

Draft Environmental Assessment
City of Bastrop, Texas
Gill's Branch Hazardous Fuels Reduction
HMGP-DR-1999-0033
Bastrop County, Texas
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Acronyms and Abbreviations

APE	area of potential effects
AQCR	air quality control region
BMPs	best management practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CsE2	Crockett fine sandy loam
CWA	Clean Water Act
DeC	Roboco loamy fine sand
EA	environmental assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESD	Emergency Services District
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	finding of no significant impact
FPPA	Farmland Protection Policy Act
GLO	Texas General Land Office
HMGP	Hazard Mitigation Grant Program
in/hr	inch(es) per hour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
P.L.	Public Law
Sa	Sayers fine sandy loam
SH	state highway
SHPO	State Historic Preservation Officer
TCEQ	Texas Commission on Environmental Quality
TDEM	Texas Division of Emergency Management
THC	Texas Historical Commission
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
Tw	Tinn clay
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

SECTION 1 Introduction

The City of Bastrop, Texas, proposes to implement hazardous fuels reduction activities along Gill's Branch to reduce wildfire hazards in residential, commercial, and public areas near wooded areas along the creek. The area along the creek represents a potential direct wildfire threat to nearby residences and businesses. The City of Bastrop has submitted an application to the Federal Emergency Management Agency (FEMA) through the Texas Division of Emergency Management (TDEM) for a grant under FEMA's Hazard Mitigation Grant Program (HMGP). TDEM is the direct applicant for the grant, and the City of Bastrop is the subapplicant.

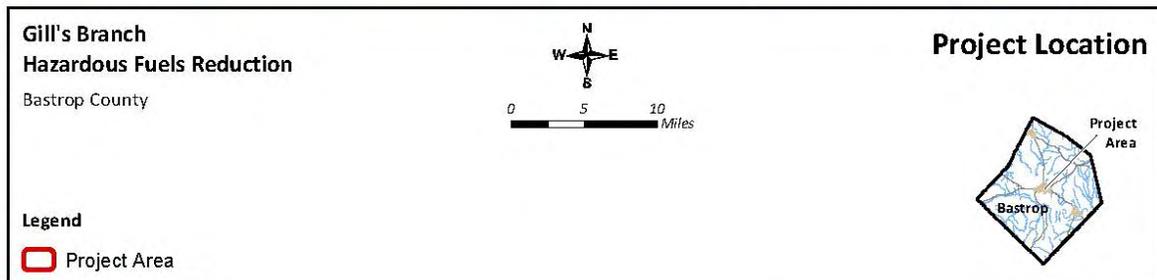
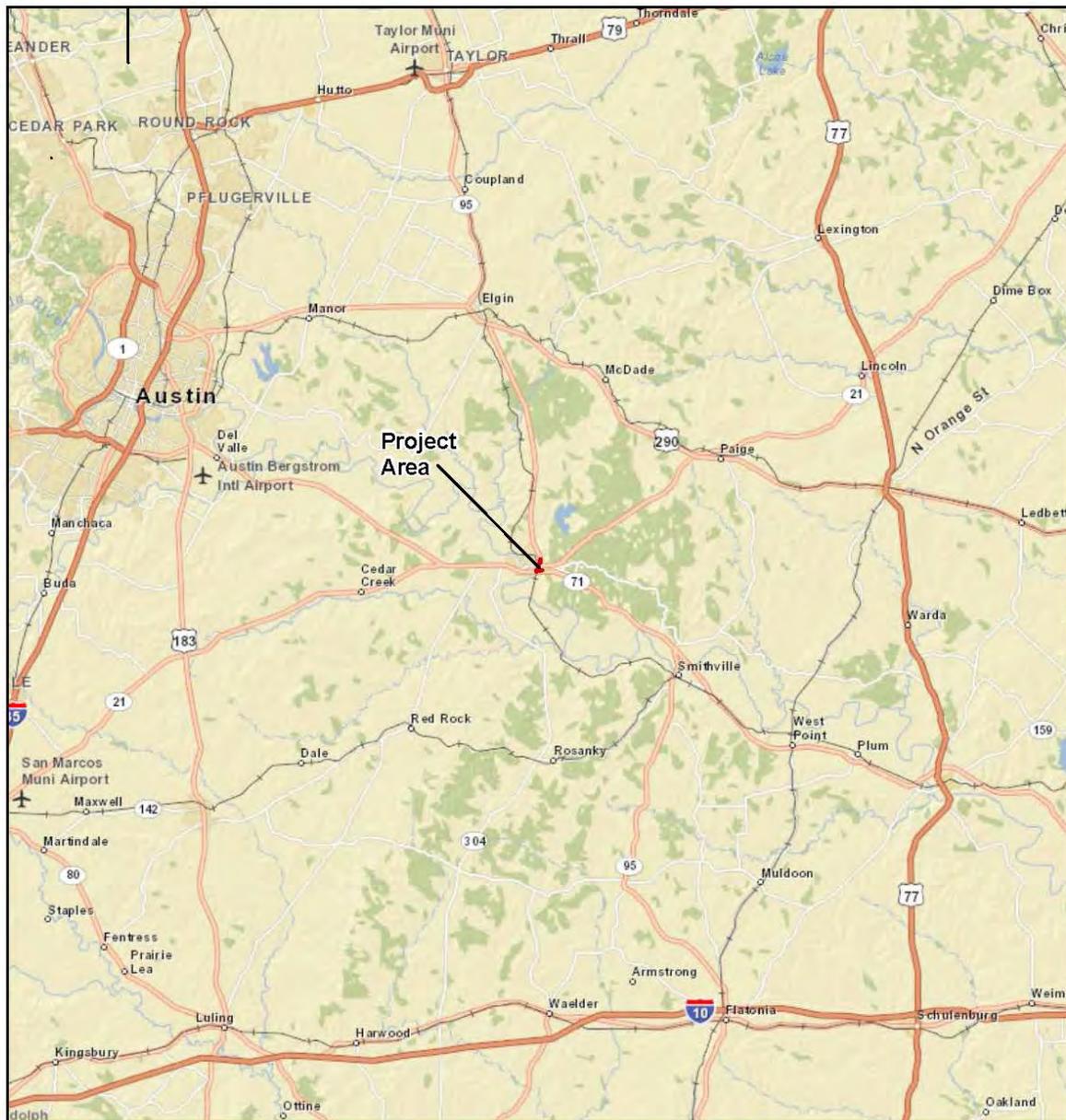
The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Under the HMGP, federal funds pay 75 percent of the project cost, and the remaining 25 percent comes from nonfederal funding sources.

The City of Bastrop is an incorporated municipality approximately 27 miles southeast of Austin, Texas (**Figure 1.1**). The project would be conducted within the banks of Gill's Branch (**Figure 1.2** and **Figure 1.3**). The creek runs through commercial, residential, and public properties. In the east tributary portion of the project area, the creek is routed through an underground conveyance; therefore, no hazardous fuels reduction activities would be conducted in this portion of the creek.

The proposed action would involve hazardous fuels mitigation measures to reduce the potential for a major wildfire along the creek and to prevent a wildfire from spreading from the edge of town into the downtown area. The mitigation measures include removing vegetation from the ground to at least 8 feet high along the creek and its banks. Brush clearing would be contained within the banks of the creek. The creek is approximately 80 to 100 feet wide. All species of trees, including hackberry, elm, cottonwood, and willow would be trimmed to at least 8 feet high and all yaupon would be removed. Select large trees (greater than 6 inches in diameter) would be removed as long as they are not necessary for bank stabilization.

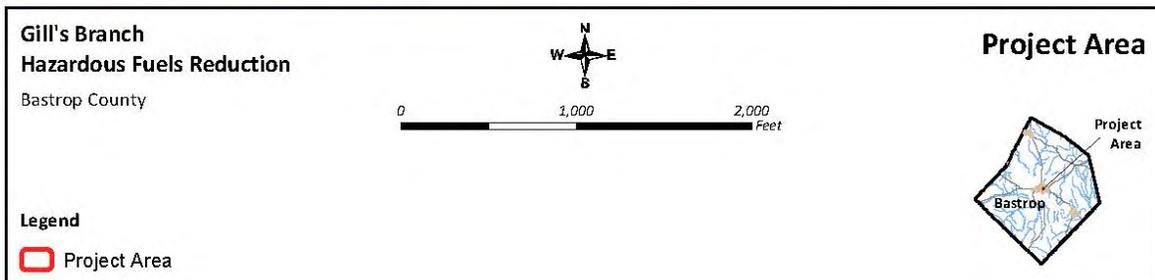
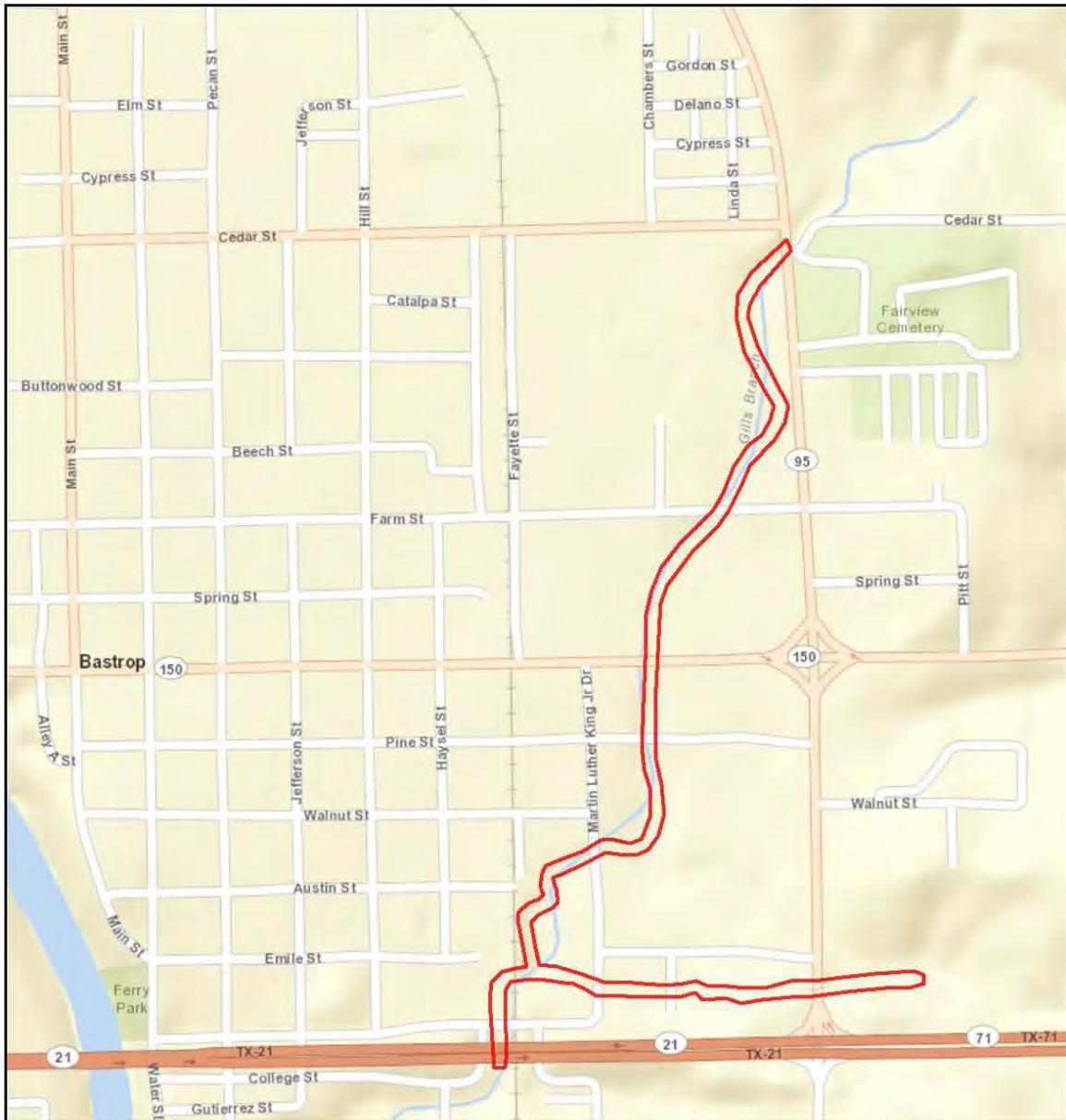
The proposed action would reduce wildfire hazards by reducing the rate at which wildfires spread. The proposed action is focused on the wildland-urban interface, which is the zone where structures and other human development meet or mix with wildland or vegetative fuels.

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



Data Sources: TNRS; USGS; CDM Smith
Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, P.C., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

Figure 1.1. Project Location Map



Data Sources: CDM Smith
 Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, P.C., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

Figure 1.2. Proposed Project Area



Figure 1.3. Proposed Project Area With Aerial Imagery

SECTION 2 Purpose and Need

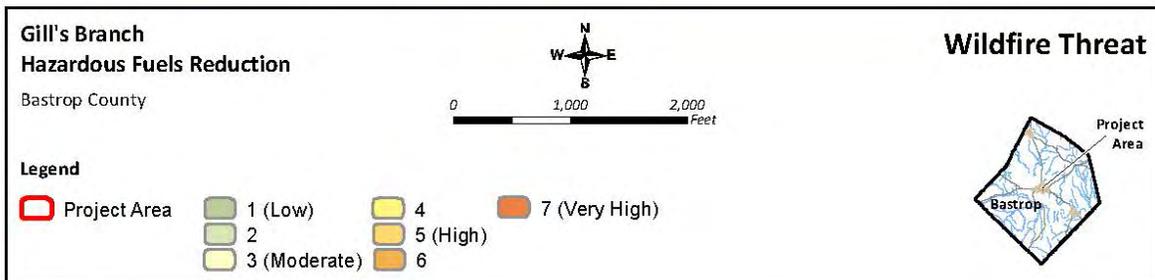
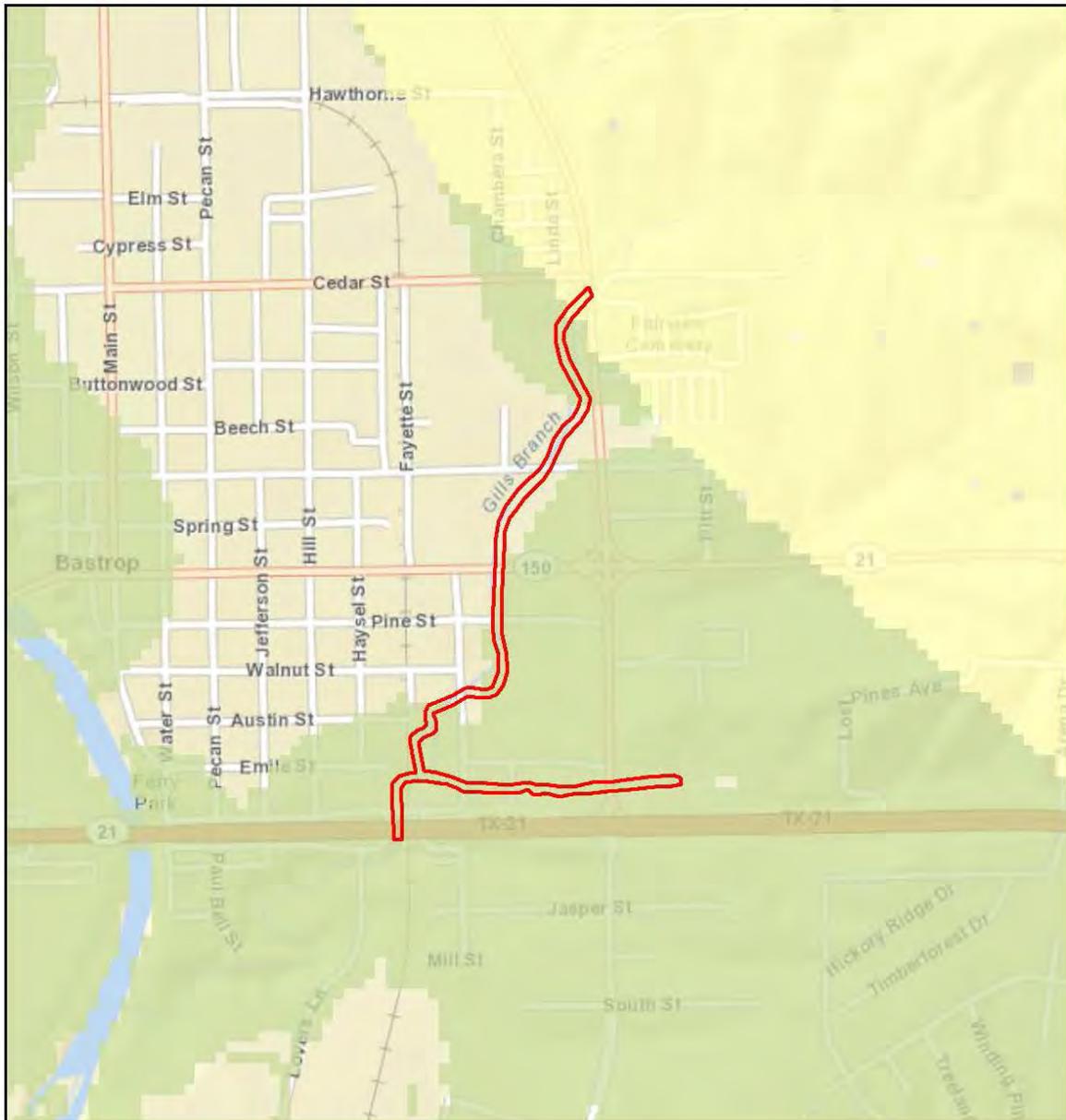
FEMA's HMGP provides funds to state and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property from natural disasters and to enable risk mitigation measures to be implemented during the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

The purpose of the proposed project is to reduce wildfire hazards in the City of Bastrop. Long-term drought has increased wildfire hazards by providing a large amount of dry fuel for a potential wildfire. Gill's Branch is heavily covered with thick vegetation and is located close to homes, commercial facilities, and some public facilities.

Although the Texas Wildfire Risk Assessment rated most of the proposed work area as 1 (low) on the Fire Intensity Scale, the project area begins in an area of moderate fire risk (**Figure 2.1**) (Texas A&M Forest Service 2013). The creek corridor could provide a conduit for a wildfire to travel from the area of moderate risk into downtown Bastrop.

In the summer of 2011, central Texas experienced severe drought conditions and record heat, setting the stage for wildfires. On September 4, 2011, the most destructive wildfire in state history ignited in Bastrop County, destroying over 1,660 homes and 36 commercial buildings and causing two fatalities. The Bastrop Complex wildfire covered 32,400 acres and burned for 37 days (Texas A&M Forest Service 2011). **Figure 2.2** shows the smoke over Bastrop County, indicating an intense, wind driven fire (Austin American Statesman 2011).

While the project area is rated as "low" on the Fire Intensity Scale, this project is in direct response to the Bastrop County fires of 2011. The fire burned through the eastern edges of the City of Bastrop, not far from the project area. During the 2011 fires, City staff observed a portion of the fire as it burned a large quantity of hazardous fuel within a river channel, which gave it the energy to jump over state highway (SH) 71 within the City. The project is intended to reduce the accumulation of hazardous fuels in the channel of Gill's Branch and to reduce wildfire hazards in the community.



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

Figure 2.1. Wildfire Threat



Figure 2.2. Bastrop Complex Fire on September 6, 2011

SECTION 3 Alternatives

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

3.1 No Action Alternative

The no action alternative is included to describe potential future conditions if no action is taken to reduce wildfire hazards. Under the no action alternative, the Bastrop Gill's Branch hazardous fuels reduction project would not be implemented. Existing conditions would continue, and the areas along the creek would not be treated to reduce wildfire fuels. Residents and homes within the City of Bastrop would remain at an elevated risk for the spread of a catastrophic wildfire.

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

Under the no action alternative, minor short-term impacts that may occur under the proposed action would be avoided because no work would be conducted to remove trees or other fuels. The impacts avoided would include temporary increases in noise and truck traffic, and minor short-term impacts to air quality.

3.2 Proposed Action

The City of Bastrop proposes to implement wildfire fuels reduction activities to reduce wildfire hazards. The proposed action would be conducted within the streambed of Gill's Branch. Gill's Branch is a tributary to the Colorado River. The creek is adjacent to residential neighborhoods and commercial and public structures (see **Figure 1.3**).

From the northern limit of the project area at about Cedar Street and Highway 95, there are a few homes on both the western and eastern banks of the creek between Cedar and Farm Streets. Between Farm and Chestnut Streets, the Bastrop Convention & Exhibit Center is on the western side of the creek and the Shulman Theaters Lost Pines 8 is to the east of the creek. Between Chestnut and Pine Streets, residential structures are on the western bank and commercial buildings are on the eastern bank. Between Pine and Emile Streets, the Bastrop Special Education Center is to the northeast and the Macedonia First Baptist Church and a few houses are on the western bank. The creek passes under Martin Luther King Drive between Walnut and Emile Streets and then winds south along the railroad tracks to eventually cross under Highway 71. The project area ends where the creek crosses under Highway 71. Just before the creek crosses under the railroad tracks a small tributary comes in from the east; however, this tributary is conveyed in an underground pipe from approximately Martin Luther King Drive eastward. Therefore, no hazardous fuels reduction work would be conducted in the eastern part of the tributary shown on the project area figures (e.g., **Figure 1.3**).

The proposed project would clear hazardous fuels along approximately 7,500 linear feet of Gill's Branch. All of the material removed would be entirely from the area within the banks of the creek.

The proposed action would include measures to minimize the spread of and damage from fires and to assist firefighters in combating wildfires. Measures under the proposed action would include removing some large trees as well as trimming of all species of trees such as hackberry, elm, cottonwood, willow, and yaupon to at least 8 feet above the ground. The root balls of trees would be left in place to minimize ground disturbance. Fuel reduction activities would be restricted to public lands, and would take approximately 5 to 6 months to complete.

Any debris created on site would be hauled off site and chipped. If any debris is left on the ground it would be removed within 24 to 48 hours and hauled to Go Green International to be used for fuel. Go Green International collects dead and diseased wood from locations around Bastrop County and reuses it at a biofuel plant in Paige, Texas. It is estimated about 1,000 loads of debris would be hauled from the site.

During project implementation, the heavy equipment used could include backhoes, track hoes, skid steer loaders, trucks, and trailers. A variety of hand tools including chain saws, hand saws, and shovels would be used. No herbicides would be used during any phase of the proposed action, including maintenance phases. The City would maintain areas where wildfire fuels reduction activities were completed by mowing cleared areas with a heavy brush cutter. Mowing would be conducted quarterly during the dry period and during the rainy season mowing would be conducted more frequently.

3.3 Additional Action Alternatives Considered and Dismissed

A physical barrier alternative was considered to mitigate the spread of wildfire. Under this alternative, the City would construct a physical barrier along Gill's Branch that would prevent the spread of wildfires. This alternative was rejected because the construction of a physical barrier is not cost-effective and would not meet the project purpose and need. A physical barrier would not reduce the amount of ladder-fuels present that could carry a ground fire up into the canopy, from which burning embers could be transported over the barrier. Under this alternative, the City would continue to be at an elevated risk for the spread of a catastrophic wildfire, and the probability of loss of human life and property would continue to be unacceptably high. Thus, the physical barrier alternative was dismissed from further consideration in this EA.

SECTION 4 Affected Environment, Potential Impacts, and Mitigation

This section describes the environment potentially affected by the no action and proposed action alternatives, evaluates potential environmental impacts, and recommends measures to avoid or reduce impacts.

4.1 Resources Not Affected and Not Considered Further

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

4.1.1. Geology and Seismicity

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

4.1.2. Prime and Unique Farmlands

Prime and unique farmlands are protected under the Farmland Protection Policy Act (FPPA) (Public Law [P.L.] 97-98, 7 United States Code [U.S.C.] 4201 et seq.). The FPPA applies to prime and unique farmlands and those that are of state and local importance. The project area is within the corporate boundaries of the City of Bastrop. Land within corporate boundaries is considered to be land already committed to urban development, and is therefore not farmland for purposes of the FPPA (see 7 CFR 658.2(a)). Therefore, the project area is not subject to the FPPA, and farmland is not considered further in this analysis.

4.1.3 Wild and Scenic Rivers

The National Wild and Scenic Rivers System (P.L. 90-542; 16 U.S.C. 1271 et seq.) was created in 1968 to preserve rivers with outstanding natural, cultural, and recreational value in a free-flowing condition. The project area is not near any river segment designated as "wild and scenic." The Rio Grande, along the Texas border, is the only wild and scenic river in Texas. The proposed project would not cause any impacts to wild and scenic rivers because the project site is not within the Rio Grande watershed (see **Appendix A-1**) (Interagency Wild and Scenic Rivers Council 2013). Wild and scenic rivers are not considered further in this analysis.

