

Appendices

Appendix A

Travis County Scope of Work

Travis County Natural Resources Scope of Work for Wildfire Mitigation on BCP

Treatment zone boundaries will be marked in the field with color-coded ribbon and clearly delineated on maps provided. Zones will be delineated to avoid areas with slopes exceeding a thirty percent grade (approx. 15 degrees). Pruning and thinning in each zone should adhere to the following prescription:

1. Canopy Edge Zone (0-30 feet inside tree canopy boundary; outer edge marked with neon green ribbon) will be treated as follows:

- Remove branches and logs less than 4 inch diameter lying on ground;
- Prune live and dead branches from juniper and live oak trees below 6 feet;
- Remove juniper and live oak trees that are;
- Less than 4 inch diameter;
- Less than 10 feet tall;
- Not currently contributing to canopy cover (i.e., underneath or mixing with another tree's canopy);
- Not growing into a canopy opening;
- If a juniper or live oak tree is growing into a canopy opening and is less than 10 feet in height, prune limbs up to approximately ½ of its current height;
- Remove dead juniper trees (greater than 75% branch mortality or crown of tree dead);
- Paint exposed stumps and pruning scars on oak trees; and
- Unless otherwise specified, slash should be chipped and the wood chips spread on-site (in specified locations within or adjacent to cut areas) at a thickness of no more than two inches.

2. Canopy Interior Zone (greater than 30 feet inside tree canopy boundary; outer edge marked with neon pink ribbon) will be treated as follows:

- Remove branches and logs less than 4 inch diameter lying on ground;
- Prune live and dead branches from juniper and live oak trees below 4 feet;
- Remove juniper and live oak trees that are;
- Less than 4 inch diameter;
- Less than 10 feet tall;

- Not currently contributing to canopy cover (i.e. underneath or mixing with another tree's canopy);
- Not growing into a canopy opening;
- If a juniper or live oak tree is growing into a canopy opening and is less than 10 feet in height, prune limbs up to approximately ½ of its current height;
- Remove dead juniper trees (greater than 75% branch mortality or crown of tree dead);
- Paint exposed stumps and pruning scars on oak trees; and
- Unless otherwise specified, slash should be chipped and the wood chips spread on-site (in specified locations within or adjacent to cut areas) at a thickness of no more than two inches.

Open Woodland Zone (outside of continuous tree canopy; outer edge marked with blue polka-dot ribbon)

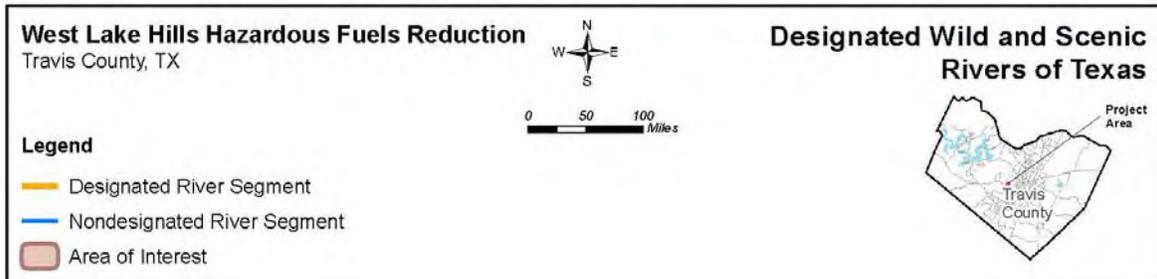
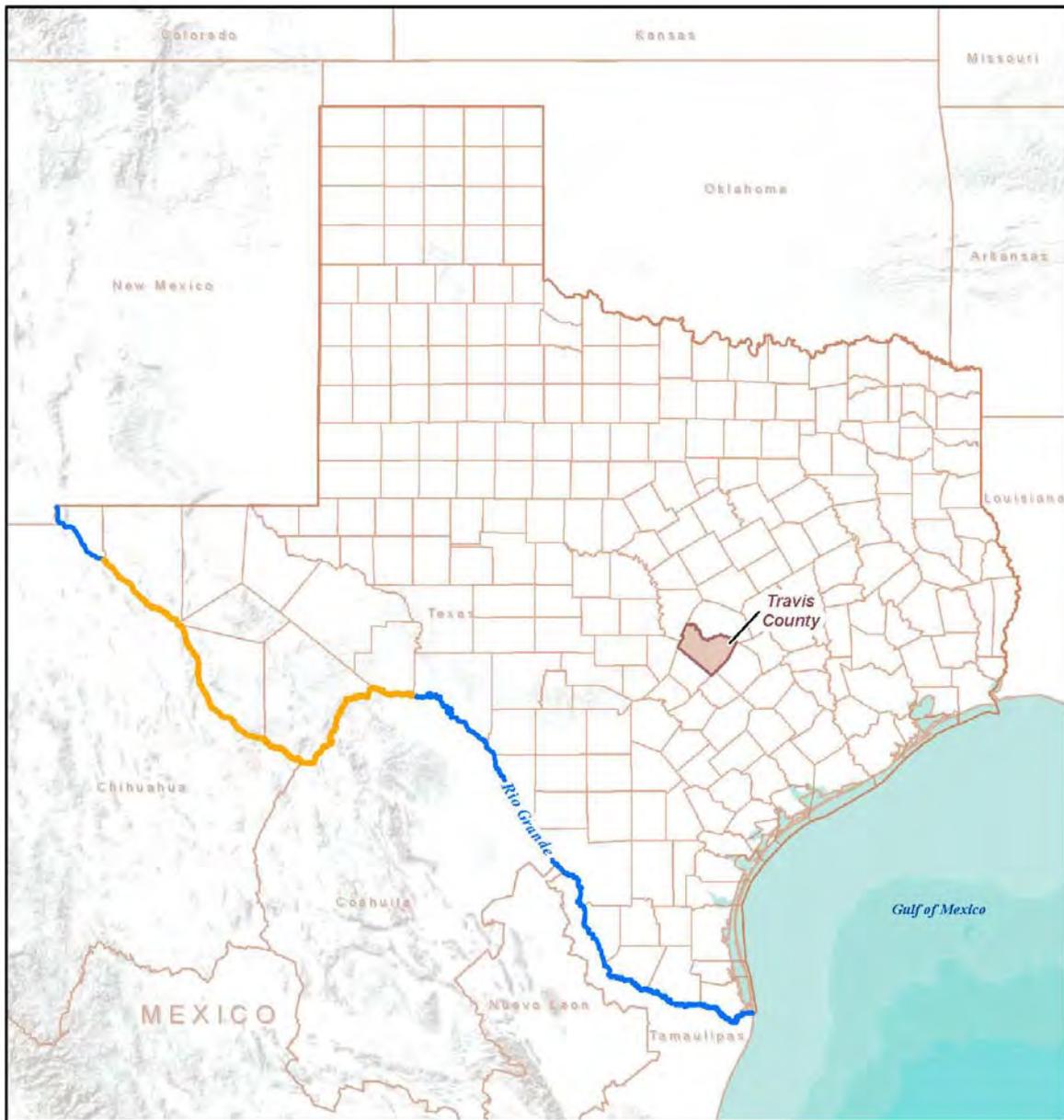
- a.) Remove branches and logs less than 4 inch diameter lying on ground.
- b.) Remove live and dead branches from juniper and live oak trees below 8 feet.
- c.) Remove juniper and live oak trees that are:
 - 1) less than 4 inch diameter and
 - 2) less than 10 feet tall and
 - 3) not currently contributing to canopy cover (i.e. underneath or mixing with another tree's canopy) and
 - 4) not growing into a canopy opening.
- d.) If a juniper or live oak tree is growing into a canopy opening and is less than 10 feet in height, prune limbs up to approximately ½ of its current height.
- e.) Remove dead juniper trees (greater than 75% branch mortality or crown of tree dead).
- f.) Paint exposed stumps and pruning scars on oak trees.
- g.) Unless otherwise specified, slash should be chipped and the wood chips spread on-site (in specified locations within or adjacent to cut areas) at a thickness of no more than two inches.

Appendix B

Water Resources Data

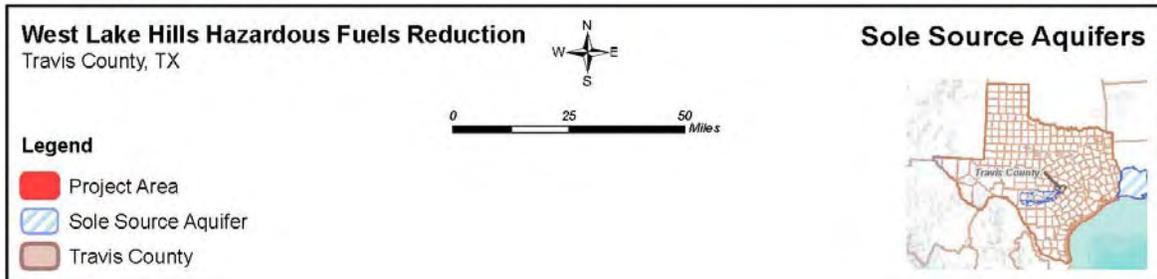
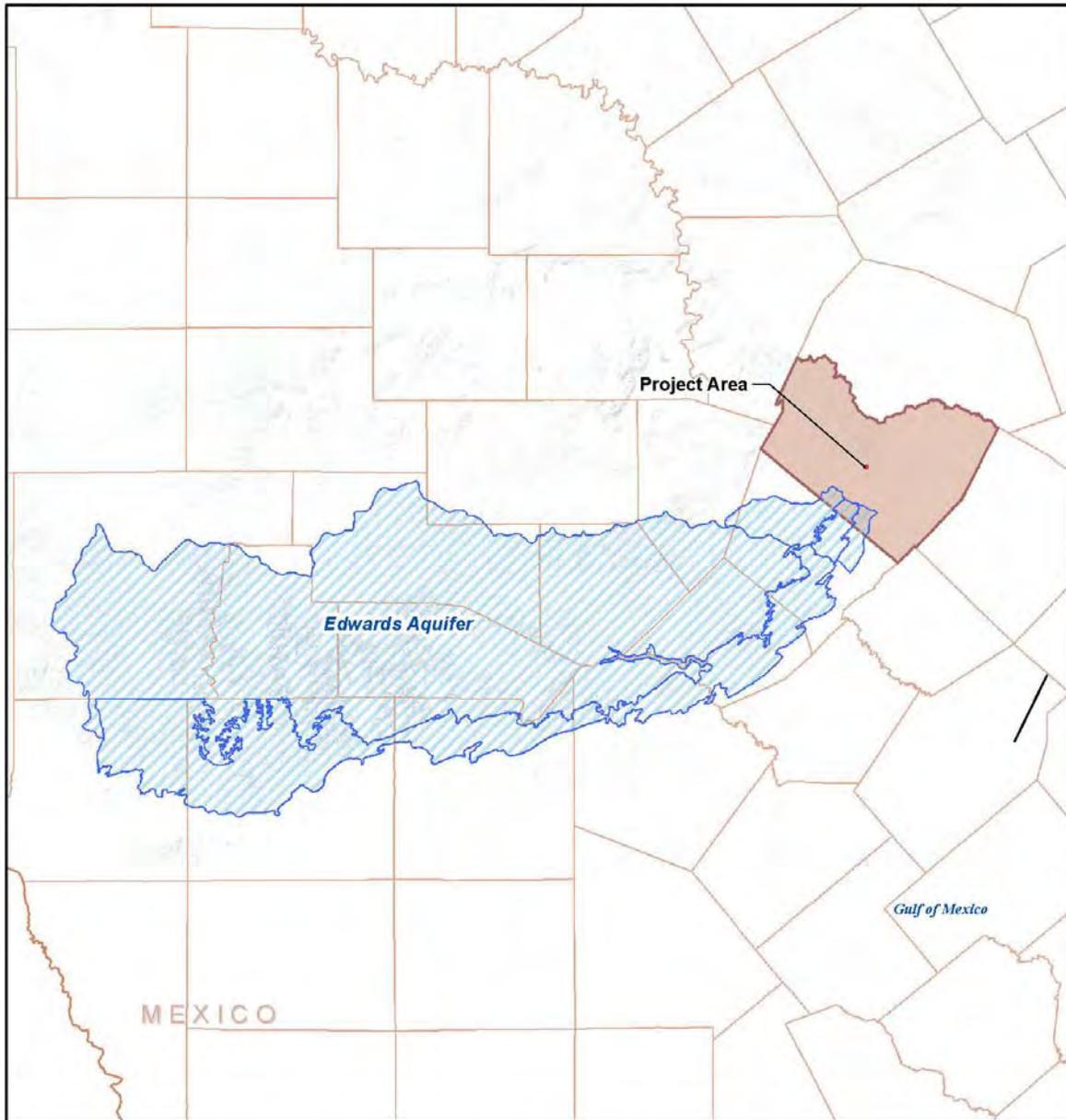
1. Wild and Scenic Rivers Map
2. Sole Source Aquifer Map
3. FEMA Flood Insurance Rate Maps
4. EPA Envirofacts EnviroMapper Maps

