

Draft Environmental Assessment
City of Bastrop, Texas
Piney Ridge Hazardous Fuel
Reduction Project
HMGP-DR-1999-0035

Bastrop County, Texas

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FEMA

Federal Emergency Management Agency
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Acronyms and Abbreviations

AfE2	Edge fine sandy loam
APE	area of potential effect
AtD	Edge gravelly fine sandy loam
Atlas	Texas Archeological Site Atlas
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFWPP	Community Fire Wildfire Protection Plan
ChE	Crockett gravelly loam
CsD3	Crockett fine sandy loam
CWA	Clean Water Act
EA	environmental assessment
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
ESD	emergency service 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
JeF	Jedd gravelly fine sandy loam
LPHCP	Lost Pines Habitat Conservation Plan
mg/L	milligram per liter

Acronyms and Abbreviations

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
NWI	National Wetlands Inventory
P.L.	Public Law
ROW	right-of-way
SHPO	State Historic Preservation Officer
TCEQ	Texas Commission on Environmental Quality
TDEM	Texas Division of Emergency Management
TDS	total dissolved solids
THC	Texas Historical Commission
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

SECTION 1 Introduction

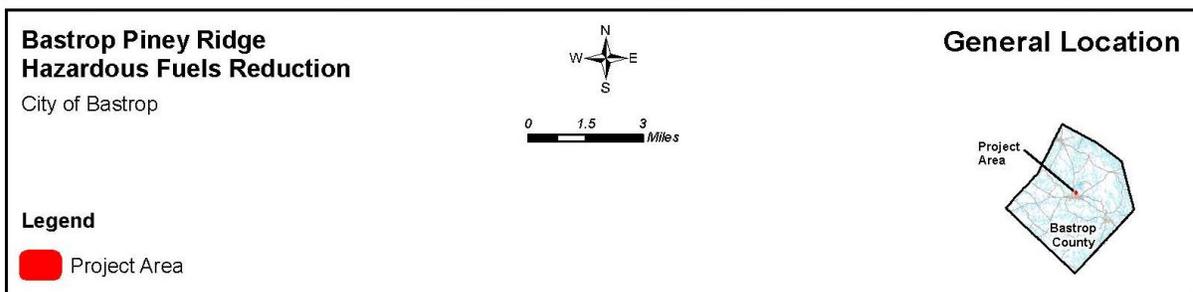
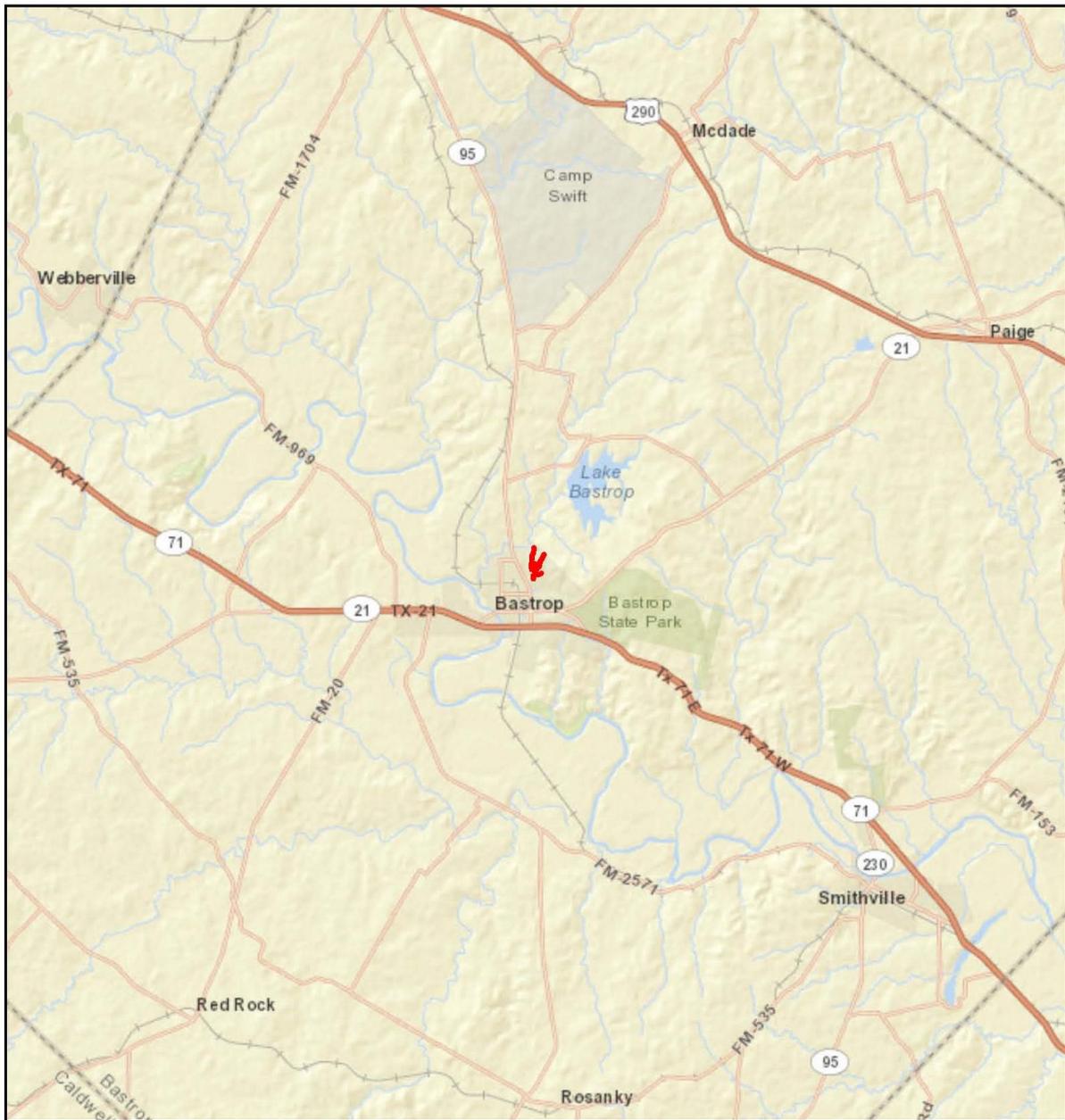
The City of Bastrop, Texas, proposes to implement a hazardous fuels reduction project to reduce wildfire hazards to electric utility lines in the Piney Ridge subdivision. The City of Bastrop has submitted an application to the Federal Emergency Management Agency (FEMA) through the Texas Division of Emergency Management (TDEM) for a grant under FEMA's Hazard Mitigation Grant Program (HMGP). The TDEM is the direct applicant for the grant, and the City of Bastrop is the subapplicant.

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

The City of Bastrop is an incorporated municipality approximately 27 miles southeast of Austin, Texas, in Bastrop County. The Piney Ridge subdivision includes approximately 126 homes and is located in a hilly area surrounded by a forest of pine, oak, and cedar. Homes in the subdivision are located on relatively large lots that support a mix of forest and landscape plants, including lawn areas. This landscaping extends into the road right-of-way. Piney Creek is located to the north of the subdivision, and its tributaries extend in between the road system. Homes are generally located on the “ridges” between the tributaries. Electric service is provided by overhead power lines that follow the street network within the subdivision. The proposed project area would be confined to the public road right-of-way in the subdivision within the City of Bastrop. **Figures 1.1 to 1.3** below provide a general location map, the proposed project areas within the Piney Ridge subdivision, and aerial imagery.

The proposed action would include the removal of underbrush, smaller trees, and dead trees from within the road right-of-way. The pavement averages about 18 feet; therefore, the work would be conducted on the approximately 16 feet on either side of the pavement. Larger trees would have the underbrush cut from around them and may have their lower limbs trimmed up from the ground, but the trees would be left standing. Work would be performed along approximately 16,678 linear feet or approximately 3.2 miles of roadway (work would be conducted on both sides of the road) as shown on **Figure 1.2** and **Figure 1.3**.

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 to 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 draft EA is to analyze the potential environmental impacts of the proposed City of Bastrop Piney Ridge subdivision Hazardous Fuels Reduction project. FEMA will use the findings in this draft EA to determine whether to prepare an environmental impact statement or to issue a finding of no significant impact (FONSI).



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

Figure 1.1. Project Location Map



Figure 1.2. Proposed Project Area

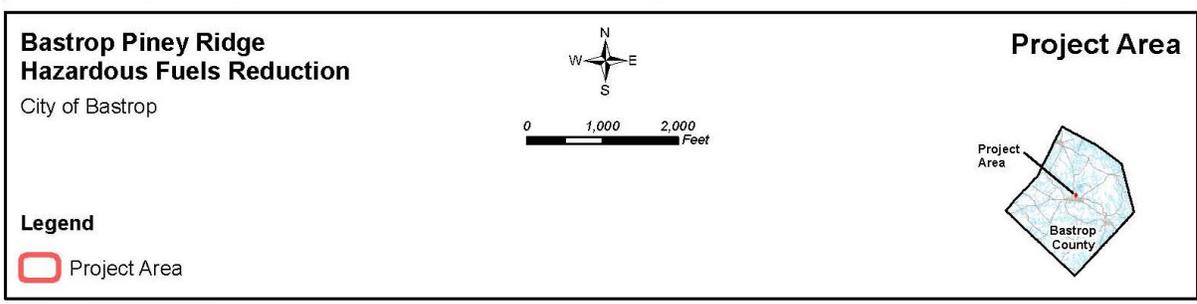
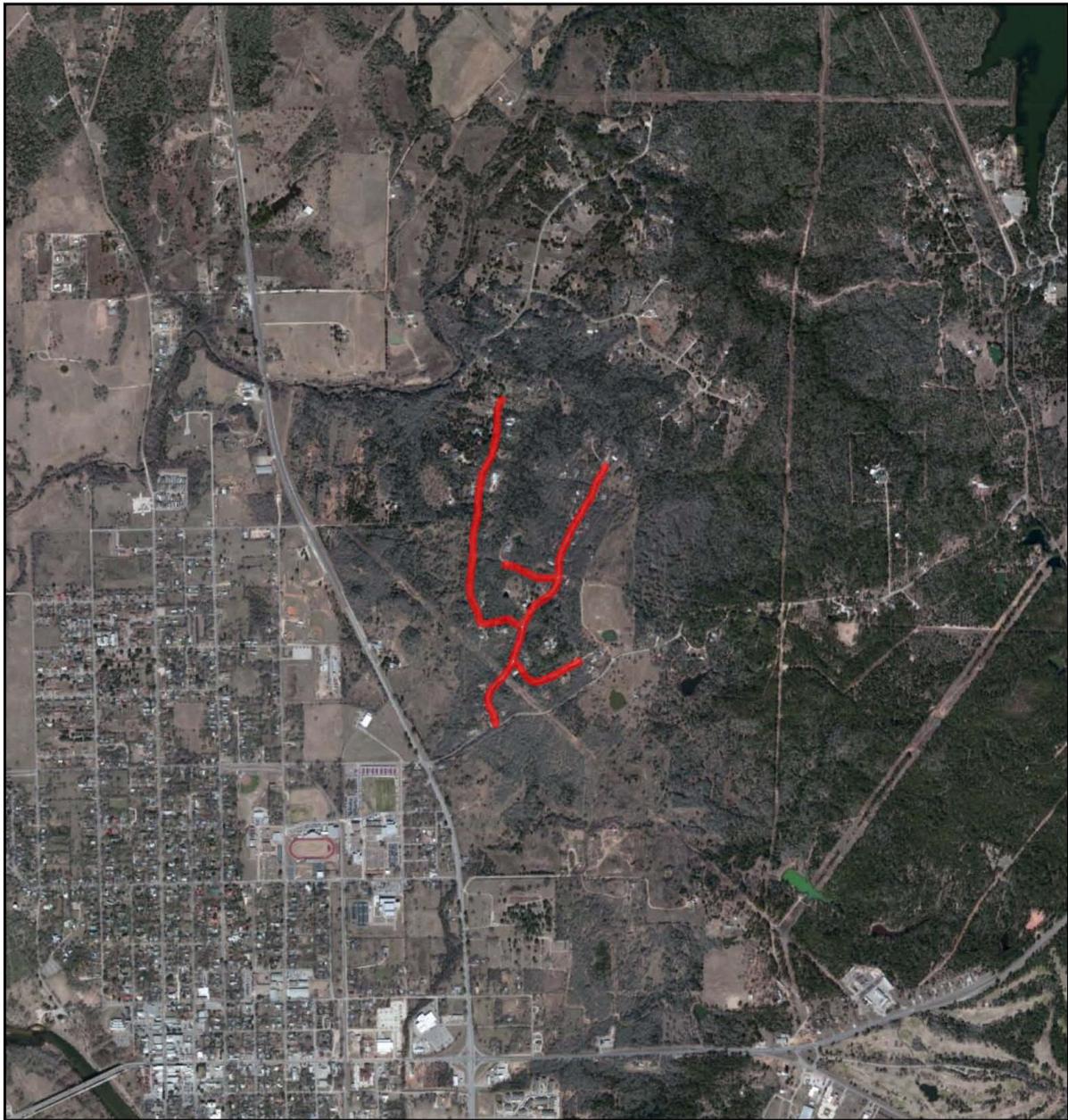


Figure 1.3. Proposed Project Area With Aerial Imagery

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 due to 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 Piney Ridge subdivision of the City of Bastrop. The Piney Ridge subdivision is located in one of the highest danger areas for fire within the city limits of Bastrop. This subdivision is in a hilly area, surrounded by a forest of pine, cedar and oak trees. Electric service is provided to this subdivision through overhead power lines. Tree limbs growing into these lines can increase the risk of fire and cause power outages to homes. As this area has a sub-standard and inadequate water system with widely spaced fire hydrants, making it difficult for firefighters to protect and defend against fires, it is imperative that overhead electric distribution and service lines are kept clear of limbs and vegetation.