4.1.4 Coastal Resources

The Coastal Zone Management Act enables coastal states to designate state coastal zone boundaries and develop coastal management programs to improve protection of sensitive shoreline resources and guide sustainable use of coastal areas. The Texas Coastal Management

Program is administered by the Texas General Land Office (GLO). Bastrop County is not a coastal county and the city is approximately 124 miles from the nearest coastline; therefore, it is not included as part of the Texas Coastal Management Program (GLO 2013). There would be no potential impacts to coastal resources under either the no action alternative or the proposed action. Coastal resources are not considered further in this analysis.

4.2 Physical Resources

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

4.2.1 Soils

The project area is in the Texas Claypan region, which is characterized as a gently sloping plain dissected by broad river systems. The project area is located in the river channel of Gill's Branch in the City of Bastrop, Texas. The four soil map units in the proposed project area include: Crockett fine sandy loam (CsE2), Roboco loamy fine sand (DeC), Sayers fine sandy loam (Sa), and Tinn clay (Tw). The properties of these soils are described in more detail in **Table 4.1** (United States Department of Agriculture [USDA], Natural Resources Conservation Service [NRCS] 2013). A soil map of the project area is shown on **Figure 4.1** (USDA, NRCS 2013). **Table 4.2** provides a key to the soil survey unit codes that occur within the project area, as shown on **Figure 4.1**.

The soils present within the project area are not mapped as prime or unique farmland soils in the NRCS Web Soil Survey. The soils within the project area are also not mapped as hydric, which means they are unlikely to support wetlands (see also **Section 4.3.2**).

Table 4.1. Soil Properties in the Project Area

Parameters	Crockett fine sandy loam (CsE2)	Roboco loamy fine sand (DeC)	Sayers fine sandy loam (Sa)	Tinn clay (Tw)
Depth	More than 80 inches	More than 80 inches	More than 80 inches	More than 80 inches
Drainage	Moderately well drained	Moderately well drained	Somewhat excessively drained	Moderately well drained
Permeability	Very low to moderately low (0.00 to 0.06 inches per hour [in/hr])	Moderately low to moderately high (0.06 to 0.20 in/hr)	High (1.98 to 5.95 in/hr)	Very low to moderately low (0.00 to 0.06 in/hr)
Parent Material	Residuum weathered from shale of tertiary age	Loamy colluvium derived from Eocene sandstones of the Carrizo, queen city, simsboro, and Sparta formations	Sandy alluvium of Holocene age derived from mixed sources	Not described in soil survey
Slope	5 to 10 percent	1 to 5 percent	0 to 1 percent	0 to 1 percent
Depth to Water Table	More than 80 inches	18 to 42 inches	More than 80 inches	More than 80 inches
Hydric Soils	No	No	No	No

Table 4.2. Soil Survey Unit Codes

Code	Description	Code	Description
CsE2	Crockett fine sandy loam, 5 to 10 percent slopes	Sa	Sayers fine sandy loam, 0 to 1 percent slopes
DeC	Roboco loamy fine sand, 0 to 1 percent slopes	Tw	Tinn clay, 0 to 1 percent slopes

Affected Environment, Potential Impacts, and Mitigation

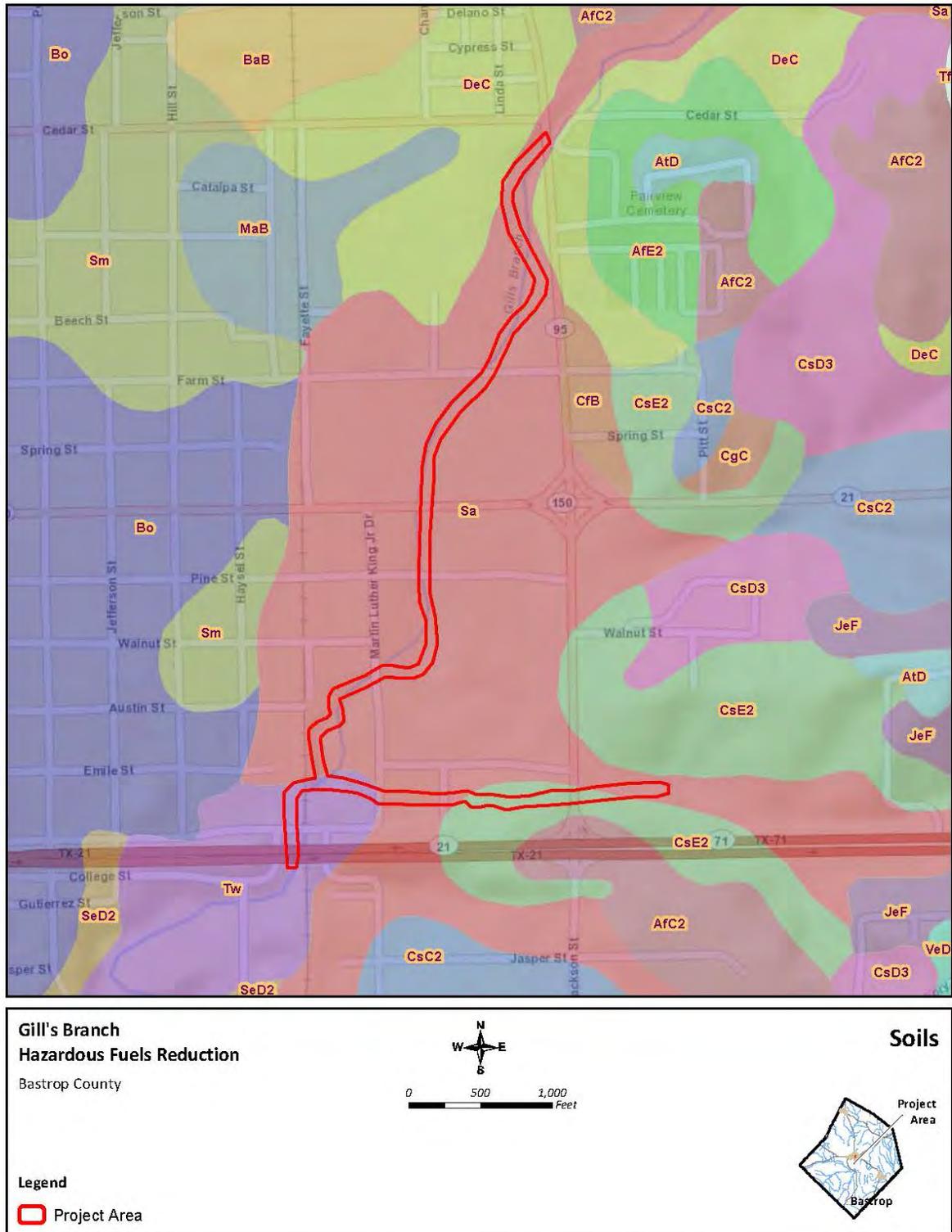


Figure 4.1. Soil Survey Map

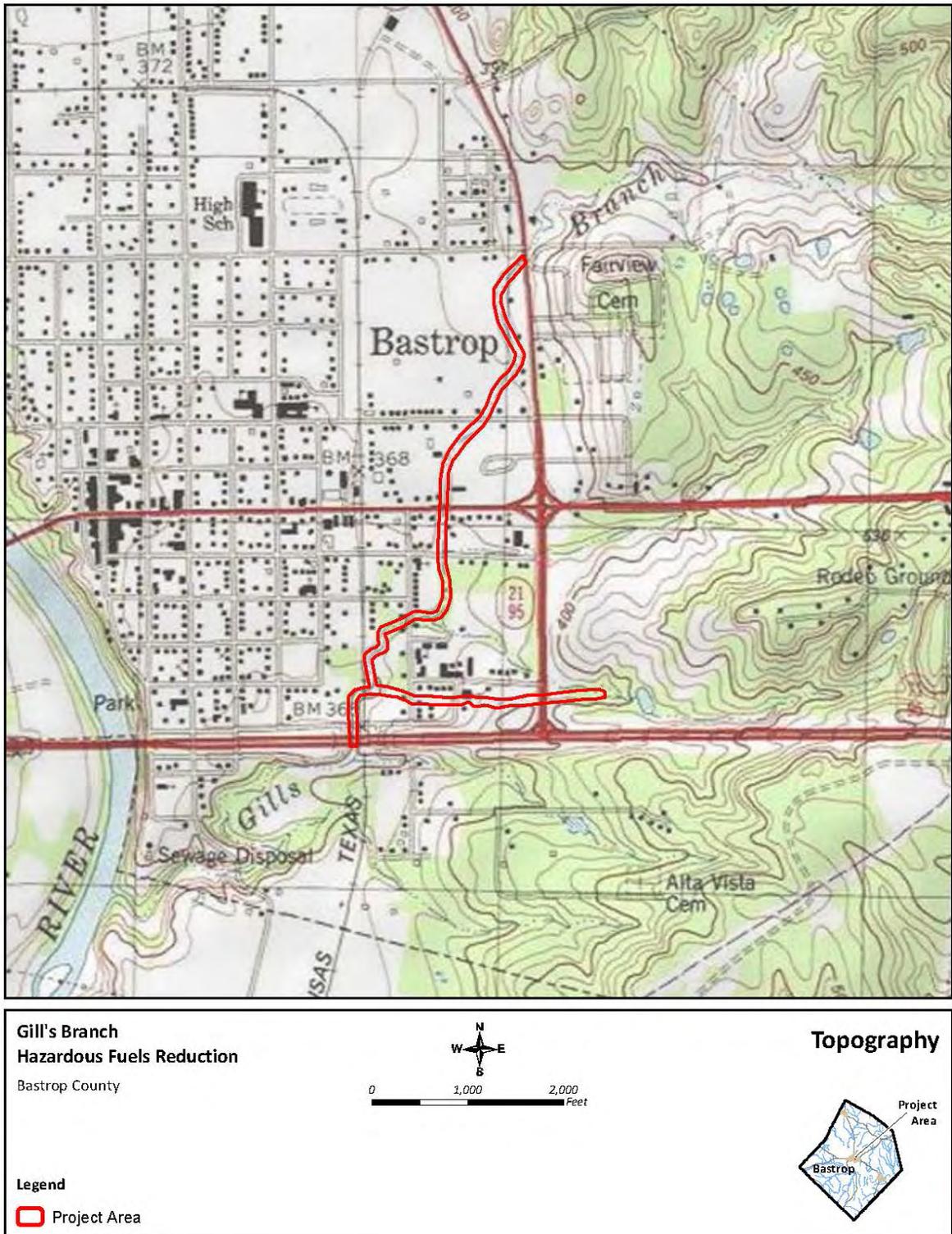
Topography in the proposed project area is depicted on **Figure 4.2**. Elevations in the project area range from approximately 370 feet to 400 feet. The project area is relatively flat overall, but the creek banks are relatively steep in spots.

No Action Alternative

In the absence of a major wildfire in the proposed project area, the no action alternative would have no effect on soils because no project-related disturbances would occur. However, a major wildfire would be more likely under the no action alternative, and soils within burnt areas could be adversely affected. When a wildfire occurs and soils heat up, significant changes can occur in the physical, chemical, and biological properties that are important to the future productivity of the soil. Soil texture influences drainage, water holding capacity, and susceptibility to erosion, among other things. The components for soil texture (e.g. sand, clay) are not typically affected by fire because they have high temperature thresholds. The most sensitive component is clay; however, temperatures are rarely high enough to alter clays beyond a couple of centimeters below the soil surface. Sand and silt are primarily quartz particles, which have a very high melting point.

The soil characteristic most affected by fire is soil structure, due to the relatively low temperatures at which organic matter can be lost (USDA Forest Service 2005). Loss of soil structure may result in reduced porosity and productivity as well as increased vulnerability to increased runoff and erosion and a potential for hydrophobicity (water repellency in the soil). Soils present in the project area are primarily fine sandy loam with clay soils in the southern portion of the project area (**Figure 4.1**). Recent studies indicate that hydrophobicity is more common in fine-textured soils such as clays (USDA Forest Service 2005); therefore, the clay soils present in the southern portion of the project area have a higher risk of hydrophobicity following a wildfire than the sandy soils present in the majority of the project area. Soils that are at a high risk for hydrophobicity are more likely to experience decreased infiltration and increased runoff following a wildfire, which often cause increased erosion.

A wildfire could alter the cycling of nutrients and the physical and chemical properties of the soils in the project area, depending on the intensity of the fire (i.e., the heat produced) and the relative sensitivity of the soil type (i.e., the potential for a particular soil type to undergo irreversible damage).



Data Sources: USGS; CDM Smith
Service Layer Credits: Copyright © 2013 National Geographic Society, I-cubed

Figure 4.2. Topography Map

Proposed Action

The proposed project would not result in significant long-term soil disturbance and is not expected to change the slope of the soils present. The proposed action would not remove stumps of cut trees, and removal of debris and brush and tree limbing would not result in significant soil disturbance. The proposed fuel reduction activities would not result in any significant soil and sediment removal or transport from the site. The fire hazard reduction activities would also reduce the potential for the negative effects of a major wildfire on soils. No adverse impacts to soils are anticipated under the proposed action.

Short term soil disturbance is expected to occur from the use of mechanical equipment and vegetation trimming or removal along the creek banks. Steps such as the use of rubber tracks on all machinery would be taken to reduce soil disturbance. With the implementation of these mitigation measures, no lasting adverse impacts to soils would be anticipated. Because the project area is within the Gill's Branch channel, erosion would be a concern, and portions of the project area already exhibit bank erosion (**Figure 4.3**). Potential erosion would be mitigated through reseeded of the creek banks, the use of



Figure 4.3. Bank Erosion in the Project Area

erosion mats, and retention of selected trees to reduce bank erosion. The proposed action would leave trees greater than 6 inches in diameter that contribute to bank stability undisturbed, which would reduce potential bank erosion. Additionally, the project proposes to reseed disturbed areas following Texas Department of Transportation (TxDOT) Standards 164 and 166 on seeding for erosion control and vegetative watering (TxDOT, 2014).

4.2.2 Air Quality

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

The proposed project area is within the City of Bastrop. EPA designates this region as being in attainment of all NAAQS (EPA 2013a).

No Action Alternative

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

Proposed Action

Air quality impacts associated with the proposed action would be localized and temporary; occurring over a period of 5 to 6 months during implementation of the fuel reduction measures. Mechanized equipment would be used, including chainsaws, back hoe, track hoe, skid steer, and trucks with trailers to haul equipment and debris. The equipment would burn hydrocarbon fuels.

Under the proposed action, the use of equipment to remove vegetation could generate low levels of particulate matter and vehicle exhaust emissions, such as hydrocarbons. Emissions would be temporary and localized, and only minor impacts on air quality in the project area would occur. To reduce emissions, labor crews would keep all vehicle and mechanical equipment running times to a minimum and ensure that all engines are properly maintained. Overall, the proposed project would not have a significant impact on air quality. Post-project maintenance would be conducted as needed and is not expected to have a significant impact on air quality, because of the short duration and small amount of equipment needed for the work. The proposed action has the potential for a long-term beneficial effect on air quality in the project area by reducing the potential for a major wildfire.

4.2.3 Climate Change

“Climate change” refers to changes in Earth’s climate caused by a general warming of the atmosphere. The primary cause of climate change is emissions of carbon dioxide and methane. The impact climate change may have on the proposed project area is uncertain and difficult to

anticipate. Climate change is capable of affecting species distribution, temperature fluctuations, sea level dynamics, and weather patterns.

No Action Alternative

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

Proposed Action

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

4.2.4 Visual Quality and Aesthetics

The project area is densely vegetated with trees and understory brush in some areas while other areas are less densely vegetated and have an open canopy. The majority of the project area is dominated by oak, willow, hackberry, and brush. The project is adjacent to residential neighborhoods in some areas and adjacent to commercial and public property in other areas. The proposed hazardous fuels reduction zone would be visible to residents in portions of the project area. To a limited extent, it is also visible to the public that visits adjacent public and commercial properties adjacent to the proposed work area. **Figure 4.4, Figure 4.5, Figure 4.6, and Figure 4.7** show the existing visual conditions in the project area. **Figure 4.4** illustrates the accumulation of hazardous fuels in the creek channel. **Figure 4.5** shows the existing vegetation adjacent to Emile Elementary School. **Figure 4.6** shows existing vegetation in the creek channel adjacent to commercial properties. **Figure 4.7** shows existing vegetation along the property boundary between residential lots and the work area.

No Action Alternative

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



Figure 4.4. Existing Vegetation in Creek Channel – Northern Portion of Project Area



Figure 4.5. Existing Vegetation Near Emile Elementary School



Figure 4.6. Existing Vegetation Near Commercial Properties



Figure 4.7. Existing Vegetation Near Residential Property

Proposed Action

The proposed project would clear brush, understory, and dead trees, and trim yaupon, hackberry, elm, cottonwood, and willow to at least 8 feet from the ground, resulting in some changes to the visual aesthetics along the creek channel. Because the Gill's Branch channel is densely vegetated in many areas and this dense vegetation would be removed under the proposed action, the proposed action would change the existing visual setting. The proposed work would open up some views from private property into the creek channel and to property across the channel that was previously obscured by vegetation in the foreground. Depending on the specific property and the perceptions of residents and visitors, this change in visual aesthetics may be perceived as positive or negative. Fuels reduction work along the creek channel may be viewed as reducing privacy screening for residential properties in the project area or it may be viewed as opening up views across the creek channel, thereby increasing security. The existing dense vegetation may be considered unsightly and undesirable by commercial and public property owners adjacent to the creek channel, and changes in the vegetation may be viewed as favorable changes in visual quality.

North of Farm Street, the land uses include scattered homes that currently have views of the riparian corridor and open fields. The proposed action would reduce the vegetative density of the riparian corridor, but views would still be of the riparian vegetation and open fields following implementation of the project. Between Farm and Pine Streets, the land uses are primarily commercial on both sides of the creek and the riparian vegetation is a narrow band. Views from either side of the creek would have less vegetation following implementation of the project, but the context of the visual setting would still be primarily commercial development. Between Pine Street and Martin Luther King Drive, residences are on one side of the creek and open fields or undeveloped land is on the other side. These homes are buffered from the creek by existing vegetation; therefore, changes in the density of the vegetation within the creek bed would be unlikely to affect views from these homes. Just west of Martin Luther King Drive, the creek passes between two homes that appear to be relatively close to the creek, and a reduction in the vegetative density in this location could open up views between the two houses and result in a reduction in privacy screening. From that point south to the end of the project area, there would be little effect on the views from existing structures. The tributary that extends to the east is largely contained in an underground pipe and there would not be vegetation removal activities in those areas.

Under the proposed action, wildfire hazards would be reduced, and the potential for significant visual alteration due to a major wildfire would also be reduced.

4.3 Water Resources

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

4.3.1 Water Quality

The water quality effects analysis includes the surface water of Gill's Branch and the Colorado River, to which Gill's Branch, sometimes referred to as Gill's Creek, is a tributary, and the Carrizo-Wilcox Aquifer. The project area is approximately 0.5 miles upstream from the confluence of Gill's Branch and the Colorado River, as shown on **Figure 4.8**.

4.3.1.1 Surface Water

Sections 303(d) and 305(b) of the Clean Water Act (CWA) require all states to identify and characterize waters that do not meet, or are not expected to meet, water quality standards (33 U.S.C. 1313(d) and 1315(b)). The Texas Commission on Environmental Quality (TCEQ) is the regulatory agency responsible for compliance with water quality standards in Texas. TCEQ's 2012 Integrated Report for CWA Sections 303(d) and 305(b) characterize the quality of Texas surface waters and identify those waters that do not meet water quality standards on the 303(d) list, which is an inventory of impaired waters (TCEQ 2013). Streams are classified by segment within their respective basins. Gill's Branch is a water of the U.S. and an unclassified segment; therefore, it is not identified on the 303(d) or 305(b) lists.

No Action Alternative

In the absence of a major wildfire in the proposed project area, the no action alternative would not have an adverse impact on surface water quality, because inputs to receiving waters would not change. However, a major wildfire would be more likely under the no action alternative and could impact surface water quality. Reduced vegetation cover could lead to flooding, soil erosion and sedimentation, pollution from substances no longer filtered by riparian vegetation, and changes in water temperature. Loss of vegetation can cause stormwater to runoff more quickly, which reduces infiltration and may lead to increased erosion.

A major wildfire may cause changes to the soil as discussed in **Section 4.2.1**, which could impact surface waters. Infiltration properties of soils may be altered when fire exposes soils to intense heat. Wildfire induced changes in vegetation and soil may result in decreased infiltration, increased overland flow, and ultimately increased streamflow discharges (USDA, Forest Service 2005).

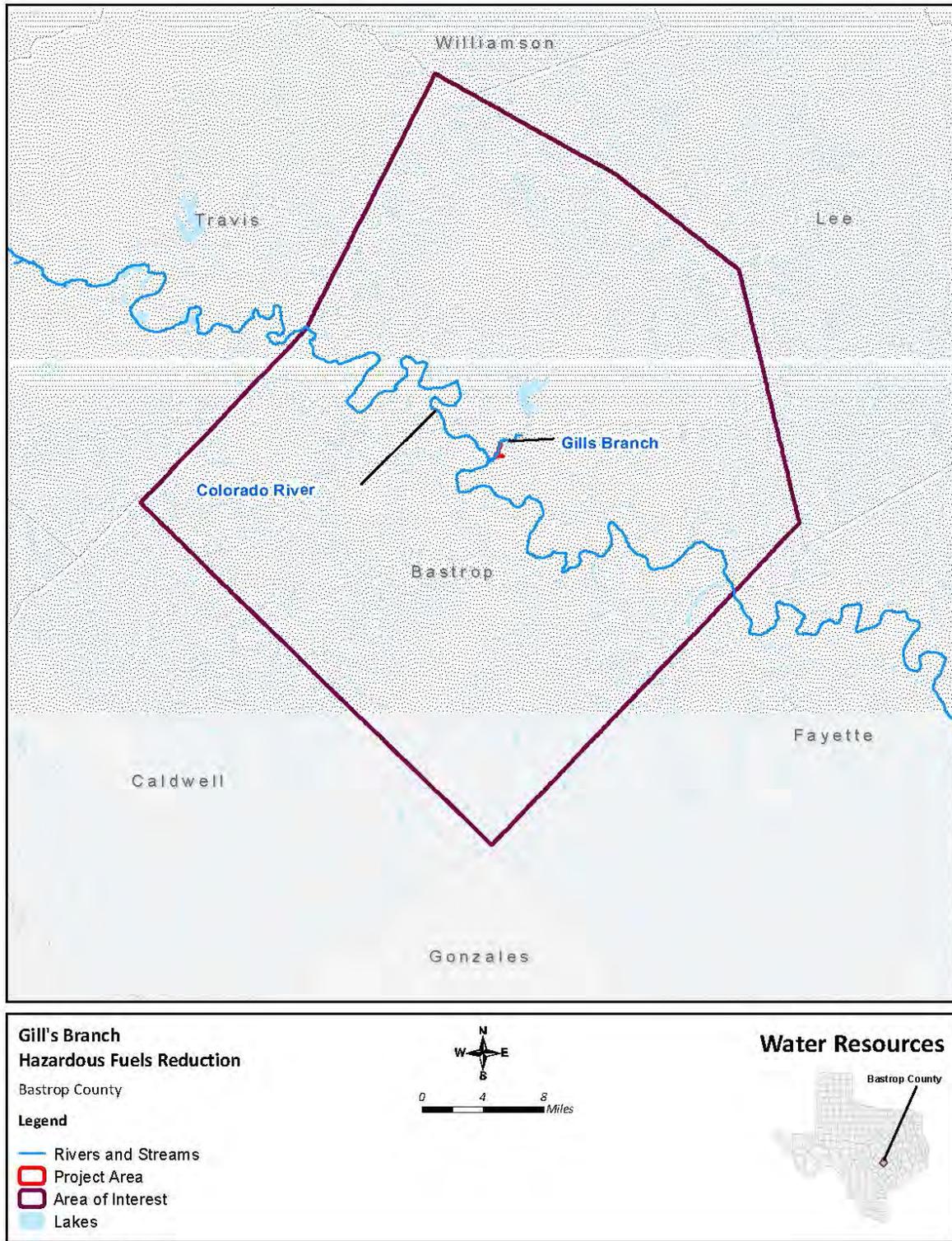


Figure 4.8. Project Area Water Resources

Proposed Action

The proposed action would not directly affect surface waters or alter stream flows. The proposed action would not contribute fecal bacteria or other organics to Gill's Branch. The proposed action would be conducted within the banks of the creek over a period of 5 to 6 months and could cause temporary minor adverse impacts on surface waters from erosion and sedimentation.

As described in 33 CFR 323, the U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into waters of the U.S. under Section 404 of the CWA. Fill material is material placed in waters of the U.S. where the material has the effect of 1) replacing any portion of a water of the U.S. with dry land, or 2) changing the bottom elevation of any portion of a water of the U.S. Activities that involve only the cutting or removing of vegetation above the ground where the activity neither substantially disturbs the root system nor involves mechanized pushing, dragging, or other similar activities that redeposit excavated soil material are not considered discharge of dredged material. The removal of root balls or the use of tracked vehicles in the stream channel of Gill's Branch would cause soil disturbance and would be considered to be a discharge of dredged material in a water of the U.S. When even small amounts of soil are moved from one location in the creek bed to another that is considered a discharge of fill material and would trigger a permit requirement through the USACE.