Appendix B-1
Wild and Scenic Rivers Map



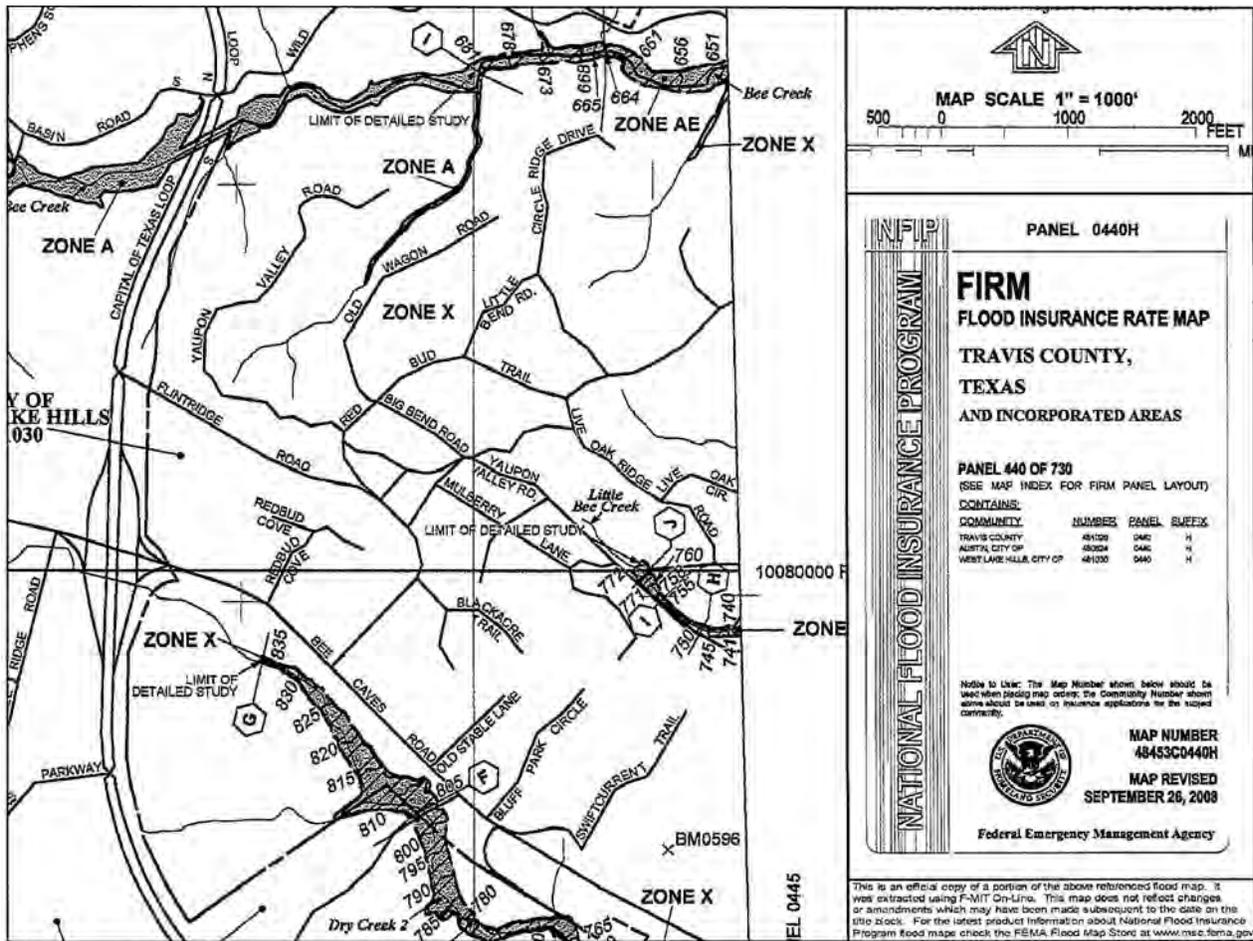
Data Sources: EPA, TNRIS
Service Layer Credits: Sources: Esri, USGS, NOAA

Appendix B-2
Sole Source Aquifer Map

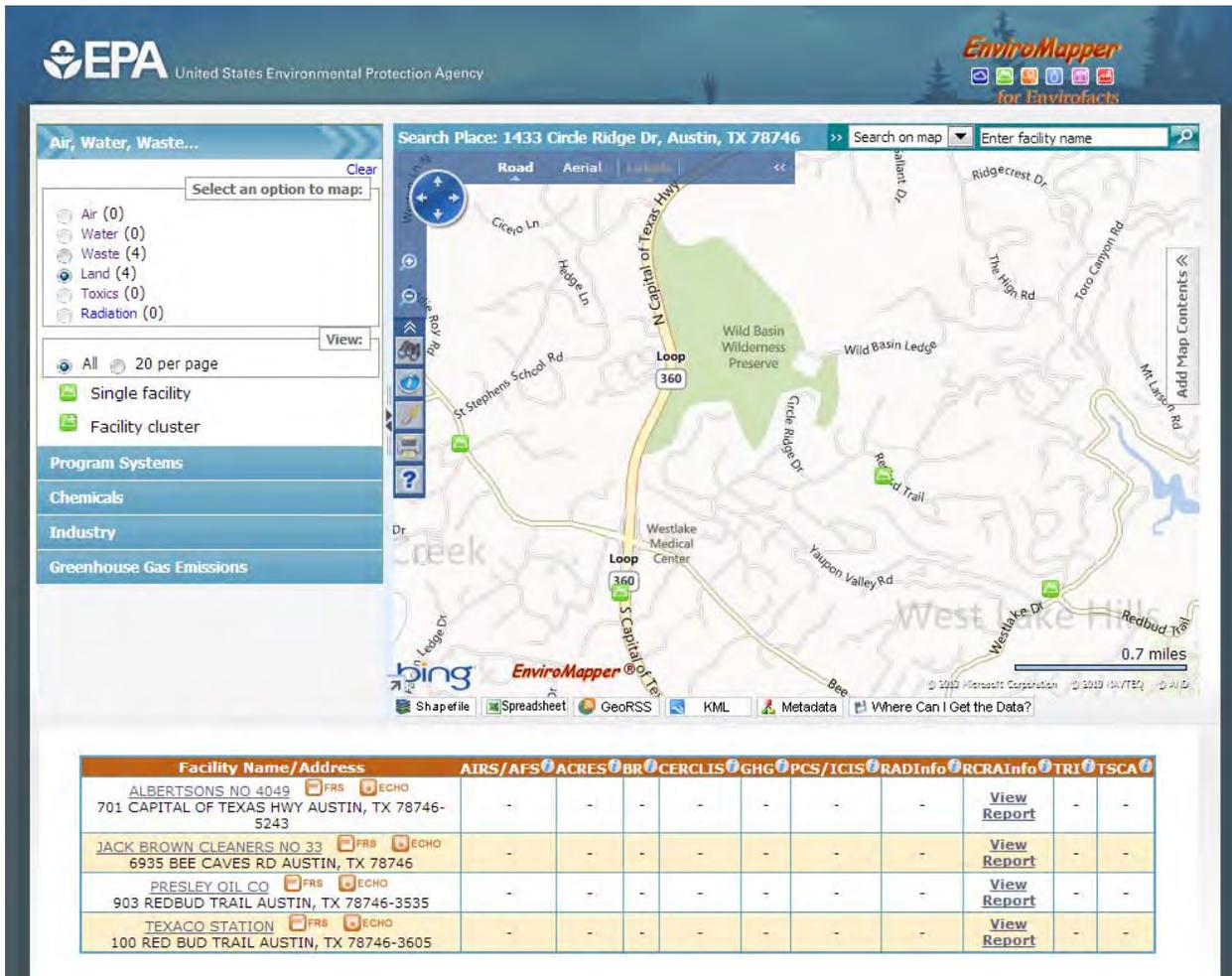


Data Sources: EPA, TNRIS
Service Layer Credits: Sources: Esri, USGS, NOAA

Appendix B-3
FEMA Flood Insurance Rate Map



Appendix B-4
EPA Envirofacts EnviroMapper Maps



EPA United States Environmental Protection Agency

EnviroMapper for Envirofacts

Search Place: 1433 Circle Ridge Dr, Austin, TX 78746

Search on map | Enter facility name

Select an option to map:

- Air (0)
- Water (0)
- Waste (4)
- Land (4)
- Toxics (0)
- Radiation (0)

View: All 20 per page

- Single facility
- Facility cluster

Program Systems

Chemicals

Industry

Greenhouse Gas Emissions

Facility Name/Address	AIRS	AFS	ACRES	BR	CERCLIS	GHG	PCS	ICIS	RADInfo	RCRAInfo	TRI	TSCA
ALBERTSONS NO 4049 701 CAPITAL OF TEXAS HWY AUSTIN, TX 78746-5243	-	-	-	-	-	-	-	-	-	View Report	-	-
JACK BROWN CLEANERS NO 33 6935 BEE CAVES RD AUSTIN, TX 78746	-	-	-	-	-	-	-	-	-	View Report	-	-
PRESLEY OIL CO 903 REDBUD TRAIL AUSTIN, TX 78746-3535	-	-	-	-	-	-	-	-	-	View Report	-	-
TEXACO STATION 100 RED BUD TRAIL AUSTIN, TX 78746-3605	-	-	-	-	-	-	-	-	-	View Report	-	-

Appendix C

Biological Site Visit Field Notes

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
Amphibians						
Austin blind salamander	<i>Eurycea waterlooensis</i>	PE	None	Mostly restricted to subterranean cavities of the Edwards Aquifer; dependent upon water flow/quality from the Barton Springs segment of the Edwards Aquifer; only known from the outlets of Barton Springs (Sunken Gardens (Old Mill) Spring, Eliza Spring, and Parthenia (Main) Spring which forms Barton Springs Pool); feeds on amphipods, ostracods, copepods, plant material, and (in captivity) a wide variety of small aquatic invertebrates.	Unlikely	Unlikely. No karst or cave habitat present
Barton Springs salamander	<i>Eurycea sosorum</i>	LE	E	Dependent upon water flow/quality from the Barton Springs pool of the Edwards Aquifer; known from the outlets of Barton Springs and subterranean water-filled caverns; found under rocks, in gravel, or among aquatic vascular plants and algae, as available; feeds primarily on amphipods.	Unlikely	Unlikely. No aquatic resources present
Jollyville Plateau salamander	<i>Eurycea tonkawae</i>	PE	None	Known from springs and waters of some caves north of the Colorado River.	Unlikely	Unlikely. No cave or spring habitat present
Birds						

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
American Peregrine falcon	<i>Falco peregrinus anatum</i>	DL	T	Year-round resident and local breeder in west Texas; nests in tall cliff eyries; migrant across state from more northern breeding areas in US and Canada; winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant; stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	Potential for foraging	Unlikely. No nesting or stopover habitat present
Bald eagle	<i>Haliaeetus leucocephalus</i>	DL	T	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds.	Unlikely	Unlikely. No nesting or foraging habitat present

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
Black-capped vireo	<i>Vireo atricapilla</i>	LE	E	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer.	Potential for foraging and nesting habitat	Potential to occur in Xeric Juniper Woodland and Xeric Juniper / Open Grassland Habitat types. None observed.
Golden-cheeked warbler	<i>Setophaga chrysoparia</i>	LE	E	Juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips only available from mature trees used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer.	Potential for foraging and nesting habitat	Potential to occur in Xeric Juniper Woodland and Xeric Juniper / Open Grassland Habitat types. None observed.
Interior Least Tern	<i>Sterna antillarum athalassos</i>	LE	E	Subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided	Unlikely	Unlikely. No nesting or foraging habitat present

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
				streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony.		
Peregrine Falcon	<i>Falco peregrinus</i>	DL	T	Both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (<i>F. p. anatum</i>) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, <i>F.p. tundrius</i> is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.	Potential for foraging	Unlikely. No nesting or stopover habitat present

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
Sprague's Pipit	<i>Anthus spragueii</i>	C ¹	None	Only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.	Unlikely	Unlikely. No large native prairie habitat patches present
Whooping crane	<i>Grus americana</i>	LE	E	Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	Unlikely	Unlikely. No marsh habitat present
Invertebrates (Arachnids)						
Bee Creek Cave harvestman	<i>Texella reddelli</i>	LE	None	Small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties.	Unlikely	Unlikely. No karst or cave habitat present
Bone Cave harvestman	<i>Texella reyesi</i>	LE	None	Small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties; weakly differentiated from <i>Texella reddelli</i> .	Unlikely	Unlikely. No karst or cave habitat present
Tooth Cave pseudoscorpion	<i>Tartarocreagris texana</i>	LE	None	Small, cave-adapted pseudoscorpion known from small limestone caves of the Edwards Plateau.	Unlikely	Unlikely. No karst or cave habitat present
Tooth Cave spider	<i>Neoleptoneta myopica</i>	LE	None	Very small, cave-adapted, sedentary spider.	Unlikely	Unlikely. No karst or cave

