0	4 x \$0.12 x 126,853 = \$60,889	3 x \$0.12 x 0 = \$0
≥100 Year (538 msl)	6 x \$0.12 x 0 = \$0	5 x \$0.12 x 1,351,928 = \$811,157	4 x \$0.12 x 0 = \$0
<b>Riparian Woods</b>			
5 Year (527 msl)	3 x \$0.12 x 0 = \$0	2 x \$0.12 x 177,484 = \$42,596	1 x \$0.12 x 0 = \$0
10 Year (531 msl)	4 x \$0.12 x 0 = \$0	3 x \$0.12 x 74,576 = \$26,847	2 x \$0.12 x 0 = \$0
50 Year (536 msl)	5 x \$0.12 x 0 = \$0	4 x \$0.12 x 28,486 = \$13,673	3 x \$0.12 x 0 = \$0
≥100 Year (538 msl)	6 x \$0.12 x 0 = \$0	5 x \$0.12 x 12,788 = \$7,673	4 x \$0.12 x 0 = \$0

In the event that these dollar values are used in future years to fully develop a mitigation plan, the values will need to be adjusted by a reasonable inflationary factor.

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#### **5.1.4 Mitigation Success and Monitoring**

The on-site habitat restoration/enhancement areas would need to be actively managed and monitored to ensure the ongoing success of the mitigation efforts. An annual monitoring effort would be required to evaluate plant survival rates and an annual monitoring report would be required following the monitoring effort at the end of each growing season. Mitigation success and monitoring report requirements are provided in Appendix J.

## **6.0 CUMULATIVE IMPACTS**

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Cumulative Impacts are impacts of the proposed project when considered in combination with the impacts of the past, present and reasonably foreseeable actions in the Area of Influence (AOI). For this proposed project, it is determined that the area of influence is USACE property at Joe Pool Lake and all areas within ½ mile of LCWRDP.

### **6.1 PAST, PRESENT AND REASONABLY FORESEEABLE ACTIONS**

#### **6.1.1 Past Projects**

Much of the landscape changes within the AOI have been associated with the construction of Joe Pool Lake and housing development in the surrounding areas adjacent to Federal Property. Development associated with the Interstate 20 corridor just to the north has expanded significantly to those areas surrounding Federal Property. Lake Ridge Parkway is a two-lane thoroughfare dividing Lynn Creek Park into two portions and crossing Joe Pool Lake at two locations. A Lake Rescue Fire Station for the City of Grand Prairie has been recently constructed at the corner of Lake Ridge Parkway and east Lynn Creek Parkway adjacent to the proposed project site. Much of the development in the immediate area reflect that of Cities experiencing growth and expansion to include housing, retail shopping stores and convenience stores.

##### **6.1.1.1 Joe Pool Lake**

Joe Pool Lake was constructed by the USACE as a multiple purpose reservoir for flood control, water supply, recreation, and fish and wildlife purposes, and became operational in January 1986. Joe Pool Lake has both a conservation pool and a flood control pool. The conservation pool has a surface area of approximately 7,470 acres at an elevation of 522.0 feet at mean sea level (MSL) and the flood control pool has a surface area of approximately 10,940 acres at 536.0 feet MSL.

##### **6.1.1.2 Lynn Creek Park**

Lynn Creek Park is leased and operated by the City of Grand Prairie which covers approximately 784 acres. Park amenities include a swimming beach, playground, restrooms, showers, two boat ramps with eight lanes, a concession stand, almost 100 picnic sites, group picnic pavilions, sand volleyball court and a marina facility with approximately 550 boat slips. All of these amenities occur on the east side of Lynn Creek Park separated by Lakeridge Parkway from the undeveloped west portion of Lynn Creek Park.

##### **6.1.1.3 Loyd Park**

Loyd Park is leased and operated by the City of Grand Prairie which covers approximately 791 acres. Park amenities include 221 camping sites, 8 cabins, picnic areas, picnic pavilions, four lane boat ramp

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with trailer parking, boat dock, a volleyball and softball field, swimming beach as well as a trail system accommodating pedestrians, biking and equestrian users.

#### **6.1.1.4 Britton Park**

Britton Park is leased and operated by the City of Grand Prairie which covers approximately 129 acres. Amenities include a boat ramp, parking lot and restrooms.