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). This fire was included in the federal disaster declaration DR-4029-TX. **Figure 2.1** shows the smoke over Bastrop County, indicating an intense, wind driven fire (Austin American Statesman 2011b).



Figure 2.1. Bastrop Complex Fire on September 6, 2011

Source: Austin American Statesman 2011b.

It is believed that the Bastrop Complex fire was started when tree limbs hitting power lines created sparks that ignited the fire (Austin American Statesman 2011a). The fire burned through the eastern edges of the City of Bastrop, not far from the Piney Ridge subdivision. Overhead power lines in the Piney Ridge subdivision could also ignite fires if tree limbs and dead trees are allowed to come into contact with them.

SECTION 3 Alternatives

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

3.1 No Action Alternative

The no action alternative is included to describe potential conditions in the future if no action is taken to reduce the risk from wildfire hazards. Under the no action alternative, no work would be conducted to reduce wildfire hazards along the utility lines in the Piney Ridge subdivision in the City of Bastrop.

Under the no action alternative, the minor short-term impacts of the proposed project would be avoided because there would be no work conducted to reduce hazards. The impacts avoided would include temporary increases in noise, truck traffic, and air pollution.

The no action alternative would not reduce the current unacceptable risk of a catastrophic wildfire. Piney Ridge would not undergo any hazard reduction, and the utility lines and adjacent homes would remain at elevated risk in the event of a wildfire. Piney Ridge would continue to have an elevated probability of tree branches or dead trees touching or breaking power lines and creating sparks that could ignite wildfires, as was the case during the 2011 Bastrop Complex wildfire. The probability of loss of life and property in a wildfire would continue to be unacceptably high. A major wildfire would have a severe temporary impact on air quality.

In addition to risks to residents in and near Piney Ridge, the federally endangered Houston toad relies on the forested habitat in and near the subdivision. The 2011 Bastrop Complex fire resulted in significant habitat destruction and fragmented habitat for the Houston toad. Under the no action alternative, the risk of a major wildfire would continue to threaten the survival of the Houston toad.

Fighting a major wildfire could require large quantities of water at a time when water resources may already be strained by drought. For the reasons described in this section, the no action alternative would not meet the purpose and need of the proposed project.

3.2 Proposed Action

The City of Bastrop proposes to reduce wildfire hazards along 16,678 linear feet of electric utility right-of-way (ROW) in the Piney Ridge subdivision. The work would be conducted on both sides of the residential streets. The road ROW is 50 feet wide. Because the pavement width averages 18 feet, 16 feet of vegetation would be treated on each side of the road, for a total of 32 feet of vegetation management along approximately 3.2 miles of residential streets.

The proposed action would remove all underbrush and small trees (defined as less than 2 inches in diameter and under 10 feet tall) from the ROW. Underbrush would be cleared and grubbed up to the bases of larger trees. Dead trees would be removed. Upper branches of larger trees may be trimmed to remove them from overhead power lines, and lower branches may be trimmed to prevent them from providing ladder fuels for fires. All stumps would be left in the ground but cut off at ground level. Stumps would not be excavated or otherwise mechanically removed. The city would perform the work by both hand thinning and mechanical thinning, depending on what

is required. All of the cut material would be chipped on site as it is cut and then would be hauled to Go Green International for disposal each day. Go Green International collects dead and diseased wood from locations around Bastrop County and reuses it at a biofuel plant in Paige, Texas.

In addition to hand tools, equipment to be used may include a backhoe, tractors, brush hogs, and chainsaws. Trucks and chippers would also be used. It would be possible to stage all the equipment from the paved portion of the streets because the ROW to be treated is so narrow.

Maintenance would be conducted yearly. Each year the city would trim large trees to a height of 10 feet and remove any re-growth. The native grasses and other brush would be shredded as needed each year. This may vary depending on the amount of rainfall each year, but the city has committed to maintaining the areas under the power lines along the ROW.

3.3 Additional Action Alternatives Considered and Dismissed

The City of Bastrop considered a physical barrier alternative. This alternative would involve the construction of a concrete wall to prevent wildfire from reaching the ROW. However, this alternative would not address the potential for utility lines to ignite fires through interactions with tree branches, and the cost of such construction would be prohibitive; therefore, this alternative was dismissed from further consideration. The impacts associated with this alternative are not analyzed further 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 those 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 that have been removed from further consideration in this EA.

4.1.1 Geology and Seismicity

Based on the nature and location of the project area, the proposed action would have no effect on geology or seismicity and is very unlikely to be affected by geology or 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. Per the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) (2000), land within corporate boundaries is not considered farmland; therefore, the project area is not subject to the FPPA.

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 located near any river segment designated as "wild and scenic." The Rio Grande, located along the Texas border, is the only wild and scenic river in Texas. The proposed project would not cause any impacts to wild and scenic rivers because the project site is not located 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 is approximately 160 miles from the nearest coastline; therefore, it is not included in the Texas Coastal Management Program (GLO 2012). There would be no potential impact to coastal resources under either the no action alternative or the proposed action.

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, 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 an upland area dissected by ephemeral tributaries of Piney Creek. Soils generally consist of well-developed, clayey subsoil with sandy or loamy A and B horizons. The parent material was formed in the Eocene and Pleistocene and consists of weathered shale and siltstone, loamy colluvium from weathered sandstones, and loamy and clayey alluvium from mixed sources.

The five soil map units present within the project area include: Edge fine sandy loam (Afe2), Edge gravelly fine sandy loam (AtD), Crockett gravelly loam (ChE), Crockett fine sandy loam (CsD3), and Jedd gravelly fine sandy loam (JeF). The properties of these soil types are summarized in **Table 4.1**. A soil map of the project area is presented in **Figure 4.1** (USDA NRCS 2013a). **Table 4.2** provides a key to the soil survey unit codes shown on **Figure 4.1**.

Topography in the area is depicted in **Figure 4.2**. Elevation within the project area ranges from 420 feet to 520 feet and the terrain is characterized by rolling uplands. The project area follows the ridge tops between tributaries to Piney Creek. The ridge tops are gently sloping with the land falling away somewhat more steeply behind the homes along the street ROW where the proposed action would occur.

The soils within the project areas are not hydric, which means they are unlikely to support wetlands (see also Section 4.3.2).

Affected Environment, Potential Impacts, and Mitigation

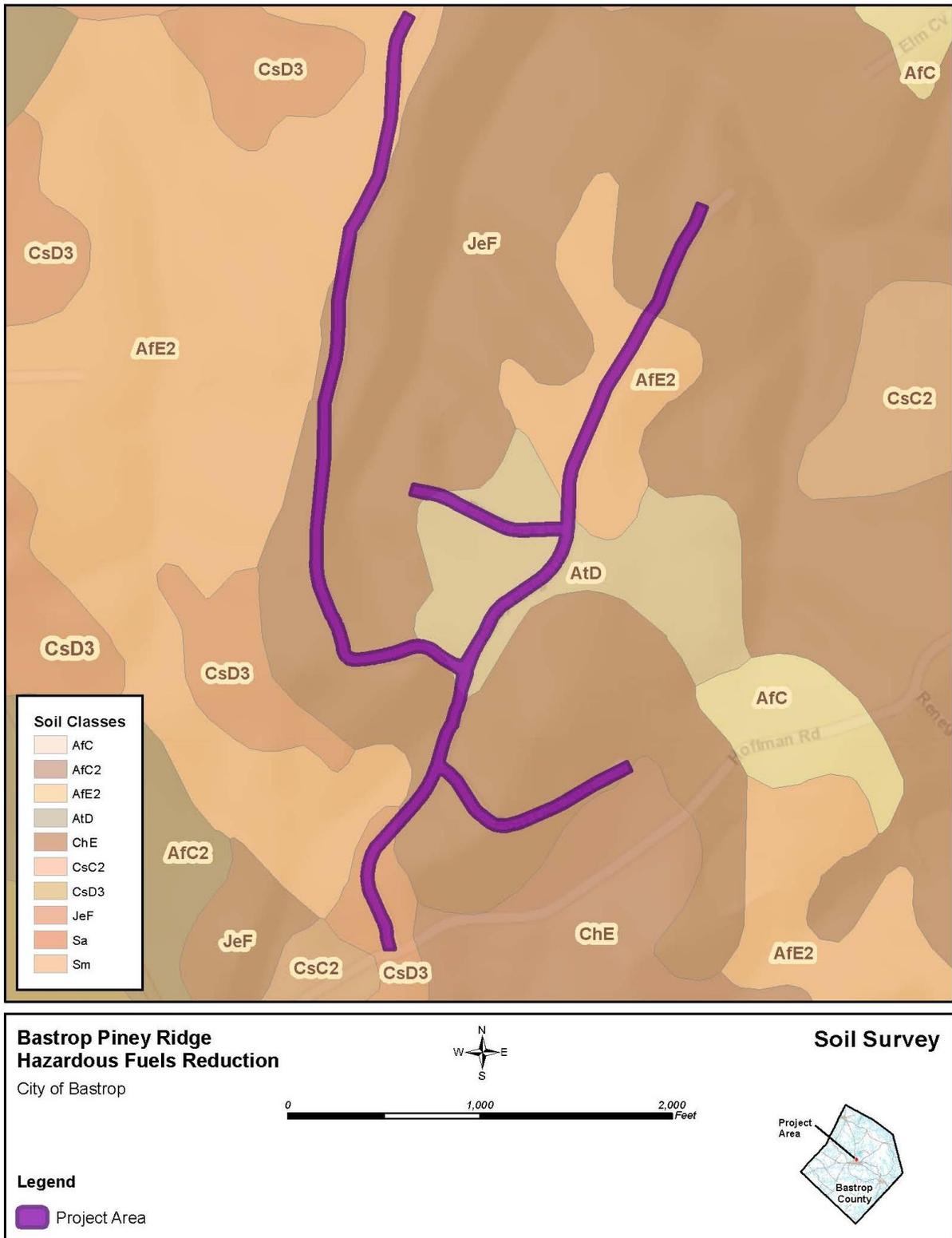
Table 4.1 Properties of Soil in the Project Area

Parameters	Edge Fine Sandy Loam (AfE2)	Edge Gravelly Fine Sandy Loam (AtD)	Crockett Gravelly Loam (ChE)	Crockett Fine Sandy Loam (CsD3)	Jedd Gravelly Fine Sandy Loam (JeF)
Depth	More than 80 inches	More than 80 inches	More than 80 inches	More than 80 inches	20 to 40 inches
Drainage	Moderately well drained	Well drained	Moderately well drained	Moderately well drained	Well drained
Permeability	Very low to moderately low (0.00 to 0.6 inches per hour [in/hr])	Very low to moderately low (0.00 to 0.06 in/hr)	Very low to moderately low (0.00 to 0.06 in/hr)	Very low to moderately low (0.00 to 0.06 in/hr)	Moderately low to moderately high (0.06 to 0.57 in/hr)
Parent Material	Residuum weathered from shale and siltstone in the Wilcox formation of Eocene age	Residuum weathered from shale and siltstone in the Wilcox formation of Eocene age	Residuum weathered from shale of Tertiary age	Residuum weathered from shale of Tertiary age	Residuum weathered from sandstones in the Reklaw Queen City, Weches, Sparta Sand, and Cook Mountain formations of Eocene age
Slope	5 to 12 percent	3 to 8 percent	5 to 10 percent	3 to 8 percent	5 to 20 percent
Depth to Water Table	More than 80 inches	More than 80 inches	More than 80 inches	More than 80 inches	More than 80 inches
Hydric Soils	No	No	No	No	No

Table 4.2. Piney Ridge – Soils Survey Unit Codes

Code	Description	Code	Description
AfE2	Edge fine sandy loam, 5 to 12 percent slopes, eroded	CsD3	Crockett fine sandy loam, 3 to 8 percent slopes, severely eroded
AtD	Edge gravelly fine sandy loam, 3 to 8 percent slopes	JeF	Jedd gravelly fine sandy loam, 5 to 20 percent slopes
ChE	Crockett gravelly loam, 5 to 10 percent slopes		