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
						habitat present
Warton's cave meshweaver	<i>Cicurina wartoni</i>			Very small, cave-adapted spider.	Unlikely	Unlikely. No karst or cave habitat present
Invertebrates (Insects)						
Kretschmarr Cave mold beetle	<i>Texamaurops reddelli</i>	LE	None	Small, cave-adapted beetle found under rocks buried in silt; small, Edwards Limestone caves in of the Jollyville Plateau, a division of the Edwards Plateau.	Unlikely	Unlikely. No karst or cave habitat present
Tooth Cave ground beetle	<i>Rhadine persephone</i>	LE	None	Resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties.	Unlikely	Unlikely. No karst or cave habitat present
Fishes						
Smalleye shiner	<i>Notropis buccula</i>	C ¹	None	Endemic to upper Brazos River system and its tributaries (Clear Fork and Bosque); apparently introduced into adjacent Colorado River drainage; medium to large prairie streams with sandy substrate and turbid to clear warm water; presumably eats small aquatic invertebrates.	Unlikely	Unlikely. No aquatic resources present
Mollusks						

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
False spike mussel	<i>Quadrula mitchelli</i>	None	T	Possibly extirpated in Texas; probably medium to large rivers; substrates varying from mud through mixtures of sand, gravel and cobble; one study indicated water lilies were present at a site where the species was found; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins.	Unlikely	Unlikely. No aquatic resources present
Smooth pimpleback	<i>Quadrula houstonensis</i>	C ¹	T	Small to moderate streams and rivers as well as moderate size reservoirs; mixed mud, sand, and fine gravel; tolerates very slow to moderate flow rates: appears not to tolerate dramatic water level fluctuations: scoured bedrock substrates or shifting sand bottoms; lower Trinity (questionable), Brazos, and Colorado River basins.	Unlikely	Unlikely. No aquatic resources present
Texas fatmucket	<i>Lampsilis bracteata</i>	C ¹	T	Streams and rivers on sand, mud, and gravel substrates; intolerant of impoundment; broken bedrock and coarse gravel or sand in moderately flowing water; Colorado and Guadalupe River basins.	Unlikely	Unlikely. No aquatic resources present
Texas fawnsfoot	<i>Truncilla macrodon</i>	C ¹	T	Little known; possibly rivers and larger streams, and intolerant of impoundment; flowing rice irrigation canals; possibly sand, gravel, and perhaps sandy-mud bottoms in	Unlikely	Unlikely. No aquatic resources present

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
				moderate flows; Brazos and Colorado River basins.		
Texas pimpleback	<i>Quadrula petrina</i>	C ¹	T	Mud, gravel and sand substrates, generally in areas with slow flow rates; Colorado and Guadalupe river basins.	Unlikely	Unlikely. No aquatic resources present
Reptiles						
Texas horned lizard	<i>Phrynosoma cornutum</i>	None	T	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September.	Low potential	Low potential to occur in Xeric Juniper/ Open Grassland and Limestone Outcrop habitat types. None observed
Plants						
Bracted twistflower	<i>Streptanthus bracteatus</i>	C	None	Texas endemic; shallow, well-drained gravelly clays and clay loams over limestone in oak juniper woodlands and associated openings, on steep to moderate slopes and in canyon bottoms; several known soils include Tarrant, Brackett, or Speck over Edwards, Glen Rose, and Walnut geologic formations; populations fluctuate widely from year to year,	Potential	Potential to occur in Xeric Juniper/ Open Grassland habitat type. None observed.

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
				depending on winter rainfall; flowering mid April-late May, fruit matures and foliage withers by early summer.		

Status Keys:

LE - Federally Listed Endangered

C - Federal Candidate for Listing; formerly Category 1 Candidate

DL - Federally Delisted

E, T - State Listed Endangered/Threatened

¹ -Based on information provided at <http://www.tpwd.state.tx.us/gis/ris/es/SpeciesList.aspx?parm=Bastrop>

Appendix D

Agency Coordination Letters

1. Texas Historical Commission
2. FEMA Letter to USFWS dated September 2013
3. USFWS Biological Opinion dated February 2015



June 7, 2012



Texas Historical Commission
Archeology Division
P.O. Box 12276
Austin, Texas 78744

RE: West Lake Hills, Texas
Hazard Mitigation Grant Project – Hazardous Fuel Reduction Project

To Whom It May Concern:

West Lake Hills is filing an application for grant assistance with Hazard Mitigation Grant Program. Langford Community Management Services/Proactive Disaster Solutions is acting on behalf of West Lake Hills, TX and your contact for this project is Steve Mendoza.

Project Location

The project will be conducted in the WUI of Westlake Hills and Wild Basin Preserve, in an area where homes have been built at the top of steep hills overlooking the WBP. The project area is approximately 12.81 acres. Fuels reduction treatments will be carried out on private property, starting at the home ignition zone, continuing down slope across private property, and onto the WBP, to a maximum of 50ft from the boundary.

Fuels Reduction Treatments

The City of Westlake Hills will work with a multi-jurisdictional team to carry out a demonstration project, showing city residents the best methods for protecting homes and property from wildfire. The project will apply Best Management Practices (BMP) the US Fish and Wildlife Service is developing for wildfire mitigation in oak/juniper woodlands with endangered species habitat.

Effective treatment strategies call for removal of surface fuel accumulation, removal of “ladder” fuels, raising the canopy base height, and reducing the canopy bulk density to reduce the chance of a fire transitioning into a crown fire or sustaining as a crown fire. When completed, the USFWS BMP documents will provide specifications for treatments, so they can be used as a reference and guideline. This treatment will focus on the edge of woodlands, where fuel loading is greater than in the interior due to sunlight penetration. Treatments will start at the edge of yards in the home ignition zone, where woodlands begin.

This approach will reduce fire risk while leaving the habitat in suitable condition for use by the endangered Golden-Cheeked Warbler (*Setophaga chrysoparia*). All fuels treatment work on the project

will be conducted from September 1 through February 28 to avoid disturbances to endangered species habitat. Construction activities, including fuels reduction, are prohibited during nesting season, from March 1 through August 31.

- Gates and fences that are removed temporarily to provide access for the project will be replaced, with locks on the gates.
- No materials will be left on the ground after treatment; they will be chipped and spread or dragged offsite and removed
- Access to the project area will be taken through private property
- Erosion controls will be installed before treatments begin
- Activities on Preserve lands will be coordinated with Wild Basin and Travis County staff

If the agency has any interest in this project or can provide any additional guidance, please respond in writing to the contact information provided.

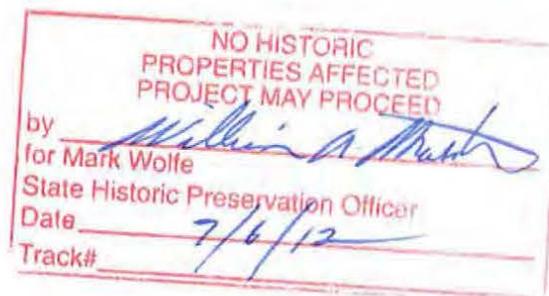
Thank you in advance for your cooperation.

Sincerely,



Steve Mendoza

Attachment: Location Map





FEMA

September 6, 2013

Mr. Adam Zerrenner
Field Supervisor
U.S. Fish and Wildlife Service
10711 Burnet Rd., Suite 200
Austin, Texas, 78758

Dear Mr. Zerrenner:

This letter is to initiate informal consultation between the Federal Emergency Management Agency (FEMA) and your office under Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) regarding wildfire mitigation activities adjacent to the Wild Basin Wilderness Preserve (Latitude: 30.30424; Longitude: -97.81763) in the City of West Lake Hills, Travis County, Texas, using funds associated with FEMA's Hazard Mitigation Grant Program (HMGP); DR-1999-TX Project #5.

Twelve federally listed species are known to occur in Travis County: Barton Springs salamander (*Eurycea sosorum*); Jollyville Plateau salamander (*Eurycea tonkawae*)¹; Austin blind salamander (*Eurycea waterlooensis*); Bee Creek Cave harvestman (*Texella reddelli*); Bone Cave harvestman (*Texella reyesi*); Tooth Cave pseudoscorpion (*Tartarocreagris texana*); Tooth Cave spider (*Leptoneta myopica*); Whooping crane (*Grus americana*); Black-capped vireo (*Vireo atricapilla*); Golden-cheeked warbler (=wood) (*Dendroica chrysoparia*); Kretschmarr Cave mold beetle (*Texamaurops reddelli*); and Tooth Cave ground beetle (*Rhadine persephone*). All are listed as endangered, except for the threatened Jollyville Plateau salamander.

Critical habitat has been designated for the Jollyville Plateau Salamander, Austin blind Salamander, and Whooping crane but not for the other nine listed species. No critical habitat is present in the proposed project area.

FEMA is making a "no effect" determination for the Barton Springs salamander (*Eurycea sosorum*); Jollyville Plateau Salamander (*Eurycea tonkawae*); Austin blind salamander (*Eurycea waterlooensis*); Bee Creek Cave harvestman (*Texella reddelli*); Bone Cave harvestman (*Texella reyesi*); Tooth Cave pseudoscorpion (*Tartarocreagris texana*); Tooth Cave spider (*Leptoneta myopica*); Whooping crane (*Grus americana*); Kretschmarr Cave mold beetle (*Texamaurops reddelli*); and Tooth Cave ground beetle (*Rhadine persephone*) and therefore is not consulting with the U.S. Fish and Wildlife Service (USFWS) regarding these species. In addition, as no

¹ Jollyville Plateau salamander and Austin blind salamander are listed effective 9/19/2013 per on-line USFWS Species Profiles. For the purposes of this consultation, FEMA considers them listed and protected by the Endangered Species Act.

designated critical habitat exists in the project area, FEMA has determined that its proposed action will not adversely modify critical habitat.

Based on field surveys and habitat assessment, the federally endangered black-capped vireo (*Vireo atricapilla*) and golden-cheeked warbler (=wood) (*Dendroica chrysoparia*) could be present within the project area. Therefore FEMA is requesting consultation with your office in regard to these two species.

FEDERAL ACTION

Through a FEMA HMGP grant, the City of Westlake Hills proposes to perform hazardous fuels reduction to reduce wildfire hazard along residential areas near wooded areas adjacent to the Wild Basin Wilderness Preserve (WBWP) and to conduct fire mitigation education of residents in the area. The proposed action would reduce the quantity of hazardous vegetative fuel between WBWP and the City of West Lake Hills to limit the movement of a wildfire between the two areas. The project area within West Lake Hills is a residential community adjacent to the WBWP and is just west of Austin, Texas (Figure 1.1). Figure 1.2 shows the project location and surrounding area. The project area is approximately 12.81 acres (Figure 1.3 and Figure 1.4). Fuels reduction would be carried out on both private and public property, beginning at the residential properties, continuing down slope across private property and onto the WBWP to a maximum of 50 feet beyond the fenced WBWP boundary.

The proposed action would reduce hazardous fuels loading in the understory and midstory by removing overgrowth and limbs. The proposed project would include removal of surface fuels and "ladder" fuels that have accumulated and reduce the canopy bulk density to diminish the chance of a fire transitioning into a crown fire or sustaining as a crown fire. The project would focus on the edge of woodlands, where fuel loading is greater than in the interior due to sunlight penetration. The proposed fuels reduction would start at the edge of the private yards perched on limestone cliffs within the residential properties, where the woodlands begin, and would minimize the volume of combustibles around homes.

Hazardous fuels reduction would be conducted with chainsaws and a front end loader. Trees that would be cut primarily include small Ashe juniper and live oak in the understory to reduce ladder fuels, and would also include some large Ashe juniper and live oak to thin the canopy. Red oak, walnut, cherry, hackberry, and cedar elm are favored for retention. Fuels reduction would also remove dead or distressed vegetation. Stumps of trees would be ground down to near the soil surface, and the subsurface soil profiles would not be disturbed. The city will encourage residents to plant fire-resistant hard woods such as red oak, walnut, cherry, hackberry, and cedar elm in bare patches to reduce grass fire ignition. These tree species have less crown bulk density than Ashe juniper and live oak.

No pesticides or herbicides would be used in project implementation or maintenance. No un-chipped materials would be left on the ground after treatment; the debris would be transported off site and chipped.

The project would be conducted between September 1 and February 28, with completion expected within 2 to 4 weeks of commencement. Fuels reduction would not be conducted during nesting season from March 1 through August 31.

PROJECT AREA HABITAT AND SPECIES STATUS

On July 24, 2013 CDM Smith, contractor to FEMA, conducted field surveys to characterize the wildlife community and habitat types within the project area. The surveys determined that the project area consists of primarily xeric cedar woodlands, xeric cedar/open grasslands, and limestone outcrops. 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 (see attachment).

Within the project area, xeric cedar woodland was the most common habitat observed, and consisted predominately of eastern red cedar (*Juniperus virginianus*) woodlands with no pine trees present. Few sparse plateau live and post oak (*Quercus stellata*) trees were present within this habitat type. The canopy averaged 90 percent cover. The sparse shrub strata consisted mostly of yaupon (*Ilex vomitoria*), with approximately 15 percent total cover. The herbaceous strata consisted of panicgrass (*Panicum* spp.) and little bluestem and averaged 10 percent total cover. Xeric cedar/open grassland habitat was characterized by open grassy areas dominated by little bluestem, with sparse concentrations of eastern red cedar. The grassland component comprised between 80 to 100 percent total cover while eastern red cedar represented 0 to 20 percent total cover within this habitat type. Little to no shrub strata was present.