#### **6.1.1.5 Cedar Hill State Park**

Cedar Hill State Park is leased and operated by the Texas Parks and Wildlife Department which covers approximately 1826 acres. Amenities of the park include 355 camping sites, 30 primitive sites, 15 miles of biking trails, approximately 200 picnic sites, 2 lighted fishing jetties, a swimming beach, three playgrounds, 2 four lane boat ramps with parking and a marina facility with 235 boat slips.

### **6.1.2 Present Actions**

Much of the immediate area around Joe Pool Lake has experienced tremendous growth and development, primarily in the form of housing construction. Very little undeveloped areas remain in the immediate vicinity except for the extreme southern end on the lake and few isolated pockets adjacent to Federal Property. These areas are for the most part slated for more housing developments and many of these spaces are currently in different stages of construction. New housing construction has slowed somewhat given the current economic state and it is assumed some of the open areas will remain in that state until need picks back up.

### **6.1.3 Reasonably Foreseeable Actions**

#### **6.1.3.1 Estes Park**

Estes Park is leased to the City of Grand Prairie which covers approximately 1030 acres. The City has proposed a master plan community on the site to include a resort with overnight accommodations, golf course and tennis course along with other amenities. An EA was conducted for the proposed activities in Estes Park but no further efforts have taken place to facilitate the development at this time.

#### **6.1.3.2 Pleasant Valley Park**

Pleasant Park is 224 acres currently undeveloped with no plans for development in the near future. This area is currently classified as high density recreation in the Joe Pool Lake Master Plan.

#### **6.1.3.3 Low Branch Park**

Low Branch Park is leased to the City of Grand Prairie which encompasses 155 acres. The park is mostly undeveloped with a small model airplane field in use. No future development in the park is planned at this time.

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#### **6.1.3.4 General Development**

Much of the area in the vicinity of the proposed project has experienced tremendous development, mostly in the form of housing editions. Though this rapid growth has slowed some, housing developments continue to be proposed and constructed. The construction of supporting businesses such as retail shopping and convenience stores will likely continue to be associated with the continued growth. A convenience store and gas station is proposed to be constructed at the corner of the proposed Lynn Creek Parkway where it terminates into SH 360 on private property.

### **6.2 CLIMATE**

As with many projects of this nature involving recreational development urban/suburban setting, it could not be expected to have any temporary, permanent, or cumulative adverse effects on climatic weather patterns in the region with respect to temperature, humidity, rainfall, or typical seasonal weather changes. No cumulative impacts would be expected to the lake or the localized lake setting as a result of the proposed project

### **6.3 GEOLOGY AND SOILS**

The Preferred Alternative, Alternative 2, 3, and 4 would reduce the surface area of soils within the project area, but none of the mapped soil units within the project study area are hydric soils. Prime farmland soils are located within the project area: 1) Bastsil fine sandy loam zero to three percent slopes and 2) Heiden clay with one to three percent slopes. No impacts to unique soil units within the project area are expected to occur; no direct or indirect impacts to geology are expected to occur from these alternatives as well.

### **6.4 WATER RESOURCES**

#### **6.4.1 Waters of the U.S., Including Wetlands**

The current design approach for the LCWRDP would be to avoid all waters of the U.S. These areas would be spanned by the proposed roadway in order to avoid impacts. It is anticipated that all required bridge piers would be placed outside of the OHWM in order to further avoid impacts. None of the waters of the U.S. crossed by the proposed project would have impacts exceeding the pre-construction notification threshold limits of Nationwide Permit 14 (0.10-acre of permanent impacts); therefore, no USACE coordination would be required. If design changes occur, and impacts to the water of the United States are proposed, a reevaluation of permitting requirements would be necessary.

Until further design has been established regarding the proposed recreational facilities, including the boat dock, it would be unreasonable to determine potential impacts. Impacts to the waters of the U.S., including wetlands are not anticipated. However, should impacts occur, they will be minimal and permitted under NWP 42 (Recreational Facilities). A pre-construction notification will be submitted to the USACE before construction activities begin.

No Section 10 Waters occur within the project area; therefore, no direct or indirect impacts would occur.

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## **6.4.2 Water Quality**

No permanent water quality impacts are expected as a result of the proposed project. Therefore, no direct or indirect impacts to streams would occur. The quality of waters in the State shall be maintained in accordance with all applicable provisions of the Texas Surface Water Quality Standards, including the general narrative and numerical criteria. Upon completion of the earthwork operations, disturbed areas would be restored and reseeded as deemed appropriate.