Affected Environment, Potential Impacts, and Mitigation



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

Figure 4.1. Soil Survey Map

Affected Environment, Potential Impacts, and Mitigation

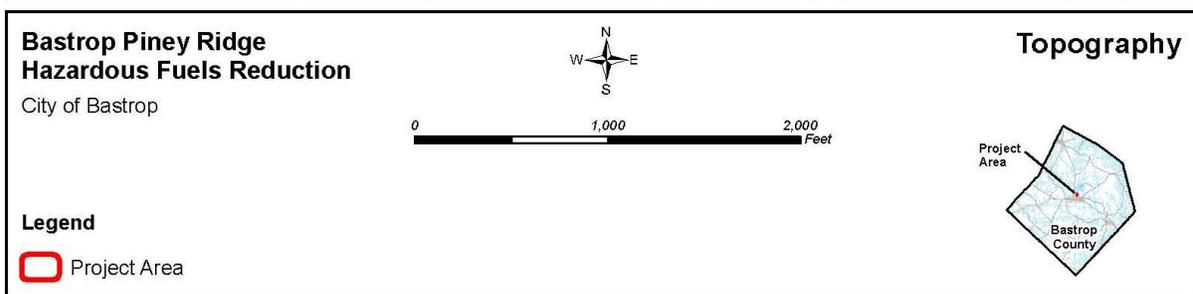
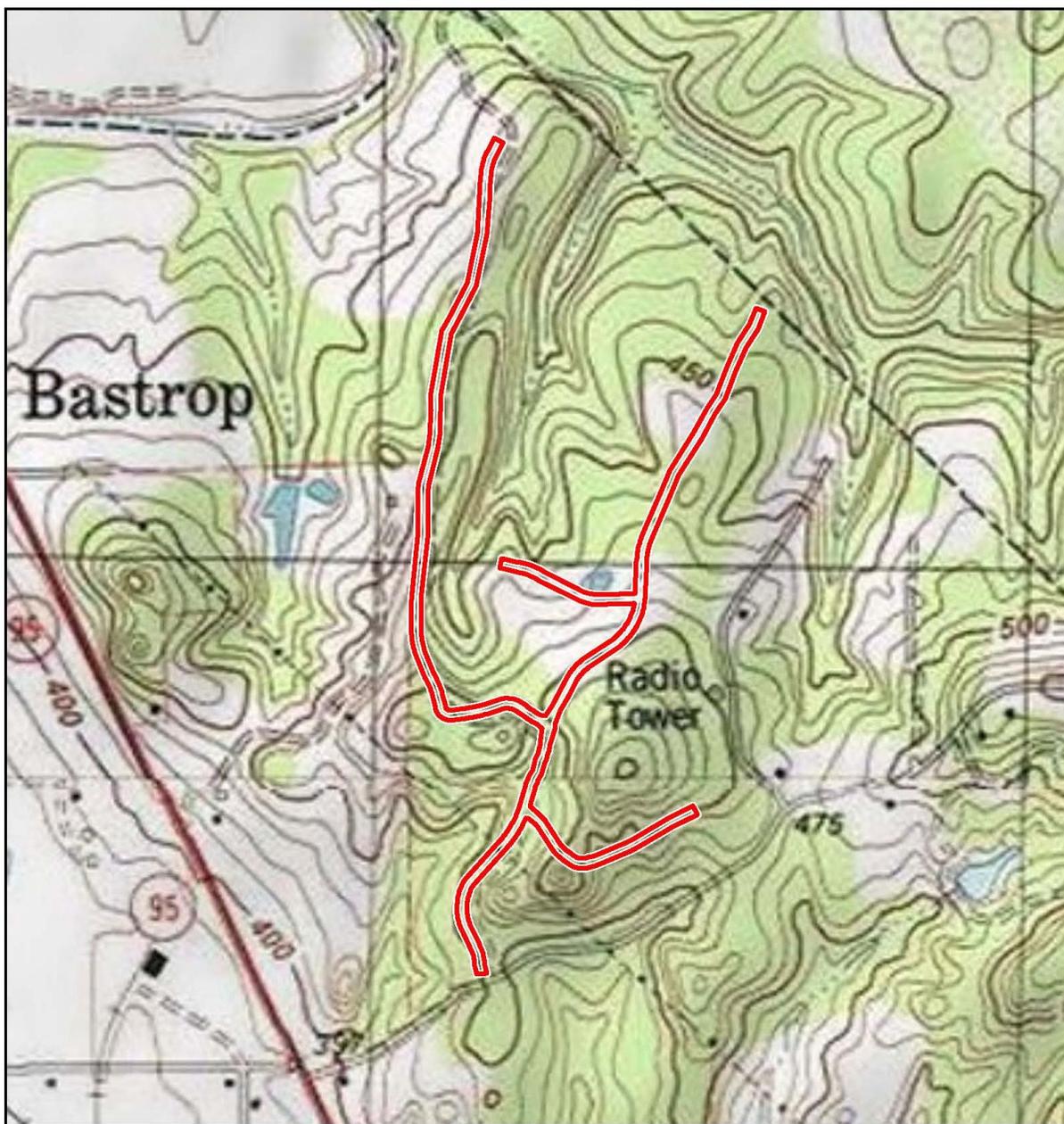


Figure 4.2. Topography Map

No Action Alternative

In the absence of a wildfire, the no action alternative would have no direct effect on soils in the project area 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. A wildfire could alter the cycling of nutrients; the physical and chemical properties of the 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.

Proposed Action

Under the proposed action, no adverse impact on soils would occur. The proposed action would not result in any significant soil or sediment removal or transport from the project area. 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 work area is limited to both sides of the residential streets within a narrow ROW, and the equipment will be staged on the paved surface, which further limits the potential for soil disturbance. Elevation changes within the proposed work areas are not significant; therefore, erosion of soils would not be likely with the minor soil disturbance that would occur from the proposed activities. The fire hazard mitigation program would also reduce the potential for the negative effects of a major wildfire on soils if a wildfire occurs. No adverse impacts to soils are anticipated under the proposed action.

4.2.2 Air Quality and Climate Change

The National Ambient Air Quality Standards (NAAQS) established by the U.S. Environmental Protection Agency (EPA) define the concentrations of air pollutants that may not be exceeded in a given period to protect human health (primary standards) and welfare (secondary standards) with a reasonable margin of safety. These standards include maximum concentrations of ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and particular matter.

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

The proposed project area is located in Bastrop County. EPA designates this region as being in attainment of all NAAQS. The EPA air quality monitoring stations located in the region have not detected levels of pollutants in excess of any air quality standards (EPA 2012).

No Action Alternative

In the absence of a major wildfire in the area, no impacts would occur, and current air quality conditions would not change. However, under the no action alternative, wildfire hazard reduction activities would not occur, and the potential for major wildfires would remain high. A major wildfire would result in substantial pollutant emissions. If a wildfire occurred during unfavorable

Affected Environment, Potential Impacts, and Mitigation

weather conditions (e.g., gusting winds from a thunderstorm), as is often the case, these weather conditions would compound the adverse effects on air quality.

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

Proposed Action

Under the proposed action, the use of equipment to remove vegetation could result in low levels of particulate matter and vehicle exhaust emissions such as hydrocarbons. Emissions would be temporary and localized, and only minor impacts on air quality in the project area would occur. To reduce emissions, labor crews would keep all vehicle and mechanical equipment running times to a minimum and ensure that all engines are properly maintained.

The proposed action has the potential for a long-term beneficial effect on air quality in the project area by reducing wildfire hazards and the potential for a major wildfire. The proposed action would also reduce the potential emission of greenhouse gases associated with a major wildfire. The proposed action is not anticipated to affect global climate change.

Post-project maintenance would be conducted annually. Each year the city would trim large trees to a height of 10 feet and remove underbrush through mowing and weeding. Because of the small scale of the continued maintenance program, no air quality impacts are expected from this activity nor would they significantly contribute to climate change.

4.2.3 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 a partially open canopy. The majority of the project area is dominated by a partially closed to closed canopy intermix of Ashe juniper and various oak species. Mid and understory fuels along right of ways extending away from roadways were observed to be extremely dense. The project area is located along the road ROW and is visually accessible to the residents and visitors in the subdivision. **Figure 4.3** through **Figure 4.5** show existing visual conditions within the project area.



Figure 4.3. Existing Conditions Along ROW – “Manicured Lawn” Habitat Type

Affected Environment, Potential Impacts, and Mitigation



Figure 4.4. Existing Conditions Along ROW – “Hardwood Forest” Habitat Type



Figure 4.5. Existing Conditions Along ROW – “Manicured Lawn” Habitat Type

Affected Environment, Potential Impacts, and Mitigation

No Action Alternative

In the absence of a major wildfire in the area, no impacts to the existing visual resources would occur. However, conditions that could result in a major wildfire would be more likely under the no action alternative. If a catastrophic wildfire were to occur, the visual quality of the project area would be adversely affected as vegetation both along the road ROWs and on the adjacent properties would be damaged.

Proposed Action

The proposed action would remove some trees and understory and would change the visual aesthetics for residents within the Piney Ridge Subdivision. In some cases, the proposed project would remove or alter desirable vegetation and visual buffers between homes and roadways.

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

4.3.1 Water Quality

The water quality effects analysis includes both surface water and groundwater resources.

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. The Texas Commission on Environmental Quality (TCEQ) is the regulatory agency responsible for compliance with water quality standards in Texas. The TCEQ's 2012 Integrated Report for CWA Sections 303(d) and 305(b) characterizes the quality of Texas surface waters and identifies those waters that do not meet water quality standards on the 303(d) list, an inventory of impaired waters (TCEQ 2013). Streams are classified by segment within their respective basin.

No perennial streams are present within the project area although Piney Creek is within 1,000 feet of the northern portion of the project area, and there is one ephemeral drainage feature present within the project area. The project area drains to Piney Creek through several intermittent tributaries. Piney Creek is an unclassified segment and is not listed on the 303(d) list for any impairment.

No Action Alternative

In the absence of a major wildfire, the no action alternative would have no effect on surface water quality because inputs to receiving waters would not change. However, a major wildfire would be more likely under the no action alternative and could have substantial impacts on surface water quality. Reduced vegetative cover could lead to increased runoff and resulting

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flooding, soil erosion, and sedimentation; pollution from substances that would no longer be filtered by vegetation; and changes in water temperature.

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

Proposed Action

The proposed action would not directly affect surface waters or alter stream flows. Equipment used during the proposed action would be staged on paved streets and use would be limited to a narrow band along the edge of the paved roads. As discussed in Section 4.2.1, the potential for soil erosion from the project area is low, and the distance of the project area from Piney Creek would further minimize the potential for the transport of sediment to the creek. The proposed action would not have a significant impact on water quality.

Under the proposed action, the potential for a major wildfire would be reduced, as would the potential for widespread loss of vegetative cover. 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 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 is primarily composed of sand locally imbedded with gravel, silt, clay and lignite. The Carrizo-Wilcox aquifer extends from the Louisiana border to the border with Mexico in a wide band. The groundwater is generally fresh and typically contains less than 500 milligrams per liter (mg/L) of total dissolved solids (TDS) in the outcrop, whereas softer groundwater with TDS of more than 1,000 mg/L occurs in the subsurface. Parts of the aquifer are slightly too moderately saline, with TDS ranging from 1,000 to 7,000 mg/L (Texas Water Development Board [TWDB] 2006 and TWDB 2013).

This project is not near any designated sole source aquifers (see **Appendix A**).

No Action Alternative

In the absence of a major wildfire in the 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, which would cause changes to the soil as discussed in Section 4.2.1, which could impact groundwater. Infiltration properties of soils are often altered when fire destroys vegetation and litter cover. These changes in the soil often 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 wildfires and thus would reduce the potential impact to groundwater recharge from a wildfire. The proposed vegetation management would not cause any impacts on the Carrizo-Wilcox aquifer. Impacts to infiltration rates and runoff in the project area are not anticipated from the proposed action; therefore, no impacts to the Carrizo-Wilcox aquifer are anticipated.

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 Clean Water Act of 1977 (33 U.S.C. 1344).

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps for the project area indicate that there are no wetlands present within the project area; however, the mapping does indicate one potential freshwater pond within 80 feet of the project area as shown on **Figure 4.6** (USFWS 2013a). The NWI maps show this pond as created by an impoundment or dike. A close inspection of aerial photography of the Piney Ridge subdivision indicates that the NWI pond likely does not exist; however, there are at least three other impoundments within the subdivision that would be categorized as freshwater ponds. The nearest of these ponds is approximately 100 feet from the project area.

No Action Alternative

In the absence of a major wildfire in or near the Piney Ridge Subdivision, the no action alternative would have no effect on wetlands because existing conditions would continue unchanged. However, a major wildfire would be more likely under the no action alternative and could result in the destruction of vegetation in wetlands. Vegetation destruction in wetlands would destroy habitat for wildlife and lessen the effectiveness of wetlands to filter pollutants and maintain water quality. The manmade ponds in the subdivision provide little habitat, as they appear to have little vegetation around their edges and to also be subject to high water level fluctuations. The two wetlands shown on **Figure 4.6** to the west of the project area have more natural vegetation around the edges and so would be more severely impacted in the case of a major wildfire.

Proposed Action

While there are wetlands near the project area, the proposed action would not occur in wetlands nor would it occur close enough to affect wetlands. Under the proposed action, the potential for a major wildfire that could affect wetlands would be reduced. In addition, long-term project maintenance would not occur within wetland areas; therefore, there would be no impact on wetlands.

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Figure 4.6. Piney Ridge – 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.

EO 11988 guidelines prepared by the Interagency Task Force on Floodplain Management describe an 8-step process that agencies should carry out as part of their decision-making on projects that have potential impacts to or within the floodplain. The eight steps reflect the decision-making process required in Section 2(a) of the EO and are reflected in FEMA regulations at 44 CFR 9.6. The first step is to determine if the proposed action is in the 100-year floodplain.

FEMA flood insurance rate maps (FIRM) map floodplain areas and illustrate the extent of the 100-year floodplain within the project areas. The FIRM for the project areas is number 48021C0220E dated January 19, 2006. The pertinent portion of the FIRM is included in **Appendix A-3**.

Although floodplains are present near the Piney Ridge subdivision, no fire hazard mitigation activities would take place within approximately 200 feet of the floodplains. **Figure 4.7** depicts the proposed project area and the extent of the floodplains near the Piney Ridge subdivision (FEMA 2006).

No Action Alternative

In the absence of a major wildfire in or near the Piney Ridge Subdivision, the no action alternative would have no effect on floodplains because current conditions would continue unchanged. However, a major wildfire would be more likely under the no action alternative and would have impacts on the floodplain (outside of the project area). 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 flooding.

Proposed Action

No activities would occur in the 100-year floodplain under the proposed action; therefore, there would be no impact on floodplains in the project area. Under the proposed action, the potential for a major wildfire that could affect floodplains would be reduced. In addition, long-term project maintenance would not occur within floodplains; therefore, there would be no impact on floodplains.