Small limestone outcrops were identified throughout the project area, primarily within the xeric cedar /open grassland habitat type on steep slopes. These outcrops ranged from 1 to 4 feet in height and consisted of exposed limestone bedrock. No cave features or large overhangs that would support species associated with cave or karst features were identified.

Table 1 presents the three dominant habitat types observed within the West Lake Hills project area. Dominant plant species and woodland canopy cover are also provided. Observed animal species were also documented.

Brief habitat descriptions and presence potential within the project area for the federally endangered black-capped vireo and the golden-cheeked warbler are shown in Table 2 below.

Nearby areas such as the Bee Creek Watershed, the Balcones Canyonlands National Wildlife Refuge, and the Wild Basin Wilderness Preserve have documented the presence of both the black-capped vireo and the golden-cheeked warbler (Figure 4.9; USFWS, 1996). The Travis County Endangered Species Habitat and Potential Preserve System indicates the project site to be within mapped habitat of the golden-cheeked warbler and within 0.5 miles of habitat for the black-capped vireo (see attached map). It should be noted that formal presence absence surveys for the black-capped vireo and the golden-cheeked warbler were not conducted per survey protocols as the biological site visit was not possible during the spring months due to grant administration timelines. Based on the habitat present and the proximity to known locations,

FEMA makes the assumption that the black-capped vireo and the golden-cheeked warbler are likely to be present in the project area.

Table 1. Habitat Type Summary

Habitat Type	Dominant Plant Species	Animal Species Observed
Xeric Cedar Woodland	Eastern red cedar 95 percent. Other hardwoods, live oak, post oak 5 percent. Total canopy cover 90 percent. Midstory is composed of sparse yaupon. Total midstory cover 15 percent. Ground cover is composed of panicum spp., little bluestem with a total cover of 10 percent.	Northern cardinal, blue jay, Carolina chickadee, White-tailed deer, common raccoon, six-lined racerunner
Xeric Cedar/ Open Grassland	Sparse eastern red cedar comprising 5 to 20 percent cover. Little bluestem totaling 80 to 100 percent cover. Some bare ground with eroded limestone cobble present in open areas.	White-eyed vireo, Eurasian collared dove, eastern cottontail rabbit, six-lined racerunner
Limestone Outcrop	Small outcrops found within the Xeric Cedar/ Open Grassland habitat type. The outcrops ranged from 1 to 4 feet in height. No cave features or large overhangs present.	None observed

Table 2. Habitat Descriptions and Field Assessment for Black-Capped Vireo and Golden-Cheeked Warbler

Species	Habitat Description from TPWD	Field Assessment
Black-capped Vireo	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs,	Potential for foraging and nesting habitat. Potential to occur in Xeric Cedar Woodland and Xeric Cedar / Open Grassland Habitat types. None observed.

	foliage to ground level, and required structure; nesting season March through late summer.	
Golden-cheeked Warbler	Juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips only available from mature trees used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March through early summer.	Potential for foraging and nesting habitat. Potential to occur in Xeric Cedar Woodland and Xeric Cedar / Open Grassland Habitat types. None observed.

AVOIDANCE AND MINIMIZATION MEASURES

The following avoidance and minimization measures will be implemented by the City of Westlake Hills for the proposed FEMA-funded wildfire mitigation activities in order to minimize impact to the black-capped vireo and the golden-cheeked warbler. These measures have been adapted from “Fuel Treatments in Juniper and Oak-Juniper Woodlands throughout the Range of the Golden-cheeked Warbler” (USFWS, 2013a) and “Guidelines for the Establishment, Management, and Operations of Golden-cheeked Warbler and Black-capped Vireo Mitigation Lands” (USFWS, 2013b). Implementation of these measures is a condition of the FEMA grant and a requirement of federal funding.

1. The City of Westlake Hills will conduct hazardous fuels reduction work only during the non-breeding season. Work is allowed from September 1 through February 28. Work cannot be conducted from March 1 through August 31.
2. Depositing 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.
3. The City of Westlake Hills must seal any wounds on oaks that are the result of pruning and any oak stumps that are created as a result of the proposed action in order to prevent transmission of the oak wilt fungus.

DETERMINATION

Direct effects to individual golden-cheeked warblers and black-capped vireos are not anticipated because the proposed action will take place outside of breeding and nesting season. Golden-cheeked warblers migrate south to Mexico in July and August and begin returning to Texas in late February, with most arriving in mid-March (USFWS, 2013c). Black-capped vireos begin to migrate to the wintering grounds in Mexico in July and are gone from Texas by mid-September. Black-capped vireos arrive back in Texas from mid-March to mid-April (USFWS, 2007).

Proposed fuels reduction activities will remove significant amounts of vegetation; however, the majority of this vegetation is edge habitat located at the wildland-urban interface. Edge habitats generally contain weedy, adaptable plant species that easily recover from large disturbance events. Additionally, reduction areas will target dead or dying trees and understory woody and herbaceous plants. Removal of dead and dying trees could prevent the spread of disease to healthy trees.

The proposed project would not likely adversely affect and possibly could have a positive effect on golden-cheeked warblers. The proposed action is limited to 8 feet above the ground; therefore, the tree canopy (i.e., at least 15 feet in height) of the existing xeric cedar woodland and associated dense canopy cover needed for golden-cheeked warblers would not be impacted. Furthermore, retention of species such as red oak, walnut, cherry, hackberry, and elm could prove beneficial for golden-cheeked warblers.

The xeric cedar/open grassland (i.e., open and brushy with few large trees) habitat of West Lake Hills is suitable for black-capped vireos. Removal of live/dead trees from the canopy would be a benefit to the vireo as long as some understory is left intact. The thinning of the understory may also favor the vireo. The proposed action therefore is not likely to adversely affect the black-capped vireo or its habitat.

In addition, the purpose of the proposed federal action is to reduce the threat of wildfires to structures. The project would also reduce the quantity of hazardous vegetative fuel between the WBWP and the City of West Lake Hills and would limit the movement of a wildfire between the two areas. 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 black-capped vireo and golden-cheeked warbler habitat, including the WBWP, would provide an overall benefit to the species in and near the project area.

Based on a review of the black-capped vireo and golden-cheeked warbler and their habitat requirements; the small size of the federal action area in relation to overall habitat; the location of work; the restriction of work to outside of breeding and nesting season; and the implementation of required avoidance and minimization measures, FEMA has determined that the federally funded work described above may affect, but is not likely to adversely affect the federally endangered black-capped vireo and golden-cheeked warbler.

FEMA requests your concurrence with this effect determination and input on any additional minimization measures required to ensure accuracy of this determination. Thank you for your

attention and assistance. Should you have any questions, please contact FEMA Environmental Specialist, Dorothy Weir at Dorothy.Weir@fema.dhs.gov or at 940-435-9275.

Sincerely,

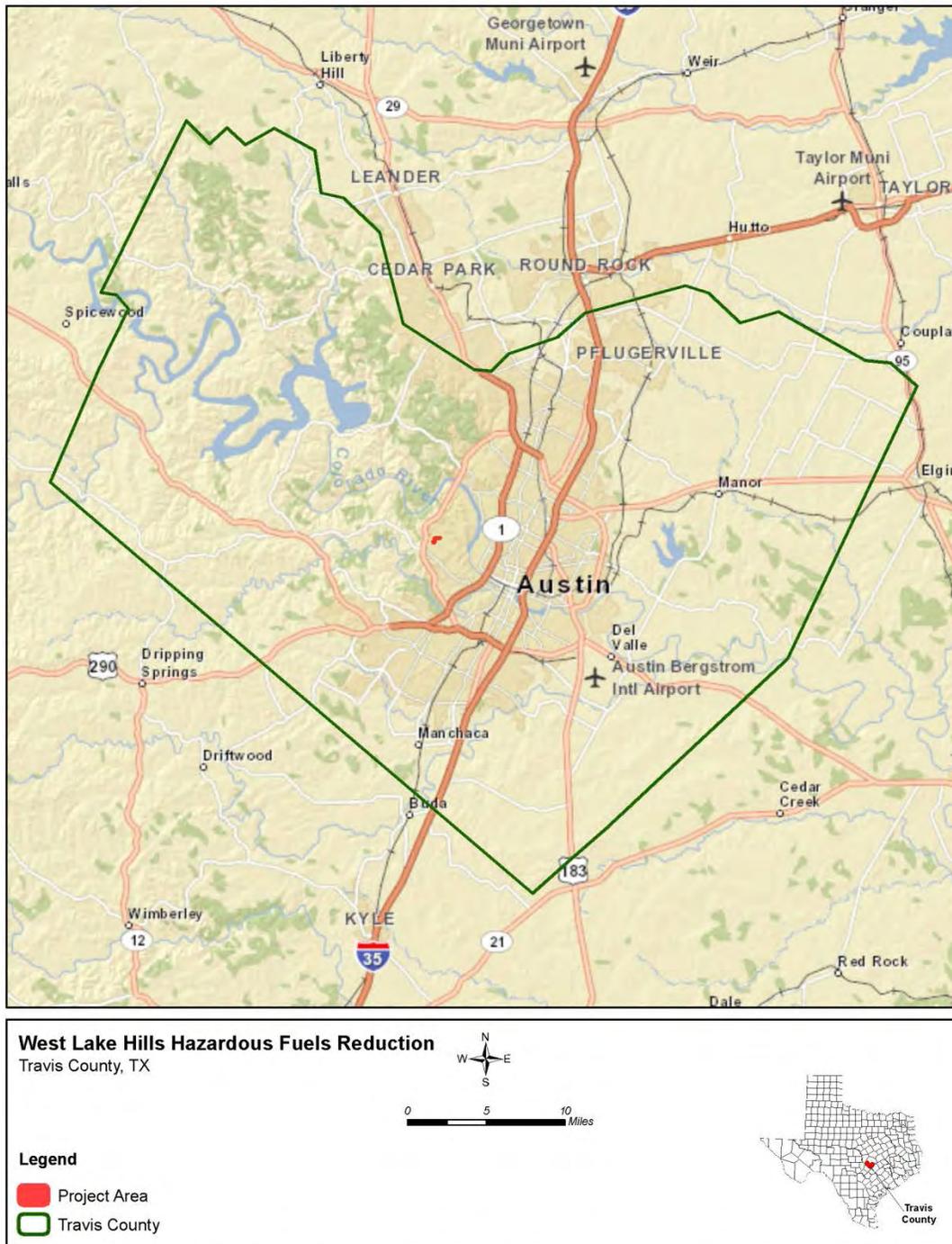


Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

Attachments: Maps of Proposed Project Area
 Photos of Proposed Project Area
 Biological Field Visit Notes
 Endangered Species Habitat and Potential Preserve System Map