Operation of heavy equipment would disturb soils, which would increase the potential for erosion during heavy rains. To minimize soil disturbance in the stream channel, tracked vehicles will not be used in the Gill's Branch creek bed. The proposed action will not remove root balls of trees that are cut, which would help to minimize potential soil disturbance and erosion. Best management practices (BMPs) will be implemented to minimize transport of sediment downstream. The proposed action involves the use of erosion mats, reseeded of disturbed soils, and the retention of larger trees (greater than 6 inches in diameter), which are important for bank stability. These actions would prevent permanent soil erosion. With the implementation of these BMPs, the effect on water quality would not be significant. The proposed action does not require coverage under Texas Pollutant Discharge Elimination System (TPDES) construction stormwater general permit TXR150000 because it is not a construction project and would not generate stormwater associated with industrial activity as defined in 40 CFR 122.26(a)(14).

The applicant is responsible for coordinating with and obtaining any required Section 404 Permit(s) from the USACE and/or any Section 401/402 Permit(s) from the State prior to initiating work. The applicant must comply with all conditions of the required permit(s). All coordination pertaining to these activities should be documented and copies forwarded to the State and FEMA as part of the permanent project files.

Under the proposed action, the potential for a major wildfire would be reduced, as would the potential for catastrophic loss of vegetative cover in the riparian zone of Gill's Branch. Therefore, the potential for impacts to surface waters from the loss of vegetation and impacts to soils from a major fire that could affect infiltration, runoff, and erosion would be reduced as compared to the no action alternative.

4.3.1.2 Groundwater

The major aquifer underlying the proposed project area is the Carrizo-Wilcox Aquifer. This aquifer extends from the Louisiana border to the border of Mexico and Texas. The aquifer is primarily a sand aquifer interbedded with gravel, silt, clay, and lignite. Water quality in the Carrizo-Wilcox Aquifer is generally good, although hard, and contains less than 500 milligrams per liter of total dissolved solids. In deeper subsurface portions of the aquifer iron and manganese are found at levels above secondary drinking water standards (TWDB 2014b).

The Carrizo-Wilcox Aquifer provides water supply for mainly agricultural and municipal uses and is an abundant source of groundwater for over 60 counties across Texas. The proposed project area lies on the Carrizo-Wilcox outcrop, which serves as the recharge area of the aquifer. The aquifer is primarily composed of sand and water infiltrating through to the aquifer generally has a high amount of natural filtration.

The sole source aquifer protection program is authorized by Section 1424 of the Safe Drinking Water Act of 1974 (42 U.S.C. 300h-3). EPA defines a sole source aquifer as an aquifer that supplies at least 50 percent of the drinking water for the area overlying the aquifer. The Carrizo-Wilcox aquifer is not designated as a sole source aquifer (EPA 2012). Sole source aquifers in Texas are shown in **Appendix A-2**.

No Action Alternative

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

Proposed Action

The proposed action would reduce the risk of catastrophic wildfire and thus would reduce the risk of impacts to groundwater from a wildfire. The proposed action would not result in the placement of impervious surfaces nor would it affect the quality of the surface waters that infiltrate down to the aquifer. Therefore, there would be no impact on the Carrizo-Wilcox aquifer as a result of the proposed action.

4.3.2 Wetlands

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

FEMA regulations in 44 CFR Part 9, Floodplain Management and Protection of Wetlands, set forth the policy, procedures, and responsibilities to implement and enforce EO 11990 and

prohibit FEMA from funding construction in a wetland unless no practicable alternative is available. To comply with EO 11990, FEMA uses the eight-step decision-making process in 44 CFR 9.6 to evaluate proposed actions that have potential to affect a wetland.

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory maps for the project area indicate that no wetlands are present within the project area. **Figure 4.9** provides an overview of existing wetlands in proximity to the proposed project area (USFWS 2014a). The nearest wetland is approximately 500 feet outside of the project area (USFWS 2014a). The proposed project would have no effect on wetlands; thus, FEMA is not required to conduct an eight-step decision-making process for wetlands.

No Action Alternative

In the absence of a major wildfire, the no action alternative would have no effect on wetlands because existing conditions would not change. However, a major wildfire would be more likely under the no action alternative and could result in the destruction of vegetation in nearby wetlands. Vegetation destruction in wetlands would damage habitat for wildlife and lessen the capacity of wetlands to filter pollutants and maintain water quality. However, these effects would likely be short term and would not be significant because the wetland areas in proximity to the project area are very small and would have limited capacity to filter pollutants and manage stormwater runoff.

Proposed Action

The proposed action would not occur in or near wetland areas; thus, there would be no effect on wetlands from the proposed action. Field surveys did not detect wetland indicators and the topography does not appear to be conducive to the formation of wetlands (i.e., there are no obvious depressions associated with the creek bed through the project area). Moreover, BMPs would prevent impacts on nearby wetlands if they are in fact present. Long-term project maintenance also would have no impact on wetlands.



Figure 4.9. Wetlands Map

4.3.3 Floodplains

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

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

FEMA Flood Insurance Rate Maps (FIRMs) map floodplain areas and illustrate the extent of the 100-year floodplain within the project area. The FIRMs for the project area are panel numbers 48021C0355E and 48021C0360E dated September 26, 2008. The pertinent portions of the FIRMs are included in **Appendix A-3**.

Figure 4.10 depicts the proposed work area and extent of the floodplain within the project area. Floodplains are present within the proposed project area. The project area is almost entirely within the 100-year floodplain.

No Action Alternative

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



Figure 4.10. Floodplain Map

Proposed Action

The majority of the proposed project area is within the 100-year floodplain, and portions fall within the regulatory floodway. The proposed action would not place any structures or fill within the floodplain that would impede or redirect flood flows nor would it result in any excavation. No structures would be constructed within the floodplain, and no significant soil disturbance would occur within the floodplain. Although the proposed action would reduce risk to homes and other structures adjacent to Gill's Branch, the proposed action would not facilitate any development within the floodplain. Potential impacts to the floodplain, such as increased sedimentation or erosion, would be minimized by the use of erosion mats, reseeding, and the retention of trees greater than 6 inches in diameter for bank stability. For any work conducted in the floodplain, the City of Bastrop would be required to coordinate with the local floodplain administrator to obtain any required permits prior to initiating work, including any necessary certifications that encroachments within the adopted regulatory floodway would not result in any increase in flood levels within the community during the occurrence of the base flood discharge. All coordination pertaining to these activities and compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files. The full eight-step analysis is documented in **Appendix A-4**.

4.4 Biological Resources

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

4.4.1 Vegetation

The project area is in the Post Oak Savannah Ecoregion according to the Ecoregions of Texas, as recognized by Texas Parks and Wildlife Department (TPWD) (Gould et al. 1960).

A wildlife and habitat survey conducted on December 12 and 13, 2013 determined that the project area is characterized primarily by riparian mixed woodland, cleared riparian mixed woodland, and riparian hardwood forest habitats. Additionally, a few maintained parcels were present in the survey area (see **Figure 4.11** and **Appendix B**). The habitat types are described as follows:

- Riparian Mixed Woodland – characterized by three vegetative community layers: tree, shrub, and herbaceous. The tree layer consists of common hackberry (*Celtis occidentalis*), American elm (*Ulmus americana*), chinaberry (*Melia azedarach*), cedar elm (*Ulmus crassifolia*), water oak (*Quercus nigra*), and a few scattered black willow (*Salix nigra*), and contributes approximately 40 percent cover. The shrub layer consists of common hackberry, cedar elm, and green hawthorn (*Crataegus viridis*) and contributes approximately 20 percent total. The herbaceous layer is dominated by giant switch cane (*Arundinaria gigantea*), giant ragweed (*Ambrosia trifida*), common greenbriar (*Smilax rotundifolia*), muscadine grape (*Vitis rotundifolia*), Johnson grass (*Sorghum halapense*), and wild parsley (*Petroselinum crispum*), and represents approximately 80 percent total cover.

- Cleared Riparian Mixed Woodland – a riparian mixed woodland habitat with most of the trees and understory removed and characterized by an open canopy layer with a moderately dense herbaceous layer. The canopy consists of chinaberry, common hackberry, American elm, green hawthorn, and common persimmon (*Diospyros virginiana*) with an average canopy cover of approximately 10 percent. The shrub layer was absent. The herbaceous layer consists of wild parsley, Johnson grass, Bermuda grass (*Cynodon dactylon*), giant ragweed, common greenbriar, southern dewberry (*Rubus trivialis*), Japanese honeysuckle (*Lonicera japonica*), and western ragweed (*Ambrosia psilostachya*) and averages approximately 90 percent total cover.
- Riparian Hardwood Forest – similar to the riparian mixed woodland habitat but contains a slightly different species composition. The canopy, which averages approximately 70 percent total cover, consists of American elm, eastern cottonwood (*Populus deltoides*), common hackberry, green hawthorn, and chinaberry. The shrub layer consists of Carolina holly (*Ilex ambigua*), green hawthorn, water oak, and chinaberry and averages approximately 20 percent total cover. The herbaceous layer consists of common greenbriar and long-leaf woodoats (*Chasmanthium sessiliflorum*) and contributes approximately 10 percent total cover.
- Maintained Parcels – characterized by open grassy areas dominated by Bermuda grass, bahaiagrass (*Paspalum notatum*), and white clover (*Trifolium repens*) with sparse eastern cottonwood trees. The grassland comprises approximately 95 percent total cover within this habitat type. The shrub layer was absent.

One federally endangered plant species occurs in Bastrop County, the Navasota ladies'-tresses (*Spiranthes parksii*). This species prefers seasonally moist soil along wooded edges of creeks and drainages with suitable hydrologic features, such as a perched water table. The Navasota ladies'-tresses was not identified during the field survey conducted in December 2013. The field survey indicated that although general habitat requirements appeared to be met for the Navasota ladies'-tresses within the project area, the specialized hydrologic conditions necessary to support the species were not present. The field survey confirmed that within the project area, Gill's Branch is a first order stream with discontinuous high water marks and contained no water despite significant rainfall prior to the survey. Additionally, dense vegetation in the streambed and the absence of a perched water table or extended periods of saturated conditions suggest that Gill's Branch does not currently provide suitable habitat for the Navasota ladies'-tresses.

Invasive Species

EO 13112 requires federal agencies to prevent the introduction of invasive species and provide for their control to minimize the economic, ecological, and human health impacts that invasive species cause. The habitat survey did not note any invasive plant or animal species listed on the Texas noxious and invasive weed list maintained by the USDA NRCS (2013b) within the project area. However, the field survey did identify several invasive species within the survey area, including the giant switch cane, chinaberry, and Japanese honeysuckle.

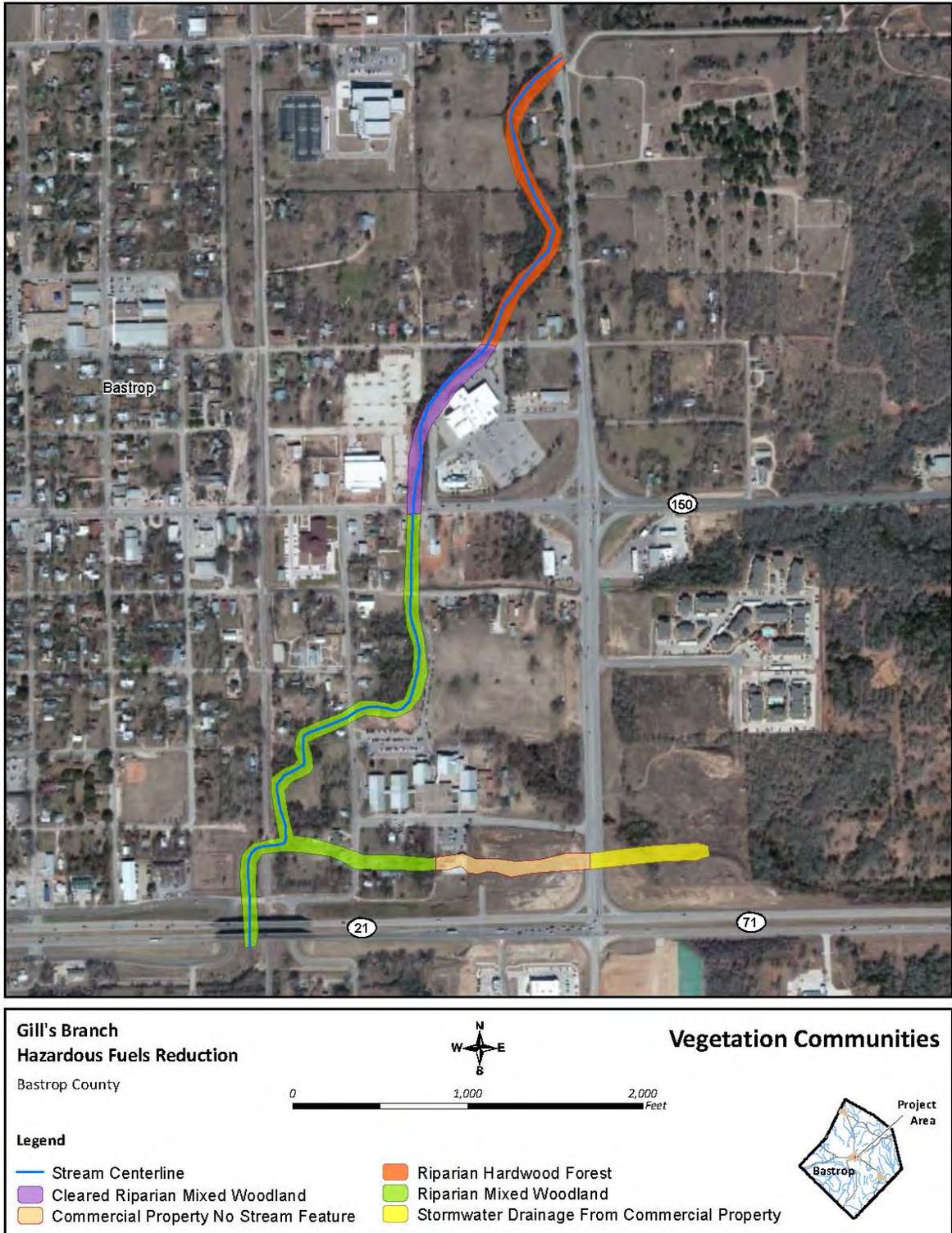


Figure 4.11. Vegetation Communities

No Action Alternative

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

Proposed Action

The proposed action would affect approximately 7,500 linear feet of Gill's Branch and a small portion of an unnamed ephemeral drainage area that extends east from the Creek. Much of the eastern tributary is in an underground pipe and is not vegetated. The proposed project would trim all species of trees up to at least 8 feet from the ground along the creek. Additionally, brush and debris as well as some large trees would be removed. The brush clearing would be contained within the banks of the creek, which are approximately 80 to 100 feet apart. The proposed action would have a short term effect on vegetation, since brush and individual trees would be removed. However, the proposed action would not have a significant impact on vegetation communities.

The Navasota ladies'-tresses is the only listed plant species in Bastrop County. Since the necessary hydrologic conditions for this species are absent in the project area and the proposed action is not expected to change these conditions, the proposed action would not affect federally listed plant species.

The proposed action could provide avenues for the establishment of invasive plant species through accidental introduction and the removal of native vegetation. The field survey identified several invasive species within the survey area, including the giant switch cane, chinaberry, and Japanese honeysuckle and the proposed action may allow for an increase in numbers of these plants. If the proposed action alters the canopy layer significantly within the project area, the change in conditions could initiate the spread of these invasive species. Provided that a significant number of mature trees are left in place and that the canopy layer would not be significantly altered, the proposed action would not be expected to contribute to the spread of invasive plant species. Any invasive species encountered during the vegetation management work should be removed.

4.4.2 Common Wildlife Species

In addition to the listed species discussed below in **Section 4.4.3**, the proposed action has the potential to impact common wildlife species and their habitats. **Table 4.3** provides a list of species that were recorded during the habitat survey conducted December 12 and 13, 2013.

Table 4.3. Common Wildlife Species Observed Within Project Area

Common Name	Scientific Name
Birds	
American crow	<i>Corvus brachyrhynchos</i>
American goldfinch	<i>Carduelis tristis</i>
Black-throated sparrow	<i>Amphispiza bilineata</i>
Carolina wren	<i>Thryothorus ludovicianus</i>
Chipping sparrow	<i>Spizella passerina</i>
Cooper’s hawk	<i>Accipiter cooperii</i>
Eastern phoebe	<i>Sayornis phoebe</i>
English sparrow	<i>Passer domesticus</i>
Field sparrow	<i>Spizella pusilla</i>
Ground dove	<i>Columbina passerina</i>
House finch	<i>Haemorhous mexicanus</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Northern mockingbird	<i>Mimus polyglottos</i>
Red-bellied woodpecker	<i>Melanerpes carolinus</i>
Ruby-crowned kinglet	<i>Regulus calendula</i>
Mammals	
Eastern grey squirrel	<i>Sciurus carolinensis</i>

Common species observed during the field survey are typical of the habitats present in the project area and the wildlife species present would be adapted to development and associated urban activities in the immediate vicinity of the project area. The habitats present likely would support additional species, including common raccoons (*Procyon lotor*), turkey vultures (*Cathartes aura*), multiple snake species, and additional hawk species.

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

No Action Alternative

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

Proposed Action

The birds and mammals observed and expected in the project area are species commonly found within fragmented habitats in an urban/residential matrix. While the narrow creek corridor may provide a movement corridor and contribute to habitat connectivity across the City, most species that use the creek are likely to also use a variety of adjacent habitats. The work would not be

conducted during the breeding season for migratory birds and would comply with the conditions below to avoid potential impacts on migratory birds. Potential impacts likely would be temporary and have little effect on local populations. Therefore, significant adverse impacts from the proposed action on the various songbird and mammal species documented within the project area would not be expected.

The following mitigation measures would be required to avoid and/ reduce potential impacts on migratory birds. The City of Bastrop will limit vegetation management work during the peak migratory bird nesting period of March through August as much as possible to avoid destruction of individuals, nests, or eggs. If vegetation management activities must occur during the nesting season, the City of Bastrop will deploy a qualified biological monitor with experience conducting breeding bird surveys to survey the vegetation management area for nests prior to conducting work. The biologist will determine the appropriate timing of surveys in advance of work activities. If an occupied migratory bird nest is found, work within a buffer zone around the nest will be postponed until the nest is vacated and juveniles have fledged. The biological monitor will determine an appropriate buffering radius based on species present, real-time site conditions, and proposed vegetation management methodology and equipment. For work near an occupied nest, the biological monitor would prepare a report documenting the migratory species present and the rationale for the buffer radius determination, and submit that report to FEMA for inclusion in project files. In addition, the City of Bastrop will retain dead trees 6 inches or greater in diameter as snags whenever practical, at an average rate of 1 to 3 per acre while still achieving fuels reduction. Snags provide sheltering, nesting, roosting, and feeding habitat for cavity nesting and migratory bird species.

4.4.3 Threatened and Endangered Species and Critical Habitat

The Endangered Species Act (ESA) of 1973 gives USFWS authority for the protection of threatened and endangered species. This protection includes a prohibition of direct take (e.g., killing, harassing) and indirect take (e.g., destruction of habitat). TPWD code prohibits take of state-listed threatened and endangered species. The proposed project area is in Bastrop County, Texas. Listed species known to occur in Bastrop County include three species federally listed as endangered and one listed as threatened. TPWD lists one additional species in Bastrop County as endangered and 11 as threatened. All federally listed species potentially found in Bastrop County are shown in **Table 4.4**, and the state-listed species are shown in **Table 4.5** (USFWS 2014b, TPWD 2014).

A field survey was conducted on December 12 and 13, 2013 to characterize the wildlife community and habitat types within the project area. In addition to documenting general wildlife observations and the dominant vegetation types present, the survey focused on determining the presence or absence of listed species and their habitats (**Appendix B**).

Table 4.4. Federally Listed Species for Bastrop County, Texas

Common Name	Scientific Name	Federal Status
Plants		
Navasota Ladies'-tresses	<i>Spiranthes parksii</i>	Endangered
Birds		
Whooping crane	<i>Grus americana</i>	Endangered
Piping Plover	<i>Charadrius melodus</i>	Threatened
Bald eagle	<i>Haliaeetus leucocephalus</i>	Recovery
Reptiles		
Houston Toad	<i>Anaxyrus houstonensis</i>	Endangered

Table 4.5. State-Listed Species for Bastrop County, Texas

Common Name	Scientific Name	State Status
Mollusks		
False Spike Mussel	<i>Quadrula mitchelli</i>	Threatened
Smooth Pimpleback	<i>Quadrula houstonensis</i>	Threatened
Texas Fawnfoot	<i>Truncilla macrodon</i>	Threatened
Texas Pimpleback	<i>Quadrula petrina</i>	Threatened
Fish		
Blue sucker	<i>Cycleptus elongatus</i>	Threatened
Amphibians		
Houston Toad	<i>Anaxyrus houstonensis</i>	Endangered
Reptiles		
Texas Horned Lizard	<i>Phrynosoma cornutum</i>	Threatened
Timber/Canebrake Rattlesnake	<i>Crotalus horridus</i>	Threatened
Birds		
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	Threatened
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened
Interior Least Tern	<i>Sterna antillarum athalassos</i>	Endangered
Peregrine Falcon	<i>Falco peregrinus</i>	Threatened
Whooping Crane	<i>Grus americana</i>	Endangered
Wood Stork	<i>Mycteria americana</i>	Threatened
Plants		
Navasota Ladies'-Tresses	<i>Spiranthes parksii</i>	Endangered

There is a low potential for federally listed species to occur within the project area. No suitable habitat is present within the project area for the federally listed Whooping crane, Piping plover, Houston toad, or Navasota ladies'-tresses, which are also state-listed endangered species. Therefore, there would be no impact on these species. Critical wintering habitat for the Piping plover has been designated in Texas, but it is all on coastal barrier islands that do not occur near Bastrop County.

The majority of the project area is not within designated critical habitat for the Houston toad, but the creek is hydraulically connected to the designated critical habitat. Additionally, a small portion of the project area east of SH 95 and north of SH71 is within the designated critical habitat for the Houston toad, as shown on **Figure 4.12**. However, no hazardous fuels reduction work is needed in this area because this area is already developed and the creek has been piped underground; therefore, no work would be conducted east of SH 95.

The field survey indicated that the majority of the project area contains dense underbrush and gravelly soils and is in an area with a high level of disturbance and human activity. The results of the field survey indicated that the toad would be unlikely to utilize the project area due to the inability to burrow in the soil and the high levels of human activity. Additionally, FEMA consulted with Dr. Forstner, a Houston toad expert at Texas State University about the proposed action. Despite the close proximity of critical habitat to the project area, FEMA determined there would be no effect to the Houston toad or its critical habitat because the project area is across a highway (SH 95) from the nearest suitable toad habitat and is within a developed portion of the city where the toad is not expected to occur. The Bald eagle has been delisted by the USFWS; however, this species is protected by the Bald and Golden Eagle Protection Act, is a state-listed species, and may occur in Bastrop County. No potential nesting or foraging habitat for the Bald eagle was identified during the field survey of the project area. Bald eagles nest from October through July; therefore, the nesting season is difficult to avoid. Since Bald eagle nests are large and readily identifiable, trees containing nests can be identified and avoided easily.

State Listed Species

No suitable habitat is present for the state-listed smooth pimpleback, false spike mussel, Texas fawnfoot, Texas pimpleback, blue sucker, Texas horned lizard, Interior least tern, or Wood stork within the project area. Therefore, there would be no impact on these species.

The Peregrine falcon and timber/canebrake rattlesnake, which are state-listed threatened species, have the potential to occur within the project area since suitable habitat is present. Suitable habitat was identified during the field survey in each of the three primary habitat types. Only suitable foraging habitat was identified for the Peregrine falcon. However, none of these species was observed during the site visit.

