

Draft Environmental Assessment

Hazardous Fuels Reduction -
Williamson County Southwest Regional
Park

HMGP-DR-1999-0019

Williamson County, Texas

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Federal Emergency Management Agency
Department of Homeland Security
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Acronyms and Abbreviations

APE	area of potential effect
Atlas	Texas Archeological Sites Atlas
BMPs	best management practices
BCRUA	Brushy Creek Regional Utility Authority
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CfB	Crawford clay
CFR	Code of Federal Regulations
CWA	Clean Water Act
EA	environmental assessment
EaD	Eckrant cobbly clay
EeB	Eckrant extremely stony clay
EIS	environmental impact statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ErE	Eckrant-Rock outcrop complex
ETJ	extraterritorial jurisdiction
FEMA	Federal Emergency Management Agency
FIRM	flood insurance rate map
FONSI	finding of no significant impact
FPPA	Farmland Protection Policy Act
GLO	Texas General Land Office
GsB	Georgetown stony clay loam
HMGP	Hazard Mitigation Grant Program
I-35	Interstate 35
in.	inches

Acronyms and Abbreviations

in/hr	inch(es) per hour
KFR	Karst Fauna Region
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PEC	Pedernales Electric Cooperative
P.L.	Public Law
RCRA	Resource Conservation and Recovery Act
RIFA	Red Imported Fire Ants
ROW	right-of-way
SHPO	State Historic Preservation Officer
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDEM	Texas Division of Emergency Management
THC	Texas Historical Commission
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WCCF	Williamson County Conservation Foundation
WCRHCP	Williamson County Regional Habitat Conservation Plan
WUI	wildland-urban interface

SECTION 1 Introduction

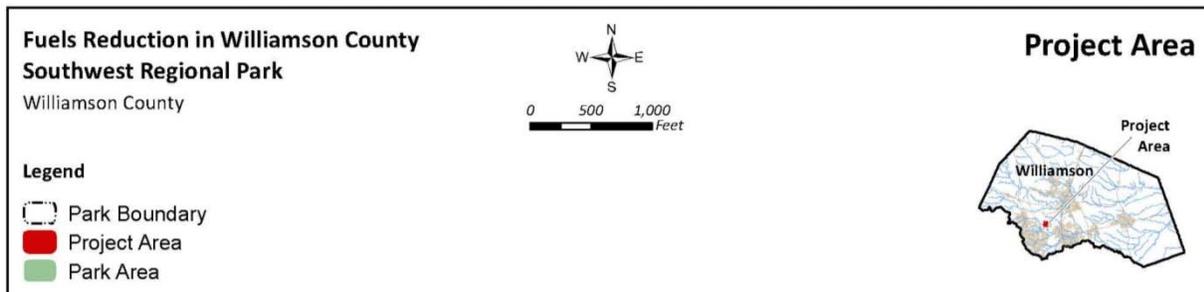
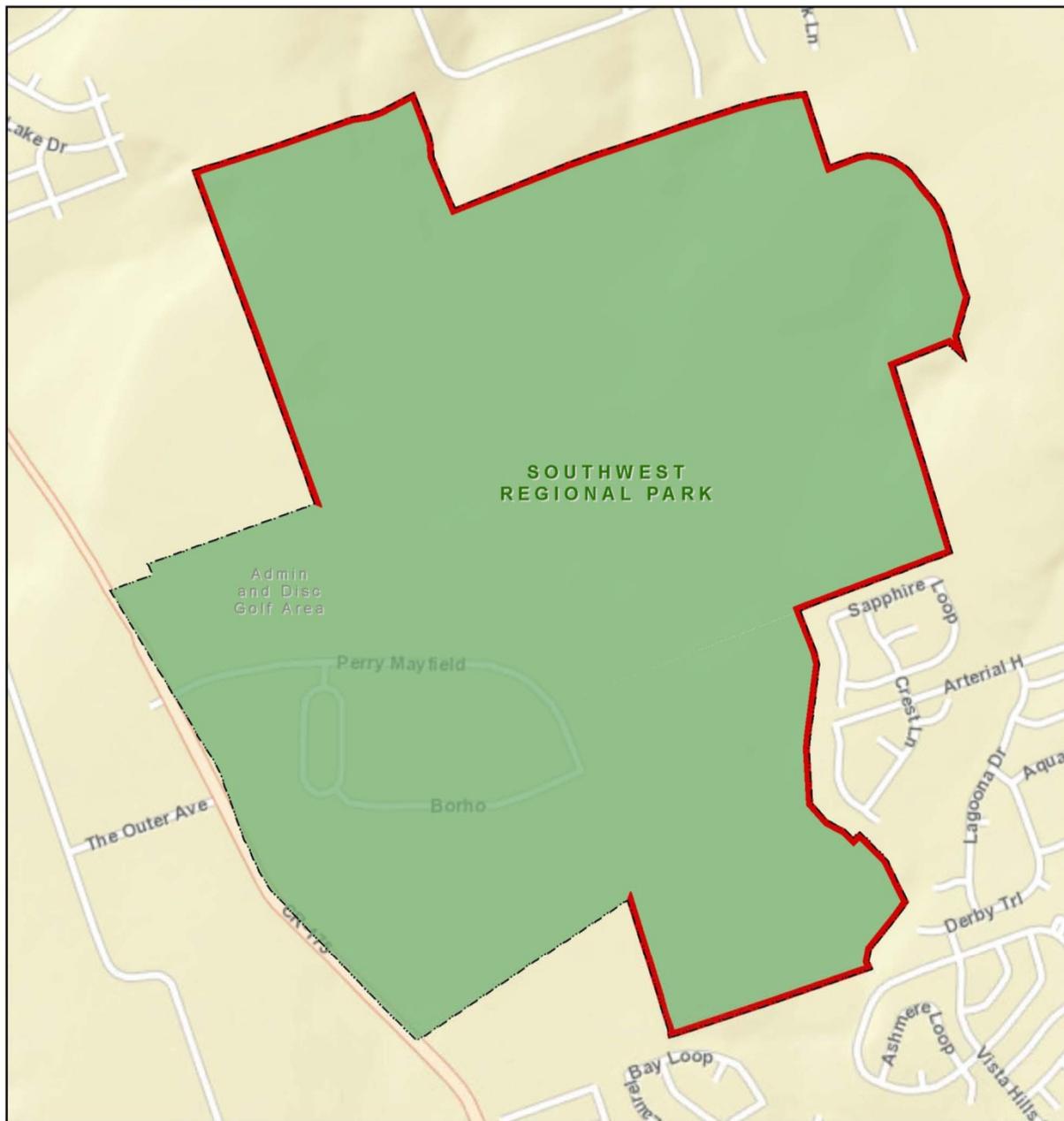
Williamson County proposes to perform hazardous fuels reduction to reduce hazardous fuels in wooded areas adjacent to residential areas along the border of the Southwest Regional Park. Williamson County has submitted an application to the Federal Emergency Management Agency (FEMA) through the Texas Division of Emergency Management (TDEM) for a grant under FEMA's Hazard Mitigation Grant Program (HMGP). TDEM is the direct applicant for the grant and Williamson County the subapplicant.

The HMGP is authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Under the HMGP, federal funds pay 75 percent of the project cost, and the remaining 25 percent comes from nonfederal funding sources.

Williamson County Southwest Regional Park is an 800-acre park located approximately 20 miles north of Austin (**Figure 1.1**). The proposed project area is a 50-foot wide band along approximately 4 miles of the perimeter of Southwest Regional Park (see **Figure 1.2**), which is approximately 24 acres of park land as shown in **Figure 1.3**. The park is surrounded by residential developments to the south, east, and north; additional residential developments and expansions are planned or in progress to the north, east, west, and southeast of the park. Williamson County is part of the Austin-Round Rock metropolitan statistical area. Southwest Regional Park and the surrounding residential areas comprise the largest and most developed wildland-urban interface (WUI) area in Williamson County. The Williamson County Southwest Regional Park is also within the Georgetown Karst Fauna Region (KFR) and includes a karst conservation area called Millennium Park.

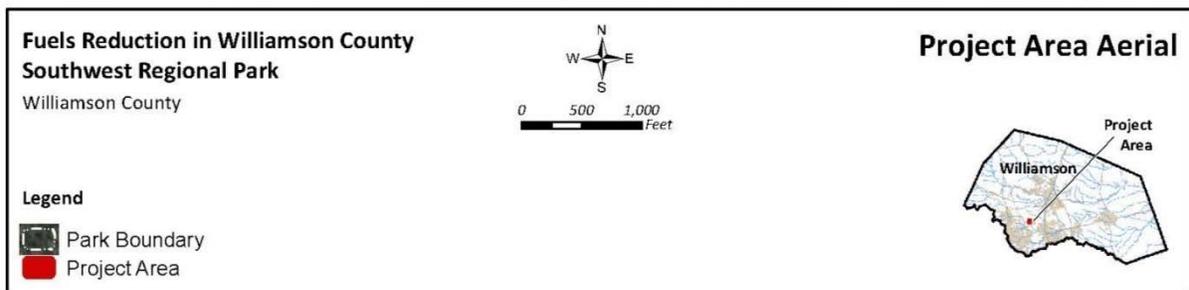
The proposed action would include hazardous fuels reduction to mitigate the potential for a major wildfire in the WUI, which is the zone where structures and other human development meet or mix with wildland or vegetative fuels. Hazardous fuels reduction activities would include trimming or cutting highly flammable, dead, and diseased vegetation within the project area, selectively trimming beneficial trees (e.g. oak species), and cutting tree branches up to 10 feet from ground level. The height of trimming and limbing would depend on the size, location, growth potential, and health of the tree. The work would be restricted to public lands.

This environmental assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the President's Council on Environmental Quality (CEQ) regulations to implement NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and FEMA's regulations implementing NEPA (44 CFR Part 10). FEMA is required to consider and evaluate potential environmental impacts before funding or approving actions and projects. The purpose of this draft EA is to analyze the potential environmental impacts of the proposed Williamson County hazardous fuels reduction project. FEMA will use the findings in this EA to determine whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI).



Data Sources: Williamson County; CDM Smith
 Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

Figure 1.2. Proposed Project Areas



Data Sources: Williamson County, CDM Smith
Service Layer Credits: Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

Figure 1.3. Proposed Project Area with Aerial Imagery

SECTION 2 Purpose and Need

FEMA's HMGP provides funds to state and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable implementation of mitigation measures during the immediate recovery and response from a declared disaster.

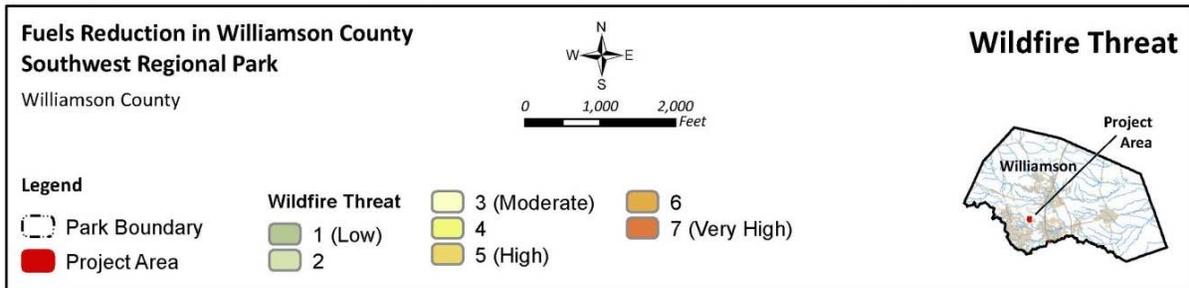
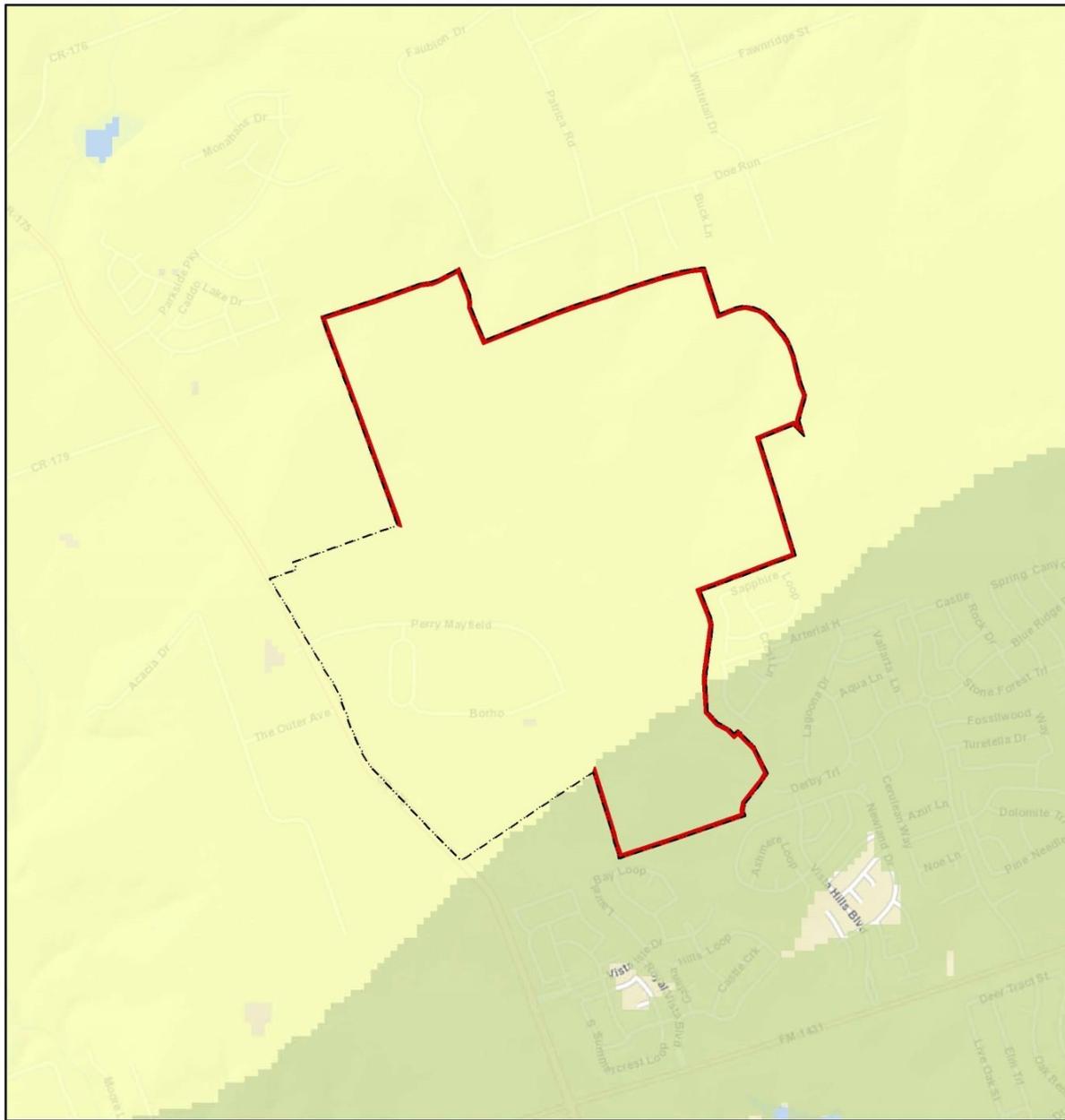
The purpose of the proposed project is to reduce wildfire hazards in and adjacent to Williamson County Southwest Regional Park. Along the WUI, unmanaged forests pose a greater wildfire risk because hazardous fuels can accumulate, increasing the potential intensity of wildfires in adjacent developed areas. The proposed project is needed because a long-term drought has increased wildfire hazards by providing a large amount of dry fuels for a potential wildfire in developed areas in addition to the wooded areas within Southwest Regional Park. Wooded areas of thick vegetation and dead vegetative material along the park boundaries are close to homes. The density of the vegetation is a wildfire hazard even where the vegetation is healthy. The park area is subject to high winds that could carry a wildfire along the dry vegetated areas and into residential neighborhoods.

According to data reported by the County in their grant application, in the past 5 years, Williamson County has experienced 831 reported wildfires (4 of which were FEMA Fire Management Assistance Grant-declared wildfires), which burned 5,668 acres, threatened 804 homes, and damaged or destroyed 32 homes. In 2011, drought conditions and high winds caused wildfires throughout Williamson County, including two wildfires within Southwest Regional Park. Both fires were contained within the park boundaries.

Figure 2.1 is an image from the news coverage of a large grass fire near the project area in southwest Leander that caused the evacuation of several neighborhoods and resulted in damage to several homes (Austin American Statesman 2011). The Texas Wildfire Risk Assessment of 2010 conducted by the Texas A&M Forest Service classifies the wildfire threat within most of the project area as moderate, as shown in **Figure 2.2** (Texas A&M Forest Service 2014).



Figure 2.1. Fire Suppression Efforts Over a Grass Fire, August 2011



Data Sources: TXWRAP, CAPCOG CDM Smith
Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

Figure 2.2. Wildfire Threat

SECTION 3 Alternatives

This section describes the alternatives considered, including the proposed action.

3.1 No Action Alternative

The no action alternative is included to describe potential conditions if no action is taken to reduce wildfire hazards. Under the no action alternative, no work would be conducted to reduce hazardous fuels along the boundary of the Southwest Regional Park. Residents and homes adjacent to Southwest Regional Park would remain at an elevated risk for the spread of a catastrophic wildfire.

Because existing wildfire hazards in Williamson County would not be reduced under the no action alternative, the probability of loss of life and property in a wildfire would continue to be unacceptably high. A major wildfire could also have severe temporary impacts on environmental resources (*i.e.*, air quality, water quality, and emergency services). Fighting a major wildfire could require large quantities of water at a time when water resources are already strained by drought.

In addition to risks to residents near the Southwest Regional Park, several federally endangered species rely on the natural vegetation in the park for habitat. A major wildfire would be more likely to spread under the no action alternative and could damage existing and potential habitats for several karst species, Black-capped vireo, Bone Cave harvestman, and Golden-cheeked warbler.

Under the no action alternative, the minor short-term impacts of the proposed project would be avoided because there would be no work conducted to remove hazardous fuels. The impacts avoided would include temporary increases in noise, truck traffic, and minor short-term impacts to air quality. For the reasons described in this section, the no action alternative would not meet the purpose and need of the proposed project.