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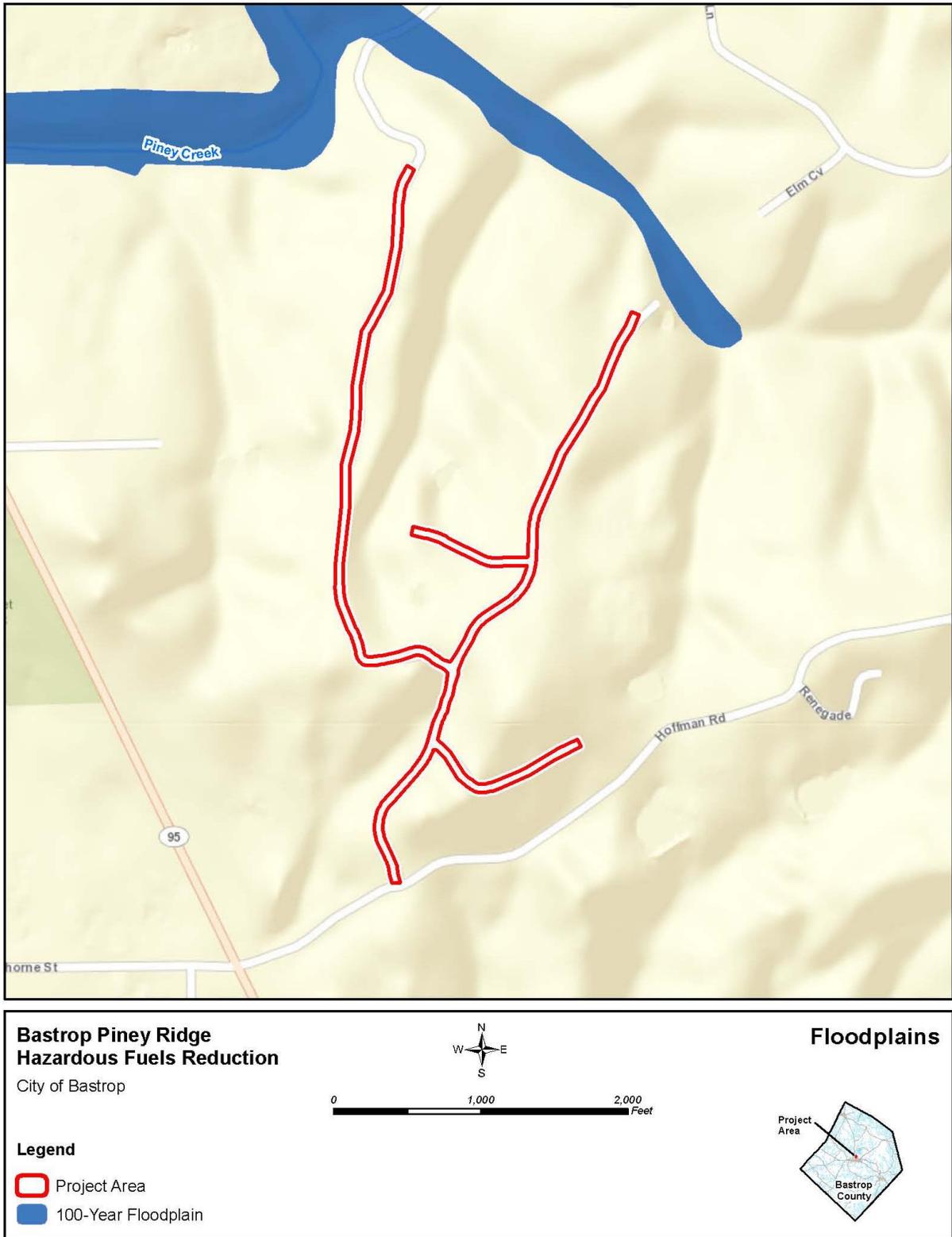


Figure 4.7. Piney Ridge – Floodplain

4.4 Biological Resources

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

4.4.1 Vegetation

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

A wildlife and habitat field survey conducted on July 24, 2013, determined that the project area is characterized primarily by two habitat types: hardwood forest and manicured lawns (**Figure 4.8** and **Appendix B**). Approximately 60 percent of the project area is hardwood forest and 40 percent is manicured lawn. A small area of mesquite scrub and the end of one ephemeral drainage were also present. The habitat types are described as follows:

- Hardwood Forest – dominated by post oak (*Quercus stellate*), mesquite (*Prosopis glandulosa*), cedar elm (*Ulmus crassifolia*), and blackjack oak (*Quercus marilandica*), with a few sparse loblolly pine (*Pinus taeda*). The canopy layer averages 40 percent total cover. A dense shrub layer is present dominated by tree saplings, yaupon (*Ilex vomitoria*), and greenbriar (*Smilax* spp.) and is approximately 80 percent total cover. The herbaceous layer is primarily greenbriar and averages 80 to 100 percent total cover. The vegetation around the ephemeral drainage is not different from the hardwood forest type. There was no water in the drainage at the time of the field survey.
- Manicured Lawn – characterized by mowed grass-covered areas (80 percent to 100 percent total cover) with sparse concentrations of post oak, cedar elm, and mesquite (0 percent to 20 percent total cover). There is little to no shrub layer present in this habitat type.
- Mesquite Scrub – one small area in the project area characterized by mesquite (40 percent cover) and an herbaceous layer consisting of giant ragweed (*Ambrosia trifida*) and various grass species.

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. Habitat for this species is not present within the project area. The Navasota ladies'-tresses also was not identified during the field survey in July 2013.

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 invasive species Bermuda grass is already present in the maintained easement habitat type. While Bermuda grass is an invasive species, it is not on the Texas noxious and invasive weed list maintained by the USDA NRCS (2013b). The field surveys did not note any other invasive species in the project areas.

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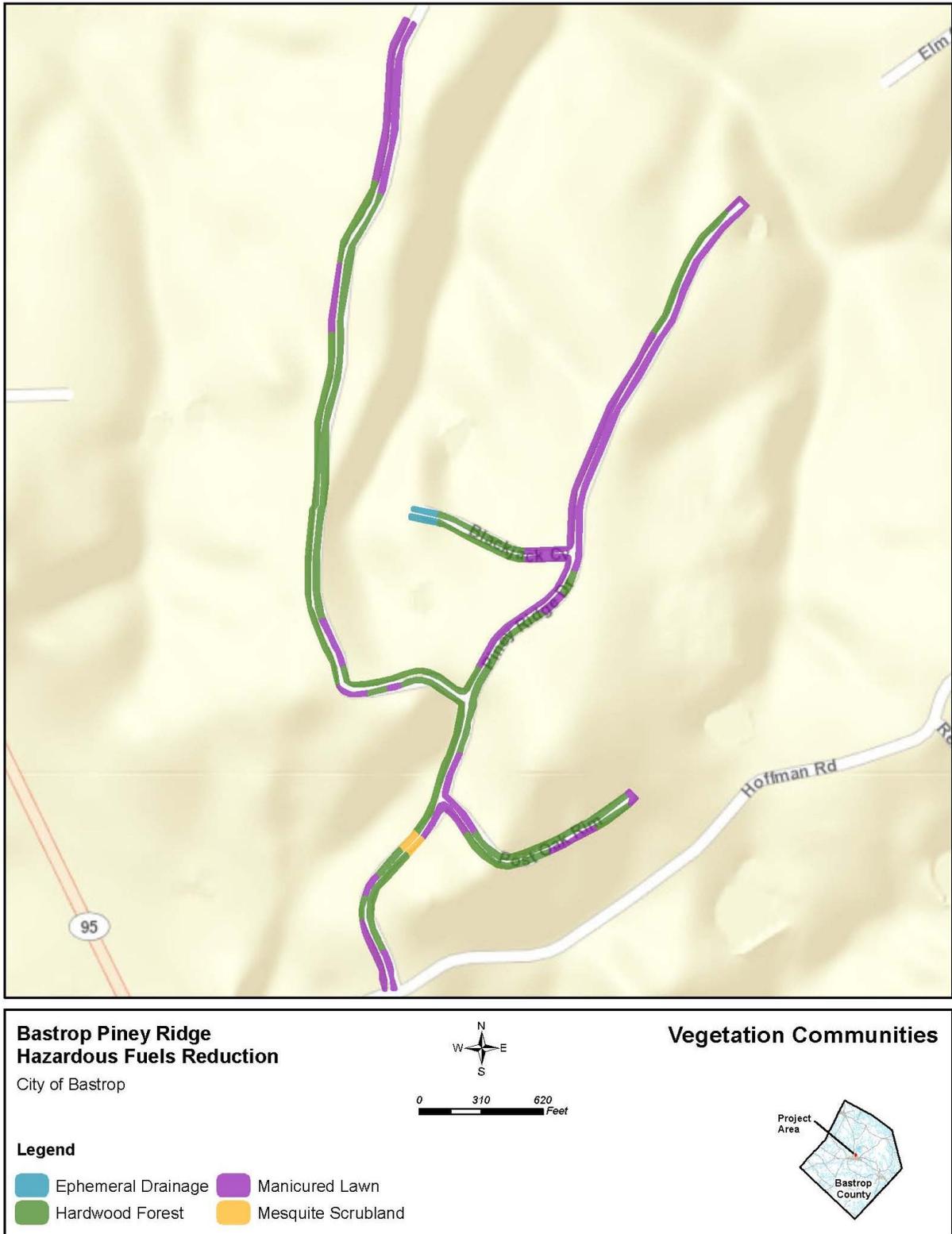


Figure 4.8. Vegetation Communities

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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. In the event of a major wildfire, non-native and/or invasive species might be expected to become established over larger areas.

Proposed Action

The proposed action would affect approximately 16,678 linear feet of ROW by removing underbrush and small trees and trimming large trees on approximately 16 feet on either side of the paved street to reduce fire hazards. Vegetation that would be removed would primarily consist of the species found in the shrub layers as described above. The proposed action would not have a significant impact on vegetation communities though individual trees would be affected.

Since there is no suitable habitat for Navasota ladies'-tresses, the proposed action would not affect this federal and state listed endangered plant species.

The proposed action could provide avenues for the establishment of invasive plant species through accidental introduction and the removal of native vegetation. However, because the proposed action would not alter the canopy layer significantly, it would not be expected to contribute to the spread of Bermuda grass or other invasives. Any invasive species encountered during the vegetation management work should be removed. Control measures are not required for species that are not on the state list of noxious weeds (4 TAC 19.300).

4.4.2 Wildlife

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 site surveys conducted in July 2013.

Table 4.3. Common Wildlife Species Observed Within Project Area

Common Name	Scientific Name
Birds	
Northern Cardinal	<i>Cardinalis cardinalis</i>
Ground Dove	<i>Columbina passerina</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
Tufted Titmouse	<i>Baeolophus bicolor</i>
Carolina Chickadee	<i>Poecile carolinensis</i>
American Crow	<i>Corvus brachyrhynchos</i>
Mammals	
White-tailed Deer	<i>Odocoileus virginianus</i>

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The common species observed during the field surveys are typical of forest fringe and residential areas. In addition, the dominant habitat types identified during the July 2013 field survey are likely to support additional species adapted to these habitats, including various snakes, sparrows, hawks, and raccoons (*Procyon lotor*).

The Piney Ridge subdivision also 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 and at the edges of forested areas and are well adapted to habitats that are heavily influenced by human activities. The proposed work would be conducted within the existing road right-of-ways and would not result in fragmentation of wildlife habitat. Cutting of vegetation with active nests would be avoided as a best management practice (BMP). The work would not be conducted during the breeding season for migratory birds and would comply with the condition 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. This seasonal restriction overlaps somewhat with the seasonal restriction to protect the Houston toad described in Section 4.4.3, which allows work from July 1 to December 31. Therefore, most of the work will be conducted from September through December. If vegetation management activities must occur during the nesting season (i.e. July and August), 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 larger diameter (6 inches or greater in diameter) dead trees as snags whenever practical, at an average rate of 1 to 3 per acre

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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). The Texas Parks and Wildlife 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. An additional species is state listed as endangered and 11 as threatened in Bastrop County by the Texas Parks and Wildlife Department (TPWD). 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 2013b, TPWD 2013).

Table 4.4. Federally Listed Species for Bastrop County, Texas

Common Name	Scientific Name	Federal Status
Amphibians		
Houston Toad	<i>Anaxyrus houstonensis</i>	Endangered
Birds		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Recovery
Whooping Crane	<i>Grus americana</i>	Endangered
Plants		
Navasota Ladies'-tresses	<i>Spiranthes parksii</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

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Common Name	Scientific Name	State Status
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

A field survey was conducted on July 24, 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**). The survey shows that most of the above-listed species are unlikely to be found in the project area.

There is a low potential for federally listed species to occur within the project area. Suitable habitat for the Whooping crane (grasslands and coastal marshes) and the Navasota ladies'-tresses is not present in the project area.

The habitat within the project area is not suitable for burrowing by the Houston toad based on the results of the field survey conducted in July 2013 and confirmed by the NRCS soil survey data as described in Section 4.2.1, which indicate the presence of gravelly soil structure in the project area soils. The gravelly soils combined with the dense underbrush mean that it is unlikely that Houston toads would be able to easily burrow into the ground, and they would be unlikely to use the project area for activities other than migration corridors. Additionally, the toad was not observed in the survey area during the field survey.

The project area is within designated critical habitat for the Houston toad. Breeding habitat includes ephemeral wet-weather ponds and other water features (e.g., stock tanks, creeks, streams, wetlands, seeps, springs, and vernal pools) with sandy substrates and shaded edges. Non-breeding habitat includes healthy and mature forest ecosystems with mixed species composition, significant canopy cover, and an open understory layer with a diverse herbaceous component. Breeding primarily occurs from February to April but has been reported into late June. Water must persist for at least 60 days for successful breeding, with larvae hatching in 4 to 7 days and metamorphosis in 3 to 9 weeks.

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Habitat for the Houston toad in Bastrop County was in poor condition prior to the Bastrop County Complex Fire due to the worst one-year drought in recorded history for this area (Lost Pines Recovery Team 2011). Following the fire, approximately 41 percent of the habitat that was considered to be highly suitable within Bastrop County was moderately to heavily burned (Forstner *et al.* 2011).