## **6.4.3 Floodplains**

The primary purpose for the authorization and construction of Joe Pool Lake was that of flood reduction. The periodic retention of flood waters while managing controlled releases to prevent downstream inducements would continue to be the normal operational directives for the Corps as conditions warrant. As a result, those facilities constructed on Federal Property or on flowage easement would be susceptible to inundation during times of flood water retention and may be periodically unusable to the public for access or recreational use. Several components of the proposed recreational plan would be susceptible to these events and would be expected to be unusable for undetermined periods of time.

## **6.5 FISH AND WILDLIFE**

Impacts to wildlife within the project study area (all Alternatives) would most likely occur in conjunction with the removal of vegetation (habitat fragmentation) and disturbance in and around water features. Native vegetation may provide food, cover, and breeding habitat for many resident and migrant species. Approximately two acres of riparian vegetation associated with Lynn Creek occurs within the proposed improvement ROW (Evaluated using the Preferred Alternative). Disturbance associated with construction related activities to aquatic species would be temporary, and only occur during the construction phase of the proposed project. Indirect impacts to wildlife would be a result of habitat fragmentation, which would cause indigenous species to seek future habitat in adjacent areas that are similar in structural and vegetative components.

## **6.6 AQUATIC VEGETATION**

The proposed Alternative would result in no cumulative impacts (direct or indirect) to aquatic vegetation as areas conducive to aquatic vegetation establishment would be avoided.

## **6.7 TERRESTRIAL VEGETATION**

The Preferred Alternative would result in impacts to approximately 40.1 acres of upland woodland vegetation, 2 acres of riparian woodland vegetation, 47.3 acres of mixed hardwood savannah, and 4.8 acres of grassland. Upon completion of earthwork operations, disturbed areas would be reseeded with a mixture of wildflowers and native grasses based on NRCS recommendations. Indirect impacts associated with the project would be a result of increased foot traffic throughout the proposed project area.

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Appropriate mitigation is prescribed in the mitigation plan (**Appendix J**) to offset losses to terrestrial vegetation. Much of the existing vegetation is comprised of those species associated with disturbed or degraded areas with little wildlife value. Much of the mitigation involves an ecosystem based approach with the removal of undesirable species to be replaced with appropriate beneficial species that functions as a system to reflect a climax plant community typical of this ecological region. Cumulatively, losses to existing vegetation is expected, but with mitigation measures implemented it is expected to see a significant increase in the value and function of the terrestrial vegetation as a result.

## **6.8 THREATENED AND ENDANGERED SPECIES**

A search of the TPWD Natural Diversity Database records indicated that there were no known reports of any federal or state-listed endangered, threatened, or rare species within the proposed project study area. A number of the listed bird species could potentially occur as migrants within the project study area; however, no substantial effects are anticipated due to the lack of habitat. Although state-listed species may occur within the project area, no impacts (direct or indirect) are anticipated.

## **6.9 NOISE AND GENERAL AESTHETICS**

Implementation of the Preferred Alternative has the potential to increase noise levels (vehicle and boat engine noise) in the immediate project vicinity. However, the increase in noise would primarily be during daylight hours as is typical of recreational activities. Existing boat traffic into and out the Lynn Creek Marina already results in some boat engine noise and the potential increase in boat traffic would potentially raise noise levels, and increase the duration primarily during daylight hours. Given the amount of residential and commercial development and transportation projects that are ongoing (and upcoming), the ambient noise levels in the project area are anticipated to increase. Odors associated with road paving would be considered indirect impacts associated with the project. The odors are expected to be minimal, and would be temporary in nature. Impacts of the Preferred Alternative are anticipated to result in a cumulative impact, but re-vegetation plans are expected to help offset construction related aesthetic issues, and help minimize noise issues.

Future developments in this area include the construction of two commercial developments on the future southeast and northeast corners of the SH 360 northbound frontage road and Lynn Creek Parkway. The proposed development on the southeast corner of the SH 360 northbound frontage road and Lynn Creek Parkway includes retail stores, a discount superstore, and two restaurant sites. The proposed development on the northeast corner includes a service station with convenience market and a retail development. It is anticipated that the build-out of the proposed developments at the intersection of SH 360 northbound frontage road and Lynn Creek Parkway would occur in 2011/2012 and are expected to generate a total of 18,841 daily trips. These developments are also anticipated to generate vehicular traffic; thereby, resulting in potential noise impacts.