3.2 Proposed Action

Williamson County proposes to implement a hazardous fuels reduction program to reduce wildfire hazards along the boundaries of Southwest Regional Park that are adjacent to residential development, as shown on **Figure 1.3**. The proposed action would reduce the quantity of hazardous vegetative fuel along the park perimeter to limit the movement of a wildfire across the park boundary. The proposed project area includes the 50 feet adjacent to approximately 4 miles (21,120 linear feet) of the park boundary for a total of approximately 24 acres. Southwest Regional Park is the site of several karst features (*i.e.*, caves) that provide habitat to threatened and endangered species, which are described in more detail in **Section 4.4.3**. The project scope includes a number of measures to protect these karst features which are discussed in more detail throughout **Section 4**.

The project would be conducted in sectors, prioritized by the level of threat to developed and built out areas adjacent to the park boundaries. Work would only be conducted between September 1 and February 28. As each section is completed, park officials would inspect the work, and upon approval, work in the next section would begin.

The proposed action is intended to minimize the spread of and damage from fires and to assist firefighters in combating wildfires. The fuels reduction activities would include trimming or cutting highly flammable, dead, and diseased vegetation within the project area, selectively trimming trees, and cutting tree branches up to 10 feet from ground level. The proposed action would include removal of surface fuels and “ladder” fuels that have accumulated to reduce the canopy bulk density and diminish the chance of a fire transitioning into a crown fire or sustaining as a crown fire. The height of trimming and limbing would depend on the size, location, growth potential, and health of the tree. The County will seal any wounds on oak trees and oak stumps that are the result of the proposed action to prevent oak wilt fungus.

The proposed action may also include the selective removal of some trees larger than 8 inches in diameter only when necessary to achieve the desired canopy cover. Selective removal of such trees will not be extensive; therefore, removal is not anticipated to create large or widespread breaks in overall canopy cover. The project would focus on the edge of woodlands where fuel loading is greater than in the interior due to sunlight penetration.

Stumps of cut trees would not be removed but would be cut down to within 3 inches of the soil surface, but root balls would not be removed, and the soils would not be disturbed. The cut vegetation and debris will be either ground or mulched on-site and temporarily stored at the park. The mulch will subsequently be used at various planting sites in the park and at County-owned buildings throughout the County. Mulch will not be placed within 345 feet of occupied cave openings. The work would be limited to public lands managed by Williamson County. Depending on the topography, some areas may be reseeded with short grasses to reduce erosion.

The implementation of the proposed action is projected to occur over a period of approximately 12 weeks. No pesticides or herbicides would be used in project implementation or maintenance. During project implementation, the equipment used would include a variety of mechanized and hand equipment, such as shredders, power mowers, grinders, mulchers, chainsaws, hand saws, pole saws, seed broadcasters, rakes, hoes, shovels, ladders, scythes, etc., depending on the type of vegetation to be removed or trimmed. Work areas would be accessed by motorized vehicles, four-wheeled gator-type vehicles, and by foot, depending on topography. The mechanized equipment would be rubber-tracked to minimize ground disturbance in the project area. Williamson County will clearly identify all buffer zones relevant for project implementation with colored flags or tape prior to beginning work. The buffer zones that will be marked include:

- 345 feet from cave openings (no mulch can be placed, hot water treatments for Red Imported Fire Ants [RIFA] must be conducted), and
- 500 feet from cave openings (no refueling, equipment staging, or storage of fuels may occur in this area).

The flags or tape marking the buffer zones will be promptly removed when work is complete. Additionally, the County will provide a full time monitor that will oversee implementation of the project and ensure that all avoidance and minimization measures are completed and adhered to.

The County Parks and Recreation Department will maintain areas where hazardous fuels reduction activities are completed as part of regularly scheduled maintenance activities.

Maintenance activities would include mowing; reseeding of beneficial grasses; removal of dead, dying, and diseased trees and hanging, broken, and fallen tree limbs; and removal of invasive species in the project areas. Treated areas will be mowed to 6 inches or higher above the ground to protect vegetation around cave openings.

Additional measures will be implemented to minimize adverse effects to the Golden-cheeked warbler, Black-capped vireo, and the Bone Cave harvestman and measures applicable to karst species would be implemented near occupied cave openings. These measures are detailed in **Section 4.4.3**.

3.3 Additional Action Alternative Considered and Dismissed

Williamson County considered the alternative action of using prescribed burns within Southwest Regional Park to reduce fuel loads and to reduce wildfire hazards in and adjacent to the park. This alternative was dismissed from further consideration at this time because if it was implemented prior to the creation of any shaded fuel breaks, the prescribed burn would be difficult to control and it could pose a significant risk to neighboring communities. In addition, environmentally sensitive areas of the park might also be at risk if a prescribed burn grew out of control. Thus, this alternative was dismissed from further consideration in this EA.

SECTION 4 Affected Environment, Potential Impacts, and Mitigation

This section describes the environment potentially affected by the proposed action and alternatives, evaluates potential environmental impacts, and recommends measures to avoid or reduce impacts.

4.1 Resources Not Affected and Not Considered Further

This section provides an overview of the environmental resources that would not be affected by the no action or proposed action alternatives and have been removed from further consideration in this EA.

4.1.1 Geology and Seismicity

Based on the nature and location of the project area, the proposed action would have no effect on seismicity and is very unlikely to be affected by seismic events. Seismicity is not considered further in this analysis. Vegetative fuels reduction and hazard mitigation actions involving vegetation management are surface activities that do not affect geology and are not affected by geology. Therefore, geology and seismicity are not considered further in this analysis.

4.1.2 Wild and Scenic Rivers

The National Wild and Scenic Rivers System (Public Law [P.L.] 90-542; 16 United States Code [U.S.C.] 1271 et seq.) was created in 1968 to preserve rivers with outstanding natural, cultural, and recreational value in a free-flowing condition. The project area is not located near any river segment designated as "wild and scenic." The Rio Grande, located along the Texas border, is the only wild and scenic river in Texas. The proposed project would not cause any impacts to wild and scenic rivers because the project site is not within the Rio Grande watershed (see **Appendix A-1**) (Interagency Wild and Scenic Rivers Council 2014). Wild and scenic rivers are not considered further in this analysis.

4.1.3 Coastal Resources

The Coastal Zone Management Act enables coastal states to designate state coastal zone boundaries and develop coastal management programs to improve protection of sensitive shoreline resources and guide sustainable use of coastal areas. The Texas Coastal Management Program is administered by the Texas General Land Office (GLO). Williamson County is not a coastal county and is approximately 144 miles from the nearest coastline; therefore, it is not included as part of the Texas Coastal Management Program (GLO 2014). There would be no potential impacts to coastal resources under either the no action alternative or the proposed action. Coastal resources are not considered further in this analysis.

4.2 Physical Resources

This section provides an overview of the affected area and potential environmental effects of the no action and proposed action alternatives on physical resources, including soils, air quality, climate change, and visual resources.

4.2.1 Soils

According to the Geologic Atlas of Texas, Austin Sheet, 1981, the project area primarily consists of the Del Rio Clay and Georgetown Formations (Texas Water Development Board [TWDB] 2014). The five soil types in the project area are Eckrant-Rock outcrop complex (ErE), Eckrant extremely stony clay (EeB), Georgetown stony clay loam (GsB), Crawford clay (CfB), and Eckrant cobbly clay (EaD). The properties of these soils are described in more detail in **Table 4.1** (U.S. Department of Agriculture [USDA], Natural Resources Conservation Service [NRCS] 2013). A full soil survey of the project area is shown on **Figure 4.1** (USDA, NRCS 2013). The soils present within the project area are not hydric, which means they are unlikely to support wetlands (see also **Section 4.3.2**).

Prime and unique farmlands are protected under the Farmland Protection Policy Act (FPPA) (P.L. 97-98, 7 U.S.C. 4201 et seq.). The FPPA applies to prime and unique farmlands and those that are of state and local importance. The FPPA establishes criteria for identifying and considering the effects of federal programs on the conversion of farmland to non-agricultural uses. Most of the soils present within the project area are not considered prime or unique farmland soils per the USDA, NRCS Web Soil Survey (2013); however, the soil type Crawford clay is considered to be prime farmland soil. The FPPA states that only actions that would convert farmland to non-agricultural uses are subject to the Act. Vegetation management as proposed by Williamson County would not convert the project site with prime farmland soils; therefore the FPPA does not apply to this project.

Topography in the project area is shown on **Figure 4.2**. Elevations in Southwest Regional Park and within the proposed work areas range from 850 feet to 940 feet and the work areas are generally flat or gently sloped.

No Action Alternative

In the absence of a major wildfire near the proposed project area, the no action alternative would have no effect on soils because no project related disturbance would occur. However, a major wildfire would be more likely under the no action alternative and soils within the burnt areas could be adversely affected. A wildfire could alter the cycling of nutrients; the physical and chemical properties; and the temperature, moisture, and biotic characteristics of the existing soils. In the event of a major wildfire, more bedrock could be exposed to direct rainfall, which would increase the rate of erosion of the formation. These primary impacts from a wildfire can also result in decreased infiltration and increased runoff, which often causes increased erosion. The no action alternative would not impact prime or unique farmland soils.

Affected Environment, Potential Impacts, and Mitigation

Table 4.1. Soil Properties in the Project Area

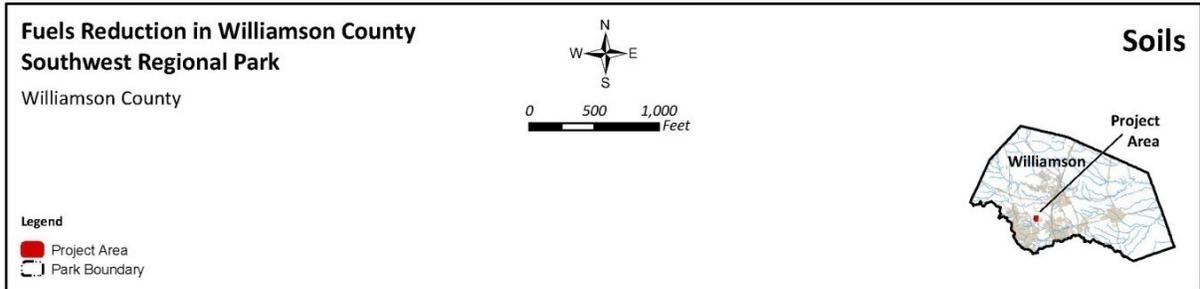
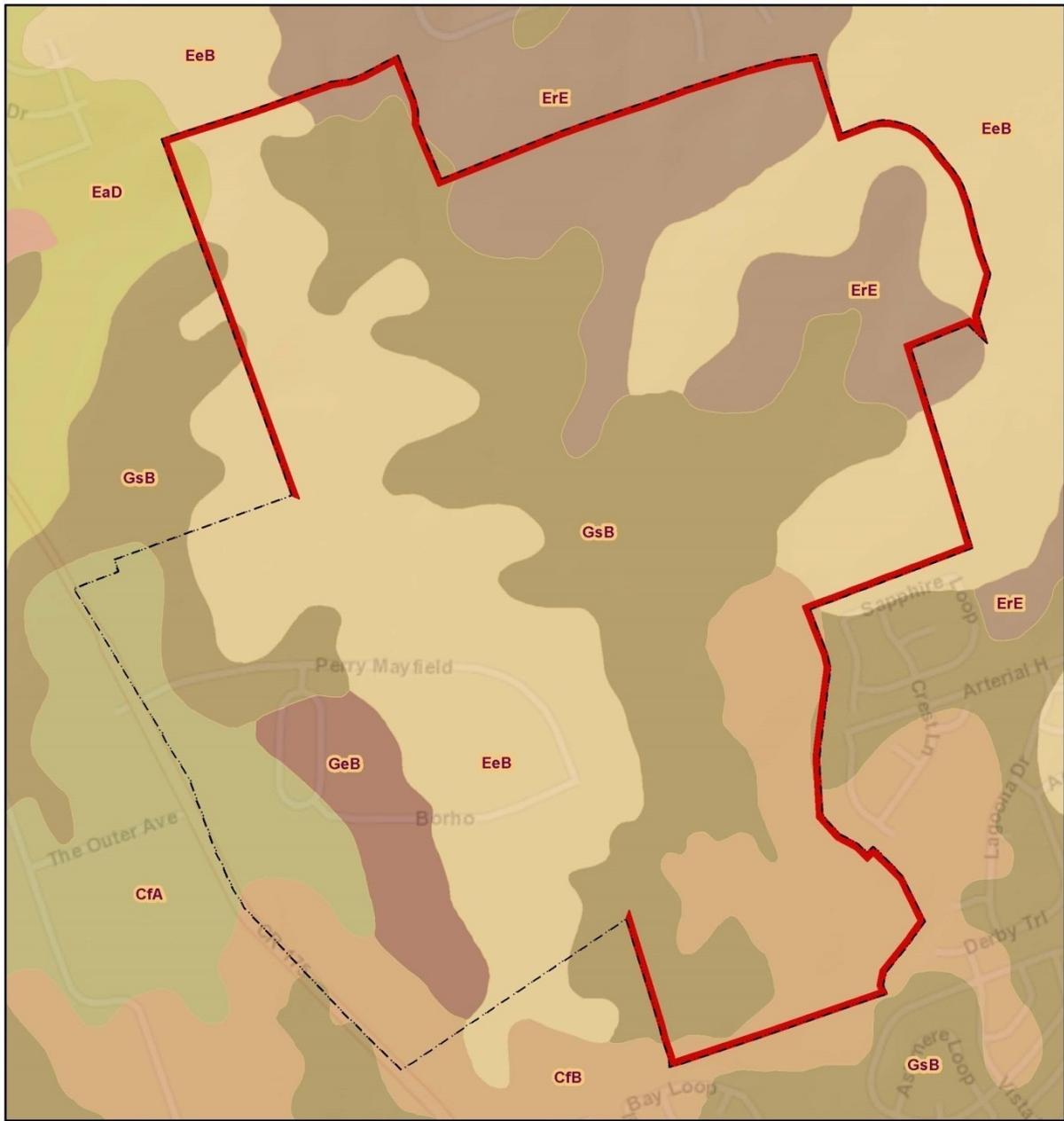
Parameters	Eckrant-Rock outcrop complex (ErE)	Eckrant extremely stony clay (EeB)	Georgetown stony clay loam (GsB)	Crawford clay (CfB)	Eckrant cobbly clay (EaD)
Depth	10 to 20 inches (in.) to lithic bedrock	10 to 20 in. to lithic bedrock	20 to 40 in. to lithic bedrock	20 to 40 in. to lithic bedrock	10 to 20 in. to lithic bedrock
Drainage	Well drained	Well drained	Well drained	Well drained	Well drained
Permeability	Moderately low to moderately high (0.06 to 0.57 in. per hour [in/hr])	Moderately low to moderately high (0.06 to 0.57 in/hr)	Moderately low to moderately high (0.06 to 0.20 in/hr)	Very low to moderately low (0.00 to 0.06 in/hr)	Moderately low to moderately high (0.06 to 0.57 in/hr)
Parent Material	Residuum weathered from limestone	Residuum weathered from limestone	Residuum weathered from limestone	Residuum weathered from limestone	Residuum weathered from limestone
Slope	3 to 16 percent	0 to 3 percent	1 to 3 percent	1 to 3 percent	1 to 8 percent
Depth to Water Table	More than 80 in.	More than 80 in.	More than 80 in.	More than 80 in.	More than 80 in.
Hydric Soils	No	No	No	No	No

Proposed Action

The proposed action would not result in significant soil disturbance and is not expected to change the grade of the soils present. The proposed fuel reduction activities would cause short-term, minor soil disturbance during implementation and would not result in any significant soil and sediment removal or transport from the site. The proposed action would not remove any stumps of cut trees, and removal of debris and brush and tree limbing also would not result in significant soil disturbance. Elevation changes within the proposed work areas are not significant; therefore, erosion of soils would not be likely with the minor soil disturbance that would occur from the proposed activities. The fire hazard reduction activities also would reduce the potential for the negative effects of a major wildfire on soils if a wildfire occurs. No adverse impacts to soils are anticipated under the proposed action.

Short term soil disturbance may occur from the use of mechanical equipment; however, steps such as the use of rubber tracks on all machinery will be taken to reduce soil disturbance in the project area during vegetation removal, and no adverse impact to soils is anticipated. In addition, prime or unique farmland would not be converted to non-agricultural uses by the proposed action. No adverse impact to soils is anticipated.