Affected Environment, Potential Impacts, and Mitigation

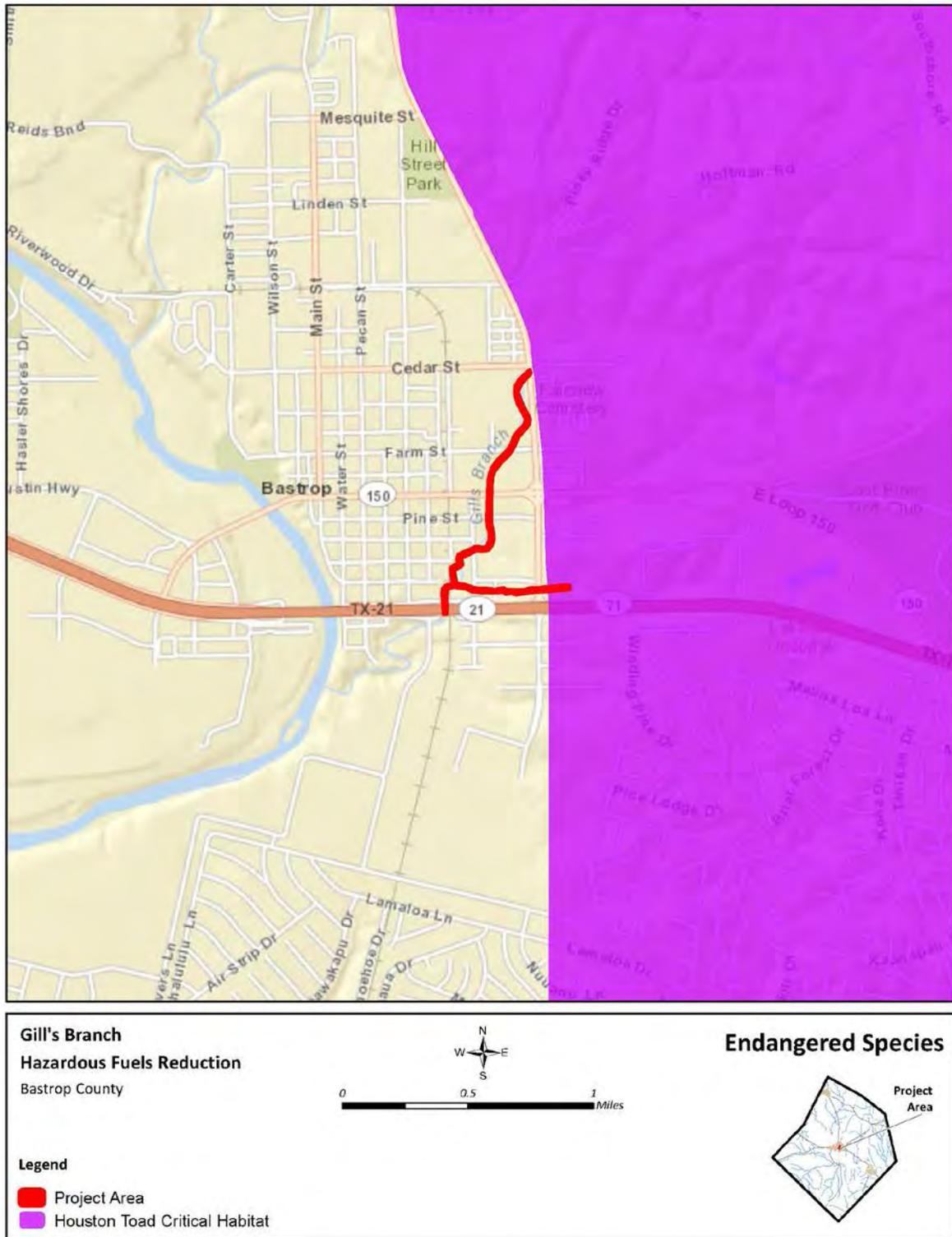


Figure 4.12. Endangered Species Habitat near Project Area

No Action Alternative

In the absence of a major wildfire, the no action alternative would have no effect on federally threatened or endangered species because existing conditions would continue unchanged. However, a major wildfire would be more likely to spread under the no action alternative and would damage existing habitat that may support state-listed species, such as the Peregrine falcon and timber/canebrake rattlesnake.

Proposed Action

No impacts from the proposed action on federally listed species are expected. Due to lack of suitable habitat present in the project area for these species, there would be no effect on the Houston toad, Whooping crane, Piping plover, or Navasota ladies'-tresses from the proposed action. Although thinning of the tree canopy may be used as a management tool to help restore habitat for the Houston toad, the other limitations on suitability of the area to provide habitat would remain, including unsuitable soils, human activity, and its location across a major highway (SH 95) from the nearest toad habitat and within a developed portion of the city. Therefore, despite the close proximity of critical habitat to the project area, impacts on the toad are not expected.

The timber/canebrake rattlesnake may move through the project area but would be unlikely to use it for extended periods. While the snakes tend to rely on their camouflage to help them avoid trouble, they are also highly mobile and may be more likely to move away from disturbances such as the equipment that would be used for the proposed action. The proposed action may affect the timber/canebrake rattlesnake but is not likely to adversely affect the species because the snakes are highly mobile and the proposed action would not result in long-term adverse habitat effects. Only foraging habitat was identified in the project area for the Peregrine falcon. Since they are highly mobile, the proposed action is not likely to adversely affect this species. No impacts from the proposed action on other state listed species are expected, since suitable habitat is not present within the project area. Consultation with TPWD concerning state-listed species would be the responsibility of the sub-applicant.

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

4.5 Cultural Resources

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

The National Historic Preservation Act of 1966 (NHPA) (16 U.S.C. 470 et seq.) is the primary federal law protecting historic properties and promoting historic preservation in cooperation with states, tribal governments, local governments, and other consulting parties. The NHPA established the National Register of Historic Places (NRHP) and designated the State Historic Preservation Officer (SHPO) as the entity responsible for administering state-level programs.

The NHPA also created the Advisory Council on Historic Preservation, the federal agency responsible for overseeing compliance with Section 106 of the NHPA (16 U.S.C. §470f) and for providing commentary on federal activities, programs, and policies that affect historic properties.

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

To assess the potential for intact, significant cultural resources within the APE of the proposed action, an archival review of the proposed undertaking was conducted. The APE for the proposed project includes 7,500 linear feet of Gill's Branch and the adjacent banks. No structures are in the project area.

Coordination with the SHPO, housed at the Texas Historical Commission (THC), was initiated via letter on August 30, 2012. On September 24, 2012, the SHPO responded by indicating that the proposed action is in an area surrounded by several historic resources. The SHPO noted that two NRHP properties, in particular the Ploeger-Kerr-White House and the Iron Bridge, are along Gill's Branch.

The SHPO requested information from the City showing the location of the two NRHP listed properties relative to the APE, identifying any other historic properties within the APE, and identifying any archaeological sites within the APE. A request was also made for a detailed description of the proposed work, including specific methods and locations for vegetation and debris removal. This information was submitted to the SHPO in a letter dated April 30, 2014.

On May 30, 2014, the SHPO concluded that the proposed project would not affect any historic properties and that the project could proceed as planned without further consultation. See **Appendix C** for copies of the SHPO correspondence. **Figure 4.13** below shows a THC map of the project vicinity (THC 2013).

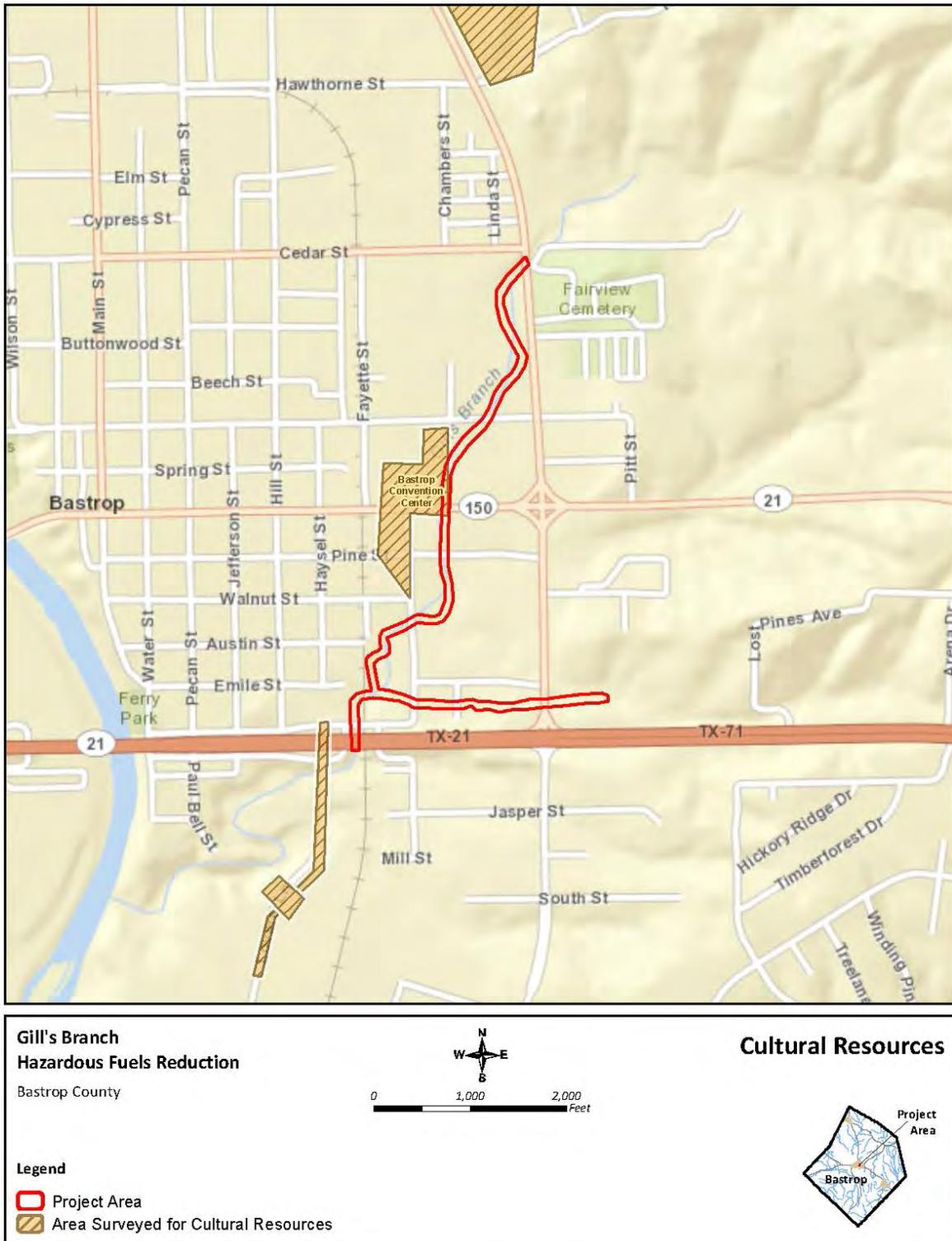


Figure 4.13. Cultural Resources Surveys Near the Project Area

4.5.1 Historic Architectural Properties

Archival research was conducted using the THC Texas Historic Sites Atlas website. According to the Historic Sites Atlas, Bastrop County has over 900 registered historic sites (historic county courthouses, national register properties, state archeological landmarks, historical markers, cemeteries, museums, and military sites). One registered historic site, the Ploeger-Kerr-White House, is listed on the NRHP and is near the APE. The Ploeger-Kerr-White House is near Gill's Branch but is outside of the proposed work area.

Some sources indicate that the NRHP-listed Iron Bridge is within the APE, but those maps are incorrect. The Iron Bridge is actually over Piney Creek, which is more than 1.5 miles northwest of the project area (Knight 2004).

4.5.2 Archaeological Sites

Archival research was conducted using the THC Texas Archeological Sites Atlas website. One site (41BP842) is in the immediate vicinity of the proposed project area but is outside of the APE.

4.5.3 Native American Cultural/Religious Sites

No federally recognized Indian tribes or traditional cultural properties are on or near the proposed project site. The Alabama and Coushatta Tribes in Livingston, Texas are the closest of the three federally recognized Indian tribes in Texas (National Conference of State Legislatures 2013). Livingston, Texas is approximately 175 miles from the City of Bastrop, Texas.

No Action Alternative

Under the no action alternative, no hazardous fuel reduction measures would occur; therefore, this alternative would result in no effect on cultural resources, including archeological sites and historic properties.

Proposed Action

Based on archival research and correspondence with the SHPO, FEMA has determined that no historic properties would be affected by the proposed action. While the Ploeger-Kerr-White House is an historic property listed on the NRHP and located near the APE, there would be no visual impact associated with trimming of limbs and removal of brush near this property. In the event that archaeological deposits, including any Native American property, stone tools, bones, or human remains, are uncovered, all work in the vicinity of the discovery must be halted immediately, and all reasonable measures must be taken to avoid or minimize harm to the finds. All archaeological findings will be secured, and access to the sensitive area will be restricted by the City of Bastrop. The City of Bastrop will inform FEMA immediately of such findings, and FEMA will consult with the SHPO. Work in sensitive areas must not resume until consultation is completed and until FEMA determines that the appropriate measures have been taken to ensure complete project compliance with the NHPA and its implementing regulations.

4.6 Socioeconomics

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

4.6.1 Environmental Justice

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

This environmental justice analysis is focused at the local (i.e., census tract and city) level. The local area included in this analysis is where project-related impacts would occur, potentially causing an adverse and disproportionately high effect on neighboring minority and low-income populations. For this project, the analysis includes census tract 9504 in the City of Bastrop, which includes the project area and adjacent residential areas. **Table 4.6** and **Table 4.7** provide economic and demographic characteristics for census tract 9504 (U.S. Census Bureau 2011). Information for Bastrop County and the City of Bastrop are presented for comparison.

Table 4.6. Income

Parameter	Census Tract 9504	City of Bastrop	Bastrop County
Percentage of population below poverty level	7.7%	6.6%	14.1%
Median household income	\$46,197	\$51,836	\$52,516
Median family income	\$70,503	\$75,750	\$62,760

Low-Income Populations

Residents of areas with a high percentage of people living below the poverty level may be considered low-income populations. The U.S. Census Bureau poverty threshold for a family of four (two adults and two children) in 2012 was \$23,681 and \$11,945 for an individual (U.S. Census Bureau 2014a). Low-income populations are also considered to include residents of areas where the median family income is less than 60 percent of the median income of the surrounding area. This analysis also considered whether the project area's median household and per capita incomes are substantially lower than the city's average.

As shown in **Table 4.6**, census tract 9504 has a median household income that is lower than the City of Bastrop and Bastrop County, and a median family income that is higher than Bastrop County but lower than the City of Bastrop. The percent of the population earning less than the poverty level in census tract 9504 (7.7 percent) is well below Bastrop County (14.1 percent) and

slightly higher than the City of Bastrop (6.6 percent). Based on the income criteria above, census tract 9504 is not considered a low-income population.

Table 4.7. Minority Populations

Ethnic Composition	Census Tract 9504		City of Bastrop		Bastrop County	
	Count	Percentage	Count	Percentage	Count	Percentage
White	6,886	84.5%	5,659	79.3%	59,881	81.6%
Black or African American	915	11.2%	1,119	15.7%	6,063	8.3%
Asian	45	0.6%	45	0.6%	493	0.7%
American Indian	49	0.6%	28	0.4%	581	0.8%
Native Hawaiian	7	0.10%	7	0.1%	23	0%
Some Other Race/Multi-Ethnic	192	2.4%	261	3.7%	5,012	6.8%
Total Population	8,153	--	7,134	--	73,368	--
Hispanic or Latino ¹	1,581	19.4%	1,159	16.2%	23,349	31.8%
Total Minority Population^{2,3}	2,617	32.0%	2,319	32.5%	30,963	42.2%

Notes:

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

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

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

Minority Populations

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

As shown in **Table 4.7**, census tract 9504 has a total minority population of 32.0 percent, less than Bastrop County (42.2 percent) and the City of Bastrop (32.5 percent) minority populations (U.S. Census Bureau 2011). The residents of the project area are not considered a minority population.

No Action Alternative

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

Proposed Action

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

4.6.2 Hazardous Materials

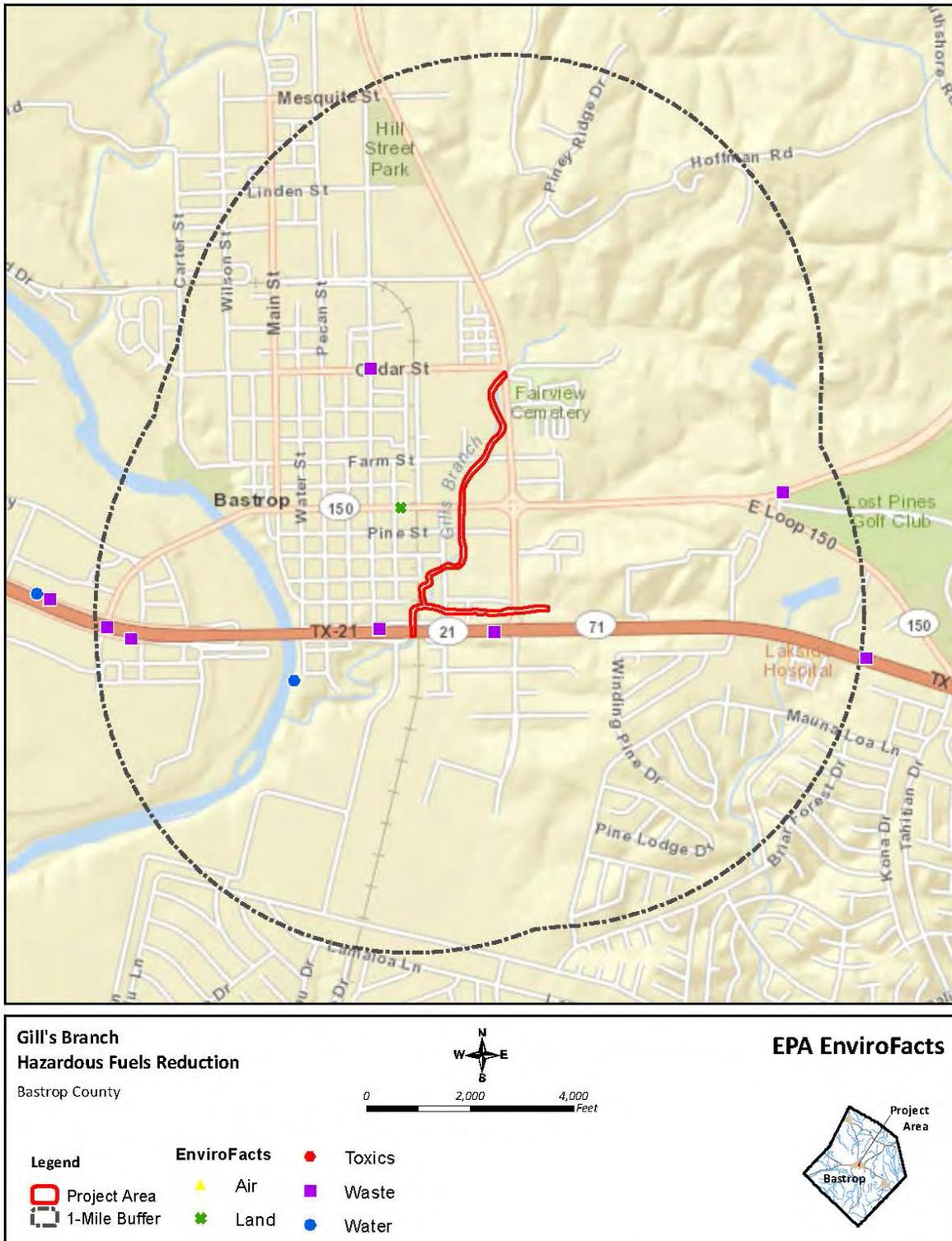
Hazardous materials are those substances defined by the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act, and the Toxic Substances Control Act. The Solid Waste Disposal Act, as amended by the Resource Conservation and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

To determine whether any hazardous waste facilities exist in the vicinity or upgradient of the project area, or whether there is a documented environmental issue or concern that could affect the proposed project site, a search for Superfund sites, toxic release inventory sites, industrial water dischargers, hazardous facilities or sites, and multi-activity sites was conducted using the EPA Envirofacts database. According to the database, 8 facilities within 1 mile of the project area have reported hazardous waste activities. **Figure 4.14** depicts the hazardous sites in closest proximity to the project area (EPA 2014).

No Action Alternative

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

Affected Environment, Potential Impacts, and Mitigation



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

Figure 4.14. Facilities Listed in EPA Envirofacts Near Project Area

Proposed Action

Under the proposed action, no impacts from waste storage and disposal sites are anticipated because no hazardous facilities are in or near the project area (EPA 2014). Additionally, herbicides would not be used during project implementation or for long term operations and maintenance, so no impacts are anticipated from herbicide use.

The proposed action would involve the use of mechanical equipment, and there is always a minor threat of leaks of oils, fuels, and lubricants from such equipment. The short-term nature of the project and use of equipment in good condition would reduce any potential effect to an insignificant level.

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

4.6.3 Noise

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

Assessment of noise impacts includes the proximity of the proposed action to sensitive receptors. A sensitive receptor is defined as an area of frequent human use that benefits from a low noise level. Typical sensitive receptors include residences, schools, churches, hospitals, and libraries. The majority of the project area is adjacent to residential, commercial, and public structures, and any noise-generating activities within the area would have the potential to affect adjacent residents and visitors to commercial and public spaces. Typical existing noise sources include traffic (including highway traffic), trains, and yard maintenance equipment. The ambient noise levels are generally low in the northern part of the project area and somewhat higher in the southern portion.

No Action Alternative

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

Proposed Action

Under the proposed action, noise would be generated by operation of equipment, such as a back hoe, track hoe, skid steer, chainsaws, trucks and trailers, maintenance vehicles, and other required equipment. The proposed action would increase noise levels in the immediate vicinity

of the project area during implementation of the proposed work. Increases in noise levels would be temporary at any one location within the project area and would occur during normal waking hours; therefore, impacts from increased noise levels on sensitive receptors in the project area would be minor. In addition, all equipment and machinery used would meet all applicable local, state, and federal noise control requirements. The proposed action would not be expected to cause significant adverse noise impacts on sensitive receptors or the surrounding environment.

4.6.4 Traffic

The local transportation network serving the project area includes arterial and local streets. The adjacent residential neighborhoods are served by various local residential streets. The project area would be accessed primarily through easements adjacent to private residences. The project area is also accessible via arterial streets, drainage right-of-ways, and public property along the creek banks. The closest highways to the project area are SH 71 and SH 95.

No Action Alternative

Under the no action alternative, existing levels of local traffic would not change, and no additional costs would be incurred for road construction or maintenance. A major wildfire would be more likely under the no action alternative. Nearby roads could be closed if a wildfire approached or encompassed local areas. A wildfire near the project area could cause closure of roads that provide access to the project area and adjacent neighborhoods. Depending on location and wind direction, smoke from a wildfire could close sections of bordering roadways or sections of SH 71 and SH 95. Short-term traffic congestion could occur during street and highway closures caused by a wildfire.

Proposed Action

Under the proposed action, vehicle traffic would be generated by work crews traveling to and from work sites and trucks hauling equipment and cut vegetation. It is anticipated approximately 1,000 loads of debris would be hauled from the site over the duration of the project (5 or 6 months). The amount of additional traffic would be temporary and would not interfere with local residents or people traveling in the vicinity of the project area.

No roads would be closed to accommodate the proposed work. The proposed action would not have a significant effect on transportation.

The proposed action would reduce the risk of a wildfire encompassing a road near the project area. Thus, the potential for road closures due to wildfire would be reduced.

4.6.5 Public Services and Utilities

4.6.5.1 Utilities

The project area is within the service area of the City of Bastrop's electric utility, Bastrop Power and Light. Electric service is provided through overhead power lines. Overhead power lines are in the vicinity of the project, generally at road crossings.

Water and wastewater services to the project area are provided by the City of Bastrop, which provides water and wastewater utility services to approximately 8,700 people in the area. The City obtains drinking water from seven groundwater wells near the Colorado River that withdraw water from an alluvium of the river (City of Bastrop 2014a).

No Action Alternative

Under the no action alternative, utilities in the project area would not be directly affected. However, the potential for wildfires would continue to be high, and electrical services provided via overhead power lines would have the potential to be adversely affected by a wildfire. A wildfire could also strain water supplies in the region, particularly if a wildfire were to occur during a drought.

Proposed Action

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

4.6.5.2 Emergency Services

The project area is serviced by the city-owned and supported Bastrop Fire Department and Bastrop County Emergency Services District (ESD) No. 2. Jointly, the City and Bastrop County ESD No. 2 provide fire rescue and protection services to over 117 square miles of central Bastrop County from two city-owned and supported fire stations and two stations supported by Bastrop County ESD No. 2. The station in closest proximity to the project area is Station No. 1, which is supported by Bastrop County ESD No. 2, at 802 Chestnut Street in downtown Bastrop. All four stations have predominately volunteer firefighting staff, which provide fire suppression and rescue services (City of Bastrop 2014b). Various informal volunteer firefighting groups have also been established by Bastrop County residents.

The Bastrop County Community Wildfire Protection Plan states that sufficient and consistent volunteer involvement is an issue for some of the fire departments, making maintenance of an adequate level of firefighting skills a concern for Bastrop County. In addition, the County experiences difficulty in obtaining and maintaining sufficient gear and protective clothing required to combat catastrophic wildfires (Bastrop County, Office of Emergency Management 2008).

Medical services within the county are provided by two hospitals: Smithville Regional Hospital in the City of Smithville and Lakeside Hospital in the City of Bastrop. Emergency medical transport (ambulance) services are provided through a private contracted service. In addition, the County promotes a volunteer first responders program in cooperation with the contracted service provider (Bastrop County, Office of Emergency Management 2008).