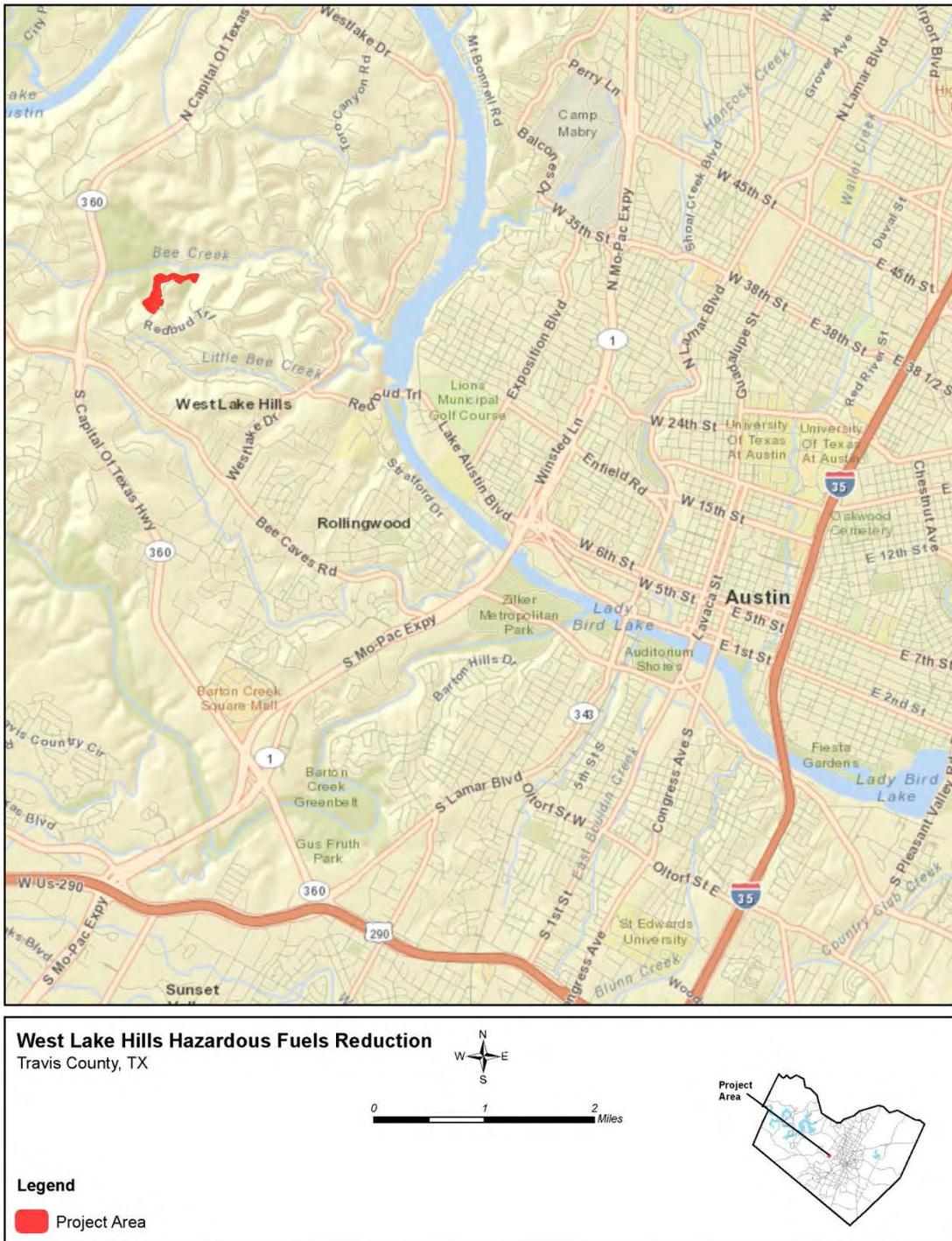
REFERENCES

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- USFWS. 1996. Final Environmental Impact Statement/Habitat Conservation Plan for Proposed Issuance of a Permit to Allow Incidental Take of the Golden-cheeked Warbler, Black-capped Vireo, and Six Karst Invertebrates in Travis County, Texas. Prepared by USFWS and Regional Environmental Consultants (RECON) for City of Austin and Travis County, Texas. 506 pp.



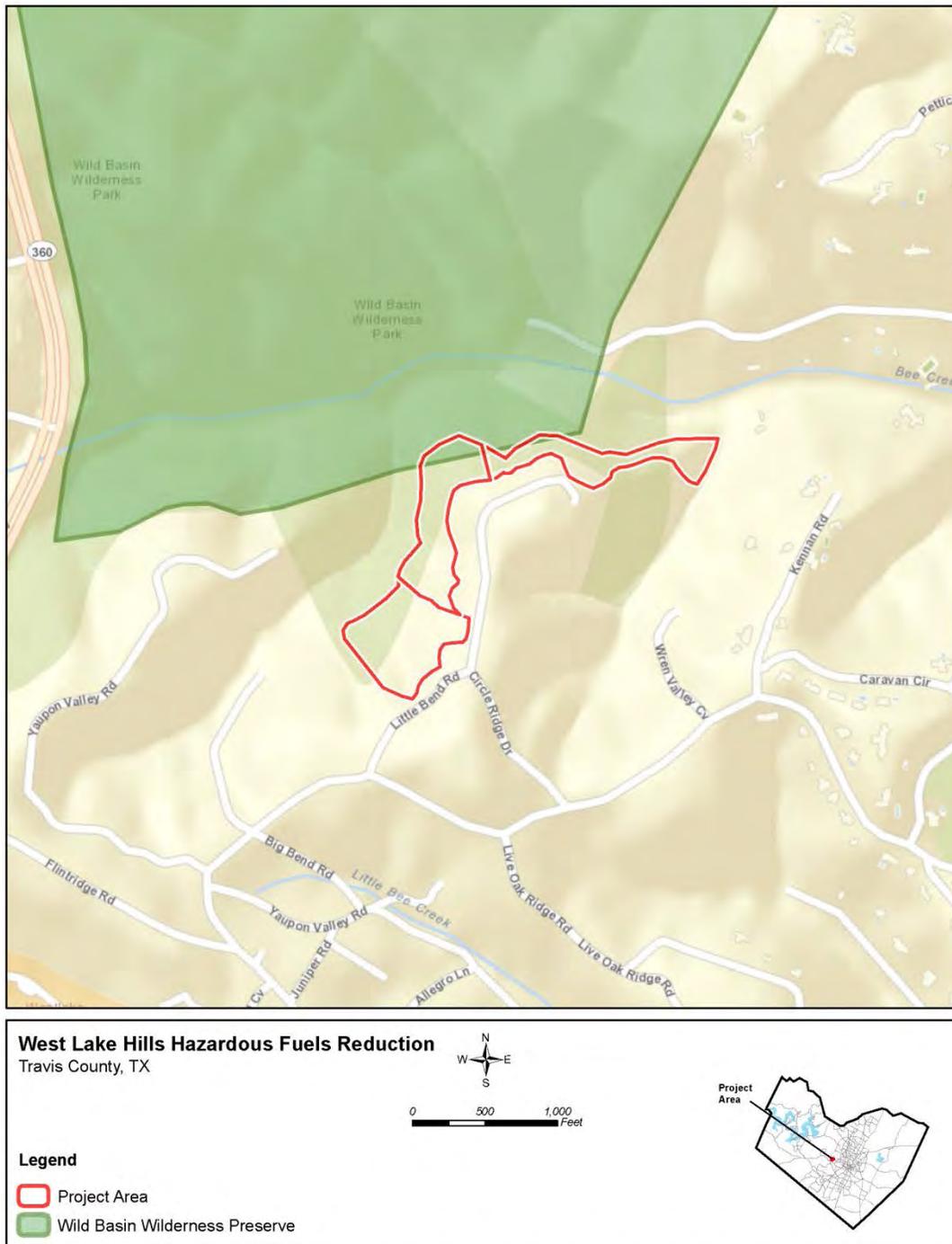
1
2

Figure 1.1. Regional Location



1
2

Figure 1.2. Local Location



1
2

Figure 1.3. Project Area Streets



1

2

Figure 1.4. Project Area Aerial

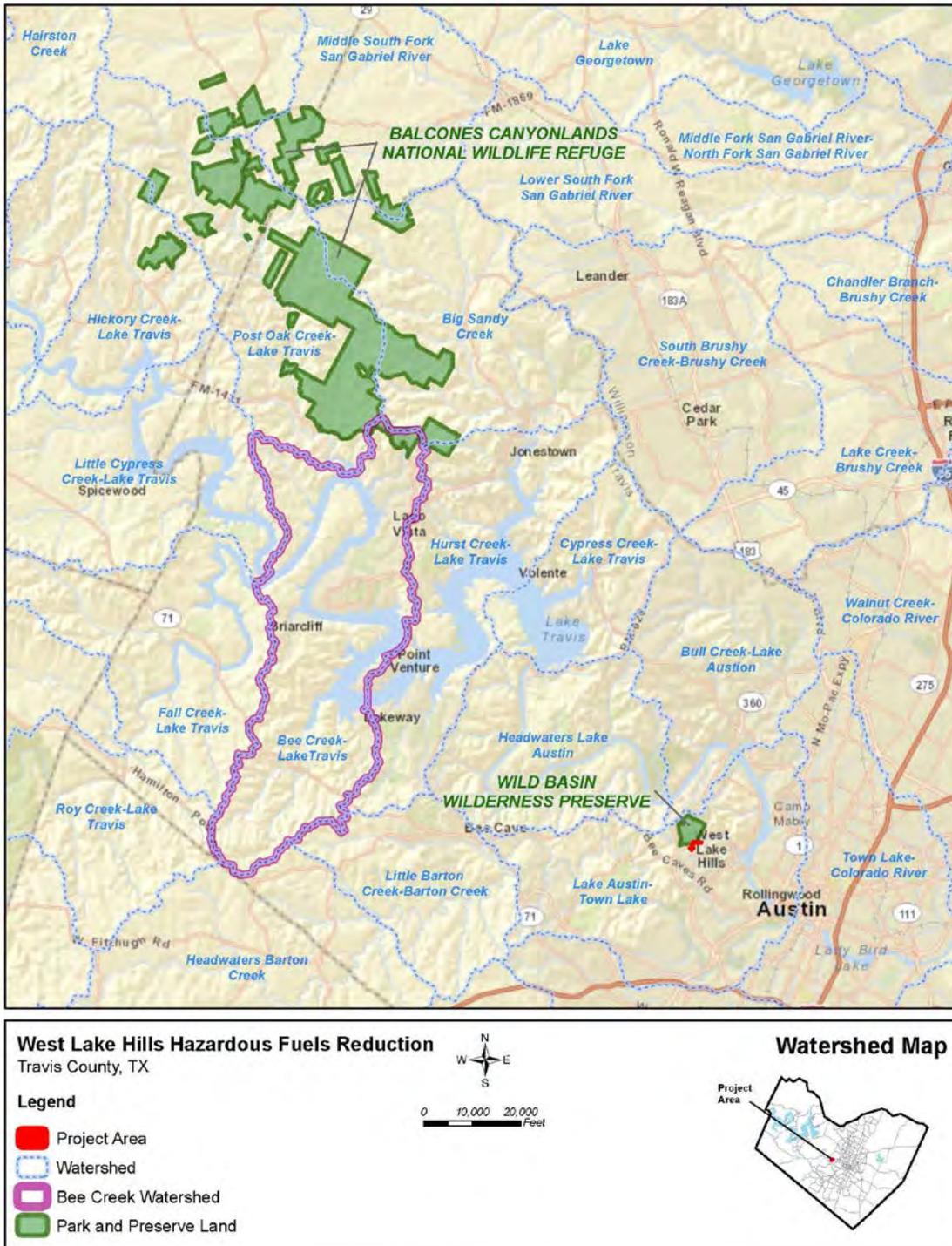
Affected Environment, Potential Impacts and Mitigation



1
2

Figure 4.7. Wetlands Map

Affected Environment, Potential Impacts and Mitigation



1
2

Figure 4.9. Watershed Map



WBWP Viewed From Proposed Project Area



WBWP Viewed From Proposed Project Area



Adjacent Residence Viewed From Proposed Project Area

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
Amphibians						
Austin blind salamander	<i>Eurycea waterlooensis</i>	PE	None	Mostly restricted to subterranean cavities of the Edwards Aquifer; dependent upon water flow/quality from the Barton Springs segment of the Edwards Aquifer; only known from the outlets of Barton Springs (Sunken Gardens (Old Mill) Spring, Eliza Spring, and Parthenia (Main) Spring which forms Barton Springs Pool); feeds on amphipods, ostracods, copepods, plant material, and (in captivity) a wide variety of small aquatic invertebrates.	Unlikely	Unlikely. No karst or cave habitat present
Barton Springs salamander	<i>Eurycea sosorum</i>	LE	E	Dependent upon water flow/quality from the Barton Springs pool of the Edwards Aquifer; known from the outlets of Barton Springs and subterranean water-filled caverns; found under rocks, in gravel, or among aquatic vascular plants and algae, as available; feeds primarily on amphipods.	Unlikely	Unlikely. No aquatic resources present
Jollyville Plateau salamander	<i>Eurycea tonkawae</i>	PE	None	Known from springs and waters of some caves north of the Colorado River.	Unlikely	Unlikely. No cave or spring habitat present
Birds						

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
American Peregrine falcon	<i>Falco peregrinus anatum</i>	DL	T	Year-round resident and local breeder in west Texas; nests in tall cliff eyries; migrant across state from more northern breeding areas in US and Canada; winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant; stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	Potential for foraging	Unlikely. No nesting or stopover habitat present
Bald eagle	<i>Haliaeetus leucocephalus</i>	DL	T	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds.	Unlikely	Unlikely. No nesting or foraging habitat present

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
Black-capped vireo	<i>Vireo atricapilla</i>	LE	E	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer.	Potential for foraging and nesting habitat	Potential to occur in Xeric Cedar Woodland and Xeric Cedar / Open Grassland Habitat types. None observed.
Golden-cheeked warbler	<i>Setophaga chrysoparia</i>	LE	E	Juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips only available from mature trees used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer.	Potential for foraging and nesting habitat	Potential to occur in Xeric Cedar Woodland and Xeric Cedar / Open Grassland Habitat types. None observed.
Interior Least Tern	<i>Sterna antillarum athalassos</i>	LE	E	Subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided	Unlikely	Unlikely. No nesting or foraging habitat present

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
				streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony.		
Peregrine Falcon	<i>Falco peregrinus</i>	DL	T	Both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (<i>F. p. anatum</i>) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, <i>F.p. tundrius</i> is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.	Potential for foraging	Unlikely. No nesting or stopover habitat present