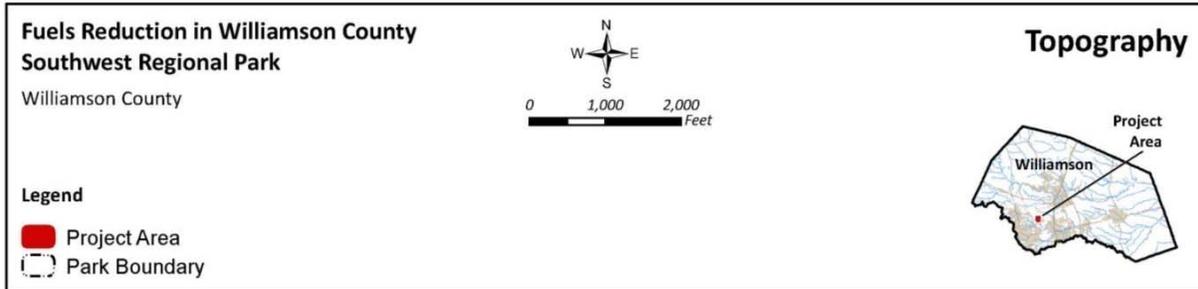
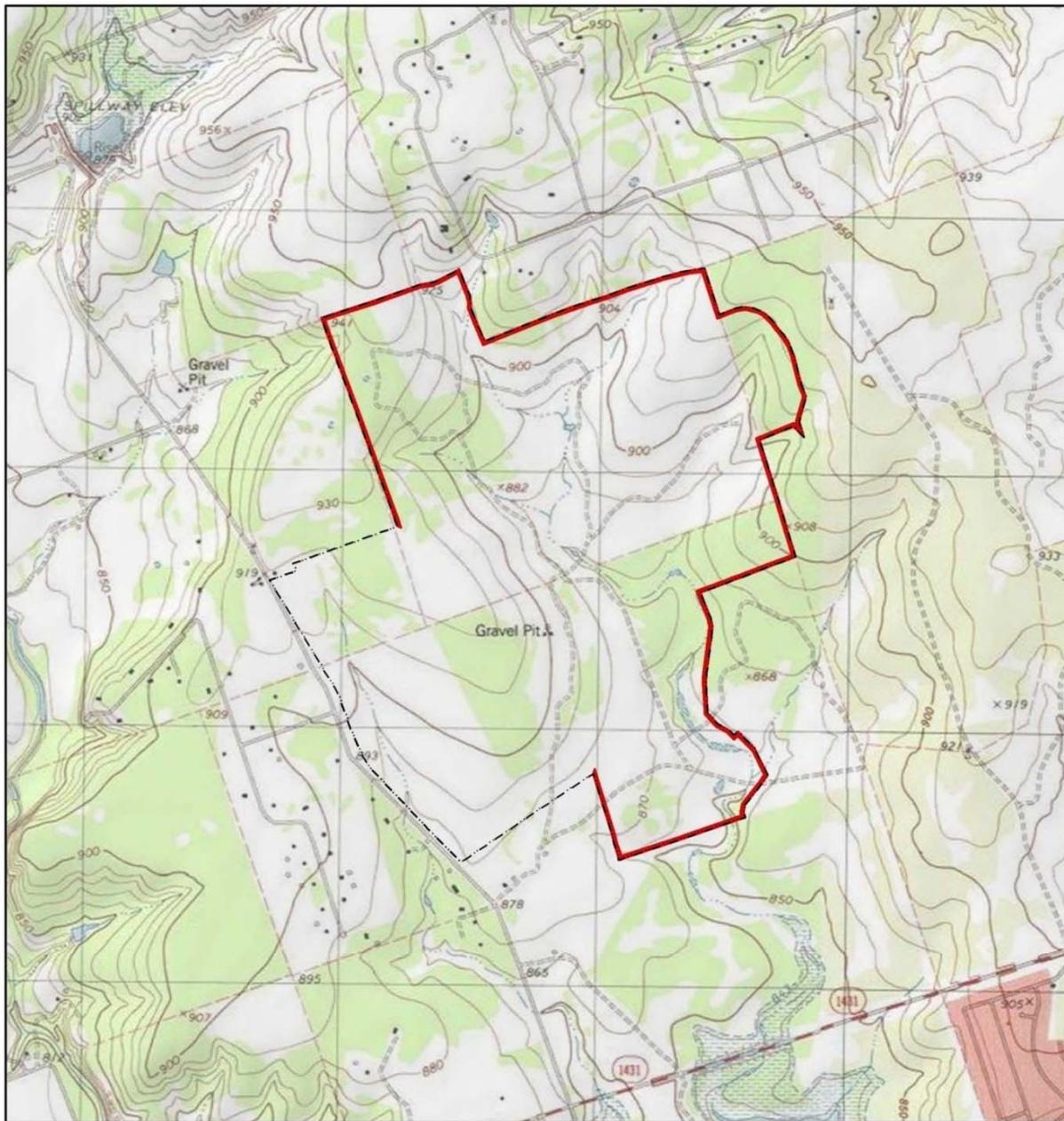
Affected Environment, Potential Impacts, and Mitigation



Data Sources: SSURGO; CDM Smith
 Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

Figure 4.1. Soils Map

Affected Environment, Potential Impacts, and Mitigation



Data Sources: USGS, CDM Smith
Service Layer Credits: Copyright © 2011 National Geographic Society, i-cubed

Figure 4.2. Topography Map

4.2.2 Air Quality

The Clean Air Act (CAA; 42 U.S.C. 7401 et seq.) provides the basis for regulating air emissions. Air quality control regions have been created under the CAA. The United States Environmental Protection Agency (EPA) classifies air quality within each region according to whether the concentrations of certain pollutants called criteria air pollutants exceed National Ambient Air Quality Standards (NAAQS).

The proposed project area in Williamson County is in the Austin-Round Rock metropolitan area, which comprises Travis, Williamson, Bastrop, Hays, and Caldwell counties. EPA designates this region as being in attainment of all NAAQS (EPA 2014a).

No Action Alternative

In the absence of a major wildfire in the area, no impacts would occur under the no action alternative, as the current air quality conditions would not change. No changes would occur that would affect air emissions. However, a major wildfire would be more likely under the no action alternative, and a major wildfire would cause substantial pollutant emissions.

Proposed Action

Air quality impacts associated with the proposed action would be localized and temporary, occurring over a period of approximately 12 weeks during implementation of the fuel reduction measures. During project implementation, the equipment to be used would include chainsaws, hand saws, shredders, a motorized utility vehicle, a variety of mechanized and hand equipment, and trucks to haul equipment and debris. The equipment would burn hydrocarbon fuels.

Under the proposed action, the use of equipment to remove vegetation could result in low levels of particulate matter and vehicle exhaust emissions, such as hydrocarbons. Emissions would be temporary and localized, and only minor impacts on air quality in the project area would occur. To reduce emissions, labor crews would keep all vehicle and mechanical equipment running times to a minimum and ensure that all engines are properly maintained. Overall, the proposed project would not have a significant impact on air quality.

Post-project maintenance would be conducted as needed and is not expected to have a significant impact on air quality. The proposed action has the potential for a long-term beneficial effect on air quality in the project area by reducing wildfire hazards and the potential for a major wildfire.

4.2.3 Climate Change

“Climate change” refers to changes in Earth’s climate caused by a general warming of the atmosphere. The primary cause is emissions of carbon dioxide and methane. The impact climate change may have on the proposed project area is uncertain and difficult to anticipate. Climate change is capable of affecting species distribution, temperature fluctuations, sea level dynamics, and weather patterns.

No Action Alternative

In the absence of a major wildfire, the no action alternative would have no effect on climate change, as current conditions would not change. A major wildfire would be more likely under the no action alternative, and large quantities of greenhouse gases could be released that could contribute to climate change. Climate change may result in more extended droughts in the project area and increase the risk of wildfire.

Proposed Action

Because of the small scale of the proposed action, the contribution to climate change from project implementation would be minor. The proposed action would also reduce the potential emission of greenhouse gases associated with a major wildfire. The proposed action is not anticipated to affect global climate change.

4.2.4 Visual Quality and Aesthetics

Southwest Regional Park is densely vegetated with trees and understory brush in some areas while other areas are less densely vegetated and have an open canopy. The majority of the project area is dominated by Ashe juniper with a number of oak species as well. The project area is adjacent to residential neighborhoods, and the proposed hazardous fuels reduction zone would be visible to residents. To a limited extent, the project area is also visible to the public that visits Southwest Regional Park. **Figures 4.3, 4.4, and 4.5** illustrate existing visual conditions in the project area. **Figures 4.3 and 4.4** show existing vegetation on the Southwest Regional Park property. **Figure 4.5** shows existing vegetation along the property boundary between residential lots and Southwest Regional Park (note: the fence on the left edge of the photo is the Southwest Regional Park property boundary).

No Action Alternative

In the absence of a major wildfire, there would be no impact on visual quality and aesthetics under the no action alternative, as current conditions would not change. A major wildfire would be more likely under the no action alternative and would have negative visual effects immediately after the fire for both adjacent landowners and the public that visits Southwest Regional Park.

Proposed Action

The proposed project would clear brush, understory, dead trees, and vegetative debris within the project area, resulting in some changes to the visual aesthetics along the WUI. Because the park is very large and densely vegetated, the overall visual quality and aesthetics along the boundary would not be impacted significantly by the proposed project. The proposed work would open up some views from private property onto the Southwest Regional Park that were previously obscured by vegetation in the foreground. Fuels reduction work along the residential edge would not affect privacy screening of most adjacent residences because of the large size of the park and the distance from the boundary to trails or active use areas of the park. There are a few places, particularly in the southeast corner and along the western boundary of the park where trails appear to be located close to the park boundary and the project area. In these areas, the fuels

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reduction work may change the existing visual setting. In the southeast corner where the trail, the park boundary, and adjacent residences are all in close proximity, there could be some reduction in privacy screening of homes from park users. Under the proposed action, wildfire hazards would be reduced, and the potential for significant visual alteration due to a major wildfire also would be reduced.



Figure 4.3. Existing Vegetation in the Proposed Project Area

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Figure 4.4. Southwest Regional Park Viewed from Proposed Project Area



Figure 4.5. Adjacent Residential Area Viewed from Proposed Project Area



4.3 Water Resources

This section provides an overview of the affected area and potential environmental effects of the no action and proposed action alternatives on water resources, including water quality, streams, wetlands, and floodplains.

4.3.1 Water Quality

The water quality effects analysis includes both surface water and groundwater resources. The project area is located mostly in the Edwards Aquifer recharge zone and a small portion of the project area, in the northeastern part of the park, is in the contributing zone.

4.3.1.1 Surface Water

Sections 303(d) and 305(b) of the Clean Water Act (CWA) require all states to identify and characterize waters that do not meet, or are not expected to meet, water quality standards (42 U.S.C 1313(d) and 1315(b)). The Texas Commission on Environmental Quality (TCEQ) is the regulatory agency responsible for compliance with water quality standards in Texas. The TCEQ's 2010 Integrated Report for CWA Sections 303(d) and 305(b) characterize the quality of Texas surface waters and identify those waters that do not meet water quality standards on the 303(d) list, an inventory of impaired waters (TCEQ 2014). Streams are classified by segment in their respective basin.

An unnamed tributary to Brushy Creek runs through Southwest Regional Park, flows into Brushy Creek and ultimately into the Colorado River. The unnamed tributary is an unclassified water body and is not on the 303(d) list of impaired waters. An unclassified segment is one for which a use has not been identified. Brushy Creek is a classified water body segment and is listed on the 303(d) list of impaired waters as impaired for bacteria (TCEQ 2014).

No Action Alternative

In the absence of a major wildfire in the proposed project area, the no action alternative would not have any adverse effect on surface water quality because inputs to receiving waters would not change. However, a major wildfire would be more likely under the no action alternative and could have substantial impacts on surface water quality. Reduced vegetation cover could lead to flooding, soil erosion and sedimentation, pollution from substances no longer filtered by riparian vegetation, and changes in water temperature.

A major wildfire may cause changes to the soil as discussed in **Section 4.2.1**, which could impact surface waters. Infiltration properties of soils may be altered when fire destroys vegetation cover within a watershed. These changes in vegetation, and subsequently the soil, often result in decreased infiltration, increased overland flow, and ultimately, increased stream flow discharges (USDA, Forest Service 2005).

Proposed Action

The proposed action would not directly affect surface waters or alter stream flows. The proposed action could cause temporary minor adverse impacts to the surface water of the unnamed

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tributary creek over a period of approximately 12 weeks from potential erosion and sedimentation. The proposed action would minimize ground disturbance by not removing stumps, but operation of heavy equipment during the work would disturb soil, which could increase erosion potential during heavy rains. Best management practices (BMPs) would be implemented to minimize transport of sediment to the unnamed tributary and ultimately to Brushy Creek. Mulch created from cut vegetation would be used for temporary erosion control to prevent soil or sediment from reaching waterways. Appropriate barriers would be used to prevent mulch from being washed into the creeks. With the implementation of these BMPs, the effect on water quality would not be significant.

4.3.1.2 Groundwater

The major aquifer underlying the proposed project area is the Edwards Aquifer. The Edwards Aquifer is a narrow belt extending through 13 Texas counties along the Interstate 35 (I-35) corridor between Austin and San Antonio and consists primarily of partially dissolved limestone that is hydrologically connected to form a highly permeable aquifer (see **Figure 4.6**). Water quality in the Edwards Aquifer is generally good and contains less than 500 milligrams per liter of total dissolved solids (TWDB 2014b).

The Edwards Aquifer provides water supply for municipal, industrial, and agricultural uses and is the sole source of drinking water for over 1.7 million people in central Texas. The aquifer produces large volumes of water from highly permeable and porous honey combed limestone, which allows for rapid recharge and discharge. The high permeability and porosity of the aquifer makes the aquifer vulnerable to contamination within the recharge zone. Pollutants on or near the surface can enter the aquifer directly with little natural filtering, and once in the aquifer, those pollutants can travel long distances in a relatively short period of time.

The sole source aquifer protection program is authorized by section 1424 of the Safe Drinking Water Act of 1974 (U.S.C. 300 et seq.). EPA defines a sole source aquifer as an aquifer that supplies at least 50 percent of the drinking water for the area overlying the aquifer. A portion of the Edwards Aquifer is designated as a sole source aquifer, and this designation requires all projects receiving federal funds to undergo a review to ensure they do not endanger the water source. The portion of the Edwards Aquifer that is designated a sole source aquifer does not underlie the project area (EPA 2008). Sole source aquifers in Texas are shown in **Appendix A-2**.

According to the TCEQ Edwards Aquifer Mapper, the proposed project area is located within the Edwards Aquifer Contributing and Recharge Zones as shown on **Figure 4.6** (TCEQ 2014). TCEQ regulates activities within the Edwards Aquifer recharge, contributing, and transition zones via 30 Texas Administrative Code (TAC) Chapter 213. According to 30 TAC, clearing vegetation without disturbing the soil is not an activity that is regulated under the Edwards Aquifer rules.

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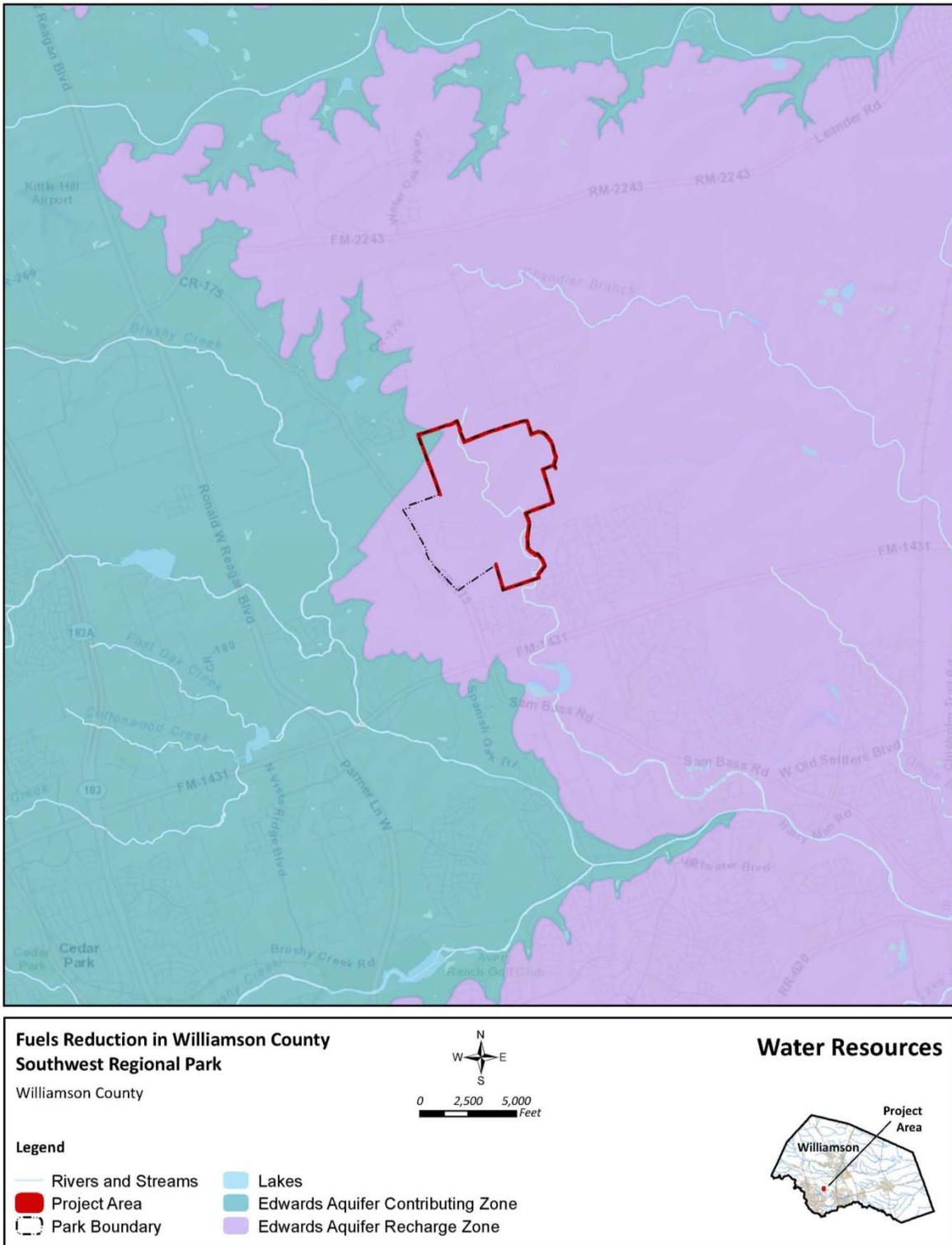


Figure 4.6. Project Area Water Resources

No Action Alternative

In the absence of a major wildfire in the project area, the no action alternative would have no effect on groundwater quality because current conditions would remain the same. However, a major wildfire would be more likely under the no action alternative and could cause changes to the soil as discussed in Section 4.2.1. These changes could impact groundwater because the infiltration properties of soils can be altered when fire destroys vegetation and litter cover within a watershed. These changes in the soil can result in decreased infiltration, increased overland flow, and ultimately decreased aquifer recharge (USDA, Forest Service 2005).

Proposed Action

The proposed action would reduce the risk of catastrophic wildfire and thus would reduce the risk of impacts to groundwater from a wildfire. BMPs would be implemented to manage any runoff from the project area; however, no impact on groundwater from stormwater runoff associated with the proposed action is anticipated. Therefore, no impact on the Edwards aquifer is expected to occur as a result of the proposed action.

4.3.2 Wetlands

Executive Order (EO) 11990, Protection of Wetlands, requires federal agencies to take action to minimize the loss of wetlands. Activities that disturb jurisdictional wetlands require a permit from the U.S. Army Corps of Engineers under Section 404 of the CWA of 1977 (33 U.S.C. 1344).

FEMA regulation 44 CFR Part 9, Floodplain Management and Protection of Wetlands, sets forth the policy, procedures, and responsibilities to implement and enforce EO 11990 and prohibits FEMA from funding construction in a wetland unless no practicable alternatives are available. To comply with EO 11990, FEMA uses the eight-step decision-making process in 44 CFR 9.6 to evaluate proposed actions that have potential to affect a wetland.

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps for the project area indicate that there are two freshwater ponds within Southwest Regional Park (**Figure 4.8**) (USFWS 2013a). Although wetlands are present within Southwest Regional Park, the project area is more than 260 feet from the wetland areas. The proposed project would have no effect on wetlands; thus, FEMA is not required to conduct an eight-step decision-making process.

No Action Alternative

In the absence of a major wildfire in the park, the no action alternative would have no effect on wetlands because existing conditions would not change. However, a major wildfire would be more likely under the no action alternative and could result in the destruction of vegetation in wetlands beyond the project area. Vegetation destruction in wetlands would damage habitat for wildlife and lessen the effectiveness of wetlands to filter pollutants and maintain water quality. However, there are no wetlands within the project area; therefore, the potential for wetland impacts would be minor.

Proposed Action

The proposed action would not occur in wetland areas nor would it occur close enough to affect wetlands; thus, there would be no effect on wetlands from the proposed action. Moreover, BMPs would prevent impacts on nearby wetlands if they turn out to be present. Long-term project maintenance also would have no impact on wetlands.