The project area is serviced by the Bastrop Police Department, which works with the City of Bastrop's Office of Emergency Management, Bastrop Fire Department, and Bastrop County

Emergency Management division to coordinate efficient emergency response (City of Bastrop 2014c).

No Action Alternative

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

Proposed Action

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

4.6.6 Public Health and Safety

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

Population growth also has implications related to wildfire hazards and the need for hazardous fuels reduction. With more people, there is a greater risk of human-caused wildfires and a greater need for protection from wildfires. The current population for Bastrop County is 75,825. Bastrop County experienced an increase in population of 2.2 percent from 2010 to 2013 (U.S. Census Bureau 2014b).

No Action Alternative

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

Proposed Action

Under the proposed action, the primary objective is to reduce hazardous fuel loads in order to reduce the rate of spread and intensity of a potential wildfire in the project area. Implementation of the proposed action would create a safer environment for firefighters, which could allow them

to more easily control the spread of a fire. Hazardous fuel reduction would not prevent wildfires but could contribute to containment and reduce the intensity and frequency of wildfires, which ultimately would reduce the risk factor for residents of Bastrop and the surrounding area. In addition, when wildfires are controlled more quickly, a smaller area is burned, resulting in less sediment and debris being transported downstream during future precipitation events that could potentially affect water quality.

4.7 Summary of Effects and Mitigation

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

Table 4.8. Summary of Impacts and Mitigation

Affected Environmental Resource Area	Impacts	Agency Coordination / Permits	Mitigation/BMPs
Soils	Beneficial impacts on soils from reduced risk of major wildfire. Short-term soil disturbance from mechanical equipment. No impact to prime and unique farmland.	N/A	Cut vegetation will be hauled off site and chipped and any debris left will be removed from the work area within 24 to 48 hours. The project area will be seeded with native grasses for permanent erosion control.
Air Quality	Short-term minor impacts on local air quality from mechanical equipment emissions. Potential long-term beneficial impact on air quality by reducing wildfire emissions.	N/A	Vehicle and equipment running times will be minimized, and engines will be properly maintained.
Climate Change	Long-term beneficial effect from reduction in risk of a major wildfire and wildfire emissions.	N/A	NA
Visual Quality and Aesthetics	Potential long-term adverse effect on visual screening and residential privacy in parts of the project area. Potential long-term beneficial effect by opening up views to the creek and removal of unsightly and undesirable vegetation overgrowth.	N/A	NA

Affected Environment, Potential Impacts, and Mitigation

Affected Environmental Resource Area	Impacts	Agency Coordination / Permits	Mitigation/BMPs
Surface Water	Minor short-term adverse impacts on surface water quality from erosion and sedimentation caused by temporary soil disturbance. Potential beneficial impact on surface water by preventing major wildfire and associated sedimentation and debris loading in streams.	N/A	BMPs will include the use of erosion mats, reseeding of disturbed soils, and the retention of larger trees to minimize transport of sediment into and along the creek bed.
Groundwater	No impact.	N/A	N/A
Wetlands	No impact.	N/A	N/A
Floodplains	No impact. The eight step floodplain review process will be completed following public review and comment.	N/A	For any work in the floodplain, the City of Bastrop will be required to coordinate with the local floodplain administrator and obtain any required permits prior to initiating work, including any necessary certifications that encroachments within the adopted regulatory floodway would not result in any increase in flood levels within the community during the occurrence of the base flood discharge. All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files. Debris and mulch piles will not be staged or stored in the floodplain.
Vegetation	No impact to listed species. No significant impact to vegetation communities.	N/A	N/A
Common Wildlife Species	Migratory birds may nest in project area.	USFWS, TPWD	Vegetation management activities will occur outside of the breeding season, which runs from March through August. If these months cannot be avoided, a biological monitor will be deployed to avoid impacts to migratory birds.
Threatened and Endangered Species/ Critical Habitat	Proposed action may affect, but is not likely to adversely affect the timber/canebrake rattlesnake. No impacts on other listed species are expected.	USFWS	N/A

Affected Environment, Potential Impacts, and Mitigation

Affected Environmental Resource Area	Impacts	Agency Coordination / Permits	Mitigation/BMPs
Cultural Resources	No impact.	THC	In the event that archeological deposits, including any Native American property, stone tools, bones, or human remains, are uncovered, all work in the vicinity of the discovery will be halted immediately, and all reasonable measures will be taken to avoid or minimize harm to the finds. All archeological findings will be secured, and access to the sensitive area will be restricted by the City of Bastrop. The City of Bastrop will inform FEMA immediately of such findings, and FEMA will consult with the SHPO. Work in sensitive areas shall not resume until consultation is completed and until FEMA determines that the appropriate measures have been taken to ensure complete project compliance with the NHPA and its implementing regulations.
Environmental Justice	No impact.	N/A	N/A
Hazardous Materials	No impact.	TCEQ	In the event that site contamination or evidence of contamination is discovered during implementation of the proposed action, the City will manage the contamination in accordance with the requirements of the governing local, state, and federal regulations and guidelines. Herbicides will not be used.
Noise	Temporary impacts from the use of equipment.	N/A	All work will be conducted during daytime hours. All equipment and machinery will meet all local, state, and federal noise requirements.
Traffic	No impact.	N/A	N/A
Public Services and Utilities	Long-term beneficial effect on overhead utility power lines and potential for power outages, and improved emergency services due to the reduction in wildfire risk.	N/A	N/A
Public Health and Safety	Reduction of the risk of a major wildfire that would threaten public health and safety.	N/A	N/A

SECTION 5 Cumulative Impacts

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

As previously mentioned, the most destructive wildfire in Texas history ignited in Bastrop County in September 2011, destroying approximately 1,700 structures and burning approximately 33,000 acres. The wildfire did not impact the project area directly, but was a significant event in the surrounding areas immediately adjacent to the project site. In addition to this past impact on the project surroundings, Bastrop County and the City of Bastrop have several other hazardous fuels reduction projects planned for the near future in the areas around the City of Bastrop. However, these other projects would not be in the same neighborhood as the proposed action.

No significant cumulative impacts are foreseen from implementation of the proposed action and other past, present, and future actions. Because the proposed action would have no impact or minimal impact on water resources, wetlands, floodplains, most wildlife, vegetation communities, cultural resources, environmental justice, public services and utilities, hazardous materials, or public health and safety, the proposed action would not contribute to significant cumulative impacts on these resources. There are currently no capital improvement projects underway or proposed by the City of Bastrop within the project area that in combination with the proposed project would cause significant cumulative effects related to noise, traffic, or air quality.

The TxDOT list of Bastrop County projects indicates that the construction of freeway ramps on SH 71 just west of the proposed project area is currently underway (TxDOT 2014). The network of arterial streets along Gill's Branch provides various options for accessing the project area and redirecting traffic would not be necessary during implementation of the proposed project.

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

SECTION 6 Agency Coordination, Public Involvement, and Permits

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

6.1 Agency Coordination

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

6.2 Public Participation

The public information process for the proposed project will include a public notice in the *Bastrop Advertiser*, the local general circulation newspaper that covers Bastrop County. The public notice will state that information about the proposed action, including this EA, is available at the City of Bastrop City Hall at 1311 Chestnut Street, Bastrop, Texas. The notice will invite the public to submit their comments about the proposed project, potential impacts, and proposed mitigation measures so that they may be considered and evaluated. FEMA will consider and respond to all public comments in the final EA. If no substantive comments are received, the draft EA will become final and a FONSI will be issued for the project. At this time, a public meeting is not planned because the proposed action is not considered controversial.

6.3 Permits

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

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SECTION 8 List of Preparers

The following is a list of preparers who contributed to the development of the Wildfire Fuels Reduction EA for FEMA.

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

CDM Smith

Preparers	Experience and Expertise	Role in Preparation
Beverly, Howard	Senior Cultural Resource Specialist	Cultural resources
da Costa, Larissa	Water Resources Engineer	Introduction, Purpose and Need, Alternatives, Socioeconomics, Cumulative Impacts
Kase, Sydney	GIS Specialist	Data collection, data management, general GIS support, figure production
Keefe, Jennifer	Environmental Scientist	Biological resources
McAuley, Erin	Environmental Planner	Site visit and kick off meeting, Resources not affected and not considered further, physical resources, water resources, environmental justice
Perotin, Manuel	Senior Civil Engineer	Task order manager
Rugg, Mack	Senior Environmental Scientist	Technical review and editing
Schenk, Roger	Senior Environmental Scientist	Site visit and kick off meeting
Stenberg, Kate Ph.D.	Senior Biologist, Senior Planner	NEPA documentation, biological resources, technical review

CH2M Hill

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

Federal Emergency Management Agency

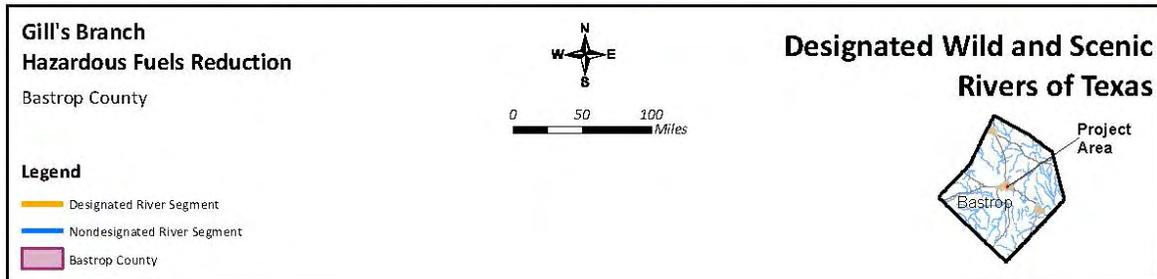
Reviewers	Role in Preparation
Jaynes, Kevin Regional Environmental Officer	Technical review and approval
Weir, Dorothy Environmental Specialist	Technical review and approval

Appendices

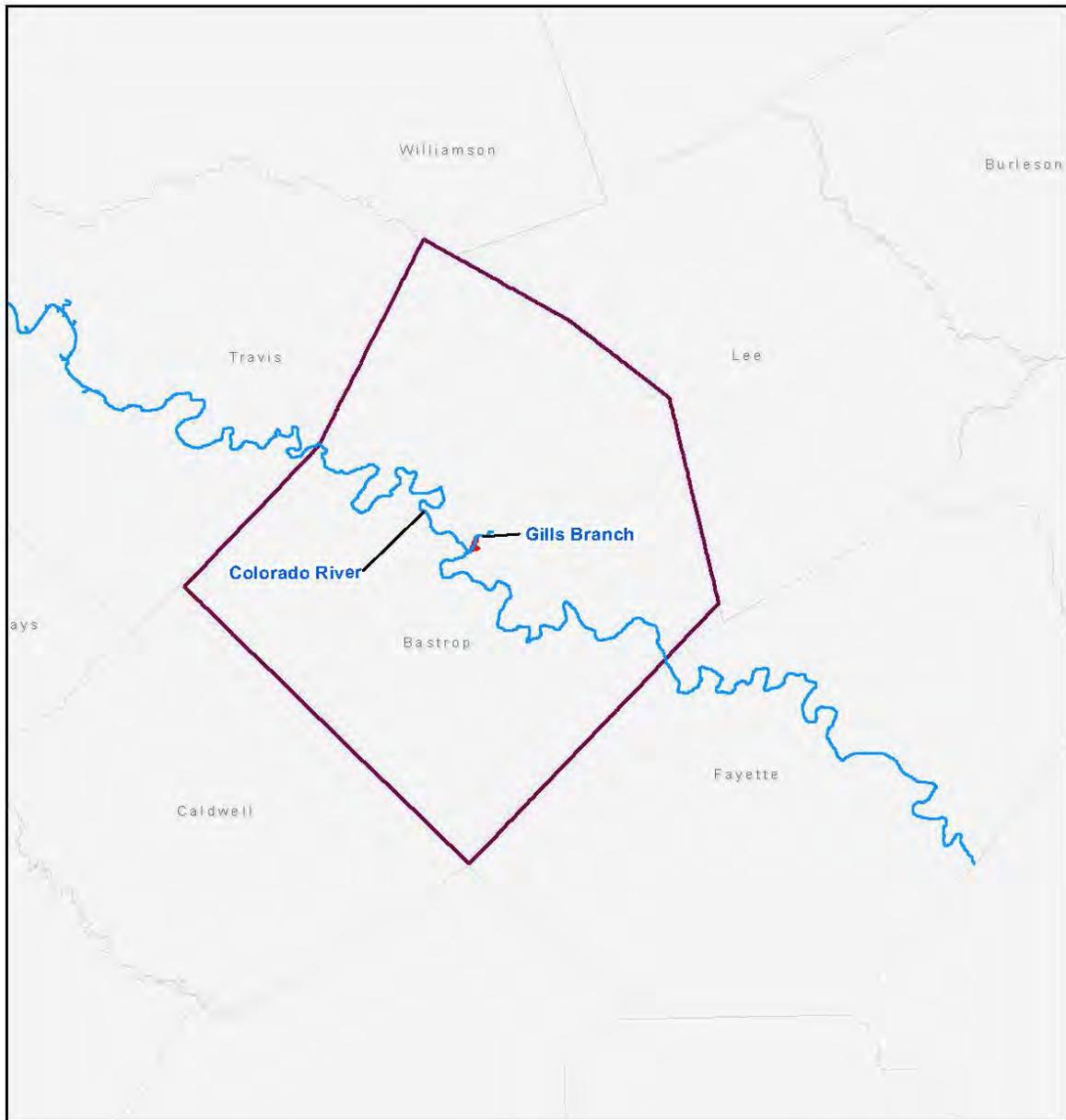
Appendix A

Water Resources Data

1. Wild and Scenic Rivers Map
2. Sole Source Aquifer Map
3. FEMA Federal Insurance Rate Maps
4. Executive Order 11988 - Floodplain Management Eight-Step Decision Making Process



Data Sources: NPS, TNRIIS
Service Layer Credits: Sources: Esri, USGS, NOAA



**Gill's Branch
Hazardous Fuels Reduction**
Bastrop County

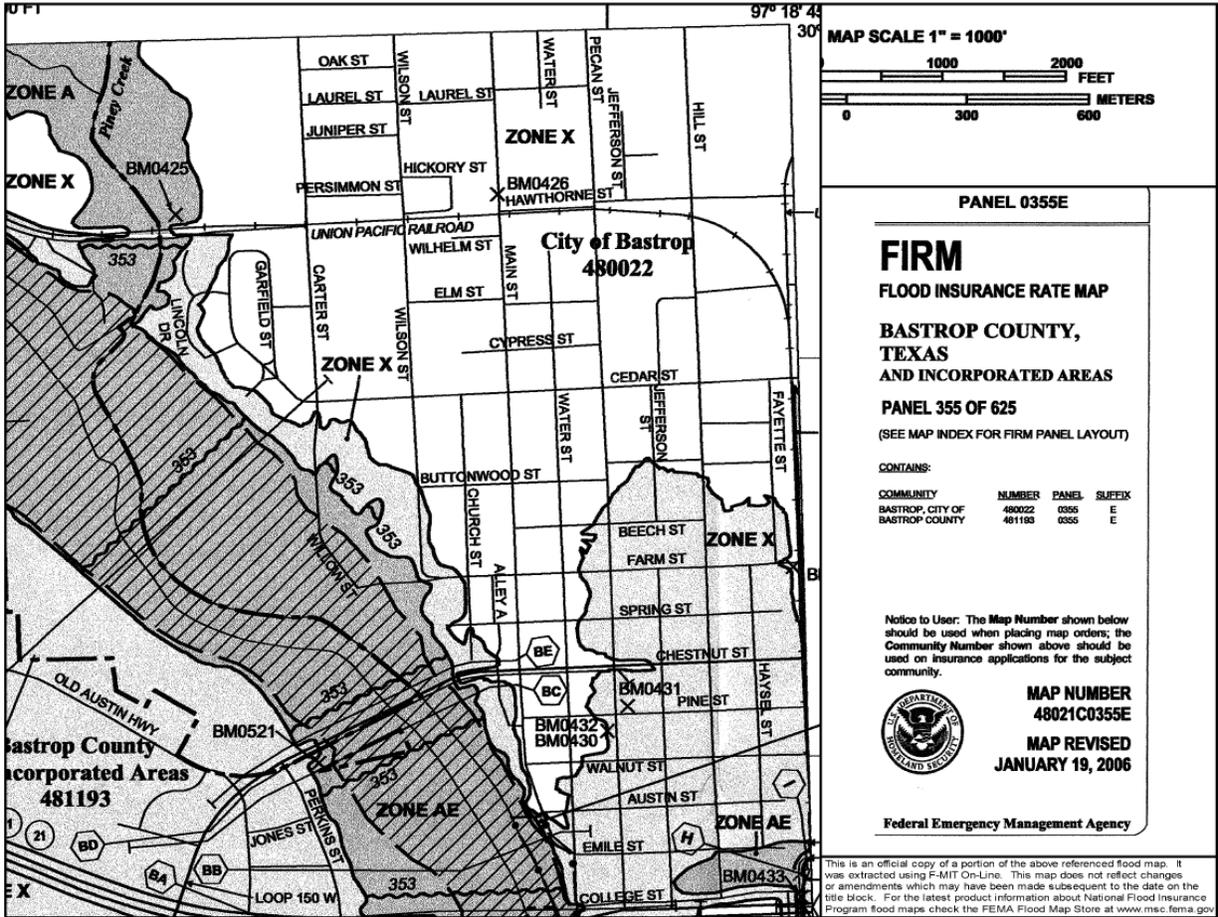
Legend

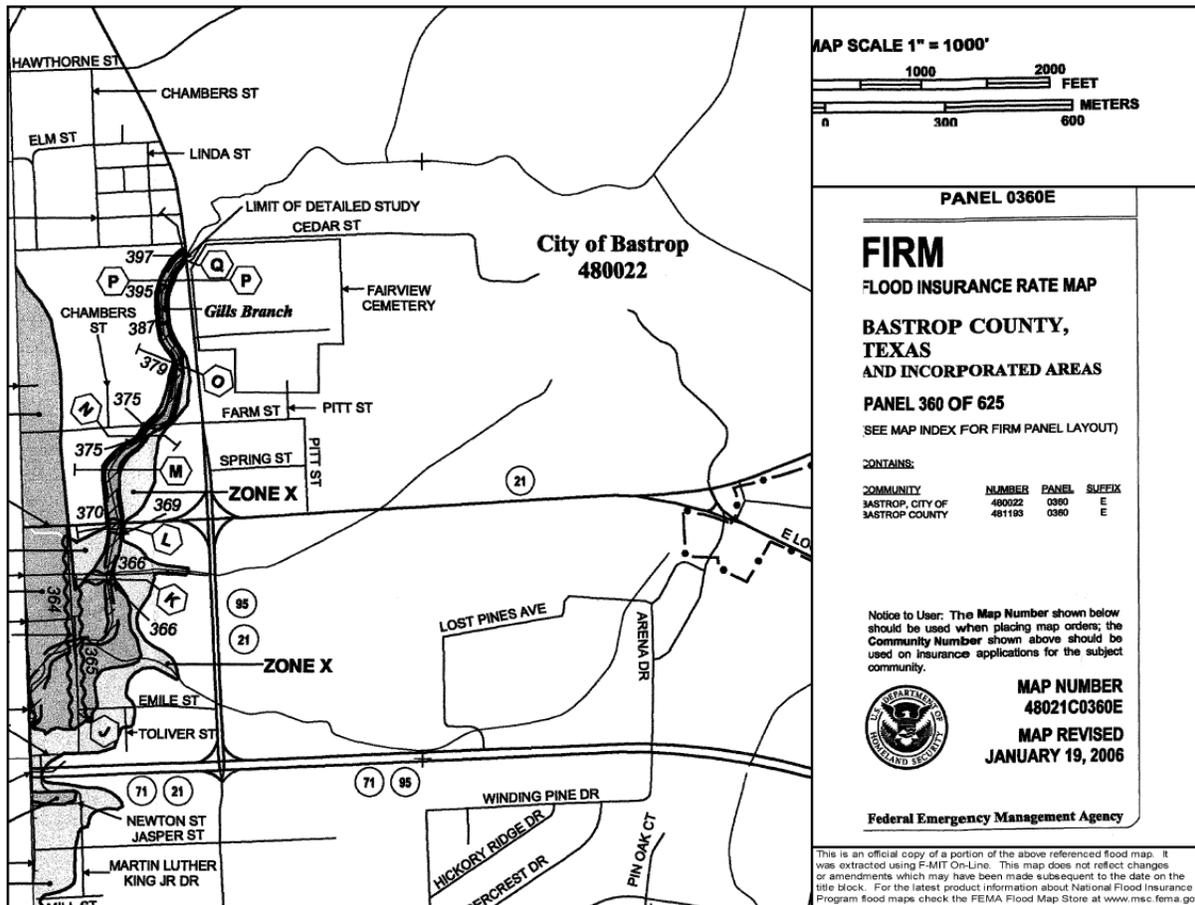
- River
- Project Area
- Area of Interest

Sole Source Aquifers

The inset map shows the state of Texas with a grid overlay. A red square in the central-eastern part of the state indicates the location of Bastrop County, with a line pointing to the county's name.

Data Sources: EPA, TNRIIS
Service Layer Credits:





Executive Order 11988 – Floodplain Management Eight-Step Decision Making Process

Executive Order (EO) 11988, Floodplain Management, requires federal agencies “to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of the floodplain and to avoid direct or indirect support of floodplain development whenever there is a practical alternative.” FEMA implements EO 11988 through an eight-step decision-making process in 44 CFR 9.6.

This eight-step process is applied to the proposed City of Bastrop Gill’s Branch Hazardous Fuels Reduction project. The proposed project involves vegetation management along Gill’s Branch in order to reduce the hazard to people and structures from wildfire. The majority of the proposed project area is within the 100-year floodplain of Gill’s Branch. The steps in the decision-making process are as follows:

Step 1 Determine if the proposed action is located in the Base Floodplain

The proposed work would be conducted within the 100-year floodplain, including the regulatory floodway, of Gill’s Branch according to FEMA Flood Insurance Rate Maps (FIRMs) (panel numbers 48021C0355E and 48021C0360E, dated January 19, 2006). The floodplain in relation to the proposed project is depicted on **Figure 4.9** of the environmental assessment (EA). The proposed project would not result in the construction of any structures within the 100-year floodplain nor would it involve any fill or excavation within the floodplain.

Step 2 Early public notice (Preliminary Notice)

A public notice concerning the proposed hazardous fuels reduction project will be published in the *Bastrop Advertiser* along with the Notice of Availability of the draft EA document. The *Bastrop Advertiser* is the local general circulation newspaper for the City of Bastrop, including the floodplain area of Gill’s Branch where the proposed action is located.

Step 3 Identify and evaluate alternatives to locating in the base floodplain

The no action alternative is described in **Section 3.1** of the EA. The no action alternative would not meet the purpose and need for the project and is not a practicable alternative.

An alternative that would relocate the project out of the floodplain is described here. A portion of the proposed project is within the 100-year floodplain of Gill’s Branch. In order to protect adjacent homes and other structures, hazardous fuels reduction is needed along Gill’s Branch. Relocating the proposed project area to avoid the floodplain would require moving the proposed project out of the Gill’s Branch stream channel. This alternative was considered but rejected because it would not protect residences adjacent to Gill’s Branch or prevent the spread of a wildfire down the river channel. An alternative that would relocate the project outside of the floodplain would not meet the project purpose and need and is not a practicable alternative.

Another alternative considered was a physical barrier to mitigate the spread of wildfire. Under this alternative, the City would construct a physical barrier along Gill’s Branch that would

prevent the spread of wildfires. This alternative was rejected because the construction of a physical barrier is not cost-effective and would not meet the project purpose and need. A physical barrier would not reduce the amount of ladder fuels present that could carry a ground fire up into the canopy, from which burning embers could be transported over the barrier. Under this alternative, the City would continue to be at an elevated risk for the spread of a catastrophic wildfire along the stream channel of Gill's Branch, and the probability of loss of human life and property would continue to be unacceptably high. An alternative that would leave vegetation in the stream channel of Gill's Branch would not meet the purpose and need and is not a practicable alternative.

Step 4 Identify impacts of proposed action associated with occupancy or modification of the floodplain

Impact on natural function of the floodplain

The proposed action would not affect the functions and values of the 100-year floodplain. The proposed action would not place any structures or fill within the floodplain that would impede or redirect flood flows nor would it result in any excavation. No structures would be constructed within the floodplain, and only minor soil disturbance would occur within the floodplain during project implementation. Although the proposed action would reduce risk to homes, businesses and public spaces adjacent to Gill's Branch, the proposed action would not facilitate any development within the floodplain.

The functions of the floodplain to provide flood storage and conveyance, filter nutrients and impurities from runoff, reduce flood velocities, reduce flood peaks, moderate temperature of water, reduce sedimentation, promote infiltration and aquifer recharge, and reduce frequency and duration of low surface flows would not be impaired by the proposed project. There would be minor short-term impacts to water quality during the implementation phase of the project.