Natural long-term breeding habitat (ephemeral pools) for the Houston toad were not observed in the project area during the ecological field survey. However, the site visit indicated that breeding habitat may be present on nearby properties that have shallow manmade ponds (CH2MHill 2013). Although optimal upland habitat for the Houston toad is not present in the project area given the soil type, there is potential breeding habitat on nearby properties, and individuals could be found moving through the upland project area.

The bald eagle occurs in Bastrop County, and there is a known nest at the nearby Bastrop Lake. Eagles are protected by the Bald and Golden Eagle Protection Act. Bald eagles nest from October through July, so the nesting season is difficult to avoid. Bald eagle nests are large and readily identifiable, so trees containing bald eagle nests can be avoided. No eagle nests were noted in or near the project area during the field visit. Eagles prefer to nest near water bodies, and this type of habitat is not present in the project area.

Both the bald eagle and peregrine falcon have recently been delisted by USFWS; however, both species remain protected by other regulations at the federal and state levels. Peregrine falcons may use the project area for foraging, but any presence of this species would be transient. The state listed threatened Peregrine falcon is not likely to nest within the project area because its preferred nesting habitat – tall cliffs – is not present. Therefore, there would be no effect on the falcon or the eagle.

The timber/canebrake rattlesnake, which is a state-listed species, has the potential to occur within the project area since suitable habitat is present; however, it was not observed during the site visit.

No Action Alternative

In the absence of a major wildfire, the no action alternative would have no effect on federally endangered species because existing conditions would not change. However, a major wildfire would be more likely under the no action alternative and would damage existing nearby Houston toad habitat.

Proposed Action

The proposed action would not alter soil structure, nor would it impact ephemeral or perennial ponds, since none are located in the project area.

The proposed action does not involve the removal of large living trees; therefore, the canopy, which could provide shaded habitat for toad dispersal, would not be adversely impacted. USFWS recognizes mechanical thinning as a management tool that can help restore habitat for the Houston toad by removing non-native vegetation and increasing light availability to the forest

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floor. This may subsequently increase vegetation diversity, which can increase insect diversity and abundance, enhancing a food source for the toad. Although the proposed action may affect the Houston toad for a short period during the implementation phase of the project, long-term benefits to Houston toad habitat and the species may be expected from the proposed action. Therefore, FEMA has determined that the proposed action may affect, but is not likely to adversely affect, the Houston toad. FEMA consulted informally with the USFWS in December 2013, and in a letter dated January 31, 2014, the USFWS concurred with FEMA's determination that the proposed action would not likely adversely affect the Houston toad and would not adversely modify critical habitat. With implementation of the avoidance and minimization measures outlined in the consultation (see concurrence letter in Appendix C), potential impacts to the Houston toad would not be significant.

Due to lack of suitable habitat for the Whooping Crane or Navasota ladies'-tresses within the project area, FEMA has made a determination that the proposed action will have no effect on the Whooping Crane or Navasota ladies'-tresses.

Similar to the Houston toad, the timber/canebrake rattlesnake may move through the project area but would be unlikely to use it for extended periods. TPWD indicates that the species preferentially uses limestone bluffs, sandy soil, or black clay, none of which occur in the project area (TPWD 2013). 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 project area is poor habitat, the snakes are highly mobile, and the proposed action would not result in long-term adverse habitat effects. Consultation with TPWD concerning state-listed species would be the responsibility of the subapplicant.

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

4.5 Cultural Resources

This section provides an overview of the affected area and potential environmental effects 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 the process described in Section 106 of the NHPA (16 U.S.C. §470f)

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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(1)(1) as "any prehistoric or historic district, site, building, structures, or object included in, or eligible for inclusion in, the National Register of Historic Places." Although buildings and archaeological sites are most readily recognizable as historic properties, the NRHP contains a diverse range of resources that includes roads, landscapes, and vehicles. Under Section 106, federal agencies are responsible for identifying historic properties in the Area of Potential 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 Section 106 is a process by which the federal government assesses the effects of its undertakings on historic properties, it is the primary regulatory framework that is used in the NEPA process to determine impacts on cultural resources.

To assess the potential for intact, significant cultural resources within the APE of the proposed action, an archival review of the proposed undertaking was conducted. The APE for the proposed hazardous fuel reduction is the Piney Ridge Subdivision within the City of Bastrop, Texas. Several single family homes are present within the APE.

Coordination with the SHPO, which is housed at the Texas Historical Commission (THC), was initiated via letter on July 24, 2013. On August 2, 2013, the SHPO concluded that the project would not affect historic properties and that the project could proceed as planned without further consultation. See **Appendix C** for a copy of the SHPO correspondence letters. **Figure 4.9** below shows a THC map of the project vicinity (THC 2011).

4.5.1 Historic Architectural Properties

Archival research conducted via the THC Texas Archeological Sites Atlas (Atlas) indicates that no previously recorded archeological sites are within the APE. According to the Atlas, Bastrop County has 953 registered historic sites (historic county courthouses, national register properties, state archeological landmarks, historical markers, cemeteries, museums, and military sites); however, no historic sites are within 500 feet of the proposed project area. The closest state registered historic site to the project area includes the Davis Family Cemetery located southeast of Mesquite Cove and north of Black Jack Lane (THC 2011).

4.5.2 Archaeological Sites

Archival research conducted via the THC's Atlas indicated that no previously recorded archaeological sites have been identified within or in the immediate vicinity of the proposed project area.

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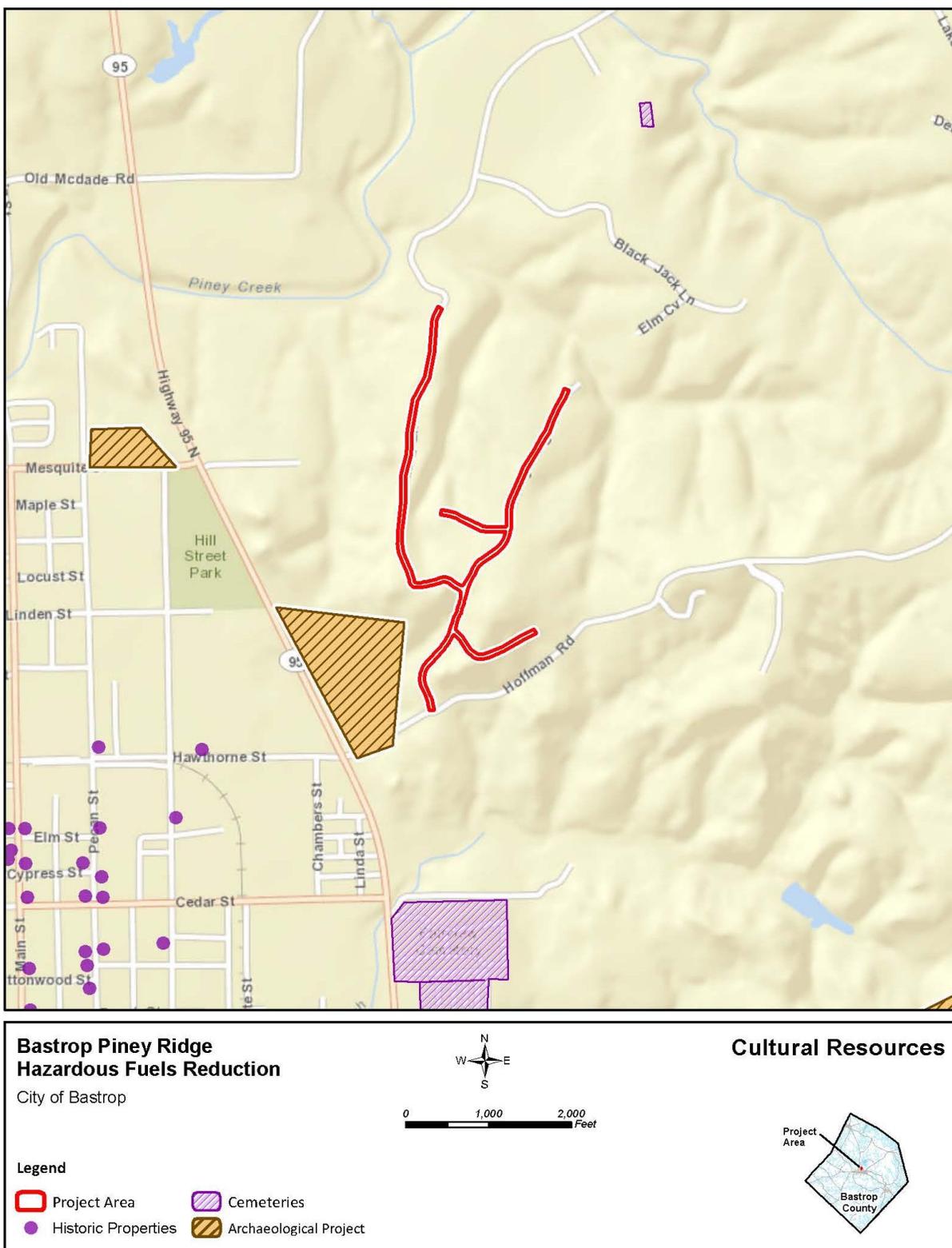


Figure 4.9. Cultural Resources Near Piney Ridge

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 vegetation thinning or management would occur; therefore, this alternative would result in no effect on cultural resources, including historic properties.

Proposed Action

Based on archival research and correspondence with the SHPO, FEMA has made the determination that the proposed action would have no effect on historic properties. In the event that archeological deposits, including any Native American property, stone tools, bones, or human remains, are uncovered, all work immediately in the vicinity of the discovery will be halted immediately, and all reasonable measures must 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. 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.

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.

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 (census tract) level. The local area included in this analysis is where project-related activities 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, inclusive of the Piney Ridge Subdivision. **Table 4.6** and **Table 4.7** provide economic and demographic

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characteristics for census tract 9504. Information for Bastrop County as a whole and the City of Bastrop are presented for comparison.

Low-Income Populations

Persons living with an income below the poverty level are identified as "low-income," according to the annual statistical poverty thresholds established by the U.S. Census Bureau. The U.S. Census Bureau poverty threshold for a family of four (two adults and two children) in 2012 was \$23,681 and \$11,945 for an individual (U.S. Census Bureau 2013a). Low-income populations are also considered to include residents of areas where the median family income is less than 60 percent of the median income of the surrounding area. Bastrop County has a poverty rate of 14.2 percent. The poverty rate in the census tract that includes the project areas is 7.3 percent. The median family income in the census tract is higher than in Bastrop County and slightly lower than in the City of Bastrop. The median household incomes are slightly lower in the census tract than in Bastrop County as a whole (**Table 4.6**). Therefore, the project areas do not include a low-income population.

Table 4.6. Income

Parameter	Census Tract 9504	Bastrop County	City of Bastrop
Percentage of population below poverty level	7.3%	14.2%	7.0%
Median family income	\$70,502	\$62,108	\$75,104
Median household income	\$50,127	\$52,882	\$56,083

Source: U.S. Census Bureau 2011.

Minority Populations

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

As shown in **Table 4.7**, census tract 9504 has a total minority population smaller than both the county average and the City average; therefore, the project area is not considered a minority population.

No Action Alternative

Under the no action alternative, all populations within the project area would continue to be at risk of a catastrophic wildfire. The no action alternative would not have a disproportionately high and adverse human health or environmental effect on low-income or minority populations and meets the requirements of EO 12898.

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Proposed Action

The proposed action would have a beneficial effect on all people living and working in the vicinity of the project area, including any low-income or minority persons, as it would reduce the risk of harm to persons and personal property from wildfire. No disproportionately high and adverse impacts to low-income or minority populations would result from the proposed action. Therefore, the proposed action would comply with EO 12898.

Table 4.7. Minority Populations

Ethnic Composition	Census Tract 9504	Percentage	Bastrop County	Percentage	City of Bastrop	Percentage
White	6,886	84.5%	59,881	81.6%	5,659	79.3%
Black or African American	915	11.2%	6,063	8.3%	1,119	15.7%
Asian	45	0.6%	493	0.7%	45	0.6%
American Indian	49	0.6%	581	0.8%	28	0.4%
Native Hawaiian	7	0.1%	23	0.0%	7	0.1%
Some Other Race/Multi-Ethnic	192	2.4%	5,012	4.2%	261	3.7%
Total Population	8,153	--	73,368	--	7,134	--
Hispanic or Latino ¹	1,581	19.4%	23,349	31.8%	1,159	16.2%
Total Minority Population^{2,3}	2,617	32.1%	30,963	47.7%	2,319	32.5%

Source: U.S. Census Bureau 2011.

Notes:

¹ The term "Hispanic" is an ethnic category and can apply to members of any race, including respondents who self-identified as "White." The total numbers of Hispanic 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.

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 wastes. 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 within the vicinity or upgradient of the project area or whether there is a known and documented environmental issue or concern that could affect the proposed project site, a search for Superfund sites, toxic release inventory sites,

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industrial water dischargers, hazardous facilities or sites, and multi-activity sites was conducted using EPA's Envirofacts database.

According to the database, one hazardous site is reported within 1 mile of the project area. In 2004, the Bastrop Independent School District reported a hazardous waste occurrence at Bastrop High School, located at 1602 Hill Street, located approximately 0.8 miles from the entrance of the project area. The occurrence was classified by EPA as general automotive repair. The site has since been deemed inactive by the Resource Conservation and Recovery Act standards.

No other potentially hazardous sites, including Superfund, toxic release, industrial water dischargers, hazardous waste, or multi-activity sites exist within the project area (EPA 2013).

Figure 4.10 shows the potentially hazardous sites closest to the project area (EPA 2013).