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
Sprague's Pipit	<i>Anthus spragueii</i>	C ¹	None	Only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.	Unlikely	Unlikely. No large native prairie habitat patches present
Whooping crane	<i>Grus americana</i>	LE	E	Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	Unlikely	Unlikely. No marsh habitat present
Invertebrates (Arachnids)						
Bee Creek Cave harvestman	<i>Texella reddelli</i>	LE	None	Small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties.	Unlikely	Unlikely. No karst or cave habitat present
Bone Cave harvestman	<i>Texella reyesi</i>	LE	None	Small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties; weakly differentiated from <i>Texella reddelli</i> .	Unlikely	Unlikely. No karst or cave habitat present
Tooth Cave pseudoscorpion	<i>Tartarocreagris texana</i>	LE	None	Small, cave-adapted pseudoscorpion known from small limestone caves of the Edwards Plateau.	Unlikely	Unlikely. No karst or cave habitat present
Tooth Cave spider	<i>Neoleptoneta myopica</i>	LE	None	Very small, cave-adapted, sedentary spider.	Unlikely	Unlikely. No karst or cave

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
						habitat present
Warton's cave meshweaver	<i>Cicurina wartoni</i>			Very small, cave-adapted spider.	Unlikely	Unlikely. No karst or cave habitat present
Invertebrates (Insects)						
Kretschmarr Cave mold beetle	<i>Texamaurops reddelli</i>	LE	None	Small, cave-adapted beetle found under rocks buried in silt; small, Edwards Limestone caves in of the Jollyville Plateau, a division of the Edwards Plateau.	Unlikely	Unlikely. No karst or cave habitat present
Tooth Cave ground beetle	<i>Rhadine persephone</i>	LE	None	Resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties.	Unlikely	Unlikely. No karst or cave habitat present
Fishes						
Smalleye shiner	<i>Notropis buccula</i>	C ¹	None	Endemic to upper Brazos River system and its tributaries (Clear Fork and Bosque); apparently introduced into adjacent Colorado River drainage; medium to large prairie streams with sandy substrate and turbid to clear warm water; presumably eats small aquatic invertebrates.	Unlikely	Unlikely. No aquatic resources present
Mollusks						

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
False spike mussel	<i>Quadrula mitchelli</i>	None	T	Possibly extirpated in Texas; probably medium to large rivers; substrates varying from mud through mixtures of sand, gravel and cobble; one study indicated water lilies were present at a site where the species was found; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins.	Unlikely	Unlikely. No aquatic resources present
Smooth pimpleback	<i>Quadrula houstonensis</i>	C ¹	T	Small to moderate streams and rivers as well as moderate size reservoirs; mixed mud, sand, and fine gravel; tolerates very slow to moderate flow rates: appears not to tolerate dramatic water level fluctuations: scoured bedrock substrates or shifting sand bottoms; lower Trinity (questionable), Brazos, and Colorado River basins.	Unlikely	Unlikely. No aquatic resources present
Texas fatmucket	<i>Lampsilis bracteata</i>	C ¹	T	Streams and rivers on sand, mud, and gravel substrates; intolerant of impoundment; broken bedrock and coarse gravel or sand in moderately flowing water; Colorado and Guadalupe River basins.	Unlikely	Unlikely. No aquatic resources present
Texas fawnsfoot	<i>Truncilla macrodon</i>	C ¹	T	Little known; possibly rivers and larger streams, and intolerant of impoundment; flowing rice irrigation canals; possibly sand, gravel, and perhaps sandy-mud bottoms in	Unlikely	Unlikely. No aquatic resources present

Appendix B

				moderate flows; Brazos and Colorado River basins.		
Texas pimpleback	<i>Quadrula petrina</i>	C ¹	T	Mud, gravel and sand substrates, generally in areas with slow flow rates; Colorado and Guadalupe river basins.	Unlikely	Unlikely. No aquatic resources present
Texas horned lizard	<i>Phrynosoma cornutum</i>	None	T	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September.	Low potential	Low potential to occur in Xeric Cedar/ Open Grassland and Limestone Outcrop habitat types. None observed
Bracted twistflower	<i>Streptanthus bracteatus</i>	C	None	Texas endemic; shallow, well-drained gravelly clays and clay loams over limestone in oak juniper woodlands and associated openings, on steep to moderate slopes and in canyon bottoms; several known soils include Tarrant, Brackett, or Speck over Edwards, Glen Rose, and Walnut geologic formations; populations fluctuate widely from year to year,	Potential	Potential to occur in Xeric Cedar/ Open Grassland habitat type. None observed.

Listed Species Summary West Lake Hills						
Species (Common) ¹	Species	Federal Status	State Status	Habitat Description	Habitat Present in Survey Areas (CDM Desktop Assessment)	Habitat Present in Survey Areas (Field Assessment)
				depending on winter rainfall; flowering mid April-late May, fruit matures and foliage withers by early summer.		

Status Keys:

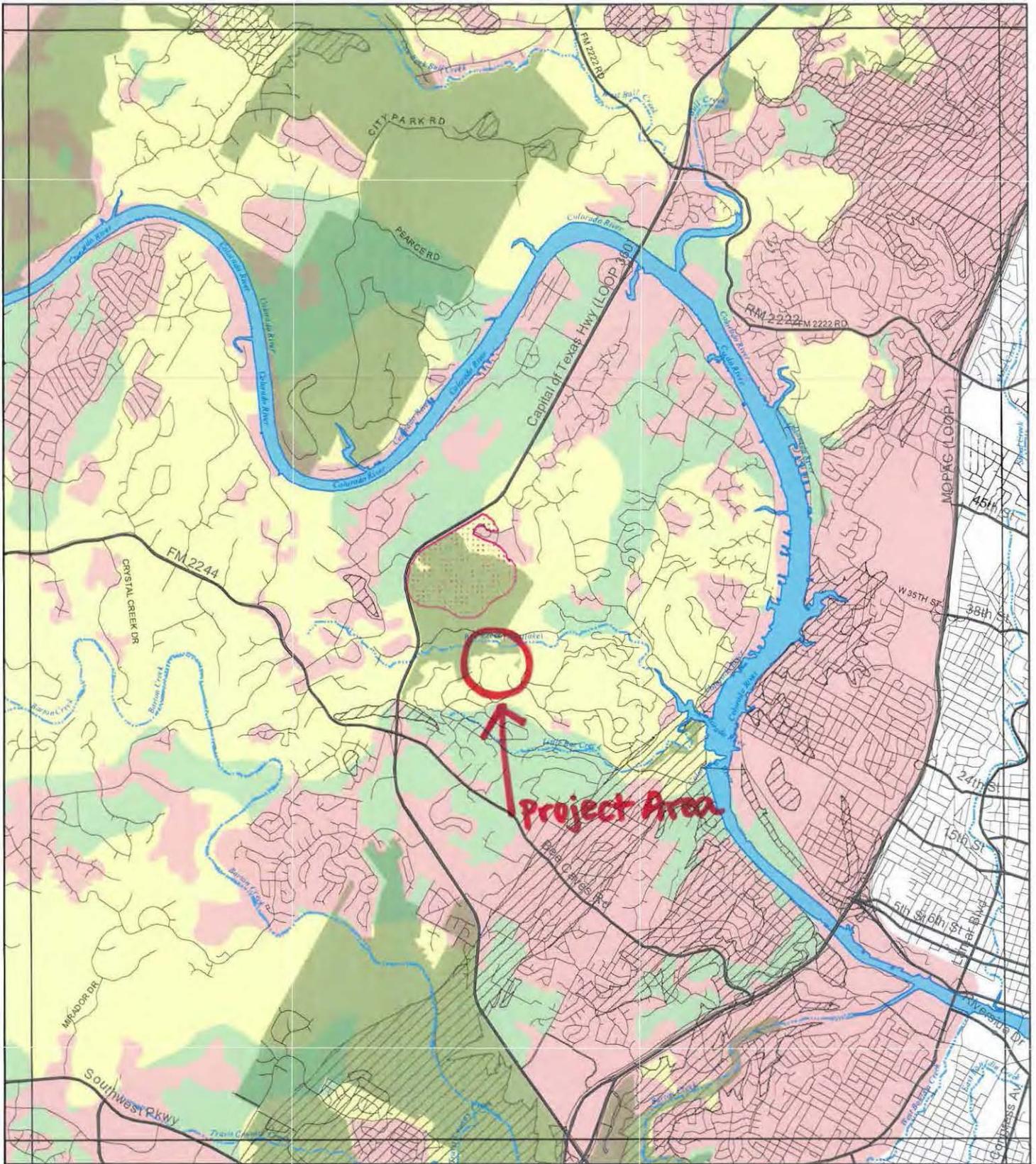
LE - Federally Listed Endangered

C - Federal Candidate for Listing; formerly Category 1 Candidate

DL - Federally Delisted

E, T - State Listed Endangered/Threatened

¹ -Based on information provided at <http://www.tpwd.state.tx.us/gis/ris/es/SpeciesList.aspx?parm=Bastrop>



**AUSTIN WEST, TEX - USGS 7.5' Quadrangle
Endangered Species Habitat and Potential Preserve System**

The map is based on property data from the Travis Central Appraisal District and general biological data available prior to September 1999. The biological data is to be used solely to calculate costs for participation in the Balcones Canyonlands Conservancy (BCCP), and not to calculate "take" as determined by the U.S. Fish and Wildlife Service (USFWS). The potential preserve boundary, endangered species habitat, and karst data depicted on this map have been verified by an USFWS biologist. The delineation for karst does not constitute a determination of eligibility for participation in the BCCP. The delineation for caves certified for protection by the BCCP will be determined by the proximity to caves certified for protection by the BCCP. The map is subject to change based on available information and decisions of the USFWS and the BCCP coordinating committee. Any such changes will go into effect on March 1st of the year specified by the USFWS. While every effort has been made to ensure the accuracy of the data, neither Travis County, the City of Austin, nor the USFWS are liable for any errors in the data. Errors brought to our attention will be reworked and corrected.

- | LEGEND | |
|---|--|
| Golden-cheeked Warbler - Zone 1 (Confirmed habitat) | Black-capped Vireo Habitat |
| Golden-cheeked Warbler - Zone 2 (Unconfirmed habitat) | BCCP Preserve Area (proposed) |
| Golden-cheeked Warbler - Zone 3 (Not known to be habitat) | Endangered Cave Species Habitat |
| | Karst Zones 1 & 2 |
| | Balcones Canyonland Wildlife Refuge (proposed) |

DATA SOURCES

Habitat: U.S. Fish and Wildlife Service
 Preserve Area: City of Austin/Travis County
 Hydrography: U.S. Geological Survey

Highways & Roads: City of Austin, Travis County TNR
 Railroads: U.S. Census Bureau
 County Boundary: Travis County - TNR



**Preserve and Refuge are not within the BCCP permit area.
 Please contact the US Fish and Wildlife Service for development information.**



United States Department of the Interior



FISH AND WILDLIFE SERVICE

10711 Burnet Road, Suite 200
Austin, Texas 78758
512 490-0057
FAX 490-0974

FEB 20 2015

Mr. Kevin Jaynes
Regional Environmental Officer
FEMA Region 6
800 North Loop 288
Denton, TX 76209-3698

Consultation #: O2ETAU00-2013- F-0297

Dear Mr. Jaynes,

This transmits our biological opinion for the proposed Federal Emergency Management Agency (FEMA) funding through their Hazard Mitigation Grant Program (HMGP- DR-1999-0005) of hazardous fuel reduction work by the City of Westlake Hills in and adjacent to Wild Basin Wilderness Preserve (WBWP). Hazardous fuel 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. Hazardous fuel reduction is proposed between WBWP and the City of West Lake Hills on approximately 12.8 acres, starting at the residential properties and continuing downslope across private property and onto WBWP, to a maximum of 50 feet inside the boundary of the WBWP (proposed action). The geographic scope of the proposed action includes public and private property adjacent to the southern boundary of the WBWP along Circle Ridge Drive, Travis County, Texas. FEMA requested formal consultation from the U.S. Fish and Wildlife Service's Austin Ecological Services Field Office (Service), for the hazardous fuel reduction work in a letter dated September 30, 2014, with an attached Biological Assessment, City of West Lake Hills, Hazardous Fuels Reduction Project, Travis County, Texas dated September, 2014 (BA).

The purpose of the proposed action is to reduce wildfire hazard through the reduction and removal of understory vegetation that has accumulated between private residences and the public preserve property. It is anticipated that the proposed hazardous fuel reduction project may adversely affect the golden-cheeked warbler (*Setophaga [=Dendroica] chrysoparia*) listed as endangered pursuant to the Endangered Species Act of 1973, as amended (Act)(16 U.S.C. 1531 et seq.). This consultation is pursuant to section 7 of the Act.

Other species listed as threatened or endangered pursuant to the Act, specifically Travis County karst species (*Texamaurops reddelli*, *Rhadine persephone*, *Texella reddell*, *Tartarocreagris*



texana, *Leptoneta myopica*, and *Texella reyesi*), have not been detected within the proposed action area. Habitat for the whooping crane (*Grus americana*) and three listed species of salamanders (*Eurycea waterlooensis*, *Eurycea sosorum*, and *Eurycea tonkawae*) does not occur within the action area. Therefore, these species will not be discussed further in this biological opinion. FEMA has determined that the effects of the proposed action are not likely to adversely affect the black-capped vireo (*Vireo atricapilla*). The Service concurs with the not likely to adversely affect determination due to avoidance and minimization measures included in the biological assessment and the restricted linear nature of the proposed activity (Please see section 4.2 in the BA).