## **6.10 CULTURAL RESOURCES**

AR Consultants, Inc. completed a 100 percent pedestrian survey of the proposed Lynn Creek Parkway in March of 2010. No sites eligible for inclusion on the National Register of Historic Places were discovered

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during the survey in the upland setting or in the Lynn Creek floodplain. It is determined that further cultural resource investigations are unwarranted. However, if buried cultural materials older than 50 years are encountered during construction, work should cease immediately and the Archeology Division of the Texas Historical Commission (THC) as well as the Forth Worth District of the USACE should be notified.

41TR57, a historic cemetery, occurs within the project study area and has been contained within a chain-link exclusion fence. This area would be avoided by development and no development would take place within 100 feet of the fence boundary. No impacts (direct or indirect) to cultural resources are anticipated as a result of the Preferred Alternative.

## **6.11 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTES**

There are no direct or indirect impacts to hazardous, toxic, and radioactive wastes expected as a result of the Preferred Alternative, and therefore there can be no cumulative impacts.

## **6.12 AIR QUALITY**

There could be cumulative impacts to air quality as a result of the Preferred Alternative and the construction of other planned developments. Ongoing and future transportation projects as well as residential and commercial construction would continue to bring additional people into the areas west of Lynn Creek Park, which would result in increased emissions in the project vicinity. However, contributions to air quality from idling or slow moving traffic is anticipated to lessen as the proposed parkway would relieve some of the localized congestion currently being experienced in the AOI.

## **6.13 RECREATION**

There would be both cumulative beneficial and adverse impacts to recreation as a result of the Preferred Alternative and actions of others. The proposed roadway would provide access and more recreational opportunities for an increased number of visitors. The roadway would provide an additional route, which would result in an increase number of visitors to the Lynn Creek Park and Lynn Creek Marina and would have a cumulative impact on the acres of water per boat ratio for Joe Pool Lake. As recreational opportunities are developed associated with the proposed project, it would be expected that some visitation associated with other recreational areas within the AOI see a slight temporary decrease in utilization. However, most of the current recreational areas in the AOI routinely see maximum capacity for visitation during the recreation season indicating the localized need and demand for more recreational opportunities in the Joe Pool Lake area.

## **6.14 SOCIOECONOMICS**

There would be temporary beneficial cumulative impacts to socioeconomics in the area due to new construction. These would be expected to be minor due to the fact that the construction would be temporary in nature; however, the proposed roadway is anticipated to result in additional commercial and

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recreational facility development which would result in a long-term increase of revenue for the local economy.

Indirect impacts would be associated with greater public use of the project area, and higher maintenance needs.

## **7.0 PUBLIC INVOLVEMENT**

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### **7.1 AGENCY COORDINATION**

A Notice of Availability (NOA) will be sent out for public notification of the review and comment period. The draft EA will be sent to the following resource agencies for review and comment in accordance with coordination requirements as set forth by the NEPA: TPWD; USFWS; EPA Region 6; SHPO and the TCEQ. Comments received and the NOA are located in Appendix K (Public Involvement).

### **7.2 PUBLIC INFORMATION AND REVIEW**

The City submitted an amendment to the Master Transportation Plan in order to include improvements designated by the Lynn Creek Parkway project. At this point, no public meetings for this project have been held.

## **8.0 FINDINGS AND CONCLUSIONS**

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This EA has identified few potential impacts related to the construction of the LCWRDP.

With respect to the Preferred Alternative, approximately 94.2 acres of land would be the largest amount of land disturbed in association with the construction of the recreational development plan. No residences would be relocated or impacted with the construction of this project. This project would not only contribute to the City, but would also support regional transportation flow within the project area. Although some emissions are expected during the construction phase, insubstantial effects are anticipated with respect to air quality. It is anticipated that there would be no impacts to waters of the U.S., Section 10 waters, water quality, cultural resources, aquatic vegetation, or threatened and/or endangered species. The largest impact associated with this project would be the removal of vegetation for the Preferred Alternative. Although vegetation would be removed in order to complete this project, extensive landscaping would be provided in association with the proposed recreational development.

The evaluation of the data and findings presented in this EA indicate that the proposed construction of Lynn Creek Parkway includes all reasonable and feasible measures to avoid, minimize, or compensate for adverse environmental impacts, as well as provide measures of enhancing the environment and recreational features of the area.

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