Floodplains also provide fish and wildlife habitat, breeding, and feeding grounds. These floodplain values would not be significantly impacted, and the overall integrity of the ecosystem would not be impacted. The project would not adversely modify or otherwise affect critical habitat. The proposed action would have negligible impacts on native species and their habitats and population levels of native species would not be affected. The potential for adverse impacts to migratory bird species would be avoided by conducting the work during the fall and winter seasons when migratory species are not breeding.

The proposed action would not adversely affect the social and recreational benefits provided by the floodplain in the project area. Open space in and along Gill's Branch would not be affected by the proposed action.

The hazardous fuels reduction activities would reduce the potential for the negative effects of a major wildfire on soils if a wildfire occurs. A wildfire could alter the cycling of nutrients; the physical and chemical properties of soils; and the temperature, moisture, and biotic characteristics of the existing soils. These primary impacts from a wildfire could also result in decreased infiltration and increased runoff, which often causes increased erosion. These potential

negative effects of a major wildfire on the natural floodplain functions would be reduced through implementation of the proposed action.

Impact of the flood water on the proposed facilities

The proposed action does not include any structures or facilities within the floodplain; therefore, no facilities would be affected by flood water in the floodplain of Gill's Branch. The proposed action also does not include any fill, excavation, or ground disturbance that could affect flood flows or elevations.

No debris or mulch piles would be staged or stored in the floodplain. Potential floodwaters would not affect the project.

Step 5 Design or modify the proposed action to minimize threats to life and property and preserve its natural and beneficial floodplain values

The objective of the proposed action is to reduce the risk of wildfires impacting homes and other structures along Gill's Branch. No structures are or would be located in the floodplain as a result of the proposed project. The proposed hazardous fuels reduction would result in removal of dead and dying trees, thinning of small trees and underbrush, and trimming of the lower branches of large trees. Stumps would be left in place and grass would be planted in disturbed areas. The proposed action would have no effect on the natural and beneficial values of the floodplain. As a condition of the project, no debris or mulch would be staged or stored in the floodplain, though mulch may be spread on the ground surface for erosion control where it would not be washed downstream.

Many of the impacts discussed above are considered insignificant or beneficial to the floodplain. The proposed action to reduce fuel loads contributes to the conservation of the floodplain and its natural and beneficial values. Short-term water quality impacts will be mitigated by the implementation of BMPs.

Impacts to migratory bird species will be minimized by seasonal restrictions such that work is conducted outside of nesting season or by the deployment of a biological monitor if work must take place during nesting season.

For any work in the floodplain, the City of Bastrop will be required to coordinate with the local floodplain administrator and obtain any required permits prior to initiating work, including any necessary certifications that encroachments within the adopted regulatory floodway would not result in any increase in flood levels within the community during the occurrence of the base flood discharge. All coordination pertaining to these activities and applicant compliance with any conditions should be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

Step 6 Determine if proposed action is practicable and re-evaluate alternatives

The proposed action would not expose any segment of the population to flood hazards because it does not include a housing component, and would not facilitate development in the floodplain. The proposed action would not change the current flood hazard because it would not impede or

redirect flood flows. The current conditions in the channel are overgrown vegetation that impedes flood flows; the proposed hazardous fuels reduction would remove these impediments from the channel and restore flood flows to their original state. Therefore, the project would not disrupt floodplain values because it would not change water levels in the floodplain. Therefore, it is practicable to implement the proposed action within the floodplain. Alternatives consisting of locating the project outside of the floodplain or taking no action are not practicable because these alternatives would not reduce wildfire risks to people and homes along Gill's Branch. FEMA maintains that the proposed action alternative is the only practicable alternative to meet the purpose and need of the project. This section may be revised following public comment on the EA and this eight-step evaluation if significant comments are received regarding floodplain impacts.

Step 7 Findings and public explanation (Final Notification)

Step 7 requires that the public be provided with an explanation of any final decision that the floodplain is the only practicable alternative. In accordance with 44 CFR §9.12, the City of Bastrop must prepare and provide a final public notice 15 days prior to the start of any hazardous fuels reduction activities in the floodplain. Documentation of the final public notice is to be forwarded to FEMA for inclusion in the permanent project files.

Step 8 Implement the action

Step 8 is the review of the implementation and post-implementation phases of the proposed action to ensure that the requirements stated in 44 CFR Part 9.11 are fully implemented. The proposed hazardous fuels reduction project will be conducted in accordance with applicable floodplain management requirements.

Conditions identified in Step 5 would be implemented.

Appendix B

Biological Site Visit Field Notes

Appendix B Table 1. Habitat Type Summary

Habitat Type	Dominant Plant Species	Animal Species Observed
Riparian Mixed Woodland	<p>Canopy: Hackberry, American elm, cedar elm, Chinaberry, water oak, few scattered black willows. 40 percent total cover.</p> <p>Shrub: green hawthorn, hackberry, cedar elm, 20 percent total cover.</p> <p>Herbaceous: giant switch cane (Phragmites), giant ragweed, common greenbriar, muskadine grape, Johnsongrass, wild parsley.</p>	<p>Northern cardinal, field sparrow, ruby-crowned kinglet, cooper's hawk, Carolina wren, house finch, gold finch, eastern phoebe, red-bellied woodpecker, English sparrow, chipping sparrow, black-throated sparrow, ground dove, mocking bird, grey squirrel, common raccoon.</p>
Maintained Parcel	<p>Canopy: Few/Scattered manicured trees (cottonwood).</p> <p>Shrub: None.</p> <p>Herbaceous: Bermudagrass, bahaiagrass, white clover.</p>	None
Cleared Riparian Mixed Woodland	<p>Canopy: chinaberry, hackberry, American elm, green hawthorn, common persimmon. 10 percent total cover.</p> <p>Shrub: None.</p> <p>Herbaceous: wild parsley, Johnsongrass, bermudagrass, giant ragweed, southern dewberry, honeysuckle, western ragweed.</p>	<p>Chipping sparrow, English sparrow, northern cardinal, Carolina wren, field sparrow.</p>
Riparian Hardwood Forest	<p>Canopy: American elm, cottonwood, water oak, hackberry, green hawthorn, chinaberry. 70 percent total cover.</p> <p>Shrub: Carolina holly, green hawthorn, water oak, chinaberry. 20 percent total cover.</p> <p>Herbaceous: Long-leaf woodoats, common greenbriar. 10 percent total cover.</p>	<p>American crow, northern cardinal, grey squirrel.</p>

Appendix B Table 2. Listed Species Summary

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						
Houston toad	<i>Anaxyrus houstonensis</i>	LE	E	Endemic; sandy substrate, water in pools, ephemeral pools, stock tanks; breeds in spring especially after rains; burrows in soil of adjacent uplands when inactive; breeds February-June; associated with soils of the Sparta, Carrizo, Goliad, Queen City, Recklaw, Weches, and Willis geologic formations.	Low potential, close to designated critical habitat, but disconnected and located in city limits in highly disturbed landscape.	Unlikely. Highly disturbed by urbanization. Soil within the project area is not conducive to burrowing; sandy loam with gravel inclusions.
Birds						
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 foraging	Low potential. Foraging habitat only.
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, tributary small, no suitable roosting, nesting or foraging habitat.	Unlikely. No foraging or nesting habitat present.

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)
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 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.	Unlikely	Unlikely. No beach, coastal, or sandbar habitat present.
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 foraging	Potential to occur; Suitable habitat present. Foraging habitat only.
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, suitable habitat does not exist.	Unlikely to occur; Suitable habitat does not exist. No coastal marsh habitat present. Stopover only.

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)
Wood Stork	<i>Mycteria americana</i>	None	T	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960.	Unlikely, suitable habitat does not exist.	Unlikely to occur; Suitable habitat does not exist. No permanent water or marsh habitat present.
Fishes						
Blue sucker	<i>Cycleptus elongatus</i>	None	T	Larger portions of major rivers in Texas; usually in channels and flowing pools with a moderate current; bottom type usually of exposed bedrock, perhaps in combination with hard clay, sand, and gravel; adults winter in deep pools and move upstream in spring to spawn on riffles.	Unlikely	Unlikely to occur; Suitable habitat does not exist. No permanent water present.

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)
Mollusks						
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 to occur; Suitable habitat does not exist. No permanent water present.
Smooth pimpleback	<i>Quadrula houstonensis</i>	C	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 to occur; Suitable habitat does not exist. No permanent water present.
Texas fawnsfoot	<i>Truncilla macrodon</i>	C	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 moderate flows; Brazos and Colorado River basins.	Unlikely	Unlikely to occur; Suitable habitat does not exist. No permanent water present.
Texas pimpleback	<i>Quadrula petrina</i>	C	T	Mud, gravel and sand substrates, generally in areas with slow flow rates; Colorado and Guadalupe river basins.	Unlikely	Unlikely to occur; Suitable habitat does not exist. No permanent water present.

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)
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 where suitable habitat exists. Within city limits in highly disturbed landscape.	Unlikely to occur; Suitable habitat does not exist. Dense herbaceous and shrub strata present throughout site.

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)
Timber/Canebrake rattlesnake	<i>Crotalus horridus</i>	None	T	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto.	Low potential where suitable habitat exists. Within City limits in highly disturbed landscape.	Potential to occur; Suitable habitat present. Potential habitat present within the Riparian Mixed Woodland, Cleared Riparian Mixed Woodland, and Riparian Hardwood Forest habitat types
Plants						
Navasota ladies'-tresses	<i>Spiranthes parksii</i>	LE	E	Texas endemic; openings in post oak woodlands in sandy loams along upland drainages or intermittent streams, often in areas with suitable hydrologic factors, such as a perched water table associated with the underlying claypan; flowering populations fluctuate widely from year to year, an individual plant does not flower every year; flowering late October-early November (-early December)	Low potential	Potential to occur; Suitable habitat present. Sandy loam with sand to coble texture present throughout site. However, no perched water table or intermittent streams were observed.

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 C
Agency Coordination Letters

RECEIVED
FRC MAIL CENTER
FEMA REGION 6

2014 JUN -6 A 2:47



U.S. Department of Homeland Security
Federal Emergency Management Agency
800 North Loop 288
Denton, Texas, 76309

FEMA

April 30, 2014

Mark Wolfe
State Historic Preservation Officer
Texas Historical Commission
P.O. Box 12276
Austin, TX 78711-2276



RE: Section 106 Review Consultation, FEMA HMGP-DR-1999-TX Project #34, City of Bastrop
Gill's Branch Fuels Reduction Project

Dear Mr. Wolfe:

The City of Bastrop (Applicant) is requesting Hazard Mitigation Grant Program (HMGP) funding from the Federal Emergency Management Agency (FEMA) for wildfire mitigation activities along Gill's Branch Creek in Bastrop, Bastrop County, Texas. The Applicant contacted State Historic Preservation Office (SHPO) in August 2012 regarding this project, and your office replied by letter on September 24, 2012. FEMA would like to re-initiate Section 106 consultation for this project because we now have additional information on the undertaking as described below.

The Applicant proposes to conduct wildfire fuels reduction activities along approximately 7,500 feet of Gill's Branch Creek, a tributary to the Colorado River which runs adjacent to residential neighborhoods and commercial and public structures. The work would be conducted along the banks and within the streambed of the creek. The proposed action includes removing some large trees as well as trimming of all species of trees such as hackberry, elm, cottonwood, willow, and yaupon to at least 8 feet high. During project implementation, the heavy equipment used could include backhoes, trackhoes, skid steer loaders, trucks, and trailers. A variety of hand tools including chain saws, hand saws, shovels, etc. would also be used to cut ladder fuels. Trees would be flush cut and no stumps or rootballs would be removed. Any debris created on site would be hauled off site within 48 hours to Go Green International to be used for fuel. It is estimated that about 1,000 loads of debris would be hauled from the site. Fuel reduction activities would be restricted to public lands and would take approximately 5 to 6 months to complete.

The Area of Potential Effect (APE) is shown on the enclosed map and includes the streambed and its banks. From the northern limit of the project area at Cedar Street and Highway 95, there are a few homes on both the western and eastern banks of the creek between Cedar and Farm Streets. Between Farm and Chestnut Streets, the Bastrop Convention & Exhibit Center is located on the western side of the creek and the Shulman Theaters Lost Pines 8 is located on the east. Between Chestnut and Pine Streets, residential structures are located on the western banks and commercial buildings are on the eastern banks. Between Pine and Emile Streets, the Bastrop Special Education Center is located to the

northeast and the Macedonia First Baptist Church and a few houses are located on the western banks. The creek passes under Martin Luther King Drive between Walnut and Emile Streets and then winds south along the railroad tracks to eventually cross under Highway 71. The project area ends where the creek crosses under Highway 71. Just before the creek crosses under the railroad tracks a small tributary comes in from the east; however, this tributary is contained in an underground pipe from about Martin Luther King Drive eastward and so there would not be any hazardous fuels reduction work in the eastern part of the tributary.

FEMA has retained CDM Smith to prepare an environmental assessment for this undertaking. A CDM Smith archeologist (RPA, GISP) has reviewed the undertaking. A cultural records file search in the Texas Archeological and Historic Sites Atlas was conducted for known historical sites. According to the Atlas, there are no archeological sites directly within the boundaries of the APE (see enclosed map). Site 41BP842 is nearby but outside of the APE. This site was documented as a result of an archaeological survey conducted in 2008 for the Bastrop Convention & Exhibit Center. Site 41BP842 consists of a building located at 1408 Chestnut Street and associated archaeological deposits. The structure was documented as dogtrot style house with a well and shed. The house has been renovated several times and is not considered eligible for the National Register (Dowling, 2008). The archaeological component of the site is also not eligible for the National Register (Dowling, 2009).

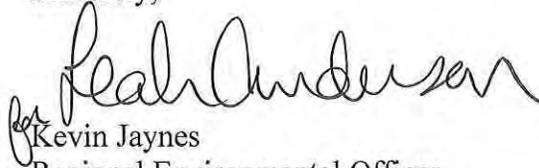
The Iron Bridge, a property listed on the National Register, spans over Piney Creek and not Gill's Branch Creek. The bridge is several miles northwest of the project area. The Ploeger-Kerr-White House, which is also listed on the National Register, is nearby, but outside of the APE. The APE does not intersect with any national register districts (see attached map).

FEMA has made a determination of **No Historic Properties Affected** as a result of the proposed undertaking. The proposed work is not anticipated to have an impact on historic properties because the National Register structures are outside of the APE. View shed impacts to the nearby Ploeger-Kerr-White House are not anticipated because the project does not involve clear cutting rather it involves the trimming of limbs, removal of select trees, and brush removal. Because there would be minimal surface ground disturbance due to equipment and only above-ground vegetation would be removed, there should be no impact on archeological resources. The documented archeological site that resulted from the 2008 survey was determined to be outside of the APE and not eligible for the National Register. In addition, the Applicant will be required to adhere to the following requirement as a condition of the FEMA grant: "In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains are uncovered, the project must be halted immediately in the vicinity of the discovery, and all reasonable measures will be taken to avoid or minimize harm to the finds. The Applicant must secure all archeological findings and restrict access to the sensitive area. The Applicant must inform FEMA immediately, and FEMA will consult with the State Historic Preservation Office (SHPO). Work in sensitive areas must not resume until consultation is completed and until FEMA determines that appropriate measures have been taken to ensure compliance with the National Historic Preservation Act (NHPA) and its implementing regulations."

Mark Wolfe
April 30, 2014
Page 3

FEMA requests concurrence with this determination. Your prompt review of this project is greatly appreciated. Should you need additional information please contact Dorothy Weir, FEMA EHP, at (940) 383-7250.

Sincerely,



Kevin Jaynes
Regional Environmental Officer
Region 6

References

- Dowling, J. 2008. Archaeological Investigations of the Proposed Convention Center and City Hall Prospect Area in Downtown Bastrop, Bastrop County, Texas. Archaeological Report, No. 386. Center for Archaeological Research, The University of Texas at San Antonio. Submitted to City of Bastrop. Copies available from Texas Historical Commission.
- Dowling, J. 2009. Archaeological Testing Within Two Blocks of the Proposed Convention Center and City Hall Project Area, Bastrop County, Texas. Archaeological Report, No. 399. Center for Archaeological Research, The University of Texas at San Antonio. Submitted to City of Bastrop. Copies available from Texas Historical Commission.

Enclosures

- Original SHPO Response dated September 24, 2012
Map of APE
Texas Atlas Map of Archeological Resources
Texas Atlas Map of Historic Resources
Photos of Project Area



TEXAS HISTORICAL COMMISSION
real places telling real stories

24 September 2012

Judy Langford
Langford Community Management Services
13740 Research Blvd. Suite G1
Austin, Texas 78750

*Re: Project review under Section 106 of the National Historic Preservation Act of 1966
Federal Emergency Management Agency (FEMA), Hazard Mitigation Grant Program (HMGP), Vegetation
and Debris Removal and Mitigation of Hazardous Fuels at Gill's Branch, Bastrop County, Texas*

Dear Ms. Langford:

Thank you for submitting information on the above-referenced project to initiate Section 106 consultation. We received your letter on August 30, 2012. This letter serves as official comment from the State Historic Preservation Officer (SHPO), the Executive Director of the Texas Historical Commission (THC). At this time we are unable to complete our review based on the provided documentation.

As the SHPO for Texas, the THC has an online resource you can use in your search for historic resources near the project location. Our Online Historic Sites Atlas, located at <http://atlas.thc.state.tx.us/index.asp>, is by no means comprehensive, but it does list most of the sites already listed in the National Register of Historic Places (NRHP) or designated Recorded Texas Historic Landmarks, many of which are also eligible for listing in the NRHP.

The review staff, led by Sarah K. Birtchet and Jeff Durst, has examined our records, including the Atlas. According to our maps the proposed project location is in an area surrounded by several historic resources, including many NRHP-listed properties. The Atlas indicates there are two NRHP-listed properties located along Gill's Branch: The Ploeger-Kerr-White House and an Iron Bridge. To further assist us in our review please include a map defining the Area of Potential Effects (APE), confirm the location of the two (2) NRHP-listed properties within the project area, and identify any other historic properties within this APE. Also, please provide a detailed description of the proposed work, including specific methods and locations for vegetation and debris removal. Further information regarding this process can be found on-line at www.thc.state.tx.us/crm/crm106rvw.shtml.

Additionally, according to our maps, the proposed project location has never been surveyed for cultural resources. Archeological sites have been recorded on similar landforms and in close proximity to this location in Bastrop County, and we believe a professional archeologist should survey the proposed construction site. The work should meet the minimum archeological survey standards posted on-line at www.thc.state.tx.us/rulesregs/rrdefault.shtml. A report of investigations should be produced in conformance with the Secretary of the Interior's Guidelines for Archaeology and Historic Preservation, and submitted to this office for review.

Thank you for your cooperation in this federal and state review process, and for your efforts to preserve the irreplaceable heritage of Texas. If you have any questions concerning our review or if we can be of further assistance, please contact Sarah K. Birtchet, Historian, Federal Programs at sarah.birtchet@thc.state.tx.us or 512/936.7403; or Jeff Durst, Archaeologist at jeff.durst@thc.state.tx.us or 512/463-8884.

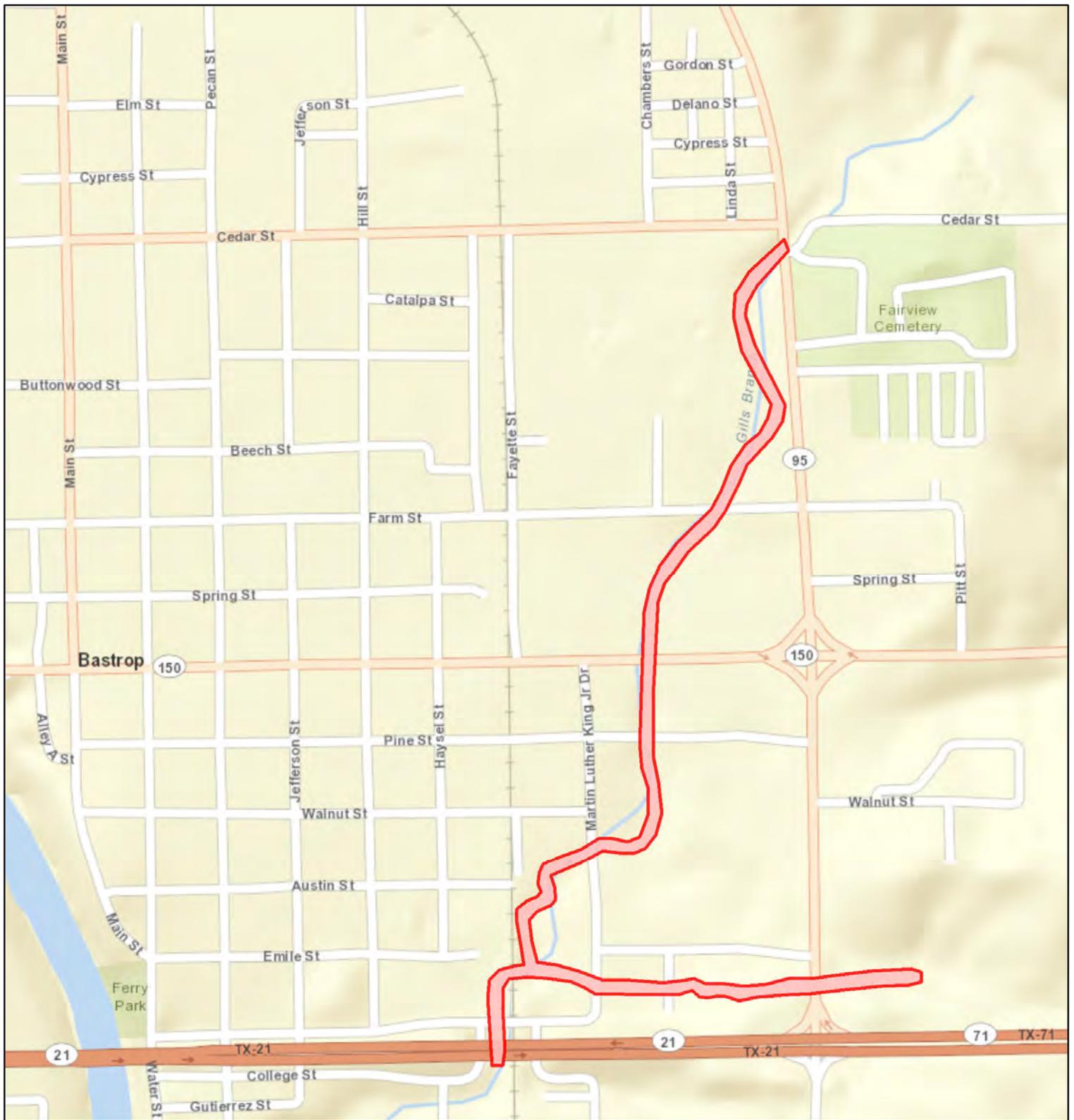
Thank you,



Sarah K. Birtchet, Historian, Federal Programs
For: Mark Wolfe, Chief Deputy State Historic Preservation Officer

CC: Michael H. Talbot, City Manager, City of Bastrop





Gills Branch Hazardous Fuels Reduction

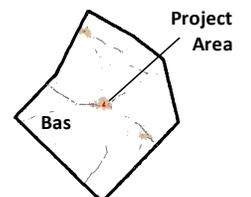
Bastrop County



Project Area

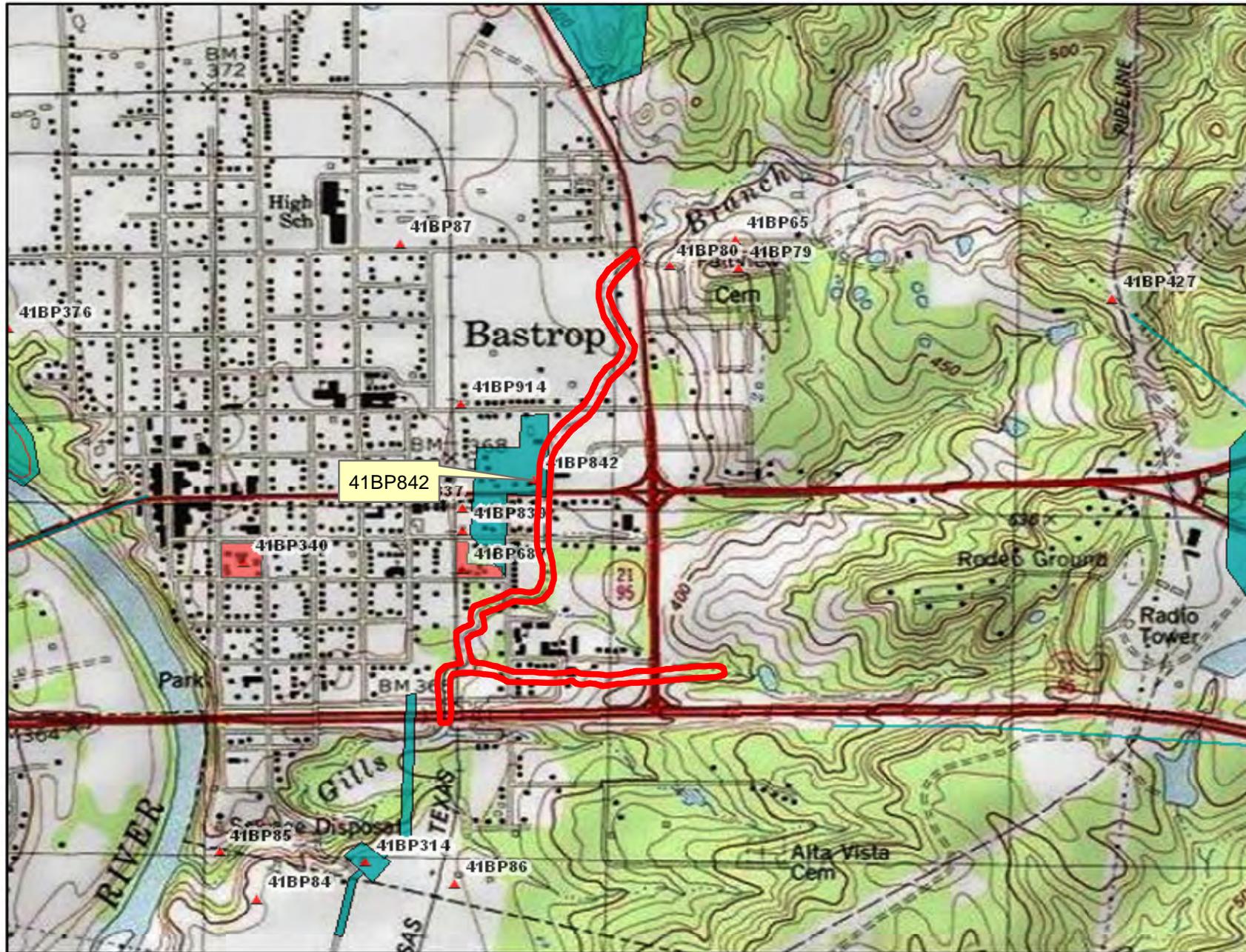
Legend

 Project Area

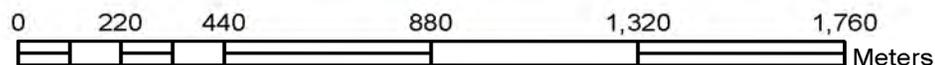


Note: The depiction of Gill's Branch in the basemap does not accurately represent its delineation. The project area follows the actual alignment of the creek bed.