The findings and recommendations in this consultation are based on: (1) the Biological Assessment, City of West Lake Hills, Hazardous Fuels Reduction Project, Travis County, Texas dated September, 2014, (2) 2014 survey data provided by the City of Austin, (3) discussions with FEMA staff; and, (4) other sources of information available to the Service.

Consultation History

September 10, 2013 The Service received a letter from FEMA requesting concurrence with a not likely to adversely affect determination for the City of West Lake Hills hazardous fuel reduction project.

September 25, 2013 The Service supplied FEMA with additional information by phone about the location of the proposed project including that WBWP was a mitigation site under the Balcones Canyonlands Habitat Conservation Plan (BCCP) and recommended formal consultation and correspondence with Travis County and the City of Austin.

October 24, 2013 The Service received an e-mail confirming that FEMA had been in contact with Travis County and that the County would work with FEMA regarding the scope and scale of the project within WBWP.

September 30, 2014 The Service received a letter from FEMA transmitting the BA and requesting initiation of formal consultation on the City of West Lake Hills hazardous fuel reduction project.

BIOLOGICAL OPINION

Proposed Action

For more specific information regarding the objectives of the proposed action, please refer to the BA.

The City of West Lake Hills has submitted an application to FEMA through the Texas Division of Emergency Management (TDEM) for a grant under FEMA's HMGP. TDEM is the direct applicant for the grant, and the City of West Lake Hills is the subapplicant. The City of West Lake Hills proposes to implement hazardous fuels reduction on approximately 12.81 acres, starting at the residential property boundaries and continuing downslope across private property and onto the WBWP, to a maximum of 50 feet beyond the boundary of the WBWP. The proposed action would reduce wildfire hazards in the City of West Lake Hills adjacent to the WBWP.

Hazardous fuel 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. Trees that would be cut primarily include small Ashe juniper (*Juniperus ashei*) and live oak (*Quercus fusiformis*) in the understory to reduce ladder fuels, and would also include some large Ashe juniper and live oak to thin the canopy. Red oak (*Quercus rubra*), walnut (*Juglans* sp.), cherry (*Prunus* sp.), hackberry (*Celtis occidentalis*), and cedar elm (*Ulmus crassifolia*) are favored for retention (Please see Figures 1.3 and 1.4 in the BA).

Stumps of trees would be ground down to near the soil surface, and the subsurface soil profiles would not be disturbed. Debris would be chipped onsite and spread to a thickness of no more than 2 inches or transported off site and chipped. The City proposes to plant or encourage residents to plant fire-resistant hard woods such as red oak, walnut, cherry, hackberry, and cedar elm in bare patches to reduce grass fire ignition. These tree species have less crown bulk density than Ashe juniper and live oak.

During project implementation, the equipment used would include chainsaws and a front end loader. No pesticides or herbicides would be used in project implementation or maintenance.

Per FEMA grant requirements, the City must maintain the areas where hazardous fuels reduction activities have been completed to achieve the proposed wildfire hazard mitigation. Post-project maintenance to cut back and clear the undergrowth would be conducted a minimum of once every 3 years. Maintenance would include minor use of mechanical equipment and would not include the use of herbicides or pesticides.

Site preparation and monitoring

The City of Westlake Hills plans to collaborate with the following agencies and entities to carry out the proposed action:

West Lake Hills Fire Department

WBWP

Travis County (WBWP owner)

St. Edwards University (WBWP manager)

U.S. Fish and Wildlife Service (USFWS)

FEMA and the City of West Lake Hills will coordinate activities on preserve lands with WBWP and Travis County staff, and no work will be done on WBWP land without prior approval from Travis County staff. All work performed on the WBWP must comply with the Travis County Natural Resources Scope of Work for Wildfire Mitigation on Balcones Canyonlands Preserve. All access to the preserve area must be from the private property side.

The Travis County Natural Resources Scope of Work for Wildfire Mitigation on Balcones Canyonlands Preserve (please see Appendix A in the BA) includes the following site preparation items:

- Treatment zone boundaries will be marked in the field with color-coded ribbon and clearly delineated on maps provided.
- Zones will be delineated to avoid areas with slopes exceeding a thirty percent grade (approx. 15 degrees).
- Pruning and thinning will be accomplished according to the appropriate guidelines for each of three zones, (1) Canopy Edge Zone (0-30 feet inside tree canopy boundary), (2) Canopy Interior Zone (greater than 30 feet inside tree canopy boundary), (3) Open Woodland Zone (outside of continuous tree canopy).

Project timing

FEMA and the City of West Lake Hills would conduct hazardous fuels reduction work only outside of the breeding season for golden-cheeked warbler. Work would be allowed from September 1 through February 28. Work would not be conducted from March 1 through August 31. The implementation of the proposed project is scheduled to occur over a period of 2 to 4 weeks.

Proposed Conservation Measures

FEMA and the City of West Lake Hills have proposed the following conservation measures to minimize adverse effects to golden-cheeked warbler. Implementation of these measures is a condition of the FEMA grant and a requirement of federal funding.

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.

The City of West Lake Hills 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 the oak wilt fungus.

The City of West Lake Hills must ensure that best management practices (BMPs) are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent waters. This includes equipment storage and staging to minimize erosion and sedimentation.

Description of the Action Area

Area Affected

The action area is defined as xeric juniper/open grassland and xeric juniper/woodland between Little Bend Road, Circle Ridge Drive, and 50 feet within the boundary of WBWP in Travis County, Texas (please see Figure 3.1 in the BA).

Status of the species

Golden-cheeked warbler

Species Description and Life History

The golden-cheeked warbler was emergency listed as endangered on May 4, 1990 (55 FR 18844). The final rule listing the species was published on December 27, 1990 (55 FR 53160). No critical habitat is designated for this species.

The golden-cheeked warbler is a small, insectivorous songbird, 4.5 to 5 inches long with a wingspan of approximately 8 inches (Pulich 1965 and 1976, Oberholser 1974). Golden-cheeked warblers breed exclusively in the mixed Ashe juniper/deciduous woodlands of the central Texas Hill Country west and north of the Balcones Fault (Pulich 1976). Golden-cheeked warblers require the shredding bark produced by mature Ashe junipers for nest material. Typical deciduous woody species include Texas oak (*Quercus buckleyi*), Lacey oak (*Q. glaucooides*), live oak (*Q. fusiformis*), Texas ash (*Frazinus texensis*), cedar elm (*Ulmus crassifolia*), hackberry (*Celtis occidentalis*), bigtooth maple (*Acer grandidentatum*), sycamore (*Platanus occidentalis*), Arizona walnut (*Juglans major*), and pecan (*Carya illinoensis*) (Pulich 1976, Ladd 1985, Wahl et al. 1990). Breeding and nesting golden-cheeked warblers feed primarily on insects, spiders, and other arthropods found in Ashe junipers and associated deciduous tree species (Pulich 1976).

Male golden-cheeked warblers arrive in central Texas around March 1st and begin to establish breeding territories, which they defend against other males by singing from visible perches within their territories. Female golden-cheeked warblers arrive a few days later, but are more difficult to detect in the dense woodland habitat (Pulich 1976). Three to five eggs are generally incubated in April, and unless there is a second nesting attempt, nestlings fledge in May to early June (Pulich 1976). If there is a second nesting attempt, it is typically in mid-May with nestlings fledging in late June to early July (Pulich 1976). By late July, golden-cheeked warblers begin

their migration south (Chapman 1907, Simmons 1924). Golden-cheeked warblers winter in the highland pine-oak woodlands of southern Mexico and northern Central America (Kroll 1980).

Historic and Current Distribution

The golden-cheeked warbler's entire breeding range occurs on the Edwards Plateau and Lampasas Cut Plain of central Texas. Golden-cheeked warblers have been confirmed in 39 counties: Bandera, Bell, Bexar, Blanco, Bosque, Burnet, Comal, Coryell, Dallas, Eastland, Edwards, Erath, Gillespie, Hamilton, Hays, Hill, Hood, Jack, Johnson, Kendall, Kerr, Kimble, Kinney, Lampasas, Llano, Mason, McLennan, Medina, Menard, Palo Pinto, Real, San Saba, Somervell, Stephens, Tom Green, Travis, Uvalde, Williamson, and Young. However, many of the counties where golden-cheeked warblers are known to occur, now or in the past, have only small amounts of suitable habitat (Pulich 1976, Service 1996a, Lasley et al. 1997). Estimates of the amount of suitable warbler breeding habitat range from approximately 321,000 to 1.7 million hectares (247,000- 4.2 million acres), and much of this habitat occurs on private lands (Groce et al. 2010). As a result, the population status for the golden-cheeked warbler on private lands remains undocumented throughout major portions of the breeding range.

Reasons for Decline and Threats to Survival

Before 1990, the primary reason for golden-cheeked warbler habitat loss was juniper clearing to improve conditions for livestock grazing. Since then, habitat loss has occurred as suburban developments spread into prime golden-cheeked warbler habitat. Groce et al. (2010) summarized the rates of expected human population growth within the range of the golden-cheeked warbler and found by 2030 the growth rate ranges from 17 percent around the Dallas-Fort Worth area to over 164 percent around San Antonio. As the human population continues to increase, so do associated roads, single and multi-family residences, and infrastructure, resulting in continued habitat destruction, fragmentation, and increased edge effects.

Fragmentation is the reduction of large blocks of a species' habitat into smaller patches. While golden-cheeked warblers have been found to be reproductively successful in small patches of habitat (<50 acres), there is an increased likelihood of occupancy and abundance as patch size increases (Coldren 1998, DeBoer and Diamond 2006, Butcher et al. 2010). Increases in pairing and territory success are also correlated with increasing patch size (Arnold et al. 1996, Coldren 1998, Butcher et al. 2010). In addition, while some studies have suggested that small patches that occur close to larger patches are likely to be occupied by golden-cheeked warblers, the long-term survival and recovery of the golden-cheeked warbler is dependent on maintaining the larger patches (Coldren 1998, Peterson 2001, TNC 2002).

As a species' habitat fragmentation increases it creates edges where two or more different vegetation types meet. For the golden-cheeked warbler, edge is where woodland becomes shrubland, grassland, a subdivision, etc., and depending on the type of edge, it can act as a barrier for dispersal; act as a territory boundary; favor certain predators; increase nest predation; and/or reduce reproductive output (Arnold et al. 1996, Johnston 2006). Canopy breaks (the distance between tree top foliage) of as little as 36 feet have been shown to be barriers to golden-

cheeked warbler movement (Coldren 1998). Territory boundaries have not only been shown to stop at edges, but golden-cheeked warblers will often avoid nesting near habitat edges (Beardmore 1994, DeBoer and Diamond 2006, Sperry 2007).

Other threats to golden-cheeked warblers include the clearing of deciduous oaks upon which the warbler forage, oak wilt infection in trees, nest parasitism by brown headed cowbirds (Engels and Sexton 1994), drought, fire, stress associated with migration, competition with other avian species, and particularly, loss of habitat from urbanization (Ladd and Gass 1999). Human activities have eliminated warbler habitat throughout the species' range, particularly areas associated with the Interstate 35 corridor between the Austin and San Antonio metropolitan areas.

Range-wide Survival and Recovery Needs

The recovery strategy outlined in the Golden-cheeked Warbler Recovery Plan (Service 1992) divides the breeding range of the golden-cheeked warbler into eight regions, or units, and calls for the protection of sufficient habitat to support at least one self-sustaining viable population in each unit. These recovery units were delineated based primarily on watershed, vegetation, and geologic boundaries (Service 1992).

According to the Golden-cheeked Warbler Population and Habitat Viability Assessment Report, a viable population needs to consist of at least 3,000 breeding pairs (Service 1996a). This and other population viability assessments on golden-cheeked warblers have indicated the most sensitive factors affecting their continued existence are population size per patch, fecundity (productivity or number of young per adult), and fledgling survival (Service 1996a, Alldredge et al. 2002). These assessments estimated one viable population will need a minimum of 32,500 acres of prime unfragmented habitat to reduce the possibility of extinction of that population to less than five percent over 100 years (Service 1996a). Further, this minimum carrying capacity threshold estimate increases with poorer quality habitat (e.g., patchy habitat resulting from fragmentation).

Based on the Golden-cheeked Warbler Recovery Plan (Service 1992), protection and management of occupied habitat and minimization of degradation, development, or environmental modification of unoccupied habitat necessary for buffering nesting habitat are necessary to provide for the survival of the species. Habitat protection must include elements of both breeding and non-breeding habitat (i.e., associated uplands and migration corridors). Current and future efforts to create new and protect existing habitat will enhance the golden-cheeked warbler's ability to expand in distribution and numbers. Efforts, such as land acquisition for golden-cheeked warbler habitat conservation and conservation easements, to protect existing viable populations is critical to the survival and recovery of this species, particularly when rapidly expanding urbanization continues to result in the loss of prime breeding habitat.