No Action Alternative

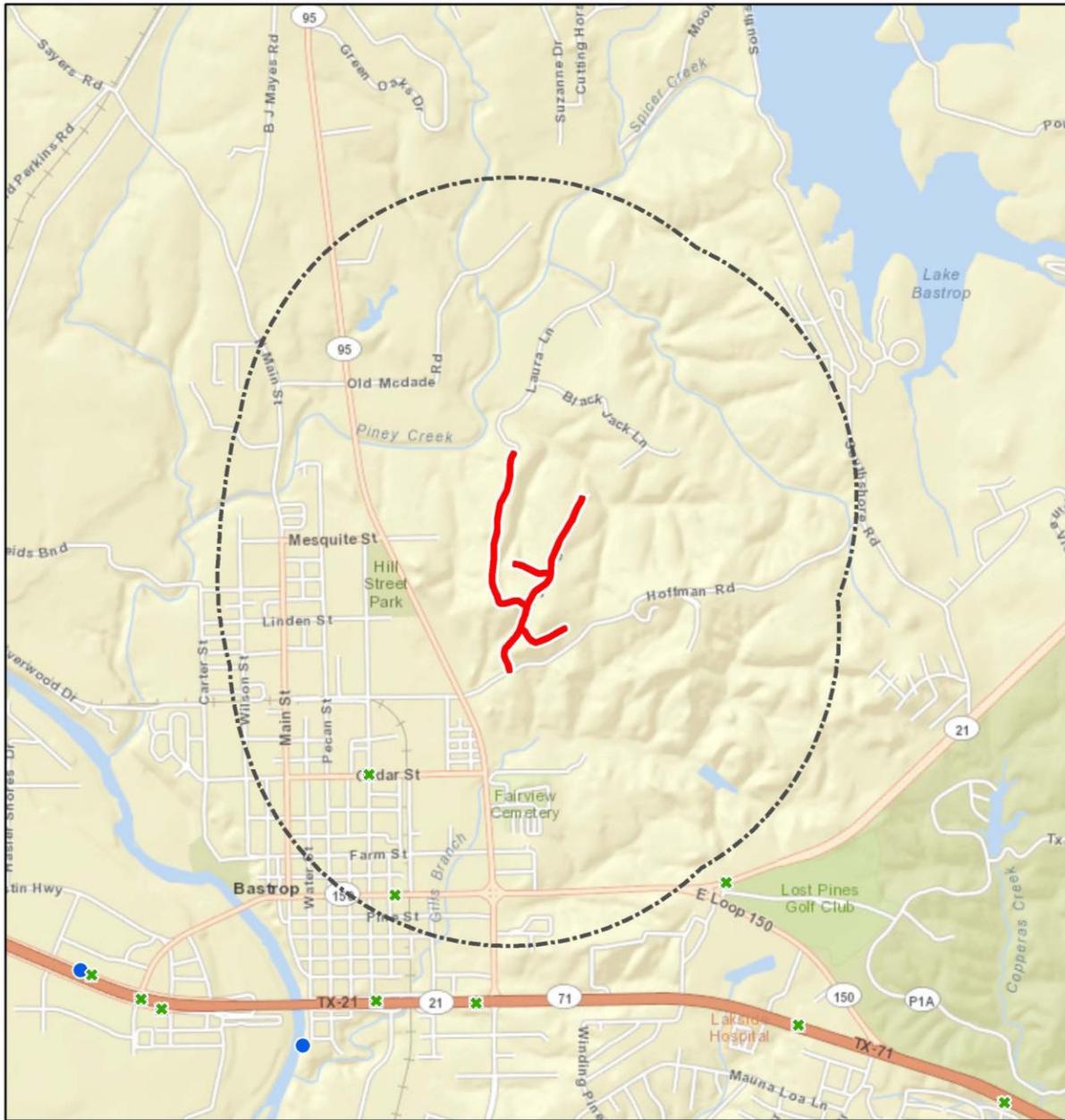
Under the no action alternative, existing conditions with respect to hazardous materials would not change; therefore, there would be no effect related to hazardous materials or sites.

Proposed Action

Under the proposed action, no impacts from hazardous materials are anticipated because no active Superfund sites, toxic release inventory sites, industrial water dischargers, hazardous waste facilities or sites, or multi-activity sites are within 1 mile of the proposed project area (EPA 2013). All vegetative material (trimmings) would be chipped and hauled off site to Go Green International where it will be reused as fuel. No unusable equipment, debris, or material shall be disposed of in an unapproved manner or location. 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.

The proposed action would involve the use of mechanical equipment, and there is always a minor threat of leaks of oil, fuels, and lubricants from the use of such equipment. The short-term nature of the project and use of equipment in good condition would reduce any potential effect to an insignificant level. Additionally, herbicides would not be used during project implementation or for long-term maintenance. Therefore, impacts from herbicide use would not occur.

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**Bastrop Piney Ridge
Hazardous Fuels Reduction**
Bastrop County

EPA EnviroFacts

Legend

 Project Area	EnviroFacts	 Waste
 1-Mile Buffer	* Land	● Water

Data Sources: EPA, FEMA FIRM Panels;
Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom,

Figure 4.10. Hazardous Waste Sites Near Piney Ridge

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 is typically associated with climatic conditions (wind, rain), transportation (traffic on roads, airplanes), and other "life sounds" (people talking, children playing, dogs barking). 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 would benefit from a lowered noise level. Typical sensitive receptors include residences, schools, churches, hospitals, and libraries. The majority of the project area is adjacent to homes and any noise-generating activities within these areas would have the potential to affect these sensitive receptors.

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 backhoes, tractors, brush hogs, chainsaws, and chippers, along with hauling and maintenance vehicles and other required safety equipment. The proposed action would increase noise levels in the immediate vicinity of the project areas 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 regulations.

4.6.4 Traffic

The project area consists of city and county residential roadways with limited access and egress. The main entrance and exit to the project area is Piney Ridge Road off Hawthorne Street. The internal circulation pattern of the project area consists of few formal roads that dead end into residential properties. These roads include Post Oak Rim, Laura's Cove, Laura's Lane, Mesquite Cove, Black Jane Lane, and Elm Cove. The nearest major intersection to the project area is that of Hawthorne Street and Texas State Highway 95.

The Bastrop County Community Fire Wildfire Protection Plan (CFWPP) evaluates the existing access, egress, and evacuation conditions for the county in case of wildfire (Bastrop County 2008). The project area does not provide adequate emergency entrances and exits, and consists of over-vegetated roads and pathways contributing to difficult firefighting operations.

No Action Alternative

Under the no action alternative, existing levels of local traffic would not change.

A major wildfire would be more likely under the no action alternative. Roads could be closed if a wildfire approached or encompassed local roads. A wildfire near the project area could close access to the primary access and egress road, Piney Ridge Road. Depending on the location and wind direction, smoke from a wildfire could close sections of bordering roadways or sections of Hawthorne Street and Texas State Highway 95. Short-term traffic congestion could occur during street and highway closures caused by a wildfire.

Limited emergency access, in combination with the heavily vegetated condition of the project area, would remain an issue under existing conditions and could contribute to difficulty in efficiently combating wildfires.

Proposed Action

Under the proposed action, vehicle traffic would be generated by work crews traveling to and from work sites and trucks hauling cut and chipped vegetation to Go Green International in Paige, Texas (approximately 15 miles from the project area). It is anticipated that the proposed action would require approximately 100 to 400 truck trips to remove all vegetative materials from the project area. The amount of additional traffic would be temporary and would not interfere with local residents or people traveling in the vicinity of the project areas.

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. Trimming of trees and clearing of underbrush would also improve emergency access to and within the project areas in the event of a wildfire, improving conditions for firefighters and reducing the potential for a catastrophic fire.

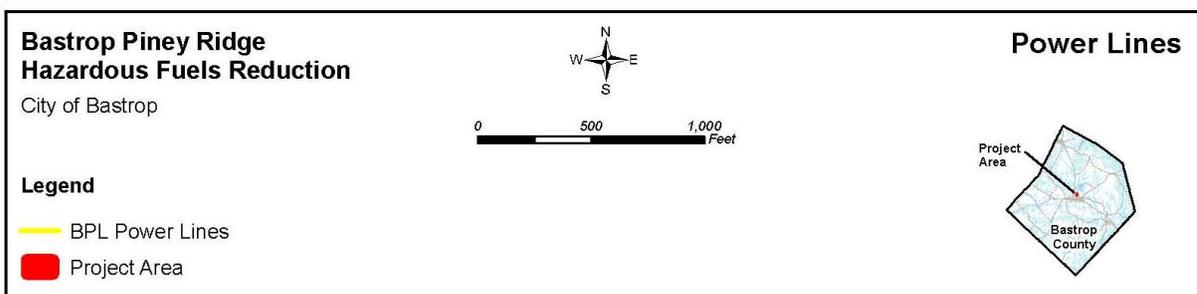
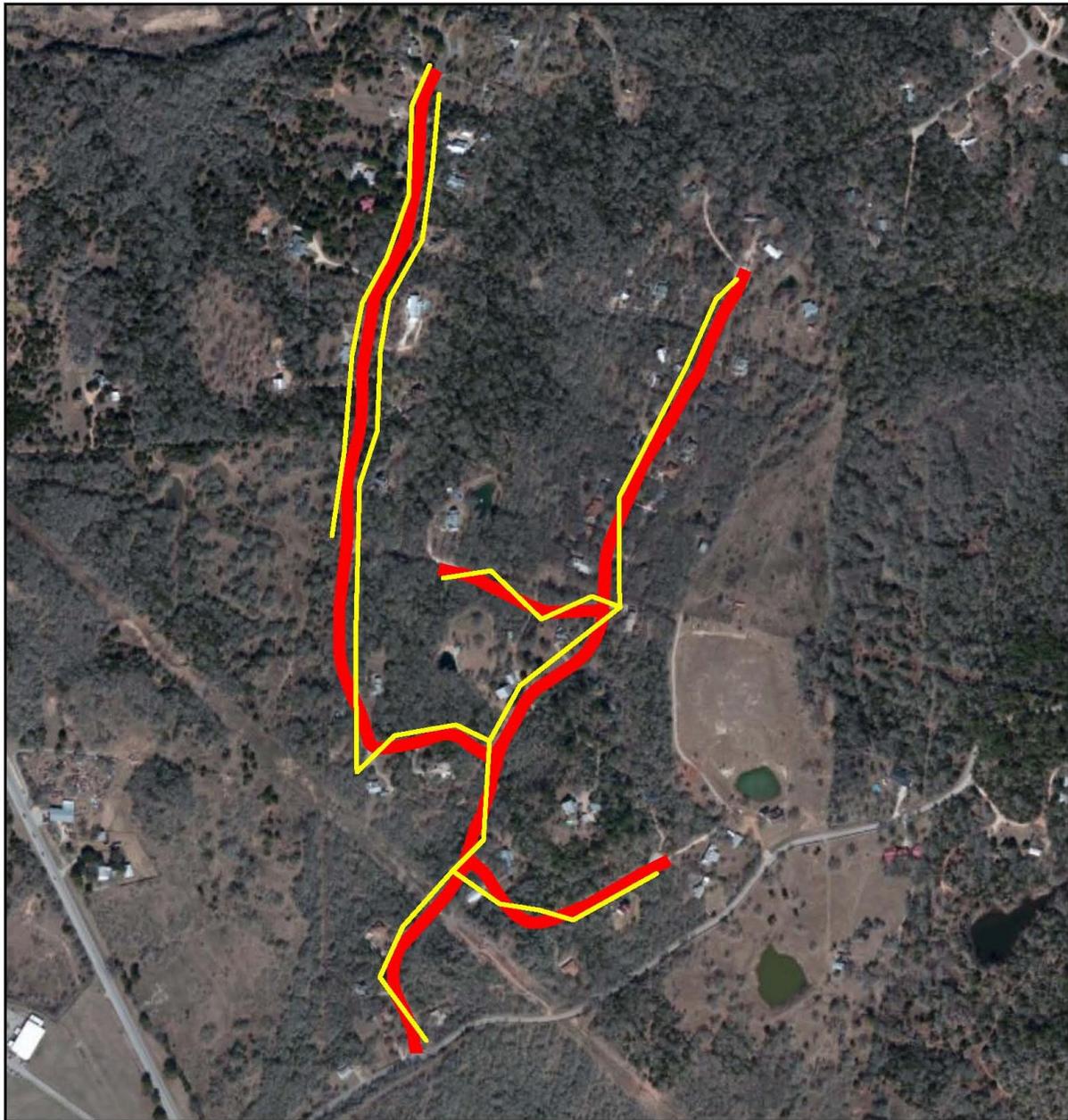
4.6.5 Public Services and Utilities

4.6.5.1 Utilities

The project area is within the City of Bastrop's electric utility service area. Bastrop Power and Light provides the city's electrical, water, and wastewater systems. Electric service is provided through overhead power lines. Due to vegetation overgrowth, the existing power lines in the project's ROW are currently at risk of sparking wildfires. The project area also has a sub-standard or inadequate water system, with widely spaced fire hydrants, which also contributes to the difficulty for firefighters to protect and defend the area (Bastrop Power and Light 2012).

Additional overhead power lines owned and managed by Bluebonnet Electric Cooperative are located within the project area; however, they are not included as part of this project and would not be affected by any proposed hazard reduction measures but could benefit from a reduction in adjacent wildfire risk. The Bastrop Power and Light overhead power lines within the Piney Ridge ROW are shown in **Figure 4-11**.

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

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 spark catastrophic fires as well as being adversely affected by a wildfire.

Proposed Action

Under the proposed action, 16,678 linear feet of vegetation along power lines in the project area's ROW would be trimmed or removed. Hazard reduction activities 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 contribute to the containment of wildfires, which would prevent or reduce potential damage to existing overhead utilities.