4.3.3 Floodplains

EO 11988, Floodplain Management, requires federal agencies to take actions to minimize occupancy of and modifications to floodplains. FEMA regulations in 44 CFR Part 9, Floodplain Management and Protection of Wetlands, set forth the policy, procedures, and responsibilities to implement and enforce EO 11988 and prohibit FEMA from funding improvements in the 100-year floodplain unless no practicable alternative is available.

To satisfy the requirements of EO 11988, the Water Resources Council developed an eight-step process that agencies should carry out as part of their decision-making on projects that have potential impacts to or within the floodplain. The eight steps reflect the decision-making process required in Section 2(a) of the EO and are reflected in FEMA regulations at 44 CFR 9.6. The first step is to determine if the proposed action is in the 100-year floodplain. As discussed below, the proposed action is partially located within the floodplain of Honey Bear Creek. The eight-step process is documented in **Appendix A-4**.

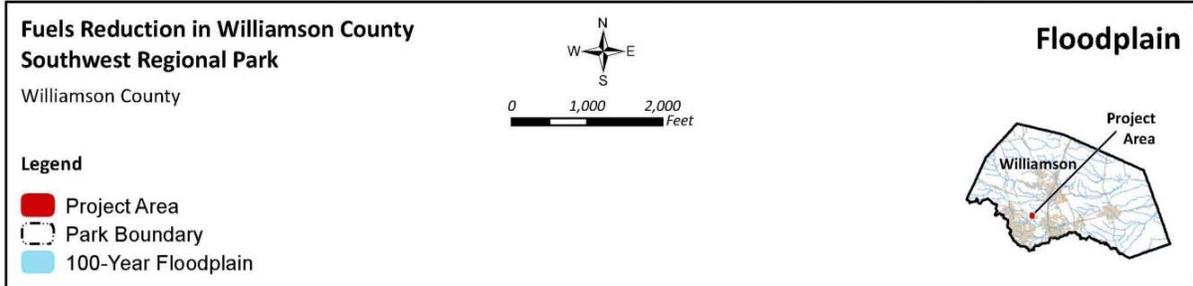
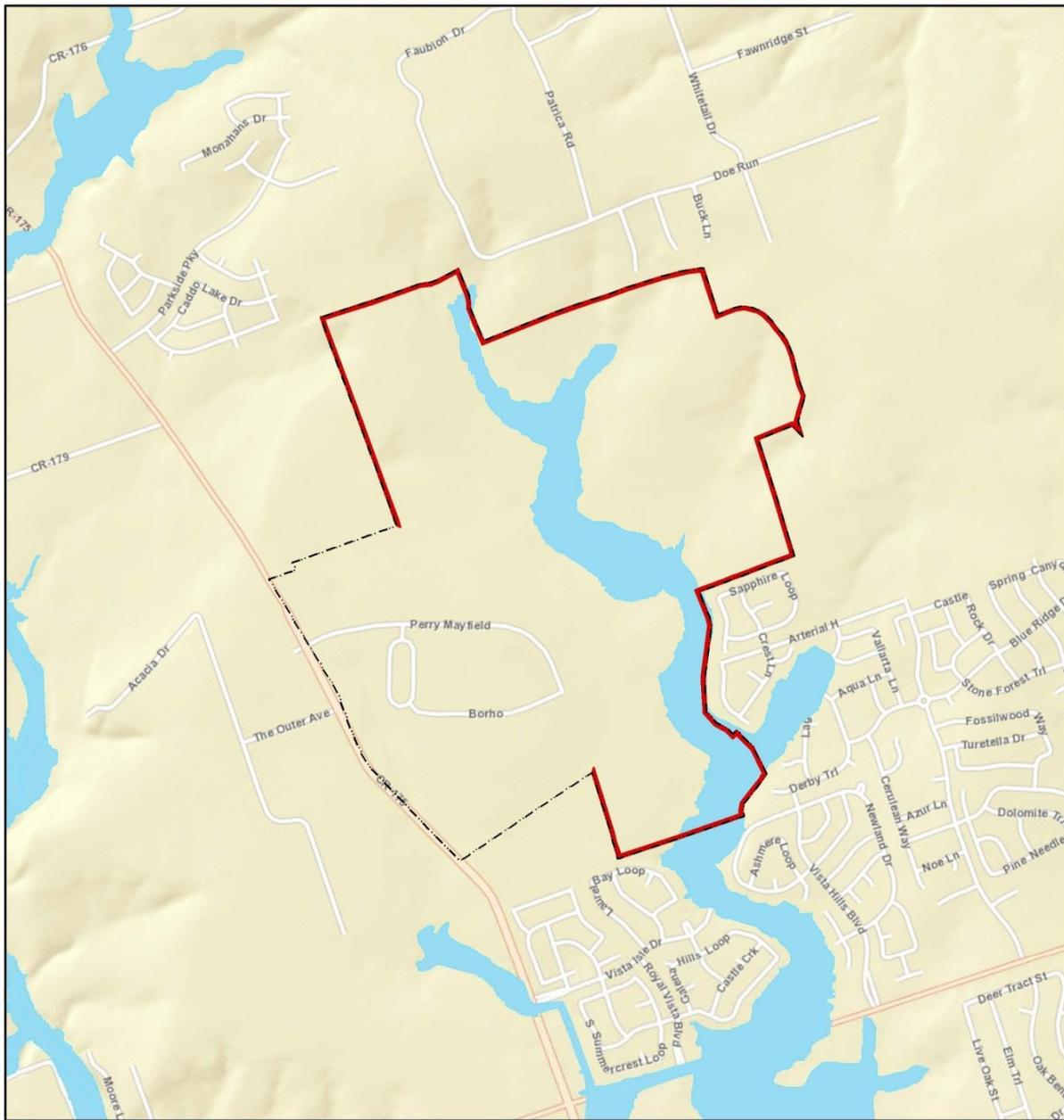
FEMA flood insurance rate maps (FIRMs) map floodplain areas and illustrate the extent of the 100-year floodplain within the project area. The FIRMs for the project area are panel numbers 48491C0470E and 48491C0460E dated September 26, 2008. The pertinent portion of the FIRM is included in **Appendix A-3**.

Figure 4.8 depicts the proposed project area and extent of the floodplain within the project area. Floodplains are present within the proposed project area. A portion of a project zone in the northern portion of the park runs adjacent to, and crosses through, the 100-year floodplain of Honey Bear Creek.

No Action Alternative

In the absence of a major wildfire, the no action alternative would have no effect on floodplains because the current conditions would not change. However, a major wildfire would be more likely under the no action alternative and could have impacts on the floodplain. If a wildfire were to occur, vegetation and ground cover would be destroyed, which could lead to increased stormwater runoff following a rain event. The no action alternative has the potential to increase localized sedimentation and flooding.

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Data Sources: CAPCOG Floodplain Q3, FEMA FIRM Panels: 48491C0460E, 48491C0470E, 48491C0480E, 48491C0490E
 Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

Figure 4.8. Floodplain Map

Proposed Action

Portions of the proposed project area are within the 100-year floodplain of Honey Bear Creek. The proposed action would not place any structures or fill within the floodplain that would impede or redirect flood flows nor would it result in any excavation. No structures would be constructed within the floodplain, and no significant soil disturbance would occur within the floodplain. Although the proposed action would reduce risk to homes adjacent to Southwest Regional Park, the proposed action would not facilitate any development within the floodplain. No debris or mulch would be staged or stored in the floodplain, though mulch may be spread on the ground surface for erosion control.

For any work in the floodplain, Williamson County would be required to coordinate with the local floodplain administrator and obtain any required permits prior to initiating work. All coordination pertaining to these activities and applicant compliance with any conditions would be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files. The full eight-step analysis is documented in **Appendix A-4**.

4.4 Biological Resources

This section provides an overview of the affected area and potential environmental effects of the no action and proposed action alternatives on vegetation, wildlife, and federally and state-listed species.

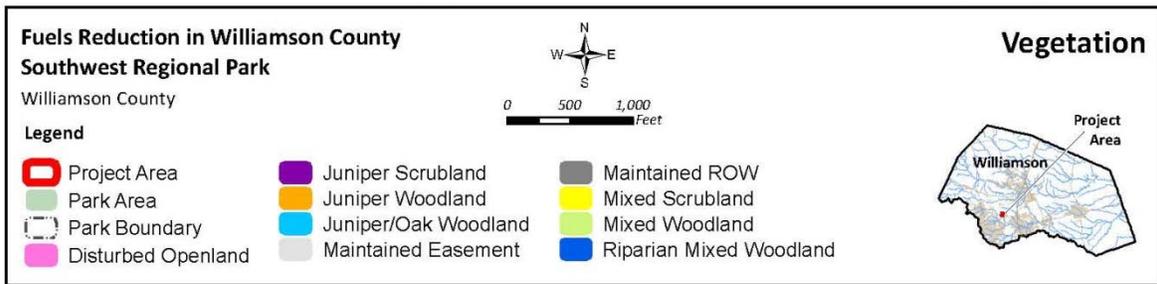
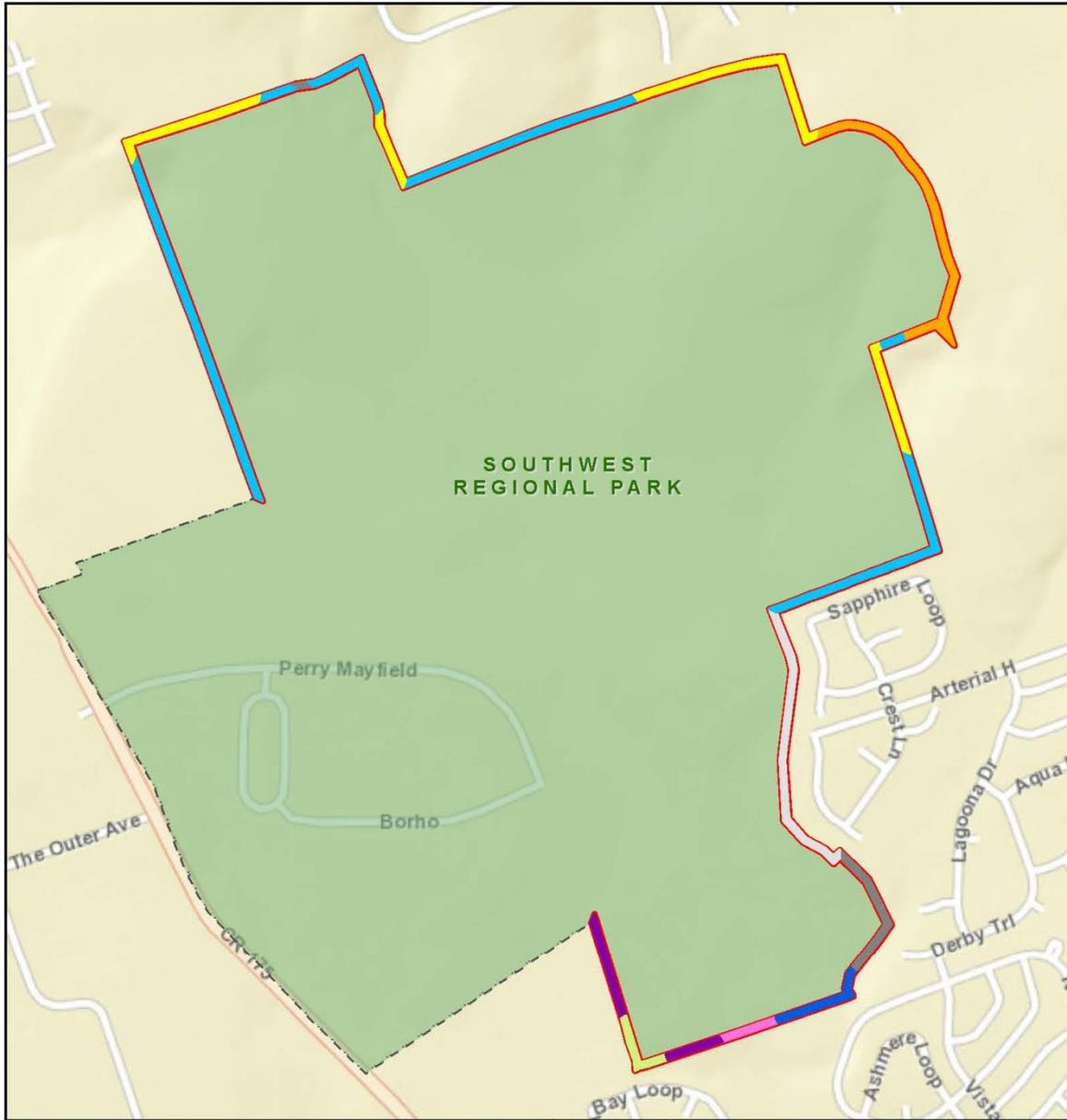
4.4.1 Vegetation

The project area is in the Cross Timbers Ecoregion according to the Gould Ecoregions of Texas, as recognized by Texas Parks and Wildlife Department (TPWD). This region is approximately 26,000 square miles in area and is the primary ecoregion of North Central Texas. The project area is located in the Lampasas Cut Plain ecological sub-region. The Lampasas Cut Plains are mostly underlain by various limestone formations; the soil has high alkalinity due to its development on limestone. Plants in this sub-region have adapted to living in higher alkalinity soils such as oaks (*Quercus* spp.), juniper (*Juniperus* spp.), and grasses (*Poaceae* spp.) (Gould *et al.* 1960). The Southwest Regional Park is located on the Edwards Plateau, which has this limestone geology (Williamson County Conservation Foundation [WCCF] 2008).

A wildlife and habitat survey conducted on October 16 and 17, 2013, determined that the project area is characterized primarily by juniper oak woodland, juniper woodland, and juniper scrubland habitats (see **Figures 4.9** and **Appendix B**). These habitat types are described below.

- Juniper Oak Woodland – dominated by Ashe juniper and Texas live oak with few and sparse cedar elms. The tree layer averages 95 percent cover. The shrub layer has less than 5 percent total cover and consists mostly of Ashe juniper saplings. The herbaceous layer averages 20 percent total cover and is dominated by little bluestem.

Figure 4.9. Vegetation Communities



Data Sources: Williamson County, CH2MHill, CDM Smith
 Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

- Juniper Woodland – dominated by Ashe juniper with few and sparse Texas live oak with the tree layer averaging 80 percent total cover. Small open grassy areas are dominated by

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little bluestem, King Ranch bluestem (*Bothriochlea ischaemum*), and prickly pear cactus with a total cover of approximately 20 percent. The shrub layer consists of yaupon (*Ilex vomitoria*) and Ashe juniper saplings with a total cover of approximately 5 percent.

- Juniper Scrubland – characterized by open grassy areas dominated by little bluestem (*Schizachyrium scoparium*), western ragweed (*Ambrosia psilostachya*), prickly pear cactus (*Opuntia engelmannii*), and Texas crabgrass (*Digitaria texana*) with dense patches of Ashe juniper (*Juniperus ashei*) trees and shrubs. The tree layer has between 40 and 60 percent total cover. The shrub layer consists of Ashe juniper saplings, Texas live oak saplings (*Quercus fusiformis*), honey mesquite (*Prosopis glandulosa*), and cedar elm (*Ulmus crassifolia*) saplings. The shrub layer has approximately 15 percent total cover. The herbaceous layer has approximately 15 to 35 percent total cover. There are large prickly pear cactus areas throughout the shrub and herbaceous layers.
- Mixed Woodland – dominated by Ashe juniper, Texas live oak, cedar elm, and honey mesquite woodlands. The tree layer averages 85 percent total cover. The shrub layer consists of honey mesquite, Ashe juniper, and Texas persimmon (*Diospyros texana*) with approximately 20 percent total cover. The herbaceous layer consists of little bluestem, rosette grass (*Dichanthelium dichotomum*), prickly pear cactus, and southern dewberry (*Rubus trivialis*) with an average of 40 percent total cover.
- Riparian Mixed Woodland – similar to Mixed Woodlands but with slight differences in species composition. The tree layer averages 90 percent total cover and consists of Ashe juniper, Texas live oak, cedar elm, honey mesquite, post oak (*Quercus stellata*), and hackberry (*Celtis occidentalis*). The shrub layer has approximately 70 percent total cover and consists of Ashe juniper, Texas persimmon, Texas live oak, and cedar elm saplings. The herbaceous layer has approximately 5 percent total cover and consists of common greenbrier (*Smilax rotundifolia*) and muscadine grape (*Vitis rotundifolia*).
- Mixed Scrubland – consists of Texas live oak, Ashe juniper, and cedar elm in the tree layer with approximately 40 to 60 percent total cover. The shrub layer is approximately 20 percent total cover and consists of Texas live oak, cedar elm, and Ashe juniper saplings. The herbaceous layer is generally free of other layers and has approximately 60 percent total cover. The herbaceous layer consists of little bluestem, western ragweed, prickly pear cactus, Christmas cholla cactus (*Opuntia leptocaulis*), and King Ranch bluestem. Bare ground consisting of limestone cobble makes up approximately 5 percent total cover.
- Disturbed Open Land – characterized by open areas dominated by herbaceous species typical of secondary succession following a disturbance. The tree and shrub layers are absent in this habitat type. The herbaceous layer consists of western ragweed, Texas frog fruit (*Phyla nodiflora*), and snow-on-the-prairie (*Euphorbia bicolor*). This habitat is covered by approximately 95 percent herbaceous plants and 5 percent bare ground.
- Maintained Right-of-Way (ROW) – the herbaceous layer is approximately 95 percent of total cover and is dominated by little bluestem, King Ranch bluestem, Bermuda grass (*Cynodon dactylon*), western ragweed, broomsedge bluestem (*Andropogon virginicus*), and Texas crabgrass. A sparse tree layer is present at the edge of the cleared ROW with

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approximately 10 percent total cover, and it consists of Texas live oak and cedar elm. The shrub layer is approximately 5 percent total cover and consists of Ashe juniper saplings. There are a few maintained ROW areas throughout the project area.

- Maintained Easement – characterized by open grassy areas dominated by western ragweed, little bluestem, Bermuda grass, Texas crabgrass, black-eyed-Susan (*Rudbeckia hirta*), side-oats grama (*Bouteloua curtipendula*), and King Ranch bluestem. This habitat did not have a tree layer. The shrub layer consists of honey mesquite and Ashe juniper with approximately 5 percent total cover. The herbaceous layer has 100 percent total cover. There are a few maintained easements throughout the project area.

There are no federally threatened or endangered plant species listed in Williamson County; therefore, there would be no effect on listed plant species.

Invasive Species

EO 13112 requires federal agencies to prevent the introduction of invasive species and provide for their control to minimize the economic, ecological, and human health impacts that invasive species cause. The habitat survey did not note any invasive plant or animal species listed by the Texas Department of Agriculture within the project area.