Several State and Federally owned lands occur within the breeding range of the golden-cheeked warbler, but the overriding majority of the species' breeding range occurs on private lands that

have been either occasionally or never surveyed (Service 1992). Currently there are four large golden-cheeked warbler populations receiving some degree of protection: those at the Balcones Canyonlands Preserve in Travis County; the Balcones Canyonlands National Wildlife Refuge in Travis, Burnet, and Williamson counties; Camp Bullis Military Installation in Bexar County; and the Fort Hood Military Reservation in Coryell and Bell counties. There are also two active conservation banks (CB) whose goal is to protect golden-cheeked warbler habitat (acres represent the amount currently under conservation easement): Hickory Pass CB (2,892 acres) in Burnet County and Bandera Corridor CB (2,113.5 acres) in Bandera County.

Environmental Baseline

Status within the Action Area

WBWP is one of a series of preserve lands included within the West Austin macrosite created by the BCCP under a permit issued by the Service in 1996. According to the BCCP (Service 1996b) Wild Basin Wilderness Preserve is managed for the benefit of the golden-cheeked warbler and black-capped vireo.

Xeric juniper/woodland, xeric juniper/open grassland, a small limestone outcrop, and manicured lawn are included within the 12.8 acre project area, with the majority of the acreage found within the xeric juniper/woodland community (please see Figure 3.1 in the BA). Male golden-cheeked warblers have consistently established breeding territories within the southern portion of WBWP. Within the last three years the number of territorial males has increased from four in 2012, to seven in 2013, and to ten in 2014 (Travis County 2012, 2013, and 2014).

According to the 2014 BCCP annual report, two golden-cheeked warbler territories were detected within and immediately adjacent to the action area during the 2014 breeding season. An unbanded male warbler occupied a territory partially outside of the WBWP southern boundary on private property within the project area. The unbanded male was not observed with a mate. A banded male that paired with a female occupied a territory within and immediately adjacent to the WBWP southern boundary. The nest from this pairing was not found during the surveys and was presumed predated. Overall golden-cheeked warblers experienced poor nesting success in 2014 on WBWP with only one of ten occupied territories successfully fledging young.

To date the BCCP has protected over 30,500 acres of habitat for the golden-cheeked warbler and black-capped vireo within Travis County (Travis County 2013).

The Service has issued 61 formal section 7 consultations authorizing over 100,000 acres of golden-cheeked warbler habitat to be impacted and 133 incidental take permits associated with HCPs for the golden-cheeked warbler that cover a permit area of more than 70.1 million acres. Several large section 7 consultations account for over 95% of the total impacts authorized: 1) over 37,900 acres were associated with Department of Defense (DOD) activities on Fort Hood; 2) over 51,500 acres were associated with Natural Resource Conservation Service brush control projects throughout the GCWA's 35 county range; and 3) 5,000 acres were associated with DOD

activities on Camp Bullis, less than 15 percent of which was considered occupied. The result of these consultations is over 67,800 acres of golden-cheeked warbler habitat maintained on DOD land and over 22,000 acres of private land preserved and/or maintained for the benefit of the GCWA.

Recent large scale 10(a)(1)(B) incidental take permits issued that include golden-cheeked warbler as a covered species include the Oncor HCP, Hays County HCP, Lower Colorado River Authority Competitive Renewable Energy Zone HCP, and the Comal County HCP. In total these four HCPs authorize approximately 18,363 acres of impacts to golden-cheeked warbler habitat and at full performance would preserve 22,988 acres of golden-cheeked warbler habitat.

Thirteen previous section 7 consultations that include take of golden-cheeked warbler have been completed for actions within Travis County resulting in the loss of approximately 2,100 acres and the preservation of approximately 2,500 acres of golden-cheeked warbler habitat.

Seventeen previous HCPs that include take of golden-cheeked warbler have been completed for actions within Travis County:

1. Sixteen smaller scale HCPs authorized removal of approximately 652 acres of golden-cheeked warbler habitat and preservation of approximately 1,500 acres of golden-cheeked warbler habitat; and,
2. The Balcones Canyonlands Conservation Plan (TE-788841) authorized removal of 21,753 acres of golden-cheeked warbler habitat and preservation of 28,428 acres of golden-cheeked warbler habitat within Travis County.

Effects of the Proposed Action

Direct and indirect effects are likely to occur to the golden-cheeked warbler as a result of the proposed activities primarily due to the alteration of habitat outside of the breeding season. The entirety of the 12.8 acres within the action area have the potential to be utilized by golden-cheeked warblers either as nesting habitat or as post foraging/fledging habitat. Prior species surveys within WBWP identified two golden-cheeked warbler territories within or immediately adjacent to the project area. Removal and trimming of vegetation to accomplish fuel reduction activities would result in a reduced amount of breeding habitat available to the species during the breeding season and would result in take in the form of harm. Indirect effects would include short-term changes in prey abundance as a result of vegetation alteration as well as further fragmentation of golden-cheeked warbler habitat.

Hazardous fuel reduction activities are anticipated to directly and indirectly impact up to 12.8 acres of golden-cheeked warbler habitat between Little Bend Road, Circle Ridge Drive, and 50 feet within the boundary of WBWP. This is based on the description of fuel reduction treatment between city-owned land and private residences, removal of hazardous fuels by clearing brush and combustible materials, and cutting tree branches to heights of up to 8 to 10 feet from ground level. However, the majority of the impacts will occur to trees and branches less than 10 feet above the ground, and the treatments will not result in a reduction in canopy cover. Since

golden-cheeked warblers often select nest locations within the top third of the nest tree and at heights greater than 6.5 feet above the ground (Groce et al. 2010), the effects of hazardous fuel treatments to the golden-cheeked warbler would be minimized by the type of treatment chosen.

Additionally a long-term beneficial effect to golden-cheeked warbler habitat is expected from a reduction in the potential for catastrophic wildfire as a result of the proposed activity. The loss of a substantial amount of golden-cheeked warbler habitat from wildfires on Fort Hood in 1996 resulted in a decrease in golden-cheeked warbler abundance even after 10 years following the fire (Baccus et al. 2007). Therefore, any activities in golden-cheeked warbler habitat that reduce the likelihood of a wildfire or reduce the intensity of wildfire when one occurs will provide indirect benefits to the species.

Cumulative Effects

Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

An undetermined number of future land use conversions and habitat conversions are not subject to Federal authorization or funding and may alter the habitat or increase incidental take of species covered by this opinion and are, therefore, cumulative to the proposed project. These additional cumulative effects include: (1) increased habitat removal due to development and urbanization; (2) utility construction through open areas/preserves; (3) recreational activities; and, (4) habitat alteration by invasive exotic species.

It is anticipated that Travis County and the City of Austin will continue to manage the WBWP for the benefit of listed species pursuant to the BCCP (TE-788841) under which the preserve was created.

Conclusion

After reviewing the current status of the golden-cheeked warbler, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of the golden-cheeked warbler. Hazardous fuel reduction activities will be limited to the minimum amount of vegetation and ground disturbance necessary to complete the proposed activity. Conservation measures proposed by FEMA will minimize the potential for harm to individuals by removing vegetation outside of the golden-cheeked warbler breeding season. Further, the proposed action will minimize the risk of catastrophic wildfire within WBWP and help to maintain the biological integrity of the preserve in the long-term. Critical habitat has not been designated for this species; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined by the Service as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is further defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding and sheltering (50 CFR §17.3). Harm is also further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns, including breeding, feeding, and sheltering. Incidental take is defined by the Service as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are nondiscretionary and must be implemented by the Federal Emergency Management Agency so that they become binding conditions of any authorization issued to implement a project covered by this biological opinion, as appropriate, in order for the exemption in section 7(o)(2) to apply. The Federal Emergency Management Agency has a continuing duty to regulate the activity covered by this incidental take statement. If the Federal Emergency Management Agency (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the authorizations, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Federal Emergency Management Agency must report the progress of the action and its impact on the species to the Austin Ecological Services Field Office as specified in the incidental take statement. [50 CFR 402.14(i)(3)].

Amount or Extent of Take

The Service anticipates incidental take of golden-cheeked warblers will occur as a result of the proposed action. Individual golden-cheeked warblers are difficult to detect unless they are observed, undisturbed, in their environment. The Service anticipates the following amount of incidental take from the hazardous fuel reduction activities within the Wild Basin Wilderness Preserve and surrounding areas:

1. No more than four golden-cheeked warblers may be disturbed as a result of actions authorized under this biological opinion.
2. No more than 12.8 acres of golden-cheeked warbler habitat may be disturbed as a result of actions authorized under this biological opinion.

Effect of the Take

In the accompanying biological opinion, the Service has determined that this level of anticipated take is not likely to result in jeopardy of the golden-cheeked warbler due to the short-term and limited effects associated with the proposed action. The hazardous fuel reduction project is anticipated to benefit the golden-cheeked warbler in the long-term by minimizing the risk of catastrophic wildfire within Wild Basin Wilderness Preserve. Critical habitat has not been designated for this species; therefore, none will be affected.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of golden-cheeked warblers:

The Federal Emergency Management Agency shall:

1. Minimize harassment and harm of golden-cheeked warblers during activities associated with hazardous fuel reduction described in this biological opinion and the accompanying attached Biological Assessment, City of West Lake Hills, Hazardous Fuels Reduction Project, Travis County, Texas dated September, 2014.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Federal Emergency Management Agency must comply with the following terms and conditions that implement the reasonable and prudent measure described above and outlined reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. The following terms and conditions implement the reasonable and prudent measure:
 - A. All personnel involved in any authorized activity covered by this biological opinion shall be informed of these terms and conditions prior to the implementation of the authorized activity;
 - B. The hazardous fuel reduction activities will be completed outside of the golden-cheeked warbler breeding season (March 1 through August 31);
 - C. After completion of activities covered by this biological opinion that result in habitat alteration, any temporary fill, construction material, or other debris shall be removed; and,
 - D. The Federal Emergency Management Agency shall ensure compliance with the Reporting Requirements below to assist in future construction project decisions to avoid and minimize effects on golden-cheeked warblers and their associated habitats.

Reporting Requirements

Where temporary or permanent adverse effects occur, a post-activity report shall be forwarded to the Field Supervisor, Austin Ecological Services Field Office, within 60 calendar days of the

completion of such activities. This report shall detail (1) dates that activities occurred; (2) pertinent information concerning the success in implementing the measures, as appropriate; (3) an explanation of failure to meet such measures, if any; (4) known project effects on species listed pursuant to the Act, if any; (5) occurrences of incidental take of species listed pursuant to the Act, if any; and (6) other pertinent information.

The Austin Ecological Services Field Office is to be notified within three working days of the finding of any dead listed species or any unanticipated harm to the species addressed in this biological opinion. The Service contact person for this is the Field Supervisor at (512) 490-0057.

Review Requirements

The reasonable and prudent measure, with its implementing terms and conditions, are designed to minimize the effects of incidental take that might otherwise result from the proposed action. With implementation of this measure, the Service believes that no more than four golden-cheeked warblers and 12.8 acres of golden-cheeked warbler habitat will be directly and/or indirectly affected.

If, during the course of the authorized activities, this level of incidental take is exceeded prior to the annual review, such incidental take represents new information requiring review of the reasonable and prudent measure provided. The Federal Emergency Management Agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measure. This biological opinion will expire five years from the date of issuance. Issuance of a new biological opinion will be subject to evaluation of the recovery of the species.

Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibilities for this species.

1. The Federal Emergency Management Agency should assist the Service in the implementation of the recovery plan for the golden-cheeked warbler;
2. The Federal Emergency Management Agency and the City of West Lake Hills should incorporate into bidding documents the terms and conditions of this biological opinion, when appropriate;
3. The Federal Emergency Management Agency, in partnership with the Service, should develop guidelines for Federal Emergency Management Agency permitted projects that will reduce adverse effects of routine projects on listed species and their habitat. Such actions may contribute to the delisting and recovery of listed species by preventing degradation of existing habitat and increasing the amount and stability of suitable habitat; and,

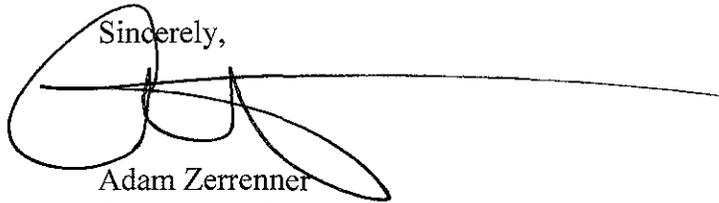
4. In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

Reinitiation Notice

This concludes formal consultation on hazardous fuel reduction activities in and adjacent to Wild Basin Wilderness Preserve. As provided in 50 CFR Sec. 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this consultation; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this biological opinion; or, (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Charlotte Kucera at (512) 490-0057, extension 224.

Sincerely,

A handwritten signature in black ink, appearing to read 'Adam Zerrenner', with a long horizontal line extending to the right.

Adam Zerrenner
Field Supervisor

cc: Dorothy Weir, Federal Emergency Management Agency, Denton, Texas

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