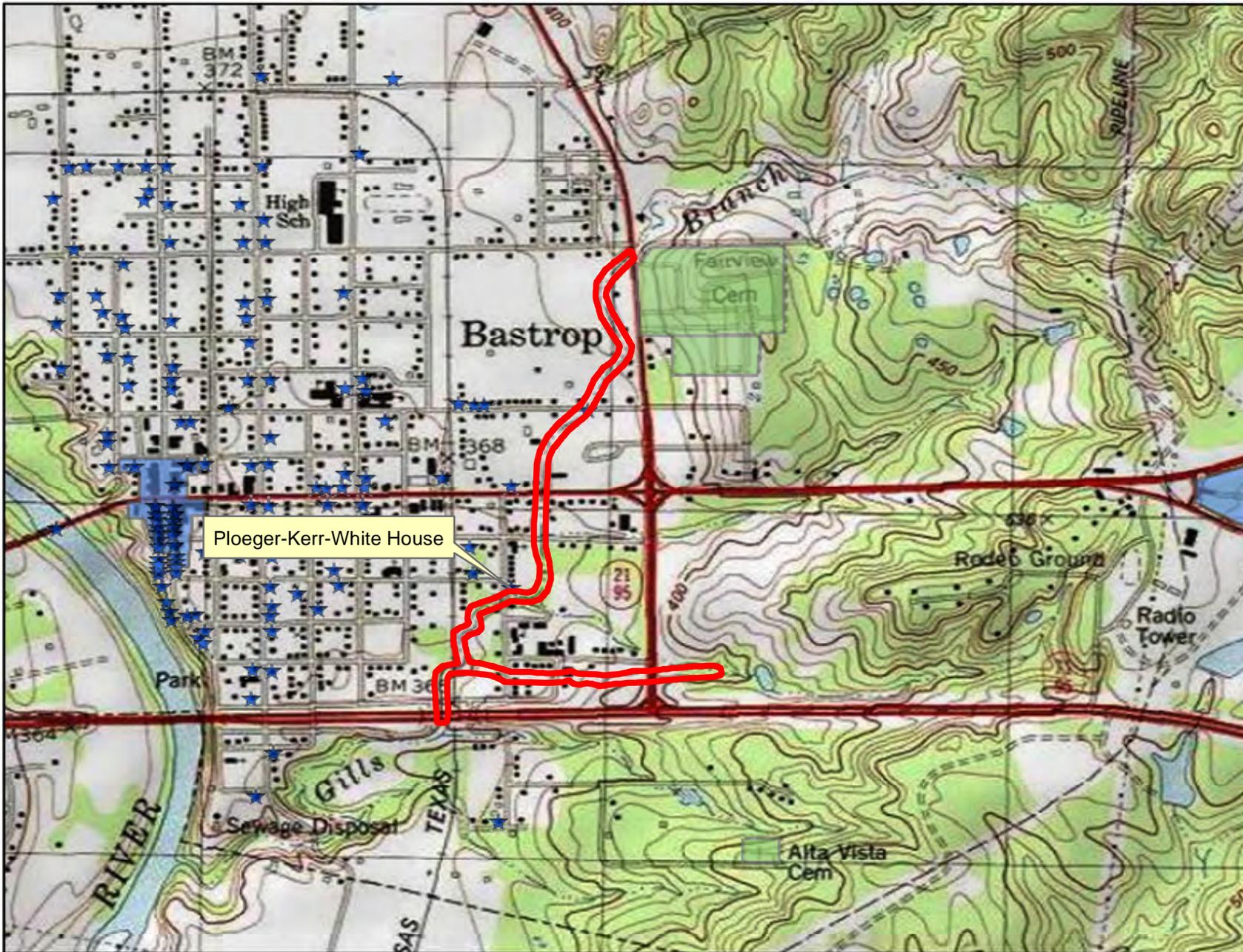
Gill's Branch - Archaeology



- Legend**
-  Site Centroid
 -  Site Boundary
 -  Site Area
 -  Project Area
 -  Project (linear)



Gill's Branch - Historic Structures



- Legend**
- NR Property
 - NR District
 - NR District (Restricted)
 - Cemetery

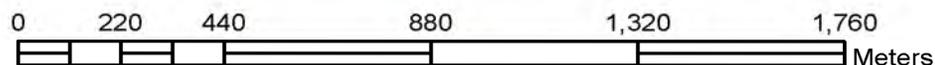




Figure 1. Existing Vegetation in Creek Channel – Northern Portion of Project Area



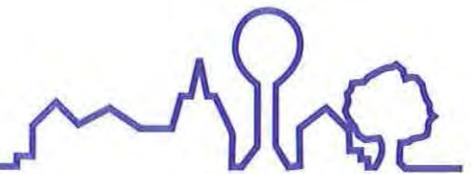
Figure 2. Existing Vegetation Near Emile Elementary School



Figure 3. Existing Vegetation Near Commercial Properties



Figure 4. Existing Vegetation Near Residential Property



August 22, 2012

Ms. Glenda Thorn
Water Program Specialist
P.O. Box 13087
Austin, Texas 78711-3087

Dear Ms. Thorn:

Through a grant with the Federal Emergency Management Agency (FEMA), the City of Bastrop plans to mitigate hazardous fuels from an existing creek bed, Gill's Branch, which is approximately 7,500 linear foot of creek. Based on aerial photography, maps, and observation, the existing creek is a meandering intermittent stream that is overgrown with weeds, brush and trees. The creek will need to be cleared of all vegetation and debris before any clearing improvements can be made to the channel. The reduction of fuel materials in a high fire danger area will allow the City to better protect the land and nearby neighborhoods from potential wildfires.

The project will have no adverse affects on any cultural, environmental or historical aspects of the community due to the fact the area is already disturbed. In additions, this area is located directly adjacent to medium density population of residential neighborhood.

According to the guidelines for this project, we are to notify your agency and obtain approval or an indication that the proposed project in not inconsistent with your environmental concerns, specifically related to fuel reduction. We will forward your response to the Texas Division of Emergency Management. Included are pictures and a map.

If you have any comments or questions please feel free to contact:

1) Judy Langford
Langford Community Management Services
13740 Research Blvd. Suite G1
Austin, Texas 78750
512/452-0432
Judy@LCMSINC.com

2) Michael H. Talbot
City Manager, City of Bastrop
1311 Chestnut St.
Bastrop, Texas 78602
512/332-3800
mtalbot@cityofbastrop.org

Respectfully,

Judy Langford

Judy Langford

From: Gregg Easley [gregg.easley@tceq.texas.gov]
Sent: Wednesday, September 19, 2012 4:27 PM
To: Judy Langford; mtalbot@cityofbastrop.org
Subject: RE: Gill's Branch Fuel Reduction Project

Ms. Langford and Mr. Talbot,

There's something that I'd like to add to my previous email concerning potential regulatory involvement of the TCEQ Water Quality Division with respect to the proposed fuel reduction project on Gill's Branch. I failed to mention that a construction stormwater general permit may be required for the proposed activities. Additional information regarding the applicability of this permit can be found on the following web page:

http://www.tceq.texas.gov/permitting/stormwater/TXR15_AIR.html

Again, please contact me if you have any questions or need more information.

Thank you,

Gregg Easley, Team Leader
Standards Implementation Team
Water Quality Division
Texas Commission On Environmental Quality
P.O. Box 13087, MC-150
Austin, TX 78711-3087

512-239-4539 (phone)
512-239-4420 (fax)
gregg.easley@tceq.texas.gov

From: Gregg Easley
Sent: Wednesday, September 19, 2012 12:03 PM
To: Judy@LCMSINC.com; mtalbot@cityofbastrop.org
Subject: Gill's Branch Fuel Reduction Project

Dear Ms. Langford and Mr. Talbot,

The TCEQ Water Quality Division has received and reviewed your letter and associated materials, dated August 22, 2012, describing proposed fuel reduction activities along approximately 7,500 linear feet of Gill's Branch within the City of Bastrop. Based on the description of the proposed activities, the only potential regulatory involvement that the TCEQ Water Quality Division might have would be if the U.S. Army Corps of Engineers, Fort Worth District required authorization for any of the components of the project that involved work in the stream. The TCEQ does review certain Corps of Engineers authorizations for state water quality certification. It is recommended that the Fort Worth District be consulted as to whether any type of authorization for the proposed project would be needed. If it is determined that a Corps of Engineers permit is needed along with an individual state water quality certification review from the TCEQ Water Quality Division, the Corps of Engineers will independently notify us of that need. If no individual state water quality certification is required, then no further coordination on your part with the TCEQ Water Quality Division is necessary.

Regardless of the level of TCEQ Water Quality Division involvement, we recommend that best management practices be incorporated to protect water quality both during and after implementation of the project, especially considering that

Gill's Branch empties into the Colorado River just a short distance downstream of the project area. We appreciate the notification given regarding the proposed project. Please contact me if you have any questions or need additional information.

Thank you,

Gregg Easley, Team Leader
Standards Implementation Team
Water Quality Division
Texas Commission On Environmental Quality
P.O. Box 13087, MC-150
Austin, TX 78711-3087

512-239-4539 (phone)
512-239-4420 (fax)
gregg.easley@tceq.texas.gov



September 28, 2012

Life's better outside.®

Ms. Judy Langford
Langford Community Management Services
13740 Research Boulevard, Suite G1
Austin, TX 78750

Commissioners

T. Dan Friedkin
Chairman
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Fort Worth

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Karen J. Hixon
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Beeville

Bill Jones
Austin

Margaret Martin
Boerne

S. Reed Morian
Houston

Dick Scott
Wimberley

Lee M. Bass
Chairman-Emeritus
Fort Worth

RE: Proposed Fuel Reduction from an Existing Creek Bed (Gill's Branch),
City of Bastrop, Bastrop County, Texas

Dear Ms. Langford:

Texas Parks and Wildlife Department (TPWD) received the preliminary coordination letter regarding the above-referenced proposed project. TPWD staff has reviewed the information provided and offers the following comments concerning this project.

Please be aware that a written response to a TPWD recommendation or informational comment received by a state governmental agency may be required by state law. For further guidance, see the Texas Parks and Wildlife Code, Section 12.0011, which can be found online at <http://www.statutes.legis.state.tx.us/Docs/PW/htm/PW.12.htm#12.0011>. For tracking purposes, please refer to TPWD project number ERCS-2576 in any return correspondence regarding this project.

Carter P. Smith
Executive Director

Project Description

The proposed project entails the mitigation of hazardous fuels from an existing creek bed, Gill's Branch. The proposed project consists of clearing 7,500 linear feet of Gill's Branch channel. Gill's Branch is a meandering intermittent stream that is overgrown with weeds, brush, and trees. No additional information about the proposed project was provided with the request.

Vegetation

The proposed project as designed would impact riparian vegetation. Removal of vegetation along stream systems is very damaging to fish and wildlife habitat and to natural processes associated with these systems. Vegetation associated with forested stream systems usually reflects highest value wildlife habitats. The degree of adverse impact to habitat resulting from this vegetation loss relates directly to the quantity of the vegetation loss and quality of the vegetation assemblage in fulfilling life requisites of those organisms using it.

Ms. Judy Langford
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Recommendation: The riparian vegetation associated with Gill's Branch acts as a natural buffer and should remain undisturbed to the extent feasible to help protect water quality and preserve wildlife cover, food sources, and travel corridors. Contractors should be advised to locate stock piles, staging areas, and other project related sites in previously disturbed areas outside of the riparian corridor (whenever possible). Disturbed areas should be revegetated with site-specific native plant species. A copy of *Texas Parks & Wildlife Department Guidelines for Construction and Clearing Within Riparian Areas* is attached for your reference.

The project letter and attachments do not include a summary of woody vegetation to be impacted. However, after review of the aerial imagery and photographs, it appears that woody vegetation could potentially be impacted by the proposed project.

Recommendation: TPWD recommends that clearing of mature, native trees be avoided. Loss of vegetation should be minimized by using site planning and construction techniques designed to avoid and preserve existing trees, shrubs, grasses, and forbs. *For impacts that are unavoidable, TPWD recommends transplanting the existing trees or replacing them at a ratio of 3 saplings for every tree lost.* Whether transplanted or replaced, a survival of 85 percent should be achieved. TPWD recommends that native plant and forage species that are beneficial to wildlife endemic to the area be used in mitigation and landscaped areas.

Invasive Species and Revegetation

Invasive species pose a significant threat to the existence of native plant communities in disturbed areas.

Recommendation: In accordance with the *Executive Order on Invasive Species (EO 13112)* and the *Executive Memorandum on Beneficial Landscaping*, TPWD recommends that practices be implemented to prevent the establishment of invasive species and sustain native species, particularly during the early stages of revegetation. Lists of invasive species to avoid can be accessed online at http://texasinvasives.org/invasives_database/. The Lady Bird Johnson Wildflower Center's *Native Plant Alternatives to Invasives* database can be accessed at <http://www.wildflower.org/alternatives/index.php>. Additional useful information may be found at TPWD *Texas Plant Information Database* at <http://tpid.tpwd.state.tx.us/>.

Ms. Judy Langford
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Streambed Disturbance

The proposed project would result in significant streambed disturbance to Gill's Branch.

Recommendation: If the proposed project would impact a state-owned stream bed the project would require a permit from TPWD under Chapter 86, Parks and Wildlife Code. Contact Mr. Tom Heger, TPWD Wetlands Conservation Team at 512-389-4583 for additional information on the required permit. Information on these permits may be found at the Texas Parks and Wildlife Department website at http://www.tpwd.state.tx.us/faq/landwater/sand_gravel/

Federal Laws

Endangered Species Act

Federally-listed animal species and their habitats are protected from "take" on any property by the Endangered Species Act (ESA). Take of a federally-listed species can be allowed if it is "incidental" to an otherwise lawful activity and must be permitted in accordance with Section 7 or 10 of the ESA. Federally-listed plants are not protected from take except on lands under federal/state jurisdiction or for which a federal/state nexus (i.e., permits or funding) exists. Any take of a federally-listed species or its habitat without the required take permit (or allowance) from the U.S. Fish and Wildlife Service (USFWS) is a violation of the ESA.

The project area contains designated critical habitat for the federally-listed Houston toad (*Bufo houstonensis*).

The Houston toad was the first amphibian species placed on the endangered species list in 1973 and is a fossorial toad species. The Houston toad is associated with deep sandy soils within the Post Oak Savannah of east central Texas and is a year-round resident where found. Houston toads are known to cross unfavorable soils to reach breeding ponds, but cannot cross large areas without canopy due to the effects of temperature and desiccation. In addition, large uncanopied areas prevent recolonization of previously occupied habitat when juvenile toads disperse, effectively fragmenting habitat further, an action that inhibits the recovery of this species. Tree clearing, road construction, and heavy equipment activity could cause mortality to toads.

Ms. Judy Langford
Page Four
September 28, 2012

The project area may also contain suitable habitat for the federally endangered plant species, Navasota ladies'-tresses (*Spiranthes parksii*).

It is the responsibility of the project proponent to determine if adverse impacts to federally-listed species are expected to occur as a result of the proposed project and consult with the appropriate agency concerning those impacts.

Recommendation: The project area should be surveyed for suitable Houston toad and Navasota ladies'-tresses habitat prior to clearing or construction. If suitable habitat for the Houston toad or Navasota ladies'-tresses is found on the project site or within 300 feet of the project site, TPWD recommends surveys for these species during the appropriate season as specified in the USFWS survey protocols. These federally-listed species are protected by the ESA. Because the definition of take in the ESA includes harming or harassing a listed species, this disturbance could constitute a violation of the ESA.

TPWD recommends Langford Community Management Services contact the USFWS Austin Ecological Field Office at (512) 490-0057 for species occurrence data, guidance, permitting, survey protocols, and mitigation for federally-listed species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits taking, attempting to take, capturing, killing, selling/purchasing, possessing, transporting, and importing of migratory birds, their eggs, parts and nests, except when specifically authorized by the Department of the Interior. This protection applies to most native bird species, including ground nesting species. The USFWS Migratory Bird Office can be contacted at (505) 248-7882 for more information on potential impacts to migratory birds.

Recommendation: If migratory bird species are found nesting on or adjacent to the project area, they must be dealt with in a manner consistent with the MBTA. TPWD recommends excluding vegetation clearing activities during the general bird nesting season, March through August, to avoid adverse impacts to this group. If clearing vegetation during the migratory bird nesting season is unavoidable, TPWD recommends the facility survey the area proposed for disturbance to ensure that no nests with eggs or young will be disturbed by operations. Any vegetation (trees, shrubs, and grasses) where occupied nests are located should not be disturbed until the eggs have hatched and the young have fledged.

Ms. Judy Langford
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Clean Water Act

The U.S. Army Corps of Engineers (USACE) as authorized by Section 404 of the Clean Water Act (CWA) of 1972 issues permits for unavoidable discharge of dredged or fill material into Waters of the U.S., including wetlands. Any unavoidable impacts to jurisdictional streams and wetlands would be subject to review and approval of the USACE. If potential impacts to jurisdictional streams or wetlands are anticipated, the appropriate USACE district office should be consulted pursuant to CWA.

Wetlands, riparian areas, and bottomland forests generally provide valuable habitat for wildlife and protect waterways from sediment loads in runoff water. Such habitats are priority habitat types targeted for conservation by TPWD across the state.

Recommendation: Langford Community Management Services should minimize disturbance to inert microhabitats, i.e., snags, brush piles, fallen logs, creek banks, and pools as these provide habitat for a variety of wildlife species and their food sources.

Recommendation: In wetland areas, only vegetation impeding construction should be removed, equipment should not be driven over vegetation when it is extremely wet, and heavy machinery should not be stored on vegetative cover for long periods of time. Protective mats should be placed within streambeds during construction to reduce the amount of soil and root disturbance and aid in the recovery of plants.

Recommendation: Vehicles not needed specifically at creek crossings should utilize nearby roadways and bridges when crossing wetlands and streams to avoid soil disturbances.

State Laws

Parks and Wildlife Code, Section 68.015

Section 68.015 of the Parks and Wildlife Code regulates state-listed species. Please note that there is no provision for take (incidental or otherwise) of state-listed species. A copy of *TPWD Guidelines for Protection of State-Listed Species*, which includes a list of penalties for take of species, is attached for your reference. State-listed species may only be handled by persons with a scientific

Ms. Judy Langford
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September 28, 2012

collection permit obtained through TPWD. For more information on this permit, please contact the Wildlife Permits Office at (512) 389-4647.

Riparian vegetation present within the project area could potentially support the following state-listed species:

- Timber/Canebrake rattlesnake (*Crotalus horridus*)

Recommendation: TPWD recommends avoiding disturbance of the Timber/Canebrake rattlesnake during clearing and construction. TPWD recommends a biological monitor be present during construction to try to relocate protected species if found. If the presence of a biological monitor during construction is not feasible, state-listed threatened species observed during construction should be allowed to safely leave the site.

Species of Concern

In addition to state- and federally-protected species, TPWD tracks special features, natural communities, and rare resources that are not listed as threatened or endangered. These species and communities are tracked in the Texas Natural Diversity Database (TXNDD), and TPWD actively promotes their conservation. TPWD considers it important to evaluate and, if necessary, minimize impacts to rare species and their habitat to reduce the likelihood of endangerment.

Based on the project description, site location, a review of the TXNDD, and publicly-available aerial photographs, the following species of concern and natural communities could be impacted as a result of the proposed project:

- Texas garter snake (*Thamnophis sirtalis annectens*)
- Loblolly pine-post oak-blackjack oak/farkleberry forest series (*Pinus taeda-Quercus stellata-Quercus marilandica-Vaccinium arboretum series*)
- Post oak-blackjack oak series (*Quercus stellata-Quercus marilandica series*)
- Houston toad (*Bufo houstonensis*) – Federally-listed as Endangered

Records of the Texas garter snake, Loblolly pine-post oak-blackjack oak/farkleberry forest series, Post oak-blackjack oak series, and the Houston toad have been documented within 1.5 miles of the project site. A printout of these occurrence records is attached for your reference.

Ms. Judy Langford
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September 28, 2012

Recommendation: If during construction the project area is found to contain rare species, natural plant communities, or special features, TPWD recommends that precautions be taken to avoid impacts to them.

Please note that absence of TXNDD information in an area does not imply that a species is absent from that area. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presence, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and **cannot be used as presence/absence data**. They represent species that could potentially be in your project area. This information cannot be substituted for on-the-ground surveys. The TXNDD is updated continuously. As the project progresses and for future projects, please request the most current and accurate information at txndd@tpwd.state.tx.us.

Recommendation: Please review the TPWD county list of rare and protected species for Bastrop County, as rare species in addition to those discussed above could be present depending upon habitat availability. These lists are available http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ online at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/. The USFWS should be contacted for species occurrence data, guidance, permitting, survey protocols, and mitigation for federally-listed species. For the USFWS rare species lists by county please visit <http://www.fws.gov/endangered/>.

Determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence. If encountered during construction, measures should be taken to avoid impacting wildlife.

TPWD strives to respond to requests for project review within the 45 day comment period. Responses may be delayed due to workload and lack of staff. Failure to meet the 45 day review timeframe does not constitute a concurrence

Ms. Judy Langford
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from TPWD that the proposed project will not adversely impact fish and wildlife resources.

TPWD advises review and implementation of these recommendations. If you have any questions, please contact me at (512) 389-8054.

Sincerely,



Jessica E. Schmerler
Wildlife Habitat Assessment Program
Wildlife Division

JES:gg.ERCS-2576

Attachments (3)

Protection of State-Listed Species
Texas Parks and Wildlife Department Guidelines

Protection of State-Listed Species

State law prohibits any take (incidental or otherwise) of state-listed species. State-listed species may only be handled by persons possessing a **Scientific Collecting Permit** or a **Letter of Authorization** issued to relocate a species.

- **Section 68.002 of the Texas Parks and Wildlife (TPW) Code** states that species of fish or wildlife indigenous to Texas are endangered if listed on the United States List of Endangered Native Fish and Wildlife or the list of fish or wildlife threatened with statewide extinction as filed by the director of Texas Park and Wildlife Department. Species listed as Endangered or Threatened by the Endangered Species Act are protected by both Federal and State Law. The State of Texas also lists and protects additional species considered to be threatened with extinction within Texas.
- **Animals** - Laws and regulations pertaining to state-listed endangered or threatened animal species are contained in **Chapters 67 and 68 of the Texas Parks and Wildlife (TPW) Code** and **Sections 65.171 - 65.176 of Title 31 of the Texas Administrative Code (TAC)**. State-listed animals may be found at **31 TAC §65.175 & 176**.
- **Plants** - Laws and regulations pertaining to endangered or threatened plant species are contained in **Chapter 88 of the TPW Code** and **Sections 69.01 - 69.9 of the TAC**. State-listed plants may be found at **31 TAC §69.8(a) & (b)**.