No Action Alternative

In the absence of a major wildfire, the no action alternative would have no effect on vegetation, including invasive species, because the vegetation that is currently present would persist. However, a major wildfire would be more likely under the no action alternative and would result in partial or complete loss of vegetation. While fire is a natural component of the ecosystems near the project area, years of fire suppression have increased fuel density and likely would increase the extent and intensity of future wildfires in the area. In the event of a major wildfire, non-native and/or invasive species might be expected to become established over larger areas.

Proposed Action

The proposed action would affect approximately 4 miles (24 acres) along the perimeter of Southwest Regional Park. Treated areas would be approximately 50 feet in width. Fuel reduction would include trimming or removal of highly flammable dead and diseased vegetation, selected trimming of beneficial trees, and cutting of tree branches up to a height of 10 feet. The proposed action would not have a significant impact on vegetation communities although individual trees would be affected.

Since there are no listed threatened or endangered plant species in Williamson County, the proposed action would not affect federal listed endangered plant species.

The proposed action could provide avenues for the establishment of invasive plant species through accidental introduction and the removal of native vegetation. However, because the proposed action would not alter the canopy layer significantly, it would not be expected to contribute to the spread of invasive plant species. Any invasive species encountered during the vegetation management work should be removed.

4.4.2 Common Wildlife Species

In addition to the listed species discussed below in **Section 4.4.3**, the proposed action has the potential to impact common wildlife species and their habitats. **Table 4.2** provides a list of species that were recorded during the habitat survey conducted in October 2013.

Table 4.2. Common Wildlife Species Observed Within Project Area

Common Name	Scientific Name
Birds	
Red-tailed hawk	<i>Buteo jamaicensis</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Turkey vulture	<i>Cathartes aura</i>
American crow	<i>Corvus branchyrhynchos</i>
Blue jay	<i>Cyanocitta cristata</i>
Red-bellied woodpecker	<i>Melanerpes carolinus</i>
Northern mockingbird	<i>Mimus polyglottos</i>
Carolina chickadee	<i>Poecile carolinensis</i>
House wren	<i>Troglodytes aedon</i>
American robin	<i>Turdus migratorius</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Mourning dove	<i>Zenaida macroura</i>
Mammals	
Coyote	<i>Canis latrans</i>
White-tailed deer	<i>Odocoileus virginianus</i>
Eastern grey squirrel	<i>Sciurus carolinensis</i>
Fox squirrel	<i>Sciurus niger</i>
Hispid cotton rat	<i>Sigmondon hispidus</i>
Wild boar	<i>Sus scrofa</i>
Cottontail rabbit	<i>Sylvilagus floridanus</i>

Common species observed during the field survey are typical of those found along the forest fringe and open grassland edges. The project areas are adjacent to residential neighborhoods, and the wildlife species present would be influenced by residential habitats and activities.

The mixed woodland, riparian mixed woodland, juniper and oak woodland, juniper woodland, mixed scrubland, and juniper scrubland habitats present likely would support additional species adapted to these areas, including bobcats, snakes, and wild turkeys. Although a tributary to Brushy Creek is in the project area, work within the stream is not proposed; therefore, impacts to aquatic wildlife species would not be expected.

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The Southwest Regional Park provides habitat for a number of migratory bird species, which are protected by the Migratory Bird Treaty Act.

The RIFA is native to South America and has become a pest in the southern U.S. RIFA successfully competes against other ants and outcompetes species that karst invertebrates rely on for food. The significance of listed karst species, and the impact RIFA colonies may have on them, is explained in **Section 4.4.3**.

No Action Alternative

In the absence of a major wildfire, the no action alternative would have no effect on common wildlife species in the project area. However, the spreading of a major wildfire would be more likely under the no action alternative and would result in the destruction of wildlife habitat.

Proposed Action

The birds and mammals observed within the project area and other species expected to be in the project area are species commonly found within and at the edges of forested areas and are well adapted to habitats that are influenced by human activities. Potential impacts likely would be temporary and have little effect on local populations.

The following mitigation measures will be required to avoid and reduce potential impacts on migratory birds. Williamson County will limit vegetation management work during the peak migratory bird nesting period of March through August to avoid destruction of individuals, nests, or eggs. Vegetation management will only be conducted between September 1 and February 28. This restriction is primarily imposed to protect federally listed bird species, but will also serve to protect migratory birds.

In addition, Williamson County will retain larger diameter (6 inches or greater in diameter) dead trees as snags whenever practical, at an average rate of 1 to 3 per acre while still achieving fuels reduction. Snags provide sheltering, nesting, roosting, and feeding habitat for cavity nesting and migratory bird species.

With implementation of measures to protect migratory birds, significant adverse impacts from the proposed action on the various songbird, mammal, and reptile species documented within the project area would not be expected.

4.4.3 Threatened and Endangered Species and Critical Habitat

The Endangered Species Act of 1973 gives USFWS authority for the protection of threatened and endangered species. This protection includes a prohibition of direct take (e.g., killing, harassing) and indirect take (e.g., destruction of critical habitat). TPWD Code prohibits take of state-listed threatened and endangered species.

The proposed project area is located in Williamson County, Texas. Six species federally listed as endangered, and 4 species federally listed as threatened are known to occur in Williamson County. Additionally, one delisted species, the bald eagle, is known to occur in Williamson County. Seven additional species are state listed as threatened in Williamson County by TPWD.

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Critical habitat has not been designated for any species within the Southwest Regional Park. All federally listed species potentially found in Williamson County are shown in **Table 4.3**, and the state-listed species are shown in **Table 4.4** (USFWS 2014b, TPWD 2014).

Table 4.3. Federally Listed Species for Williamson County, Texas

Common Name	Scientific Name	Federal Status
Arachnids		
Bone Cave harvestman	<i>Texella reyesi</i>	Endangered
Insects		
Coffin Cave mold beetle	<i>Batrisodes texanus</i>	Endangered
Tooth Cave ground beetle	<i>Rhadine persephone</i>	Endangered
Amphibians		
Georgetown salamander	<i>Eurycea naufragia</i>	Threatened
Jollyville plateau salamander	<i>Eurycea tonkawae</i>	Threatened
Salado salamander	<i>Eurycea chisholmensis</i>	Threatened
Birds		
Whooping crane	<i>Grus americana</i>	Endangered
Golden-cheeked warbler	<i>Setophaga chrysoparia</i>	Endangered
Black-capped vireo	<i>Vireo atricapilla</i>	Endangered
Piping plover	<i>Charadrius melodus</i>	Threatened

Table 4.4. State-Listed Species for Williamson County, Texas

Common Name	Scientific Name	State Status
Mollusks		
Smooth pimpleback	<i>Quadrula houstonensis</i>	Threatened
False spike mussel	<i>Quadrula mitchelli</i>	Threatened
Texas fawnsfoot	<i>Truncilla macrodon</i>	Threatened
Reptiles		
Timber/canebrake rattlesnake	<i>Crotalus horridus</i>	Threatened
Texas horned lizard	<i>Phrynosoma cornutum</i>	Threatened
Birds		
Peregrine falcon	<i>Falco peregrinus</i>	Threatened
American peregrine falcon	<i>Falco peregrinus anatum</i>	Threatened
Whooping crane	<i>Grus Americana</i>	Endangered
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened
Golden-cheeked warbler	<i>Setophaga chrysoparia</i>	Endangered
Black-capped vireo	<i>Vireo atricapilla</i>	Endangered

A field survey was conducted on October 16 and 17, 2013 to characterize the wildlife community and habitat types within the project area. The project survey area included both the project area and the adjacent 50 feet on both sides to determine whether any karst or cave features were present. The survey did not include areas exterior to the park boundary where residential development was present close to the boundary. In addition to documenting general wildlife observations and the dominant vegetation types present, the survey focused on determining the presence or absence of listed species and their habitats (**Appendix B**).

Suitable aquatic habitat for the Georgetown salamander, Jollyville Plateau salamander, Salado salamander or state-listed mollusks is not present, and there are no known springs or perennial streams in the project area. Similarly, marsh habitats required by the Whooping crane are not present in the park or the project area. Therefore, there would be no impact on these species. Although critical habitat has been designated for the Whooping crane, there is no designated critical habitat within Williamson County for this species. The remaining five federally listed species in Williamson County are discussed in more detail below.

Williamson County has carefully surveyed and mapped the locations of cave and karst features. Many of these features have been surveyed for the presence of karst invertebrates. The field survey conducted for this analysis did not identify any additional cave or karst features within or adjacent to the project area. Per the USFWS protocol, biologists did not enter, excavate, or investigate the interior of the karst or cave features identified during the field survey (WCCF 2008).

The Williamson County Regional Habitat Conservation Plan (WCRHCP) is an incidental take permit implemented by WCCF allowing limited impact to four of the listed species in Williamson County, provided certain conservation and management actions are implemented. The WCRHCP describes two categories of species: covered species and additional species. The covered species include the Bone Cave harvestman, Coffin Cave mold beetle, Golden-cheeked warbler, and Black-capped vireo. The additional species are not covered by the WCRHCP and include the Tooth Cave ground beetle and the salamander species. Land clearing that is permitted and lawfully conducted may be covered by the WCRHCP. Indirect negative impacts to species may occur from negative changes in habitat quality due to the removal of existing vegetation, alteration of drainage patterns, increased habitat fragmentation, increased populations of predatory or competitive species and indirect effects of proximity to development activities (WCCF 2008).

Karst Species

There are 2 previously mapped karst or cave features within 50 feet of the project area (**Figure 4.10**) and a number of others within Southwest Regional Park. Based on information from the USFWS and Williamson County, a total of 4 caves have been identified that are confirmed occupied and 6 caves are presumed to be occupied by the Bone Cave harvestman. Only one cave is within the proposed action area. The cave opening for the presumed occupied Venture Cave is approximately 315 feet from the proposed hazardous fuels reduction activities. **Figure 4.10** also shows data from the 2008 Williamson County Regional Habitat Conservation Plan (WCCF

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2008). There is no specific habitat suitability or presence/absence data for the locations marked with triangles on **Figure 4.10**, and none of these potential habitat locations are within 345 feet of the project area.

Caves host both troglobites, which are obligate cave-dwelling organisms, and troglloxenes, which are species that live partly in caves and partly outside of caves. Troglobites have developed adaptation for living in caves, including loss of pigment, loss of sclerotization (hardening of exoskeletons), reduction or loss of eyes, elongation of appendages, lengthened life span, modified fecundity and metabolic adaptation to nutrient-poor habitat conditions. Karst fauna are vulnerable to the impacts of development due to their dependency on the specific environmental conditions present in caves. Natural processes of erosion gradually remove caves, and surface nutrients are carried by troglloxenes into caves and alter the nutrient balance. Human activities may also affect cave environments by altering erosional patterns or surface nutrient availability (USFWS 1994).

The vegetation within 345 feet of an occupied cave entrance may be used by foraging cave crickets, a main source of nutrient inputs into cave ecosystems (USFWS 2012). The WCRHCP notes that caves containing listed invertebrates are known to occur in a wide variety of landscapes and that the simple presence of a surface vegetation community is sufficient to provide the needed nutrient inputs to a cave system (WCCF 2008). That is, the surface vegetation community type and condition are not predictors of the presence or absence of listed species in subterranean habitats. Even landscape vegetation associated with residential yards may be sufficient to support cave cricket foraging (WCCF 2008).

Bone Cave Harvestman

The Bone Cave harvestman is restricted to Travis and Williamson Counties and is a troglobitic species that requires deep cave habitats. The Bone Cave harvestman is known to occur in Karst Conservation Areas within Southwest Regional Park (WCCF 2008).

Because this species does not leave the deep cave environment it is dependent in part on energy inputs from species that do move in and out of the cave environment such as cave crickets (Taylor et al. 2005). USFWS has designated foraging buffers of 345 feet around cave openings for karst species (USFWS 2012). This buffer is based on research where cave crickets were found at a maximum distance of 105 m (345 feet) from cave openings (Taylor et al. 2005). The surface foraging area of the cave crickets is part of the habitat requirements for the cave obligate species.

Coffin Cave Mold Beetle

Coffin Cave mold beetle, endangered, requires small Edwards Limestone caves (TPWD 2014). It is a troglobitic species that lives in subterranean habitats. Although there are caves within the action area, the species is not known to occur in Southwest Regional Park or in the proposed action area (WCCF 2008). Therefore, there would be no effect on Coffin Cave mold beetle.

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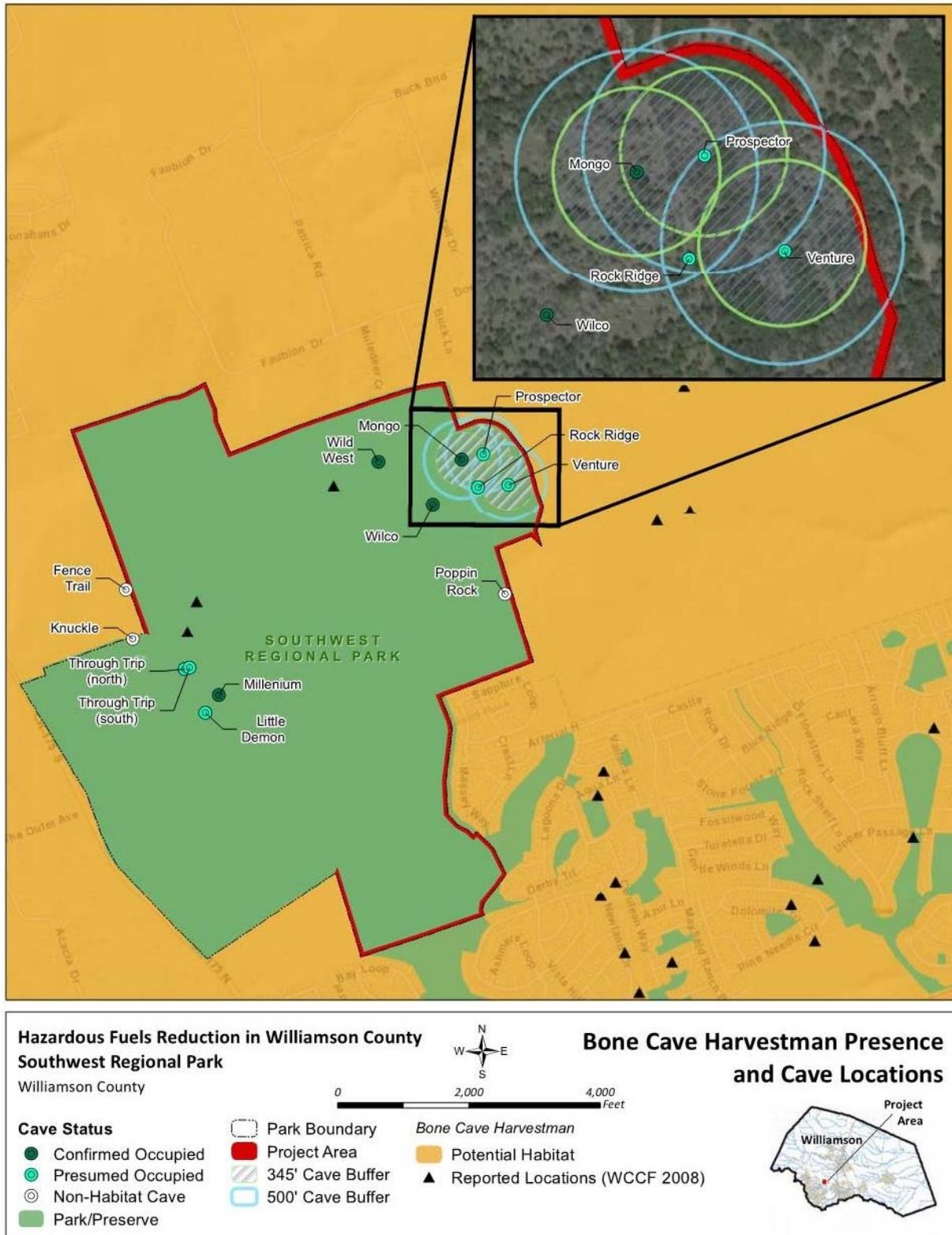


Figure 4.10. Karst Zones and Cave Locations Within Southwest Regional Park

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Tooth Cave Ground Beetle

The Tooth Cave ground beetle, endangered, is a cave obligate species. It is a troglobitic species that lives in subterranean habitats. Although there are caves within the action area, the species is not known to occur in Southwest Regional Park or in the proposed action area (WCCF 2008). Therefore, there would be no effect on Tooth Cave ground beetle.

Birds

Black-Capped Vireo

The Black-capped vireo requires oak-juniper woodlands with a two-layer shrub and tree structure. Woody foliage reaching the ground is used for nesting cover and deciduous or broad-leaved shrubs provide insects for successful foraging. They require some open grassy areas, and a canopy that is too closed may not allow for the development of the patchy, low shrub cover that provides suitable nesting habitat. Good nesting habitat generally has between 30 to 60 percent shrub canopy (USFWS 2013a). Nesting occurs between March and late summer.

Potential nesting and foraging habitat exists within the juniper-oak woodland, mixed woodland, and riparian mixed woodland vegetation types and potential foraging habitat is present in the mixed scrubland habitat. Habitat quality may be reduced in the juniper-oak woodland habitat due to a sparse shrub layer and reduced foraging opportunities. The project area was surveyed on October 16 and 17, 2013 for potential habitat for the Black-capped vireo as part of this evaluation. Potential habitat for the Black-capped vireo was observed within the project area although the existing habitat quality is poor. There were no observations of Black-capped vireo within the project survey area during the 2013 field surveys, although sightings would not have been expected because these birds migrate south to Mexico in the fall.

The Black-capped vireo is not known to occur in the Southwest Regional Park according to data presented in the WCRHCP and there is no designated critical habitat for the Black-capped vireo (USFWS 2013a). The WCRHCP indicates that the closest occurrence of Black-capped vireos is over 10 miles away to the west and the closest mapped habitat is over 0.5 miles west of Southwest Regional Park (WCCF 2008).

Golden-cheeked Warbler

The Golden-cheeked warbler requires juniper-oak woodland habitat, with mature Ashe junipers, in particular, for the long fine bark from mature trees for nesting material. Mature junipers are trees that are at least 15 feet high and about 5 inches in diameter at 4 feet above the ground. Preferred habitat generally has a canopy closure of 50 to 100 percent. Nests may be constructed in trees other than Ashe juniper. Broad-leaved trees and shrubs are required to provide insects for foraging. Similar to the Black-capped vireo, nesting occurs between March and early summer.