4.6.5.2 Emergency Services

The City of Bastrop is serviced by four fire stations, two city operated stations and two supported by the Bastrop County Emergency Service District (ESD) #2. The station in closest proximity to the project area is Bastrop County ESD Station #1, at 802 Chestnut and the intersection of Loop 150E in downtown Bastrop. All four stations have predominately volunteer firefighting staff, which provide fire suppression and rescue services (City of Bastrop 2013). Various informal volunteer firefighting groups have also been established by Bastrop County residents.

The Bastrop County CFWPP states that sufficient and consistent volunteer involvement is an issue for many of the departments, making maintenance of an adequate level of firefighting skills a concern for the county. In addition, the county experiences difficulty in obtaining and maintaining sufficient gear and protective clothing required to combat catastrophic wildfires.

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 times (City of Bastrop 2013).

No Action Alternative

Under the no action alternative, there would be no change in emergency response time. The risk of a major wildfire in the project area would continue at its current high level. During a major wildfire, these emergency personnel would not be available to respond to other emergencies in their service area.

Proposed Action

Under the proposed action, hazard reduction 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 serve other emergencies throughout the city and county.

4.6.6 Public Health and Safety

The risk of a catastrophic fire in the project area is high because tall trees and dead or dying trees can spark fires from contact with overhead power lines, and heavy fuel loading (closely spaced trees and shrubs and dead material on the forest floor) that has accumulated over time contributes to fuel loads. Heavy rain conditions 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 of the project area.

Population growth has many implications related to wildfire hazards and the need for vegetation management. 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 75,115. Bastrop County experienced an increase in population of 0.8 percent from 2010 to 2012 (U.S. Census Bureau 2013b).

No Action Alternative

A major wildfire in the project area would be more likely under the no action alternative. If a wildfire occurred then people 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. Major wildfires are also a major threat to the health and safety of frontline firefighters.

Proposed Action

Under the proposed action, the primary objective is to reduce the hazard of fires caused by trees touching overhead power lines and to reduce hazard fuel loads to reduce the rate of spread and intensity of a wildfire in the project area. Trimming and removal of trees along overhead power lines and removal of dead and down vegetation would reduce risks. Hazardous fuel reduction would not prevent wildfires but could contribute to containment, reducing the intensity and frequency of wildfires, which ultimately would reduce the risk factor for residents. 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 or permits, and mitigation or BMPs that would be implemented to minimize impacts.

Affected Environment, Potential Impacts, and Mitigation

Table 4.8. Summary of Impacts and Mitigation

Affected Environmental Resource Area	Impacts	Agency Coordination/ Permits	Mitigation/BMPs
Soils	Short-term soil disturbance from mechanical equipment. Long-term beneficial impacts on soils from reduced risk of major wildfire.	N/A	N/A
Air Quality and Climate Change	Short-term minor impacts on local air quality from mechanical equipment emissions. Potential long-term beneficial impact on air quality and climate change by reducing wildfire emissions.	N/A	Vehicle and equipment running times will be minimized, and engines will be properly maintained.
Visual Quality and Aesthetics	Long-term negative effect on visual screening and residential privacy. Potential long-term beneficial effect by reducing loss of vegetation in wildfires.	N/A	N/A
Surface Water	Potential beneficial impact on surface water by preventing major wildfire, reducing sedimentation and debris loading in streams.	TWDB	N/A
Groundwater	No impact.	N/A	N/A
Wetlands	No impact.	N/A	N/A
Floodplains	No impact.	N/A	N/A
Vegetation	No impact to listed species. No significant impact to vegetation communities.	N/A	N/A

Affected Environment, Potential Impacts, and Mitigation

Affected Environmental Resource Area	Impacts	Agency Coordination/ Permits	Mitigation/BMPs
Wildlife	Migratory birds may nest in ROW.	USFWS	Vegetation management activities will occur outside of the breeding season between September and December and will be coordinated with Houston toad seasonal work limits.
Threatened and Endangered Species/Critical Habitat	No effect on Whooping Crane and Navasota ladies'-tresses. Proposed action not likely to adversely affect Houston toad. No adverse modification of critical habitat.	USFWS	Applicant must comply with the avoidance and minimization measures outlined in the consultation agreement between FEMA and USFWS.
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 immediately 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. 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 Material	No impact.	N/A	No unusable equipment, debris, or material shall be disposed of in an unapproved manner or location. 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.
Noise	Temporary impacts from vegetation removal equipment.	N/A	All work will be conducted during daytime hours. All equipment and machinery will meet all local, state, and federal noise regulations.

Affected Environment, Potential Impacts, and Mitigation

Affected Environmental Resource Area	Impacts	Agency Coordination/ Permits	Mitigation/BMPs
Traffic	Temporary increase in vehicle trips from hauling of vegetation from project site. Traffic increase would not be significant.	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 Safety and Health	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 implementation of the proposed action. Cumulative impacts are the impacts of a proposed action when combined with the impacts of other 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 to the project surroundings, Bastrop County and the City of Bastrop have several other hazardous fuels reduction and defensible space projects planned for the near future in the areas around the City of Bastrop. However, these other projects would not be located 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. The proposed action would have no impact or essentially no impact on water resources, wetlands, floodplains, wildlife, vegetation communities, cultural resources, environmental justice, or hazardous materials and would have a beneficial impact on public services and utilities and public health and safety. Therefore, the proposed action would not contribute to significant cumulative impacts on these resources.

There is the potential for short-term adverse impacts to the federally listed Houston toad, but there are no other known projects that could contribute to a cumulative impact on the toad or its habitat in and near the project area.

Temporary noise, traffic, and air quality impacts of the proposed action could combine with similar impacts of other projects occurring at the same time. 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 (City of Bastrop 2013). Other hazardous fuels reduction and defensible space projects planned by the City of Bastrop for the near future would not occur in the same neighborhood as the proposed action.

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 City of Bastrop, Piney Ridge Hazardous Fuel Reduction EA. In addition, an overview of the permits that would be required under the proposed action is included.

6.1 Agency Coordination

Appendix C provides copies of all agency coordination and response letters for this EA.

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 and the Piney Ridge Subdivision. The public notice will state that information about the proposed action, including this environmental assessment, 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 Texas Pollutant Discharge Elimination System construction stormwater general permit TXR150000 because it is not a construction project and would not generate stormwater associated with industrial activity as defined in 40 CFR 122.26(a)(14).

SECTION 7 References

- Austin American Statesman. 2011a. Bastrop fire's apparent cause: trees hitting power lines. September 20, 2011. Accessed August 5, 2013. Available at: <http://www.statesman.com/news/news/local/bastrop-fires-apparent-cause-trees-hitting-power-1/nRfgg/>
- 2011b. Collective Vision: Statesman Photo & Multimedia Blog. Accessed on: June 5, 2013. Available at: <http://photoblog.statesman.com/2011/09>.
- Bastrop, City of. 2013. City of Bastrop Webpage. Accessed on: June 13, 2013. Available at: <http://cityofbastrop.org/default.aspx?name=city.homepage>.
- Bastrop County, Office of Emergency Management. 2008. Bastrop County Community Wildfire Protection Plan. Approved June 23.
- Bastrop Power and Light. 2012. Letter written by Chris Erwin, Director of Bastrop Power and Light to the City of Bastrop on March 12, 2012.
- Federal Emergency Management Agency. 2006. Federal Insurance Rate Map 48021C0220E, January 19, 2006. Accessed on: August 30, 2013. Available at: <http://www.fema.gov/floodplain-management/flood-insurance-rate-map-firm>.
- Forstner, M. R. J., D. Wallace, J. Bell, D. Stout, and J.T. Jackson. 2011. Houston toad 2011 data and final report for the Lost Pines Habitat Conservation Plan annual monitoring, Bastrop County, Texas. Bastrop County Lost Pines Habitat Conservation Plan Office, Bastrop Texas.
- Gould, F. W., Hoffman, G. O., and Rechenhth, C. A. 1960. Vegetational Areas of Texas, Texas A&M University. Texas Agricultural Experiment Station, Leaflet No. 492.
- Interagency Wild and Scenic Rivers Council. 2013. Designated Wild & Scenic Rivers Webpage. Accessed on: June 3, 2013. Available at: <http://www.rivers.gov/wsr-rio-grande-texas.html>.
- Lost Pines Recovery Team. 2011. Bastrop County Complex Fire Lost Pines Region Resources Assessment and Response Report. November 10. Accessed on: July 21, 2013. Available at: <http://www.co.bastrop.tx.us/>.
- National Conference of State Legislatures. 2013. Federally Recognized Tribes, Texas. Accessed on: June 13, 2013. Available at: <http://www.ncsl.org/issues-research/tribal/list-of-federal-and-state-recognized-tribes.aspx>.
- Texas A&M Forest Service. 2011. 2011 Texas Wildfires: Common Denominators of Home Destruction. Available at: http://tfsweb.tamu.edu/uploadedFiles/FRP/New_-_Mitigation/Safety_Tips/2011%20Texas%20Wildfires.pdf

References

- Texas Commission on Environmental Quality. 2013. 2012 Texas Integrated Report for Clean Water Act Sections 305(b) and 303(d) Webpage. Accessed on: June 17, 2013. Available at: <http://www.tceq.texas.gov/waterquality/assessment/10twqi/10twqi>.
- Texas General Land Office. 2012. Coastal Management Program Website. Accessed on: June 13, 2013. Available at: <http://www.glo.texas.gov/what-we-do/caring-for-the-coast/grants-funding/cmp/index.html>.
- Texas Historical Commission. 2011. Texas Historical Sites Atlas, Bastrop County. Accessed on: June 13, 2013. Available at: <http://atlas.thc.state.tx.us/shell-county.htm>.
- Texas Parks and Wildlife Department (TPWD). 2013. List of Rare, Threatened, and Endangered Species of Texas by County accessed August 26, 2013 at: http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/
- Texas Water Development Board (TWDB). 2006. Major Aquifers of Texas Webpage. Accessed on: June 17, 2013. Available at: http://www.twdb.state.tx.us/mapping/doc/maps/aqu_maj_8x11.pdf.
- 2013. Major Aquifers of Texas Webpage. Accessed on: June 17, 2013. Available at: <http://www.twdb.state.tx.us/groundwater/aquifer/majors/carrizo-wilcox.asp>.
- U.S. Census Bureau. 2011. American Community Survey 1 Year Estimates, Bastrop County. Accessed on: June 13, 2013. Available at: <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>.
- 2013a. Poverty Thresholds, 2011. Accessed on: June 13, 2013. Available at: <http://www.census.gov/hhes/www/poverty/data/threshld/index.html>.
- 2013b. State and County Quick Facts, Bastrop County. Accessed on: June 13, 2013. Available at: <http://quickfacts.census.gov/qfd/states/48/48021.html>.
- U.S. Department of Agriculture, Forest Service. 2005. Wildland Fire in Ecosystems: Effects of Fire on Soil and Water. General Technical Report RMRS-GTR-42-volume4.
- United States Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2000. Farmland Protection Policy Act. Accessed on: May 28, 2013. Available at: <http://www.nrcs.usda.gov/wps/portal/nrcs/>.
- 2010. "Field Indicators of Hydric Soils in the United States, Version 7.0. L.M. Vasilas, G.W. Hurt, and C.V. Noble (eds). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
- 2013a. Web Soil Survey. Accessed on: July 27, 2013. Available at: <http://websoilsurvey.sc.egov.usda.gov/app/HomePage.htm>.

- 2013b. Introduced, Invasive, and Noxious Weeds; Texas State-listed Noxious Weeds. Accessed February 11, 2014. Available at:
<http://plants.usda.gov/java/noxious?rptType=State&statefips=48>
- U.S. Environmental Protection Agency. 2012. The Green Book Nonattainment Areas for Criteria Pollutants. Accessed on: June 18, 2013. Available at:
<http://www.epa.gov/oar/oaqps/greenbk/>.
- 2013. Envirofacts database. Accessed on: June 13, 2013. Available at:
<http://www.epa.gov/enviro/>.
- United States Fish and Wildlife Service (USFWS). 2013a. Wetlands Mapper. Accessed on: May 29, 2013. Available at: <http://www.fws.gov/wetlands/Data/Mapper.html>.
- 2013b. Species by County Report. Accessed August 26, 2013 at:
http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=48453

SECTION 8 List of Preparers

The following is a list of preparers who contributed to the development of the City of Bastrop Piney Ridge Hazardous Fuel Reduction EA for FEMA.