Prohibitions on Take of State Listed Species

Section 68.015 of the TPW Code states that no person may capture, trap, take, or kill, or attempt to capture, trap, take, or kill, endangered fish or wildlife.

Section 65.171 of the Texas Administrative Code states that except as otherwise provided in this subchapter or **Parks and Wildlife Code, Chapters 67 or 68**, no person may take, possess, propagate, transport, export, sell or offer for sale, or ship any species of fish or wildlife listed by the department as endangered or threatened.

"Take" is defined in **Section 1.101(5) of the Texas Parks and Wildlife Code** as:

"Take," except as otherwise provided by this code, means collect, hook, hunt, net, shoot, or snare, by any means or device, and includes an attempt to take or to pursue in order to take.

Penalties

The penalties for take of state-listed species (**TPW Code, Chapter 67 or 68**) are:

- 1ST Offense = Class C Misdemeanor:
\$25-\$500 fine
- One or more prior convictions = Class B Misdemeanor
\$200-\$2,000 fine and/or up to 180 days in jail.
- Two or more prior convictions = Class A Misdemeanor
\$500-\$4,000 fine and/or up to 1 year in jail.

Restitution values apply and vary by species. Specific values and a list of species may be obtained from the TPWD Wildlife Habitat Assessment Program.

*Texas Parks & Wildlife Department Guidelines for Construction
and Clearing Within Riparian Areas*

A. Summary of Impacts Anticipated With Clearing of Rights-of-Way and Construction Within Riparian Habitats

The following discussion lists a portion of the adverse impacts often incurred to natural resources with clearing of vegetation along streams and rivers as a result of construction disturbance and right-of-way (ROW) preparation.

(1) *Direct Vegetation Loss*

Removal of vegetation along stream systems is usually very damaging to fish and wildlife habitat and to natural processes associated with these systems. Vegetation associated with forested stream systems usually reflects highest value wildlife habitats. The degree of adverse impact to habitat resulting from this vegetation loss relates directly to the quantity of the vegetation loss and quality of the vegetation assemblage in fulfilling life requisites of those organisms using it.

(2) *Disruption of Habitat Continuity*

Habitat fragmentation is a serious threat to biological diversity. Because of the high use of riparian systems in general by wildlife, TPWD recommends that forest systems associated with floodplains be managed so as to avoid habitat fragmentation. Wildlife use river corridors to travel across the landscape and to move between food, cover, and breeding locations. Fish use habitat features within stream systems where appropriate physical parameters of light, temperature and water quality exist. As human development activity continues to compete for the natural resources existing within these riverine systems, remaining forested floodplains become increasingly valuable and scarce. Clearing for construction and utility ROW's, widening of utility ROW's, realignment of roadways crossing riverine systems, and abandonment of roads which cross these systems contribute significantly to increasing fragmentation of high value riparian habitats.

(3) *Impacts to Protected and Rare Species and Natural Resources*

Riverine systems are more prone to function as protected species habitat than upland areas because they tend to be less disturbed and represent higher value systems. Consequently, endangered species and natural plant community investigations should always be conducted when disturbance of these systems is projected or planned.

(4) Impacts to Natural Functions Associated with Forested Stream Systems

Riparian area management, which was once considered to be essentially a fish and wildlife concern, is a broader issue that cuts across various agency functions, including not only fish and wildlife but also range management, watershed management, and soil management. Streamside forests are complex ecosystems vital to the protection of our streams and rivers. Functions served by these forested riparian systems include:

Improving the quality of water resources by removing or ameliorating the effects of pollutants in runoff; Increasing biological diversity and productivity of stream communities by improving habitat and adding organic matter to the food base; Removing sediment and sediment-attached phosphorus by filtration;

Transforming nitrate to nitrogen gas as a part of nutrient cycling;

Acting as a sink by storing nutrients for extended periods of time;

Dampening sedimentation and erosion and providing organic energy to downstream reaches.

B. Recommendations Concerning Construction in Riparian Areas

Construction and clearing of vegetation for development can drastically affect natural resources and natural processes associated with stream systems. These resources and processes are fundamental to the development of habitat for fish and wildlife. The following general recommendations concerning disturbances within riparian systems should be followed to minimize adverse impacts to fish, wildlife, and plant resources.

(1) Channel Modification (channelization, realignment, relocation, modification, "improvement")

Channel modification projects serve to destroy natural aquatic and riparian habitats through direct removal of woody vegetation along streambanks and alteration of the physical attributes affecting the stream's configuration and flow characteristics. Therefore, TPWD supports channel modification projects only if vegetation impacts are avoided or mitigated and the reconstructed channel provides for a stream floodplain, natural stream meandering, pools and riffles, streamside vegetation, overhead canopy vegetation and appropriate width/depth/velocities.

(2) Stream Crossing Structures ((culverts, bridges, transmission lines, pipelines, utility rights-of-way)

- cross at right angles to the stream;
- locate crossings where the channel is straight and exhibits unobstructed flows;

- avoid crossing at bends;
- structure design (span) must ensure that the natural stream-bed and bank remains intact;
- during construction, work from only one bank;
- vegetation and overstory canopy should be preserved (i.e. preserve the streamside vegetation corridor), especially the more southerly or westerly banks to maximize shading;
- construction of conduit for fluids or transmission lines across waterways should be installed by boring under streams versus trenching through the stream substrate;
- accommodate low-flow fish passage,
- Avoid vegetation buffer areas adjacent to wetlands and riparian corridors by a minimum of 100'.

(3) *Stream Maintenance (stream cleaning and desnagging)*

- Rocks and boulders are usually part of the natural stream-bed and should not be removed unless they cause significant ponding, sediment deposition, or accumulation problems with logs, small debris, or garbage.
- Trees should not be removed from stream banks unless they: are dying, dead, or have damaged root systems; are leaning over the channel at an angle greater than 30 degrees off vertical; have root systems undercut to the degree that they rely on adjacent vegetation for support (if so, leave the root system for stabilization).
- Logs should not be removed from streams if they: are isolated or single logs that are embedded, jammed, rooted, or water logged in the channel or floodplain; are not subject to displacement by the current; are not blocking flows; are embedded logs parallel to the channel or stabilizing a shoreline.

(4) *General Mitigation Measures*

- Restore, replant, or revegetate with native vegetation (85% survivability required) all areas incurring minor or temporary disturbance.
- If soil replacement is required, the replacement soils should be native to the area (similar physical and chemical characteristics) and non-toxic.
- If wetland disturbance is involved, in-kind, in-basin replacement is recommended.

Wetland creation should not destroy good to excellent quality upland habitat.

(5) *General Stream Conservation Criteria*

- Construction and development activities should occur in such a manner to prevent or minimize damage to any stream, river or lake from pollution by debris, sediment, foreign material or from the manipulation of equipment and/or materials in or near such waterways.
- Water used for wash purposes or any other operation which might cause the water to become polluted with sand, silt, cement, oil or other impurities should not be returned directly to a stream, river or lake or to a ditch immediately flowing into a stream, river or lake. Such waters should be detained and treated prior to release to the natural ecosystem.
- Any water used from a stream, river or lake should be taken in such a manner that maintains water rights and sustains fish life downstream or around a stream, river or lake's perimeter.
- If the proposed development indicates substantial disturbance or removal of the State-owned streambed material, a permit from TPWD under Chapter 86, Parks & Wildlife Code may be required. Application forms and instructions are available by contacting the Inland Fisheries Division at (512) 389-4639.

Element Occurrence Record

Scientific Name: *Thamnophis sirtalis annectens* Occurrence #: 13 Eo Id: 5791
Common Name: Texas Garter Snake TX Protection Status: ID Confirmed: Y
Global Rank: G5T3 State Rank: S3 Federal Status:

Location Information: Latitude: 300913N Longitude: 0971732W

Watershed Code: 12090301 Watershed Description: Lower Colorado-Cummins

County Code: TXBAST County Name: Bastrop Mapsheet Code: 30097-B3 Mapsheet Name: Lake Bastrop State: TX

Directions:
LAKE BASTROP

Survey Information:

First Observation: Survey Date: Last Observation: 1979-05-12
Eo Type: EO Rank: EO Rank Date:
Observed Area (acres): Estimated Representation Accuracy:

Comments:

General Description:

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Managed Area:

Managed Area Name: LCRA TRACT - LAKE BASTROP TRACT Managed Area Type: SPWPK
LAKE BASTROP SRA SPWRA

Reference:

Full Citation:

Element Occurrence Reco

Specimen:

West Texas A & M University Museum, Canyon. 1979. J. McKinney, Catalog # 6351 WTSU. 12 May 1979.

Associated Species:

<u>Species Name</u>	<u>Type</u>	<u>Comments</u>

Element Occurrence Record

<u>Scientific Name:</u> <i>Quercus stellata-quercus marilandica series</i>	<u>Occurrence #:</u> 23	<u>Eo Id:</u> 4758
<u>Common Name:</u> Post Oak-blackjack Oak Series	<u>TX Protection Status:</u>	<u>ID Confirmed:</u> Y
<u>Global Rank:</u> G4	<u>State Rank:</u> S4	<u>Federal Status:</u>

Location Information: Latitude: 300626N Longitude: 0971659W

Watershed Code: Watershed Description:
12090301 Lower Colorado-Cummins

<u>County Code:</u> TXBAST	<u>County Name:</u> Bastrop	<u>Mapsheet Code:</u> 30097-A3	<u>Mapsheet Name:</u> Bastrop	<u>State:</u> TX
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Directions:

UPLANDS ON TERRACE GRAVELS, INSIDE LOOP ROAD, SOUTH OF RESIDENCE, NORTH OF UTILITY LINE CLEARING, WEST END OF BASTROP SP

Survey Information:

<u>First Observation:</u>	<u>Survey Date:</u> 1990-04	<u>Last Observation:</u> 1990
<u>Eo Type:</u>	<u>EO Rank:</u> BC - Good or fair estimated viability	<u>EO Rank Date:</u>
<u>Observed Area (acres):</u>	<u>Estimated Representation Accuracy:</u>	

Comments:

General Description:

Comments:

Protection Comments:

Management Comments:

Data:

EO Data: DESCRIPTION AND PLANT LIST IN DLI REPORT, SITE 2

Managed Area:

<u>Managed Area Name:</u> BASTROP STATE PARK	<u>Managed Area Type:</u> SPWPK
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Reference:

Element Occurrence Record

Full Citation:

TEXAS PARKS & WILDLIFE DEPARTMENT, 1990. BASTROP STATE PARK. SUMMARY OF REPRESENTATIVE PLANT COMMUNITIES.

Specimen:

Associated Species:

<u>Species Name</u>	<u>Type</u>	<u>Comments</u>
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Element Occurrence Record

Scientific Name: *Pinus taeda-quercus stellata-quercus marilandica/vaccinium arb* Occurrence #: 1 Eo Id: 2179
Common Name: Loblolly Pine-post Oak-blackjack Oak/farkleberry Forest TX Protection Status: ID Confirmed: Y
Global Rank: G4 State Rank: S4 Federal Status:

Location Information:

Latitude: 300502N

Longitude: 0971316W

Watershed Code:

12090301

Watershed Description:

Lower Colorado-Cummins

County Code:

TXBAST

County Name:

Bastrop

Mapsheet Code:

30097-A2

Mapsheet Name:

Smithville

State:

TX

30097-A3

Bastrop

TX

30097-B3

Lake Bastrop

TX

30097-B2

Smithville NW

TX

Directions:

HIGHWAY 21, 2 MILES NORTHEAST OF BASTROP

Survey Information:

First Observation:

Survey Date: 1986-06-12

Last Observation: 1986-06-12

Eo Type:

EO Rank: B - Good estimated viability

EO Rank Date:

Observed Area (acres):

3,500

Estimated Representation Accuracy:

Comments:

General

Description:

REMNANT OUTLIER OF EAST TEXAS PINEY WOODS; PRIMARILY POST OAK-LOBLOLLY-BLACKJACK OAK COMPLEX; PATCHY; DISTURBED THROUGHOUT

Comments:

THIS OCCURRENCE IS IMPORTANT BECAUSE IT IS ON THE FAR WESTERN EDGE OF THIS COMMUNITY TYPE

Protection

Comments:

Management

Comments:

Data:

EO Data:

SOME DATA ON IMPACT OF CAMPERS ON THE PINES IS IN PARKS DIVISION FILES; SOME HISTORICAL DATA AS WELL

Managed Area:

Managed Area Name:

BASTROP STATE PARK

BUESCHER STATE PARK

Managed Area Type:

SPWPK

SPWPK

Element Occurrence Reco

Reference:

Full Citation:

DIAMOND, D.D., I. BUTLER, N.J. CRAIG, AND T. FOTI. 1986. A SURVEY OF THE POTENTIAL NATIONAL NATURAL LANDMARKS OF THE WEST GULF COASTAL PLAIN: BIOTIC THEMES. USDOJ, NPS, WASHINGTON, D.C.

MITCHELL, R. J. 1964. A QUANTITATIVE INVESTIGATION OF THE PERENNIAL VEGETATION OF BASTROP STATE PARK, TEXAS. M. A. THESIS, U. T., AUSTIN.

LODWICK, L. 1974. BASTROP STATE PARK VEGETATION ANALYSIS. UNPUBL. DATA, TPWD FILES.

RANKIN, R. 1986. FIRE ECOLOGY OF THE LOST PINES. UNPUBL. REPORT BY ENVIRONMENTAL STUDIES CLASS. TEXAS GOVERNOR'S SCHOOL, BOX 42, COMFORT, TEXAS.

TEXAS PARKS & WILDLIFE DEPT. 1977. CHECKLIST OF PLANTS OF BASTROP STATE PARK. TPWD PARK DIVISION FILES, AUSTIN, TX.

DEMOS, E. K. 1975. THE ALLELOPATHIC POTENTIAL OF A PINE FOREST ECOSYSTEM IN CENTRAL TEXAS. PH.D. DISSER, U. T., AUSTIN.

McBryde, James B. 1933. The vegetation and habitat factors of the Carrizo sands. Ecological Monographs 3(2):247-297.

WHITTAKER, R. H. 1977. VEGETATION DATA ON BASTROP PARK. UNPUBLISHED FIELD DATA SHEETS.

Specimen:

Associated Species:

<u>Species Name</u>	<u>Type</u>	<u>Comments</u>

Element Occurrence Record

Scientific Name: *Anaxyrus houstonensis* **Occurrence #:** 1 **Eo Id:** 344
Common Name: Houston Toad **TX Protection Status:** E **ID Confirmed:** Y
Global Rank: G1 **State Rank:** S1 **Federal Status:** LE

Location Information:

Latitude: 300626N

Longitude: 0971318W

Watershed Code:

12090301

Watershed Description:

Lower Colorado-Cummins

County Code:

TXBAST

County Name:

Bastrop

Mapsheet Code:

30097-B2

Mapsheet Name:

Smithville NW

State:

TX

30097-B3

Lake Bastrop

TX

30097-A2

Smithville

TX

30097-A3

Bastrop

TX

30097-B1

Paige

TX

30097-A1

Winchester

TX

Directions:

AN AREA BOUNDED BY STATE HIGHWAY 95 ON THE WEST, THE COLORADO RIVER ON THE SOUTH, 30 12'00" LATITUDE ON THE NORTH, AND 97 07' 30" LONGITUDE ON THE EAST

Survey Information:

First Observation: 1970

Survey Date: 1983

Last Observation: 2003

Eo Type:

EO Rank: A - Excellent estimated viability

EO Rank Date:

Observed Area (acres): 70,000

Estimated Representation Accuracy:

Comments:

General

Description:

PLAIN DIVIDED BY SMALL STREAMS AND CREEKS; SANDY SUBSTRATE WITH LOBLOLLY PINE; TWO STATE PARKS AND SEVERAL IMPROVED ROADS ARE WITHIN THIS AREA; SEE TPWD PARK DIVISION FILES

Comments:

THE HEALTHIEST POPULATION KNOWN, MANAGED FOR NO IMPACT BY TP& WD ON THE TWO STATE PARKS

Protection

Comments:

SUPPORT LEGAL STATUS

Management

Comments:

ENCOURAGE REINTRODUCTIONS, STUDY MINIMUM PRESERVE AREA NEEDS

Data:

EO Data:

IN 1983, A LARGE POPULATION, 1,000 TO 1,500 INDIVIDUALS, REGULARLY OCCURRING; SOME HYBRIDS WITH BUFO VALLICEPS & BUFO WOODHOUSEI, BUT FEW TOADS EMERGE AS EARLY AS JANUARY OR FEBRUARY & MATE; EGGS DEPOSITED IN PONDS OR TEMPORARY POOLS OF WATER; SMALL RED * INDICATE TOADS LOCATED BY A LIMITED ROAD SURVEY IN 1993; 26 FEBRUARY 1999, 8, 11, 19 MARCH 1999, 1 APRIL 1999 TOADS CHORUSING

Element Occurrence Reco

Managed Area:

Managed Area Name:

BUESCHER STATE PARK
BASTROP STATE PARK

Managed Area Type:

SPWPK
SPWPK

Reference:

Full Citation:

BROWN, L.E., ET. AL., 1983. AGENCY REVIEW DRAFT OF THE RECOVERY PLAN FOR THE HOUSTON TOAD (BUFO HOUSTONENSIS). USF& WS, ALBUQUERQUE, NM. 48PP.

PBS& J. 1999. RESULTS OF HOUSTON TOAD SURVEY AT TAHITIAN VILLAGE, BASTROP COUNTY, TEXAS. PREPARED FOR LCRA. JULY 1999.

PBS& J. 1999. RESULTS OF HOUSTON TOAD SURVEY AT THE PROPOSED GENTEX ELECTRIC GENERATION FACILITIES, BASTROP COUNTY, TEXAS. PREPARED FOR GEN TEX POWER CORPORATION. JUNE, 1999.

TEXAS DEPARTMENT OF TRANSPORTATION. 1993. HOUSTON TOAD MONITORING ALONG STATE HIGHWAY 21 FROM THE ENTRANCE OF BASTROP STATE PARK TO FM 1441. BASTRO COUNTY, TEXAS. 2 FEBRUARY-11 MAY, 1993.

BROWN, LAUREN E., 1971. NATURAL HYBRIDIZATION AND TREND TOWARD EXTINCTION IN SOME RELICT TEXAS TOAD POPULATIONS. SOUTHWESTERN NATURALIST 16(2):185-199.

QUINN, HUGH R. AND GREG MENGDEN. 1984. REPRODUCTION AND GROWTH OF BUFO HOUSTONENSIS (BUFONIDAE). S.W. NAT. 29(2): 189-195.

QUINN, HUGH. NO DATE. CURATOR OF REPTILES HOUSTON ZOOLOGICAL GARDENS PARKS & RECREATION DEPARTMENT PH-713/520-3208.

BROWN, L.E. 1975. THE STATUS OF THE NEAR EXTINCT HOUSTON TOAD (BUFO HOUSTONENSIS) WITH RECOMMENDATIONS FOR ITS CONSERVATION. HERP. REV. 6:37-40.

Specimen:

Associated Species:

<u>Species Name</u>	<u>Type</u>	<u>Comments</u>
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**Code Key for Printouts from
Texas Parks and Wildlife Department
Texas Natural Diversity Database (TXNDD)**

This information is for your assistance only; due to continuing data updates, vulnerability of private land to trespass and of species to disturbance or collection, please refer all requesters to our office to obtain the most current information available. Also, please note, identification of a species in a given area does not necessarily mean the species currently exists at the point or area indicated.

LEGAL STATUS AND CONSERVATION RANKS

FEDERAL STATUS (as determined by the US Fish and Wildlife Service)

LE	Listed Endangered
LT	Listed Threatened
PE	Proposed to be listed Endangered
PT	Proposed to be listed Threatened
PDL	Proposed to be Delisted (Note: Listing status retained while proposed)
SAE, SAT	Listed Endangered on basis of Similarity of Appearance, Listed Threatened on basis of Similarity of Appearance
DL	Delisted Endangered/Threatened
C	Candidate. USFWS has substantial information on biological vulnerability and threats to support proposing to list as threatened or endangered. Data are being gathered on habitat needs and/or critical habitat designations.
C*	C, but lacking known occurrences
C**	C, but lacking known occurrences, except in captivity/cultivation
XE	Essential Experimental Population
XN	Non-essential Experimental Population
Blank	Species is not federally listed

TX PROTECTION (as determined by the Texas Parks and Wildlife Department)

E	Listed Endangered
T	Listed Threatened
Blank	Species not state-listed

GLOBAL RANK (as determined by NatureServe)

G1	Critically imperiled globally, extremely rare, typically 5 or fewer viable occurrences
G2	Imperiled globally, very rare, typically 6 to 20 viable occurrences
G3	Very rare and local throughout range or found locally in restricted range, typically 21 to 100 viable occurrences
G4	Apparently secure globally
G5	Demonstrably secure globally
GH	Of historical occurrence through its range
GU	Possibly in peril range-wide, but status uncertain
G#G#	Ranked within a range as status uncertain
GX	Apparently extinct throughout range
Q	Rank qualifier denoting taxonomic assignment is questionable
#?	Rank qualifier denoting uncertain rank
C	In captivity or cultivation only
G#T#	"G" refers to species rank; "T" refers to variety or subspecies rank

STATE (SUBNATIONAL) RANK (as determined by the Texas Parks and Wildlife Department)

S1	Critically imperiled in state, extremely rare, vulnerable to extirpation, typically 5 or fewer viable occurrences
S2	Imperiled in state, very rare, vulnerable to extirpation, typically 6 to 20 viable occurrences
S3	Rare or uncommon in state, typically 21 to 100 viable occurrences
S4	Apparently secure in State
S5	Demonstrably secure in State
S#S#	Ranked within a range as status uncertain
SH	Of historical occurrence in state and may be rediscovered
SU	Unrankable – due to lack of information or substantially conflicting information
SX	Apparently extirpated from State
SNR	Unranked – State status not yet assessed
SNA	Not applicable – species id not a suitable target for conservation activities
?	Rank qualifier denoting uncertain rank in State

ELEMENT OCCURRENCE RECORD

Element Occurrence Record (EOR) Spatial and tabular record of an area of land and/or water in which a species, natural community, or other significant feature of natural diversity is, or was, present and associated information; may be a single contiguous area or may be comprised of discrete patches or subpopulations

Occurrence # Unique number assigned to each occurrence of each element when added to the NDD

LOCATION INFORMATION

Watershed Code Eight digit numerical code determined by US Geological Survey (USGS)

Watershed Name of watershed as determined by USGS

Quadrangle Name of USGS topographical map

Directions Directions to geographic location where occurrence was observed, as described by observer or in source

SURVEY INFORMATION

First/Last Observation Date a particular occurrence was first/last observed; refers only to species occurrence as noted in source and does not imply the first/last date the species was present

Survey Date If conducted, date of survey

EO Type State rank qualifiers:

M	Migrant – species occurring regularly on migration at staging areas, or concentration along particular corridors; status refers to the transient population in the State
B	Qualifier indicating basic rank refers to the breeding population in State
N	Qualifier indicating basic rank refers to the non-breeding population in State
EO Rank	A Excellent AI Excellent, Introduced
	B Good BI Good, Introduced
	C Marginal CI Marginal, Introduced
	D Poor DI Poor, Introduced
	E Extant/Present EI Extant, Introduced
	H Historical/No Field Information HI Historical, Introduced
	X Destroyed/Extirpated XI Destroyed, Introduced
	O Obscure OI Obscure, Introduced

EO Rank Date Latest date EO rank was determined or revised

Observed Area Acres, unless indicated otherwise

COMMENTS

Description General physical description of area and habitat where occurrence is located, including associated species, soils, geology, and surrounding land use

Comments Comments concerning the quality or condition of the element occurrence at time of survey

Protection Comments Observer comments concerning legal protection of the occurrence

Management Comments Observer comments concerning management recommendations appropriate for occurrence conservation

DATA

EO Data Biological data; may include number of individuals, vigor, flowering/fruitletting data, nest success, behaviors observed, or unusual characteristic, etc.

SITE

Site Name Title given to site by surveyor

MANAGED AREA INFORMATION

Managed Area Name Place name or (on EOR printout) name of area when the EO is located within or partially within an area identified for conservation, such as State or Federal lands, nature preserves, parks, etc.

Alias Additional names the property is known by

Acres Total acreage of property, including non-contiguous tracts

Manager Contact name, address, and telephone number for area or nearest area land steward

Please use one of the following citations to credit the source for the printout information:

Texas Natural Diversity Database. [year of printouts]. Wildlife Diversity Program of Texas Parks & Wildlife Department. [day month year of printouts].

Texas Natural Diversity Database. [year of printouts]. Element occurrence printouts for [scientific name] *records # [occurrence number(s)]. Wildlife Diversity Program of Texas Parks & Wildlife Department. [day month year of printouts]. *Use of record #'s is optional.