The juniper-oak woodland, juniper woodland, mixed woodland, and mixed scrubland vegetation types would all provide potential nesting and foraging habitat. Mature juniper trees with sloughing bark that may provide nesting material were present throughout the project area. The existing tree age and height meet the Golden-cheeked warbler requirements for nesting and foraging habitat. The Golden-cheeked warbler has been observed in the vicinity (approximately

1.5 miles to the south) of the proposed action as reported in the Williamson County Regional Habitat Conservation Plan (WCRHCP), but no dates were provided for those observations (**Figure 4.11**) (WCCF 2008). There is no designated critical habitat for the golden-cheeked warbler (USFWS 2013b).

Bald Eagle

The Bald eagle has been delisted by the USFWS; however, this species is protected by the Bald and Golden Eagle Protection Act and may occur in Williamson County. No potential nesting or foraging habitat for Bald eagle was identified during the field survey of the project area. Bald eagles nest from October through July; therefore, the nesting season is difficult to avoid. Since Bald eagle nests are large and readily identifiable, trees containing nests can be avoided easily.

State-Listed Species

The Peregrine falcon, timber/canebrake rattlesnake, and Texas horned lizard, which are state-listed threatened species, have the potential to occur within the project area since suitable habitat is present. None of these species was observed during the site visit. Consultation with TPWD concerning state-listed species would be the responsibility of the subapplicant.

No Action Alternative

In the absence of a major wildfire, the no action alternative would have no effect on federally threatened or endangered species because existing conditions would continue unchanged. However, a major wildfire would be more likely to spread under the no action alternative and would damage existing and potential habitats for karst species, Black-capped vireo, Golden-cheeked warbler, and state-listed species.

Proposed Action

FEMA has determined that the proposed action will have no effect on the Georgetown salamander, Jollyville plateau salamander, Salado salamander, Whooping crane, Piping plover, Tooth Cave ground beetle, and the Coffin Cave mold beetle. The proposed action includes a variety of vegetation modification activities that may occur within habitat for listed species or near karst or cave habitats, which may directly alter habitats through brush clearing or tree removal or indirectly through changes in the surface habitats near karst or cave features. These actions could potentially affect the Bone Cave Harvestman, Black-capped vireo, and Golden-cheeked warbler.

Bone Cave Harvestman:

The Bone Cave harvestman may occur near the project area. The proposed project would not physically disturb subsurface habitats, would not introduce contaminants or use herbicides, and it would not alter drainage patterns or the existing moisture regime inside known caves and karst areas. The proposed action would limit soil disturbance by avoiding stump and root ball removal and by implementing BMPs to prevent erosion of areas disturbed by the use of heavy equipment. Vegetation that is chipped would be placed on existing trails with appropriate measures to prevent mulch from washing into cave openings.

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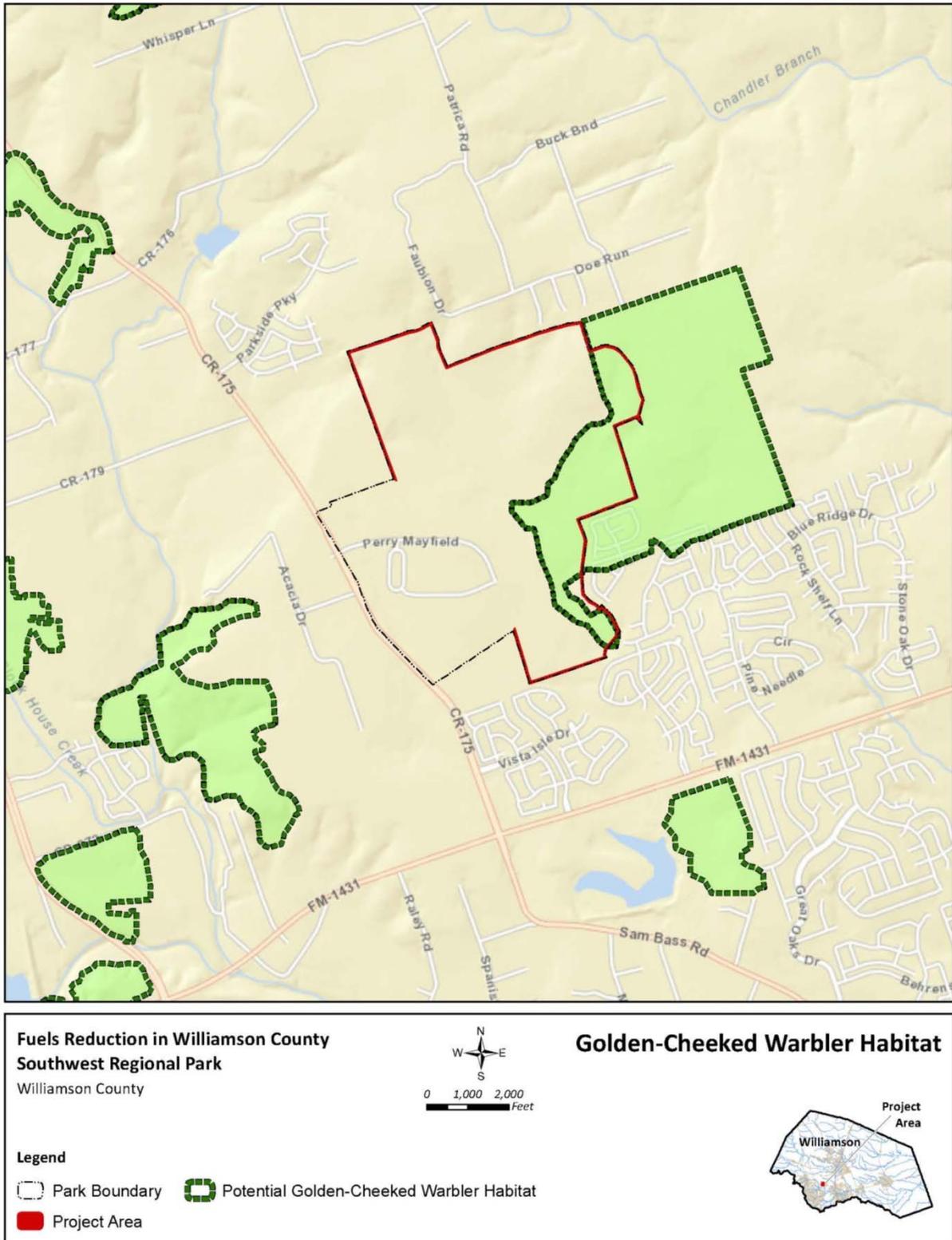


Figure 4.11. Golden-cheeked Warbler Habitat Near Southwest Regional Park

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The USFWS identifies a healthy native plant community as a key component in the management of karst species, including the Bone Cave harvestman (USFWS 2012). As described previously, the vegetation within 345 feet of a cave entrance may be used by foraging cave crickets (USFWS 2012). Cave obligate species such as the Bone Cave harvestman may depend on cave crickets and other surface foraging prey species to bring needed nutrients into the cave environment.

The proposed action would maintain natural vegetation within the project area and would help to reduce the hazards associated with a major wildfire, including the potential loss of all surface vegetation. This may help to preserve foraging areas for prey of the Bone Cave harvestman, yielding an overall long-term benefit to the species in and near the project area.

There would be no physical disturbance of subterranean habitats. The proposed work would not alter drainage patterns, which would avoid any disturbance of springs or existing conditions that may direct moisture to cave environments. The proposed action also would not significantly alter the canopy cover, which would preserve the existing condition with respect to evapotranspiration from the vegetation and the soils. Therefore, existing temperature and humidity regimes around karst features would not be altered.

The proposed action has the potential to create conditions that might be more favorable for the invasive RIFA to come into areas near caves and adversely impact karst species. Mitigation measures include actions to control RIFA near occupied cave openings.

The proposed work is located within 345 feet of one presumed occupied cave as the cave opening of Venture Cave is approximately 315 feet away from the proposed activities. Several mitigation measures would be applied to protect the habitat around this cave. Therefore, minimal impacts would be expected to the foraging area for cave crickets or other forage species that cave-dependent species rely upon. The proposed project is not expected to change the surface conditions that contribute to existing cave environments.

The following measures would prevent adverse effects to the Bone Cave harvestman:

- Deposition or accumulation of soil, trash, ashes, refuse, waste, bio-solids, or any other materials at the project site as a result of the proposed action is prohibited. Vegetative debris must be removed from the project site or mulched and spread on-site. Mulch will be placed on existing trails with appropriate measures (such as adequate setbacks or a silt fence) to prevent mulch from washing toward or into cave openings. Mulch will not be placed within 345 feet of occupied or presumed occupied cave openings.
- Williamson County must seal any wounds on oaks that are the result of pruning and seal any oak stumps that are created as a result of the proposed action in order to prevent transmission of oak wilt fungus.
- Equipment staging, refueling, and storage of gasoline must occur more than 500 feet from the entrance of any occupied or presumed occupied cave including Mongo, Wilco, Wild West, Millennium, Rock Ridge, Little Demon, Prospector, Venture, Through Trip (North), and Through Trip (South) caves.

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- Stumps and root balls will not be removed. Stumps will be ground down to 3 inches above the ground surface.
- Soil disturbance will be limited by implementing BMPs to prevent soil erosion of areas disturbed by the use of heavy equipment. Rubber tracks will be used on heavy equipment to limit soil disturbance.
- To reduce the re-colonization of RIFA, Williamson County will re-seed treated areas within 345 feet of the opening of the presumed occupied Venture Cave (see **Figure 4.10**) with a native seed mix.
- Williamson County must implement boiling water treatments on RIFA colonies following the first rain of the first spring after project implementation. Boiling water treatments are required within treated areas within 345 feet of the openings of the presumed occupied Venture Cave; see **Figure 4.10**. Boiling water treatments are most effective during early to mid-morning when the queen(s) and larvae are likely to be near the top of the mound. Mounds should not be disturbed before treatment as this causes the ants to move the queen(s) and larvae to deeper locations within the mound or to a remote location.
- As part of the maintenance program, Williamson County will conduct RIFA eradication efforts twice annually, during the spring and fall within treated areas that are within 345 feet of the opening of Venture Cave. This should include a regimen of two or more treatments per month. If some time has passed since the initial RIFA invasion, the control regimens can be decreased to one or fewer times per month, provided that RIFA mounds have decreased. Once RIFA levels are below the thresholds outlined in “Karst Preserve Management and Monitoring Recommendations,” USFWS (2014c), RIFA control can occur twice annually. Treated areas mowed during maintenance efforts must be mowed to a height of 6 inches or higher.
- Williamson County must ensure that BMPs are implemented to prevent erosion and sedimentation to nearby or adjacent waters. The application of BMPs to minimize erosion and sedimentation includes equipment storage and staging areas.
- Williamson County will provide a full time monitor that will oversee implementation of the project and ensure that the avoidance and mitigation measures are adhered to. In areas where there are occupied caves, the monitor will identify the 345 and 500 foot buffer zones to the work crews either in person or by flagging/taping the buffer zones. Any materials used to mark buffer zones will be promptly removed once work is complete.

Even with implementation of these conservation measures, the proposed action may still adversely affect the Bone Cave harvestman. FEMA consulted with the USFWS regarding impacts to this species and USFWS concurred with the above minimization measures in a Biological Opinion dated May 19, 2015 (**Appendix C**). USFWS determined that the proposed action will not jeopardize the continued existence of the species.

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Birds:

Habitat for both the Black-capped vireo and Golden-cheeked warbler exists within the project area although the existing habitat quality for Black-capped vireo is relatively poor, and the species is not known to occur in the park. The nearest known vireo habitat is more than 3,500 feet from the proposed work. In addition, vegetation management activities would be conducted outside of the vireo nesting season between September 1 and February 28. Direct effects to individual Golden-cheeked warblers or Black-capped vireos are not anticipated because the proposed action would take place outside of breeding and nesting season. These species migrate south to Mexico in July and August. The warblers return to Texas in late February, with most arriving in mid-March (USFWS 2013b) and the vireos arrive in mid-March to mid-April (USFWS 2007).

In addition to the poor quality of the available habitat for Black-capped vireos, the species is not known to occur in the vicinity of the project area. The proposed action is “not likely to adversely affect” the Black-capped vireo due to 1) the poor quality and limited amount of preferred habitat, 2) the timing of the work, which would occur when the birds are not present, and 3) the vireo is not known to occur in the project area. The USFWS concurred with this determination in a Biological Opinion dated May 19, 2015 (**Appendix C**).

Habitat for the Golden-cheeked warbler exists within the project area and they have been observed in the vicinity of the proposed action. The proposed action is not entirely consistent with the BMPs for treating vegetation that may pose a hazardous wildfire threat and that is also associated with the Golden-cheeked warbler (USFWS 2013b). Actions that would be consistent with the BMPs include (1) the proposed work would be timed to occur between September and February to avoid any impacts to nesting birds, (2) the work would be conducted so as to maintain a canopy closure suitable for warbler use, and (3) tree removal would be limited to trees smaller than 8 inches in diameter. However, the proposed action may include limbing of branches up to 10 feet above the ground, which is higher than the recommended 4 to 8 feet above the ground and the removal of some trees larger than 8 inches in diameter.

Most of the proposed action area is within potential habitat for the Golden-cheeked warbler. While vegetation management activities can benefit the Golden-cheeked warbler if they are conducted in an appropriate manner, the proposed action may adversely affect the warbler primarily due to the proposed height of the limbing and the potential size of trees that may be removed.

The proposed action could also result in a beneficial effect on Golden-cheeked warbler habitat. The proposed action would result in a reduction in the quantity of hazardous vegetative fuels in the vicinity of the Southwest Regional Park and would limit the potential for movement of a wildfire between residential areas and the identified habitats. The proposed project would diminish the chance of a fire transitioning into a crown fire or sustaining as a crown fire. Reduction of wildfire threat to Golden-cheeked warbler habitat would provide an overall and long-term benefit to the species in and near the project area.

The proposed action is “likely to adversely affect” the Golden-cheeked warbler due to inconsistencies with BMPs for vegetation management in potential warbler habitat. FEMA

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consulted with the USFWS regarding impacts to the Golden-cheeked warbler. USFWS concurred with the proposed minimization measures, mainly conducting work only from September 1 through February 28 which is outside of breeding season, in a Biological Opinion dated May 19, 2015 (**Appendix C**). USFWS determined that the proposed action will not jeopardize the continued existence of the species.

The wildlife and habitat surveys did not identify any potential Bald eagle nesting habitat within the project area. Therefore, the proposed action is unlikely to adversely impact Bald eagles. If the project activities occur adjacent to any occupied or unoccupied Bald or Golden eagle nest, the applicant must contact FEMA and consult with USFWS before work begins.

4.5 Cultural Resources

This section provides an overview of the affected area and potential environmental effects from the no action and proposed action alternatives on cultural resources, including historic structures and archeological resources.

The National Historic Preservation Act of 1966 (NHPA; 16 U.S.C. 470 et seq.) is the primary federal law protecting historic properties and promoting historic preservation in cooperation with states, tribal governments, local governments, and other consulting parties. The NHPA established the National Register of Historic Places (NRHP) and designated the State Historic Preservation Officer (SHPO) as the entity responsible for administering state-level programs. The NHPA also created the Advisory Council on Historic Preservation, the federal agency responsible for overseeing the process described in Section 106 of the NHPA (16 U.S.C. §470f) and for providing commentary on federal activities, programs, and policies that affect historic properties.

Section 106 of the NHPA and its implementing regulations (36 CFR Part 800) contain the procedures for federal agencies to follow to take into account the effect of their actions on historic properties. The Section 106 process applies to any federal undertaking that has the potential to affect historic properties, defined at 36 CFR §800.16(l)(1) as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places." Although buildings and archaeological sites are most readily recognizable as historic properties, the NRHP contains a diverse range of resources that includes roads, landscapes, and vehicles. Under Section 106, federal agencies are responsible for identifying historic properties in the area of potential effect (APE) for an undertaking; assessing the effects of the undertaking on these historic properties, if present; and considering ways to avoid, minimize, or mitigate any adverse effects. Because Section 106 of the NHPA is a process by which the federal government assesses the effects of its undertakings on historic properties, it is the primary regulatory framework that is used in the NEPA process to determine impacts on cultural resources.

To assess the potential for intact, significant cultural resources within the APE of the proposed action, an archival review of studies previously conducted in and near the proposed area of potential effect was conducted. The area of potential effect includes the project area along the boundary of the Southwest Regional Park. There are no structures within the project area; however, there are a number of residences, mostly single-family homes, located adjacent to the

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work area. **Figure 4.12** shows areas previously surveyed for cultural resources according to the Texas Historical Commission's (THC's) Texas Archeological Sites Atlas (Atlas) (THC 2014).

Williamson County initiated coordination with the SHPO, which is housed at the THC, via letter on September 18, 2013. On October 3, 2013, the SHPO concluded that no historic properties would be affected by the proposed action and that the project could proceed as planned without further consultation. See **Appendix C** for copies of the SHPO correspondence letters.

4.5.1 Historic Architectural Properties

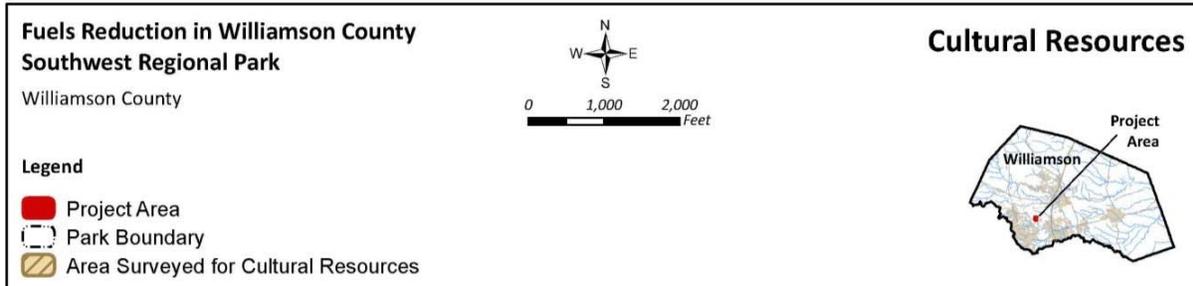
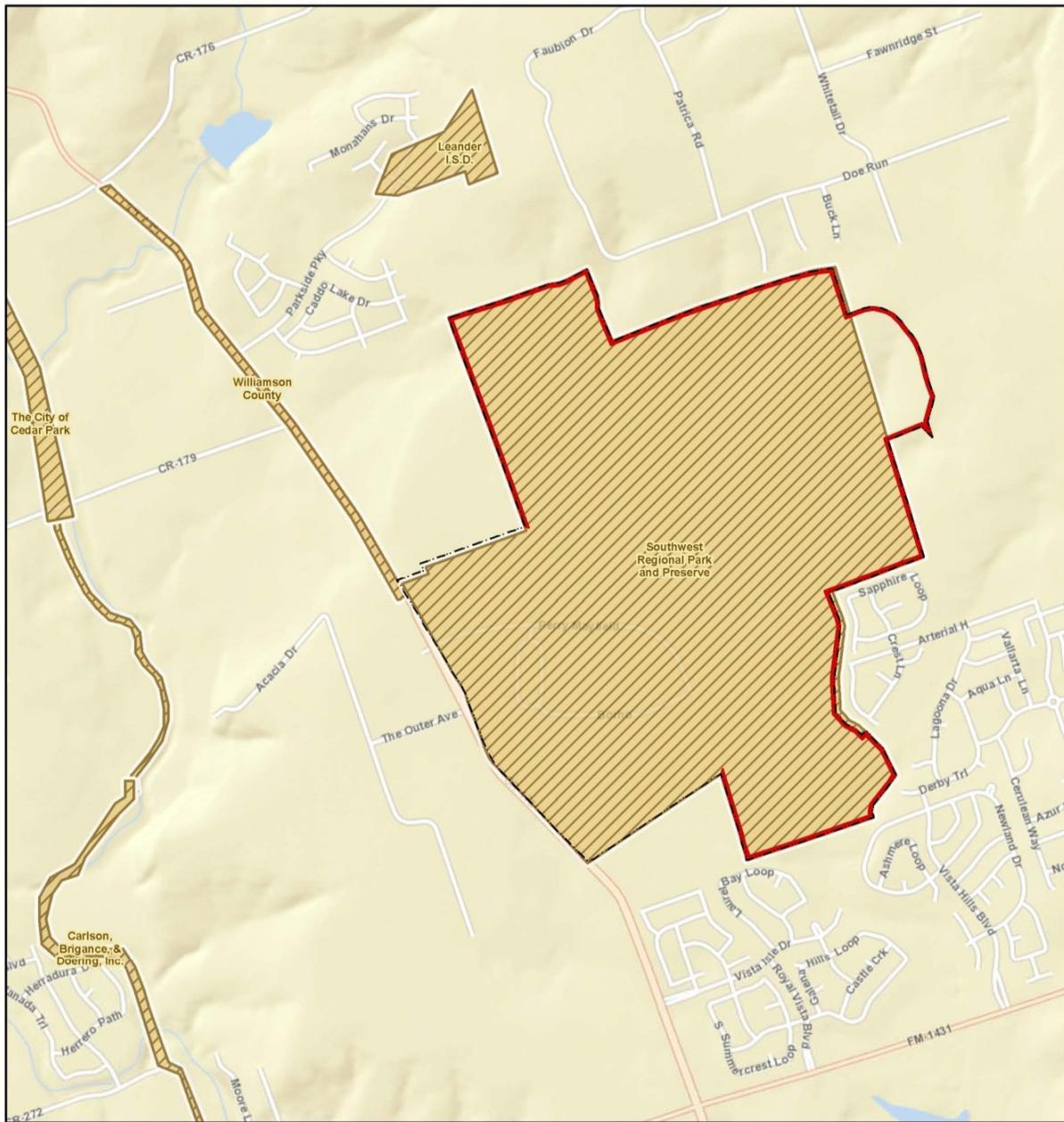
Archival research conducted via THC's Atlas web site indicated that no previously recorded historic architectural properties or NRHP properties or districts have been identified within or in the immediate vicinity of the APE. The closest NRHP property or district is the Round Rock Post Office and William M. Owen House, approximately 5.4 miles southeast of the APE.

4.5.2 Archaeological Sites

A review of the Atlas and listed sites indicated that the entirety of Southwest Williamson Park was surveyed by Feit and Moreman (2000). Later land additions to the park were surveyed by Moreman et al (2002). A water supply system that traversed the Park was surveyed by Oksanen et al. (2003). The initial survey by Feit and Moreman identified three (3) archaeological sites, 41WM968, 41WM969, and 41WM970. Although sites 41WM938 and 41WM939 were recommended as being eligible for listing on the NRHP by Feit and Moreman, the THC has determined that they are not eligible for listing on the NRHP. Two sites were identified by Moreman, et al. during their survey. Neither of these two sites is recommended as being eligible for listing on the NRHP.

Site 41WM969 is the closest to the proposed work area and may cross the work zone. The SHPO has reviewed the proposal and on October 3, 2013, indicated that the proposed action would not affect the site.

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Data Sources: THC SHPO, CDM Smith
Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

Figure 4.12. Cultural Resource Surveys Near Project Area

4.5.3 Native American Cultural/Religious Sites

No federally recognized Indian tribes or traditional cultural properties are on or near the proposed project site. The Alabama and Coushatta Tribes in Livingston, Texas are the closest of the three federally recognized Indian tribes in Texas (National Conference of State Legislatures 2014). Livingston, Texas is approximately 200 miles from the Williamson County Southwest Regional Park.

No Action Alternative

The no action alternative would have no impact on cultural resources, and FEMA has determined that no historic properties would be affected by the no action alternative.

Proposed Action

Williamson County coordinated with the SHPO regarding the proposed action, and pertinent correspondence is included in **Appendix C**. In a letter dated October 3, 2013, the SHPO made a determination of “no historic properties affected; project may proceed” for the proposed action.

Based on archival research and correspondence with the SHPO, FEMA has determined that no historic properties would be affected by the proposed action. In the event that archeological deposits, including any Native American property, stone tools, bones, or human remains, are uncovered, all work in the vicinity of the discovery must be halted immediately, and all reasonable measures must be taken to avoid or minimize harm to the discovered items. All archeological findings will be secured, and access to the sensitive area will be restricted by Williamson County. Williamson County will inform FEMA immediately of such findings, and FEMA will consult with the SHPO. Work in sensitive areas shall not resume until consultation is completed and until FEMA determines that the appropriate measures have been taken to ensure complete project compliance with the NHPA and its implementing regulations.

4.6 Socioeconomics

This section provides an overview of the affected area and potential environmental effects of the no action and proposed action alternatives on socioeconomic resources, including environmental justice, hazardous materials, noise, traffic, public services and utilities, and human health and safety resources.

4.6.1 Environmental Justice

Environmental justice is defined by EO 12898 (59 *Federal Register* 7629) and CEQ guidance (1997). Under EO 12898, demographic information is used to determine whether minority populations or low-income populations are present in the areas potentially affected by the proposed action. If so, a determination must be made whether implementation of the proposed action may cause disproportionately high and adverse human health or environmental impacts on those populations.

This environmental justice analysis is focused at the local (*i.e.*, census tract) level. The local area included in this analysis is where project-related impacts would occur, potentially causing an adverse and disproportionately high effect on neighboring minority and low-income populations.

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For this project, the analysis includes census tracts 203.10, 206.03, 206.04, and 206.05 in Williamson County, which includes the project area and adjacent residential areas. **Table 4.5** and **Table 4.6** provide economic and demographic characteristics for the census tracts that cover the project area and adjacent residential areas (U.S. Census Bureau 2011). Information for Williamson County as a whole is presented for comparison.

Low-Income Populations

Residents of areas with a high percentage of people living below the poverty level may be considered low-income populations. The U.S. Census Bureau poverty threshold for a family of four (two adults and two children) in 2012 was \$23,681 and \$11,945 for an individual (U.S. Census Bureau 2013a). Low-income populations are also considered to include residents of areas where the median family income is less than 60 percent of the median income of the surrounding area. This analysis also considered whether the project area's median household and per capita incomes were substantially lower than the county's average.

As shown in **Table 4.5**, the census tracts in the project area have median household and family incomes higher than Williamson County as a whole. All census tracts included in the analysis have a poverty level below that of the county except census tract 206.04, which has a poverty level slightly higher than the county average (as measured by the percentage of the population with an income below the poverty threshold) (U.S. Census Bureau 2011). Based on the income criteria above, this census tract is not considered to have a low-income population.

4.6.1.2 Minority Populations

CEQ (1997) defines the term "minority" as persons from any of the following groups: Black, Asian or Pacific Islander, American Indian or Alaskan Native, and Hispanic. The U.S. Census Bureau does not treat "Hispanic or Latino" as a racial category, so people identifying themselves as Hispanic or Latino make a separate selection of a racial category. This analysis is based on U.S. Census Bureau data from the American Community Survey. For the purposes of this analysis, "minority" includes all people who do not identify themselves as "white alone," plus Hispanics and Latinos who identify themselves as "white alone."

As shown in **Table 4.6**, all of the census tracts included in this analysis have minority populations less than the county average of 35.8 percent (U.S. Census Bureau 2011). The project area is not considered a minority population (U.S. Census Bureau 2011).

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1 **Table 4.5. Income**

Parameter	Census Tract 206.03	Census Tract 206.04	Census Tract 206.05	Census Tract 203.10	Williamson County
Percentage of population below poverty level	1.6%	10.4%	2.9%	1.5%	6.3%
Median household income	\$133,770	\$86,065	\$100,296	\$78,542	\$71,346
Median family income	\$135,449	\$109,205	\$101,830	\$98,607	\$81,208

2 **Table 4.6. Minority Populations**

Parameter	Census Tract 206.03		Census Tract 206.04		Census Tract 206.05		Census Tract 203.10		Williamson County	
White	6,774	83.6 %	4,015	82.8%	5,526	81.8%	2,076	88.5%	331,485	80.9%
Black or African American	197	2.4%	96	2.0%	307	4.5%	43	1.8%	25,828	6.3%
Asian	868	10.7%	190	3.9%	418	6.2%	8	0.3%	19,582	4.8%
American Indian	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,545	0.4%
Native Hawaiian	0	0.0%	0	0.0%	0	0.0%	0	0.0%	139	0.0%
Some Other Race/Multiracial	264	3.3%	549	11.3%	501	7.4%	218	9.3%	31,334	7.6%
Total Population	8,103	--	4,850	--	--	--	2,345	--	409,913	--
Hispanic or Latino ¹	857	10.6%	1,075	22.2%	1,020	15.1%	195	8.3%	93,711	22.9%
Total Minority Population^{2,3}	2,014	24.9%	1,433	29.5%	1,825	27.0%	375	16.0%	146,932	35.8%

3 ¹ The terms Hispanic and Latino can apply to members of any race, including respondents who self-identified as "White." The total numbers of Hispanic and Latino
4 residents for each geographic region are tabulated separately from the racial distribution by the U.S. Census Bureau.

5 ² A minority is defined in CEQ's environmental justice guidance as a member of the following population groups: American Indian/Alaskan Native, Asian or Pacific Islander,
6 Black (non-Hispanic), or Hispanic (CEQ 1997).

7 ³ "Total Minority" includes all people who are not "White alone," plus Hispanics and Latinos who are white alone.

No Action Alternative

Because no low-income or minority populations are located in the project area, the no action alternative would not have a disproportionately high or adverse impact on low-income or minority populations.

Proposed Action

The proposed action would have a beneficial effect on all people living and working in the vicinity of the project area, including any low-income persons, as it would reduce the risk of harm to personal property and persons from wildfire. Because no low-income or minority populations are in the project area, the proposed action would not have a disproportionately high and adverse impact on a low-income or minority population. Therefore, the proposed action would comply with EO 12898.

4.6.2 Hazardous Materials

Hazardous materials are those substances defined by the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act, and the Toxic Substances Control Act. The Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (RCRA), which was further amended by the Hazardous and Solid Waste Amendments, defines hazardous wastes. In general, both hazardous materials and hazardous wastes include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may present substantial danger to public health or to the environment when released or otherwise improperly managed.

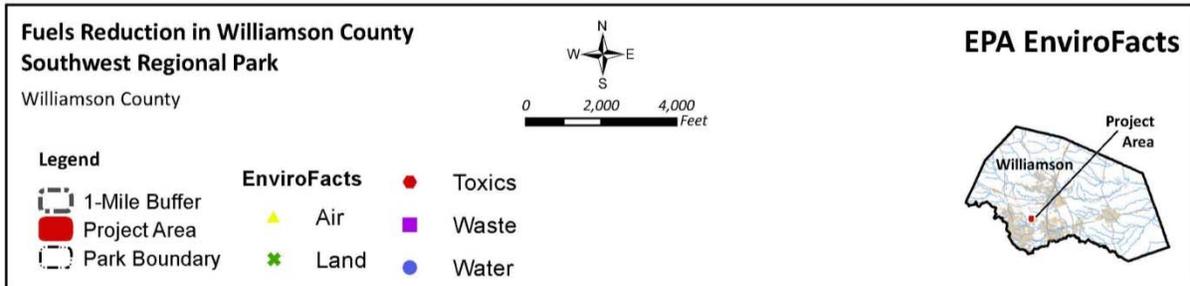
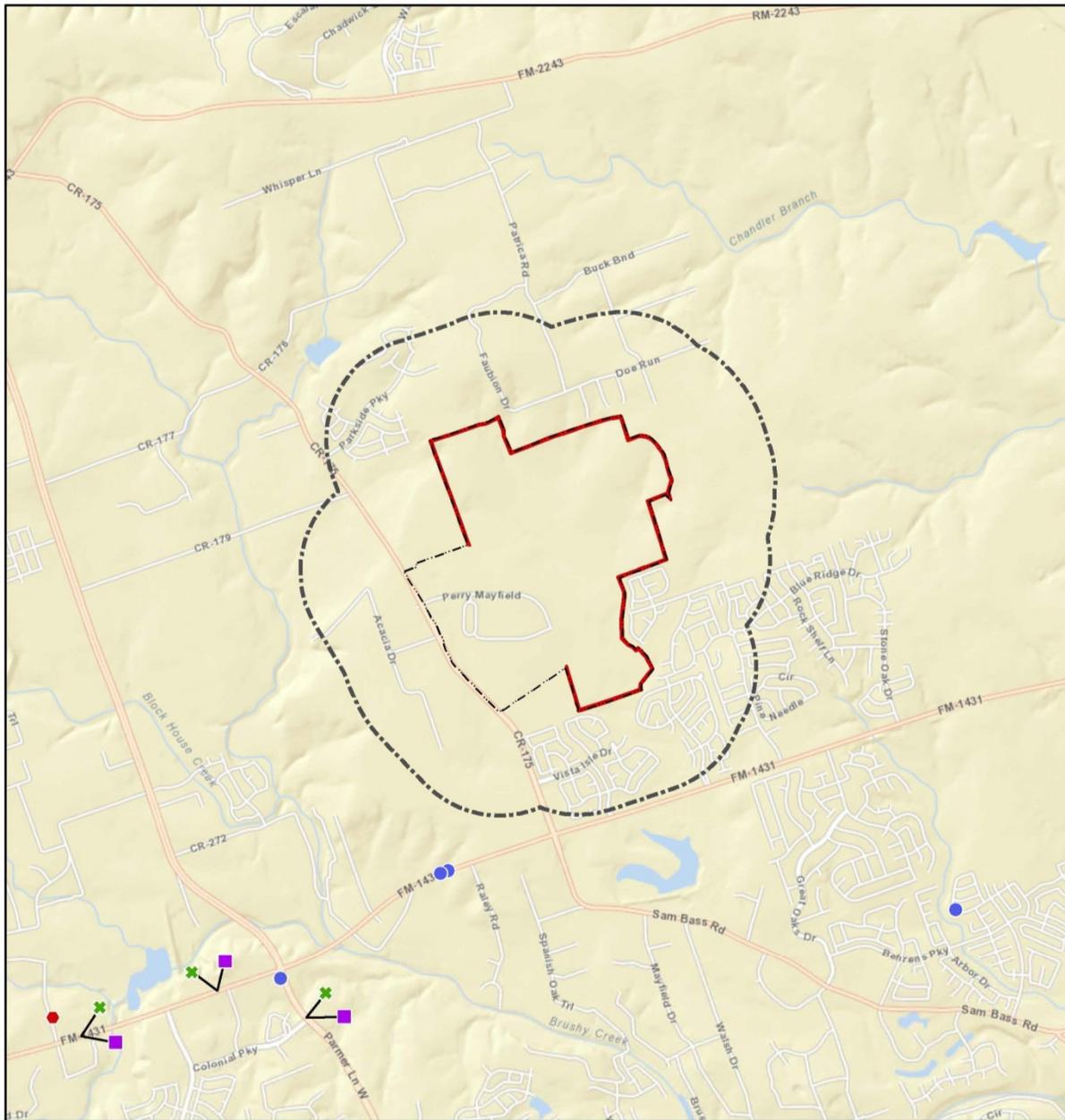
To determine whether any hazardous waste facilities exist in the vicinity or upgradient of the project area, or whether there is a documented environmental issue or concern that could affect the proposed project site, a search for Superfund sites, toxic release inventory sites, industrial water dischargers, hazardous facilities or sites, and multi-activity sites was conducted using EPA's Envirofacts database.

The Envirofacts database contains no records of potentially hazardous sites, including Superfund, toxic release, industrial waste dischargers, hazardous waste, or multi-activity sites, within the project area (EPA 2014b). There is no evidence of hazardous substances or wastes generated, treated, or disposed in the vicinity of the proposed project area. Envirofacts shows no RCRA or industrial wastewater facilities within the project area (**Figure 4.13**).

No Action Alternative

No active hazardous sites were identified within the project area that would potentially affect the existing environment. Under the no action alternative, existing conditions with respect to hazardous materials would not change.

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Data Sources: EPA, CDM Smith

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

Figure 4.13. Hazardous Waste Sites Near the Project Area

Proposed Action

Under the proposed action, no impacts from waste storage and disposal sites are anticipated because no hazardous waste facilities are in or near the project area (EPA 2014b). Deposition or accumulation of soil, trash, ashes, refuse, waste, biosolids, or any other materials at the project site as a result of the proposed action is prohibited. Cut, trimmed, dead, and downed vegetation would be mulched and distributed to parks within the city via the Parks Department. No mulch will be placed within 345 feet of occupied cave openings and mulch will not be placed more than 3 inches deep on existing trails.

In the event that site contamination or evidence of contamination is discovered during implementation of the proposed action, Williamson County would manage the contaminants in accordance with the requirements of the governing local, state, and federal regulations and guidelines.

The proposed action would involve the use of mechanical equipment, and there is always a minor threat of leaks of oils, fuels, and lubricants from the use of such equipment. The short-term nature of the project and use of equipment in good condition would reduce any potential effect to an insignificant level. Equipment staging, refueling, and storage of gasoline must occur more than 500 feet from the entrance of any occupied caves. Additionally, there would be no herbicide use for project implementation or maintenance; therefore, no impacts are anticipated from herbicide use.

4.6.3 Noise

Sounds that disrupt normal activities or otherwise diminish the quality of the environment are considered noise. Noise events that occur during the night (10 p.m. to 7 a.m.) are more disturbing than those that occur during normal waking hours (7 a.m. to 10 p.m.). Noise events in and near the project area are presently associated with climatic conditions (wind, rain), transportation noise (traffic on roads, airplanes), and "life sounds" (people talking, children playing).

Assessment of noise impacts includes the proximity of the proposed action to sensitive receptors. A sensitive receptor is defined as an area of frequent human use that would benefit from a lowered noise level. Typical sensitive receptors include residences, schools, churches, hospitals, and libraries. The project area is in a large natural park, and the majority of the work area is adjacent to homes in a low- to medium-density residential setting. Portions of the project area are along recreational walking trails within the park. Any noise-generating activities within these areas would have the potential to affect the sensitive residential receptors and park trail users.

No Action Alternative

Under the no action alternative, no fire hazard mitigation measures would occur; thus, there would be no change in existing noise levels that could affect sensitive receptors in the project area.

Proposed Action

Under the proposed action, noise would be generated by operation of equipment, such as a chainsaw, a chipper, trucks and trailers, construction and maintenance vehicles and other required equipment. The implementation of the proposed action would increase noise levels in the immediate vicinity of the project areas. Increases in noise levels would be temporary at any one location within the project area and would occur only during daytime hours; therefore, impacts from increased noise levels on sensitive receptors near the project area would be minor. In addition, all equipment and machinery used would comply with all applicable local, state, and federal noise control regulations.

4.6.4 Traffic

The local transportation network serving the project area includes arterial and local streets, as well as trails within the park. The adjacent residential neighborhoods are served by various local residential streets. The project area would be accessed primarily from the park property, but some areas may be accessed via adjacent residential properties. The closest major freeway is I-35, approximately 3.5 miles from the project area.

No Action Alternative

Under the no action alternative, existing levels of local traffic would not change, and no additional costs would be incurred from road construction or maintenance. A major wildfire would be more likely under the no action alternative. Nearby roads or internal trails could be closed if a wildfire approached or encompassed local areas. A wildfire near the project area could cause closure of roads that provide access to Southwest Regional Park as well as the adjacent residential neighborhoods. Depending on location and wind direction, smoke from a wildfire could cause closure of sections of bordering roadways. Short-term traffic congestion could occur during street and highway closures caused by a wildfire.

Proposed Action

Under the proposed action, vehicle traffic would be generated by work crews traveling to and from work sites and trucks hauling equipment and cut vegetation. The amount of additional traffic would be temporary and minimal and would not interfere with local residents or people traveling in the vicinity of the project area.

Internal trail networks would be used to access the project area, which could interfere with some recreational users at the park. No roads would be closed to accommodate the proposed work; however, a portion of the Jim Rogers trail inside the park may be closed for a short period of time. Any potential trail closures would be temporary, and other existing trails would still be available for recreational use during implementation of the proposed action. Therefore, there would not be a significant effect on transportation from the proposed action.

The proposed action would reduce the risk of a wildfire encompassing a road or trails near the project area. Thus, the potential for road or trail closures due to wildfire would be reduced. There would not be a significant effect on transportation from the proposed action.

4.6.5 Public Services and Utilities

4.6.5.1 Utilities

The project area electrical energy provider is Pedernales Electric Cooperative (PEC), which is a private utility owned by the members served by PEC. PEC provides electrical services to more than 230,000 homes and businesses over a service area of approximately 8,100 square miles, including Southwest Regional Park in Williamson County (PEC 2014). No overhead power lines are in the project area; however, overhead power lines are located along the roadways in the vicinity of the project area.

Water and wastewater services to Southwest Regional Park and adjacent residential areas are provided by the cities of Round Rock, Georgetown, and Leander. Water service is provided to Southwest Regional Park by the City of Round Rock, and wastewater services are provided by Crossroads Utility Service through an agreement with Williamson County. Brushy Creek Municipal Utility District provides non-potable water to the park for irrigation purposes. Areas to the south and southwest of the park are served by water and wastewater utilities managed by the City of Round Rock. The City of Leander provides water and wastewater service to areas west and northwest of Southwest Regional Park. Areas to the north and northeast of the park get water services from the City of Georgetown, but they are not within a designated wastewater system and are likely served by septic systems.

To meet growing water demand in the area, the cities of Round Rock, Cedar Park, and Leander collaborated to form the Brushy Creek Regional Utility Authority (BCRUA). BCRUA is a local governing authority created to provide water supply solutions for these communities (BCRUA 2014).

No Action Alternative

Under the no action alternative, utilities in the project area would not be directly affected. However, the potential for a major wildfire would continue to be high in the project area, and electrical services provided via overhead power lines along residential roads would have the potential to be adversely affected by a wildfire.

Proposed Action

The proposed action would not directly affect or require additional utilities in the project area. The proposed action would reduce the risk of a major wildfire in the project area and would contribute to containment of wildfires, which would reduce potential damage to existing overhead utility lines.

4.6.5.2 Emergency Services

The project area is serviced by the Leander Fire Department. The Emergency Operations Division is staffed with more than 60 professional fire fighters and is responsible for operating three fire stations that serve the City of Leander, including the City's extraterritorial jurisdiction (ETJ). Southwest Regional Park is located in the City of Leander's ETJ. The fire station in closest proximity to the project area is Fire Station No. 3 on 101 E. Sonny Drive, Leander,

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Texas. The Leander Fire Department provides the city with emergency medical services, fire suppression, hazardous materials response, and technical rescue. Additional emergency response services are provided by the City of Leander Police Department (City of Leander 2014).

The closest hospital to the project area is Cedar Park Regional Medical Center located at 1401 Medical Parkway in the City of Cedar Park. The hospital includes a 24-hour emergency response team, surgical services, and an intensive care unit (Cedar Park Regional Medical Center 2014).

No Action Alternative

Under the no action alternative, there would be no change in emergency response time. The risk of wildfire in the project area would continue to exist. Existing emergency services would continue to respond to wildfires in the project area. During a wildfire, emergency personnel would not be available to respond to other emergencies in their service area.

Proposed Action

Under the proposed action, hazardous fuel reduction measures would reduce the risk of wildfire or contribute to the containment of a catastrophic wildfire in the project area. The proposed action would reduce the risk that emergency service providers within the project area would need to respond to wildfires and would allow emergency responders to remain available to respond to other emergencies throughout the area. Hazardous fuel reduction may also improve conditions for firefighters within the project areas.

4.6.6 Public Health and Safety

The risk of a catastrophic fire in the project area is high because of heavy fuel loading (closely spaced trees and shrubs and dead material on the forest floor) that has accumulated over time, specifically along the park's boundary. Heavy rains following wildfires can contribute to sediment and debris in nearby waterways, which can affect downstream water quality and damage structures, roads, and utilities critical to the safety and well-being of citizens in and downgradient from the project area.

Population growth also has implications related to wildfire hazards and the need for hazardous fuels reduction. With more people, there is a greater risk of human-caused wildfires and a greater need for protection from wildfires. Population growth implications intensify fire hazard risks when residences are built in the WUI, as along the project area. The current population estimate for Williamson County is 471,014. Williamson County experienced an increase in population of 11.5 percent from 2010 to 2013 (U.S. Census Bureau 2014).

No Action Alternative

A major wildfire in the project area would be more likely under the no action alternative. If a wildfire occurred, people and structures in and near the burned area would be at risk. Wildfires can generate substantial amounts of particulate matter, which can affect the health of people breathing the smoke-laden air. Therefore, the health of people downwind of a wildfire, especially young children, the elderly, and people with lung disease or asthma, could be adversely affected.

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Wildfires can also generate substantial amounts of carbon monoxide, which can pose a health concern for frontline firefighters.

Proposed Action

Under the proposed action, the primary objective is to reduce the quantity of hazardous fuel loads in order to reduce the rate of spread and intensity of a potential wildfire along the borders of Southwest Regional Park. Implementation of the proposed action would create a safer environment for firefighters, which could allow them to more easily control the spread of a fire. Hazardous fuel reduction would not prevent wildfires but could contribute to containment, reducing the intensity and frequency of wildfires, which ultimately would reduce the risk factor for people living near and recreating in the project area. In addition, when wildfires are controlled more quickly, a smaller area is burned and less sediment and debris may be transported downstream during future precipitation events that could potentially affect water quality.

4.7 Summary of Effects and Mitigation

Table 4.7 provides a summary of the potential environmental effects from implementation of the proposed action, any required agency coordination efforts or permits, and any applicable proposed mitigation or BMPs.

Table 4.7. Summary of Impacts and Mitigation

Affected Environmental Resource Area	Impacts	Agency Coordination/ Permits	Mitigation/BMPs
Soils	Beneficial impacts on soils from reduced risk of major wildfire. Short-term soil disturbance from mechanical equipment. No impact to prime and unique farmland.	N/A	Cut vegetation will be mulched and left on site to prevent soil erosion. Appropriate barriers will be used to prevent mulch from being washed into the creeks. No mulch will be placed within 345 feet of occupied cave openings.
Air Quality	Short-term minor impacts on local air quality from mechanical equipment emissions. Potential long-term beneficial impact on air quality by reducing wildfire emissions.	N/A	Vehicle and equipment running times will be minimized, and engines will be properly maintained.
Climate Change	Long-term beneficial effect from reduction in risk of a major wildfire and wildfire emissions.	N/A	N/A

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Affected Environmental Resource Area	Impacts	Agency Coordination/ Permits	Mitigation/BMPs
Visual Quality and Aesthetics	Potential long-term beneficial effect by reducing loss of vegetation in wildfires and opening up views onto park in parts of the project area. Potential negative effect on visual screening and residential privacy in some portions of the project area.	N/A	N/A
Surface Water	Minor short-term adverse impacts on surface water quality from erosion and sedimentation caused by temporary soil disturbance. Potential beneficial impact on surface water by preventing major wildfire and reducing sedimentation and debris loading in streams.	TWDB	The County will ensure BMPs are implemented to prevent erosion and sedimentation of nearby or adjacent waters. Cut vegetation will be mulched and left on site to prevent soil or sediment from reaching stream channels. Appropriate barriers will be used to prevent mulch from being washed into the creek.
Groundwater	No impact.	N/A	No herbicides will be used to avoid impacts to the Edwards Aquifer Contributing Zone and Recharge Zone.
Wetlands	No impact.	N/A	N/A
Floodplains	No impact. The eight step floodplain review process will be completed following public review and comment.	N/A	Cut vegetation will be mulched and left on site to prevent soil erosion and sediment transport into the floodplain. Appropriate barriers will be used to prevent mulch from being washed into the creeks. Debris and mulch piles will not be staged or stored in the floodplain.
Vegetation	No impact to listed species. No significant impact to vegetation communities.	N/A	N/A
Common Wildlife Species	Migratory birds may nest in project areas.	USFWS, TPWD	Vegetation management activities will occur outside of the breeding season between September and February.

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Affected Environmental Resource Area	Impacts	Agency Coordination/ Permits	Mitigation/BMPs
Threatened and Endangered Species/ Critical Habitat	Proposed action may affect, but is not likely to adversely affect, the Black-capped vireo. The proposed action may adversely affect Golden-cheeked warbler and the Bone Cave harvestman. The project will have no effect on other federally listed species nor will it adversely modify designated critical habitat.	USFWS concurrence issued 5/19/2015.	Williamson County must comply with the minimization measures outlined in the Biological Opinion issued by the U.S. Fish and Wildlife Service on May 19, 2015 (see Appendix C).
Cultural Resources	No impact.	SHPO/THC concurrence issued 10/3/2013.	In the event that archeological deposits, including any Native American property, stone tools, bones, or human remains, are uncovered, all work in the vicinity of the discovery must be halted immediately, and all reasonable measures must be taken to avoid or minimize harm to the discovered items. All archeological findings will be secured, and access to the sensitive area will be restricted by Williamson County. Williamson County will inform FEMA immediately of such findings, and FEMA will consult with the SHPO. Work in sensitive areas shall not resume until consultation is completed and until FEMA determines that the appropriate measures have been taken to ensure complete project compliance with the NHPA and its implementing regulations.
Environmental Justice	No impact.	N/A	N/A
Hazardous Materials	No impact.	TCEQ	If contaminated materials are discovered during the project activities, work would cease until the appropriate procedures and permits can be implemented. Any hazardous materials discovered, generated, or used during construction would be handled and disposed of in accordance with applicable local, state, and federal regulations.
Noise	Temporary impacts from the use of equipment.	N/A	All work will be conducted during daytime hours. All equipment and machinery will meet all local, state, and federal noise regulations.

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Affected Environmental Resource Area	Impacts	Agency Coordination/ Permits	Mitigation/BMPs
Traffic	Potential for temporary trail closures.	N/A	Alternate routes will remain accessible during potential closures.
Public Services and Utilities	Long-term beneficial effect on overhead utility power lines and potential for power outages, and improved emergency services due to the reduction in wildfire risk.	N/A	N/A
Public Health and Safety	Reduction of the risk of a major wildfire that would threaten public health and safety.	N/A	N/A

SECTION 5 Cumulative Impacts

This section addresses the potential cumulative impacts associated with the implementation of the proposed action. Cumulative impacts can be defined as the impacts of a proposed action when combined with impacts of past, present, or reasonably foreseeable future actions undertaken by any agency or person. Cumulative impacts can result from individually minor but collectively significant actions.

No previous hazardous fuel mitigation work has been conducted at Southwest Regional Park. However, Williamson County may conduct additional hazardous fuels mitigation work at the park following the implementation of the proposed action.

No significant cumulative impacts are foreseen from implementation of the proposed action and other past, present, and future actions. The proposed action would have no impact or essentially no impact on water resources, most wildlife, vegetation communities, cultural resources, environmental justice, hazardous materials, public services and utilities, or public health and safety. Any additional hazardous fuels mitigation work undertaken by Williamson County would be located in areas not treated by the proposed action; therefore, the proposed action would not contribute to significant cumulative impacts on these resources. Areas along the park boundary that might be treated under future projects (areas not treated under the proposed action) would not be located in or near wetlands or floodplains; therefore, there would be no cumulative effects on these resources.

Operation of heavy equipment during fuels reduction would disturb soils temporarily. However, with the implementation of BMPs to protect soils, a significant adverse cumulative impact on soils would not be expected.

Temporary noise, traffic, and air quality impacts of the proposed action could combine with similar impacts of other projects occurring at the same time, but the combined impact is not expected to be significant.

The Texas Department of Transportation's (TxDOT's) list of Williamson County projects indicates that widening of Ranch to Market Road 1431 about 2.8 miles west of the proposed project area is underway. Additionally, intersection improvements are underway on RM 1431 near I-35 approximately 5 miles east of the proposed project area (TxDOT 2014). Because of the distance between this project and the proposed action, it is unlikely to combine with the proposed action to result in a cumulative impact.

Climate change is by its nature a cumulative impact. Carbon dioxide emissions from the proposed action would make a very small contribution to climate change.

The proposed vegetation modification could have a short-term, adverse effect on the Golden-cheeked warbler although the long-term effects may be beneficial. Potential future hazardous fuels mitigation work in the park would be located in areas that are not known to provide habitat for the warbler; therefore, the proposed action would not contribute to significant cumulative impacts on the warbler in the park. The proposed project areas abut already developed lands that would not support the warbler; therefore, the potential for other projects to result in a cumulative impact on the warbler in or near the project area is minimal.

Future projects involving similar work in the park could be located close to one known karst feature; however, it would not overlap with karst features close to the proposed action. The proposed action would not affect karst fauna potentially present in the karst features, and similar activities may also be expected to have little to no effect on karst fauna. Therefore, there would be no cumulative effect on karst fauna and karst features.

SECTION 6 Agency Coordination, Public Involvement, and Permits

This section provides a summary of the agency coordination efforts and public involvement process for the proposed Williamson County Hazardous Fuels Reduction project. In addition, an overview of the permits that would be required under the proposed action is included.

6.1 Agency Coordination

Consultation letters and response from resource agencies are provided in **Appendix C**.

6.2 Public Participation

The public information process for the proposed project will include a public notice in the *Williamson County Sun*, the local general circulation newspaper that covers the project area. The public notice will state that information about the proposed action, including this EA, is available at the Williamson County Courthouse, located at 710 South Main Street, Georgetown, Texas. The notice will invite the public to submit comments about the proposed action, potential impacts, and proposed mitigation measures so that they may be considered and evaluated. In compliance with EO 11988, Floodplains, the public notice will also state that the proposed action is located within the 100-year floodplain in Southwest Regional Park. Potential alternatives and impacts on floodplains are described in the draft EA, and the public will be invited to review and comment on the findings. FEMA will consider and respond to all public comments in the final EA. If no substantive comments are received, the draft EA will become final, and a FONSI will be issued for the project. At this time, a public meeting is not planned because the proposed action is not considered controversial.

6.3 Permits

No local, state, or federal permits appear to be necessary to implement the proposed fuels reduction project. The proposed action does not require coverage under Texas Pollutant Discharge Elimination System construction stormwater general permit TXR150000 because it is not a construction project and would not generate stormwater associated with industrial activity as defined in 40 CFR 122.26(a)(14).

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SECTION 8 List of Preparers

The following is a list of preparers who contributed to the development of the Williamson County Southwest Regional Park Hazardous Fuels Reduction EA.

The individuals listed below had principal roles in the preparation of this document. Many others had significant roles and contributions as well and their efforts were no less important to the development of this EA. These others include senior managers, administrative support personnel, legal staff, and technical staff.

CDM Smith

Preparers	Experience and Expertise	Role in Preparation
Beverly, Howard	Senior Cultural Resource Specialist	Cultural Resources
Boucher, Henry	Environmental Engineer and Planner	Technical review and editing
da Costa, Larissa	Water Resources Engineer	Field work; Introduction; Purpose and Need; Alternatives; Socioeconomics; Agency Coordination, Public Involvement and Permitting
Kase, Sydney	GIS Specialist	GIS analyses and Graphics
McAuley, Erin	Environmental Planner	Field work; Physical Resources; Water Resources; Environmental Justice; Cumulative Impacts
Perotin, Manuel	Senior Civil Engineer	Task Order Manager
Poyant, Andrew	Biologist and Environmental Scientist	Biological Resources
Schenk, Roger	Senior Environmental Scientist	Kick off meeting and field work
Stenberg, Kate Ph.D.	Senior Biologist, Senior Planner	NEPA documentation, Biological Resources; technical review

CH2M Hill

Preparer	Experience and Expertise	Role in Preparation
Speights, Jason	Biologist	Biological site visit
Trahan, Jacob	Environmental Scientist	Biological site visit and notes

Federal Emergency Management Agency

Reviewers	Role in Preparation
Jaynes, Kevin Regional Environmental Officer	Technical review and approval
Weir, Dorothy Environmental Specialist	Technical review and approval