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

CDM Smith

Preparers	Experience and Expertise	Role in Preparation
Beverly, Howard	Senior Cultural Resource Specialist	Cultural Resources
Boucher, Hank	Environmental Engineer and Planner	Technical Review
Bradstreet, Nicole	GIS Specialist	GIS
Evans, Selena	Environmental Planner	Cultural Resources, Socioeconomic Resources, Agency Coordination, Public Involvement and Permits
Kase, Sydney	GIS Specialist	GIS and Graphics
McAuley, Erin	Environmental Planner	Physical Resources, Water Resources, Cumulative Impacts, Fieldwork
Melancon, Patrice	Environmental Engineer	Project Manager
Schenk, Roger	Senior Environmental Scientist	Fieldwork
Stenberg, Kate Ph.D.	Senior Biologist, Senior Planner	NEPA Documentation, Biological Resources, Technical Review

CH2M Hill

Preparer	Experience and Expertise	Role in Preparation
Garcia, Linda	Biologist	Biological Site Visit
Speights, Jason	Biologist	Biological Site Visit

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

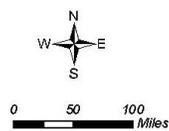


**Bastrop Piney Ridge
Hazardous Fuels Reduction**

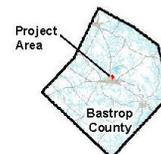
Bastrop County

Legend

- Designated River Segment
- Nondesignated River Segment
- Bastrop County



**Designated Wild and Scenic
Rivers of Texas**

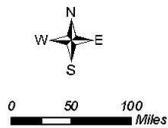


Data Sources: NPS, TNRS
Service Layer Credits: Sources: Esri, USGS, NOAA



**Bastrop Piney Ridge
Hazardous Fuels Reduction**

Bastrop County



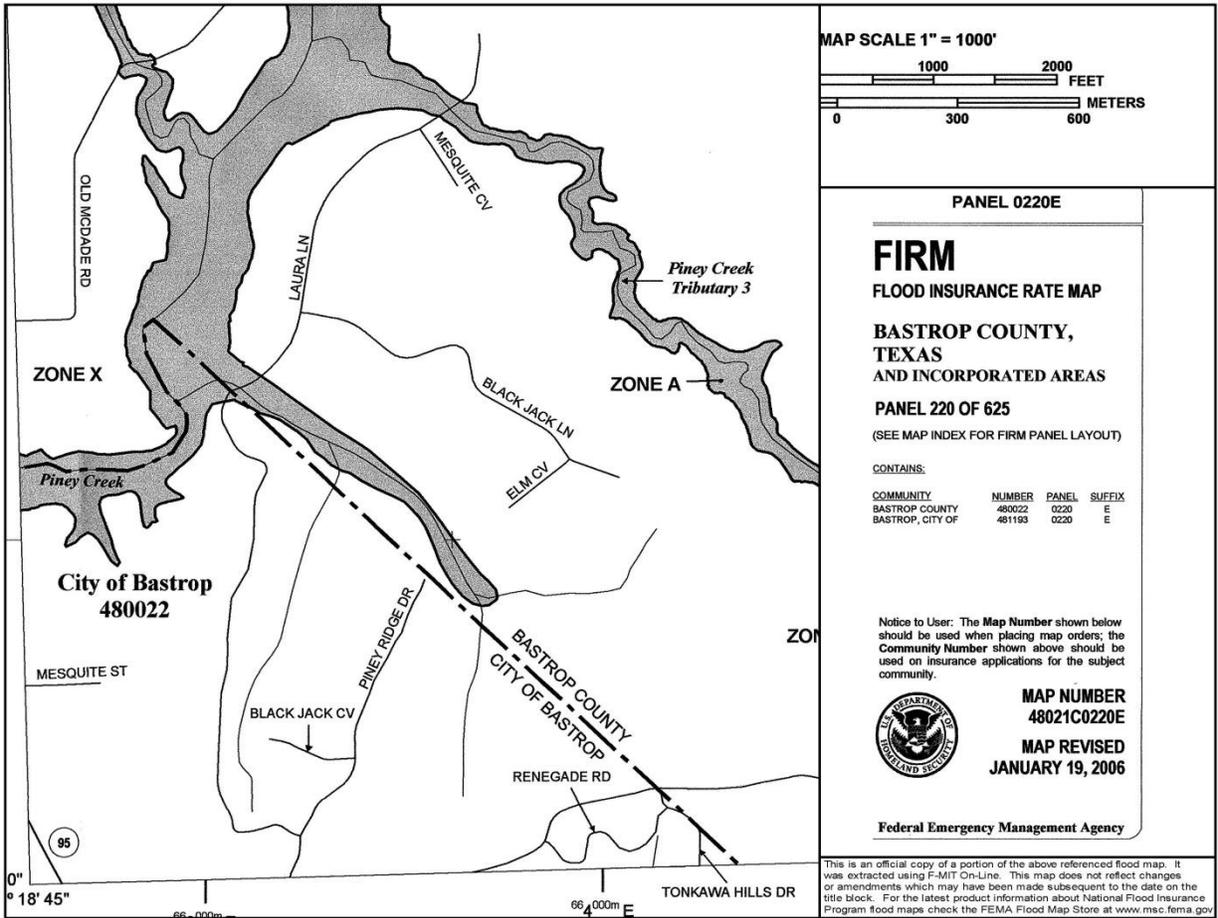
Sole Source Aquifers



Legend

-  Sole Source Aquifer
-  Bastrop County

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



Appendix B
Biological Site Visit Field Notes

Appendix B Table 1. Habitat Type Summary

Habitat Type	Dominant Plant Species	Animal Species Observed
Manicured Lawn	Various grasses, sparse post oak, cedar elm, and mesquite.	Northern cardinal, American crow, tufted titmouse, white-tailed deer.
Hardwood Forest	Canopy: Mesquite, post oak, cedar elm, blackjack oak. Total cover 40 percent. Midstory: Mesquite, yaupon, cedar elm. Total cover 80 percent. Understory: yaupon, greenbriar. Total cover 100 percent. Heavy underbrush present.	Northern cardinal, red-bellied woodpecker, ground dove, tufted titmouse, Carolina chickadee, American crow.
Mesquite Scrub	Shrub layer: Mesquite. Total cover 40 percent. Ground cover: Giant ragweed, various grasses. Total cover 80 percent.	Northern cardinal.

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.	Within designated critical habitat for the toad	Low potential for occurring within project area. Soil survey indicates gravely soil unsuited for burrowing. Confirmed in field survey.
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.	--	Low potential for occurring within the project area. As migrant only. No nesting habitat present.
Bald eagle	<i>Haliaeetus leucocephalus</i>	DL	T	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds.	--	Unlikely. No nesting habitat present. Few tall trees or cliffs for nesting present.
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 stream with sand or gravel bars 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.	--	Low potential for occurring within the project area. As migrant only. No nesting habitat present.
Whooping crane	<i>Grus americana</i>	LE	E	Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.	Unlikely	Unlikely. No large open grasslands for stopovers or coastal marsh 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)
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	Unlikely. No ponds or other shallow standing water 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	No flowing streams present in project area.
Mammals						
Red wolf	<i>Canis rufus</i>	LE	E	Extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies.	Extirpated	Unlikely. Highly urbanized.
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. No perennial stream features 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. No perennial stream features 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. No perennial stream features 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. No perennial stream features present.
False spike mussel	<i>Quadrula mitchelli</i>	None	T	Possibly extirpated in Texas; probably medium to large rivers; substrates varying from mud through mixtures of sand, gravel and cobble; one study indicated water lilies were present at a site where the species was found; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins.	Unlikely	Unlikely. No perennial stream features 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.	--	Unlikely. No areas of sparse vegetation. Dense ground cover present.
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.	--	Likely. Deciduous woodlands present.

Status Keys:

LE - Federally Listed Endangered

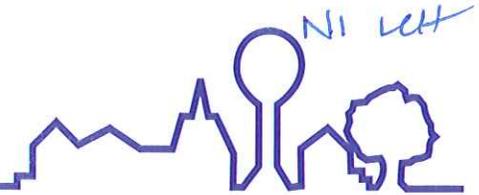
C - Federal Candidate for Listing; formerly Category 1 Candidate

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



July 24, 2013

Mr. Mark Wolfe
State Historic Preservation Officer
P.O. Box 122756
Austin, Texas 78711-2276



Dear Mr. Wolfe:

The following letter and information was sent to your office in August of 2012. I cannot find where our office received a response and the granting agency requires it so I must resubmit. I apologize in advance for the extra effort from your staff that this requires.

Through a grant with the Federal Emergency Management Agency (FEMA), the City of Bastrop plans to mitigate hazardous fuels from an existing 35,000 linear foot electric utility Right of Way in the Piney Ridge Subdivision of the City. 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) Annette Bargainer
Langford Community Management Services
13740 Research Blvd. Suite G1
Austin, Texas 78750
512/452-0432
annette@lcmsins.com

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

Respectfully,

Annette Bargainer





FEMA

December 3, 2013

Ms. Edith Erfling
Field Supervisor
U.S. Fish and Wildlife Service
17629 El Camino Real, Suite #211
Houston, TX 77058

Dear Ms. Erfling:

This letter is to initiate informal consultation between the Federal Emergency Management Agency (FEMA) and your office under Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) regarding wildfire mitigation activities within the Piney Ridge subdivision of the City of Bastrop, Bastrop County, Texas (Latitude: 30.12594; Longitude: -97.30548), using funds associated with FEMA's Hazard Mitigation Grant Program (HMGP); DR-1999-TX Project #35.

Three federally endangered species are known to occur in Bastrop County: Houston toad (*Bufo houstonensis*); Navasota ladies'-tresses (*Spiranthes parksii*); and whooping crane (*Grus Americana*). In addition, the Piney Ridge subdivision is located in designated critical habitat for the Houston toad.

FEMA is making a "no effect" determination for Navasota ladies'-tresses (*Spiranthes parksii*) and the whooping crane (*Grus Americana*) and therefore is not consulting with the U.S. Fish and Wildlife Service (USFWS) regarding these species.

However, the proposed action is taking place in critical habitat for the Houston toad, and there is a potential for the Houston toad to be present at the project site. Therefore, FEMA is requesting informal consultation with your office in regard to this species.

FEDERAL ACTIONS INCLUDED IN THIS CONSULTATION

Through a FEMA HMGP grant, the City of Bastrop proposes to reduce wildfire hazards along 16,678 linear feet of electric utility rights-of-way (ROW) in the Piney Ridge subdivision. The work would be conducted on both sides of the residential streets. The road ROW is 50 feet wide. Because the pavement width averages 18 feet, 16 feet of vegetation would be treated on each side of the road, for a total of 32 feet of vegetation management along approximately 3.2 miles of residential streets.

A wildlife and habitat field survey conducted by FEMA contractors CDM Smith and CH2M Hill on July 24, 2013, determined that the project area is characterized primarily by two habitat types: hardwood forest and manicured lawns. Approximately 60 percent of the project area is hardwood forest and 40 percent is manicured lawn. A small area of mesquite scrub and the end of one ephemeral drainage were also present. The habitat types are described as follows:

- Hardwood Forest – dominated by post oak (*Quercus stellate*), mesquite (*Prosopis glandulosa*), cedar elm (*Ulmus crassifolia*), and blackjack oak (*Quercus marilandica*), with a few sparse loblolly pine (*Pinus taeda*). The canopy layer averages 40 percent total cover. A dense shrub layer is present dominated by tree saplings, yaupon (*Ilex vomitoria*), and greenbriar (*Smilax* spp.) and is approximately 80 percent total cover. The herbaceous layer is primarily greenbriar and averages 80 to 100 percent total cover. The vegetation around the ephemeral drainage is not different from the hardwood forest type. There was no water in the drainage at the time of the field survey.
- Manicured Lawn – characterized by mowed grass-covered areas (80 percent to 100 percent total cover) with sparse concentrations of post oak, cedar elm, and mesquite (0 percent to 20 percent total cover). There is little to no shrub layer present in this habitat type.
- Mesquite Scrub – one small area in the project area characterized by mesquite (40 percent cover) and an herbaceous layer consisting of giant ragweed (*Ambrosia trifida*) and various grass species.

The proposed action would remove all underbrush and small trees (defined as less than 2 inches in diameter and under 10 feet tall) from the ROW. Underbrush would be cleared and grubbed up to the bases of larger trees. Dead trees would be cut down and removed. Upper branches of larger trees may be trimmed to remove them from overhead power lines, and lower branches may be trimmed to prevent them from providing ladder fuels for fires. All stumps would be left in the ground but cut off at ground level. Stumps would not be excavated or otherwise mechanically removed.

The city would perform the work by both hand thinning and mechanical thinning, depending on what is required. In addition to hand tools, equipment to be used may include a backhoe, tractors, brush hogs, and chainsaws. Trucks and chippers would also be used. All the equipment will be staged on the paved portion of the streets. All of the cut material would be chipped on site as it is cut and then would be hauled to Go Green International for disposal each day. Go Green International collects dead and diseased wood from locations around Bastrop County and reuses it at a biofuel plant in Paige, Texas.

STATUS OF HOUSTON TOAD IN PROJECT AREA

The Houston toad depends on healthy and mature forest ecosystems with mixed species composition, significant canopy cover, an open understory layer with a diverse herbaceous component, and breeding areas (ephemeral wet-weather ponds and other water features, such as stock tanks, creeks, streams, wetlands, seeps, and springs) with shaded edges. They are most

commonly found within the surrounding upland habitat adjacent to breeding sites. The toad uses drainages and riparian areas for dispersal and movement. The edges of breeding ponds are used by emerging juvenile toadlets after they metamorphose from their larval (tadpole) stage (USFWS, 2011a).

This species is largely inactive during hot, dry seasons and during the coldest months, though surface movement has been documented during the summer months (Brown et al, 2011; SSAR, 2012) depending on weather conditions. Most breeding occurs from February to April, when the minimum air temperature is above 14 C. Breeding has been reported as late as June. Breeding habitat consists of a body of water supporting the reproductive and larval toad life stages. Eggs and larvae develop in shallow water. For successful breeding, water must persist for at least 60 days. Larvae hatch in four to seven days and metamorphose in three to nine weeks, depending on the water temperature. This species locally migrates between breeding and non-breeding habitats. The adjacent uplands support adults year round and provide patch connectivity outward from the ponds for juvenile dispersal (USFWS, 2011c). The toad tends to occupy areas with 60 percent to 100 percent canopy cover (Forstner et al, 2011). Upland forests in the Lost Pines area of Bastrop County serve as occupied and dispersal habitat for the Houston toad and cover/shade is a necessity to facilitate distribution without desiccation (LPRT, 2011).

Prior to the Bastrop County Complex Fire, the Houston toad range in Bastrop County was in poor condition as a result of what is speculated to be the worst one-year drought on recorded history for this area (LPRT, 2011). Approximately 41 percent of the high suitability habitat for the Houston toad within Bastrop County was moderately to heavily burned (Forstner et al, 2011).

Houston toads have been detected in Bastrop during chorusing season and during dispersal from the ponds in both 2012 and 2013. Houston toad egg strands, tadpoles, toadlets, juveniles, and adults have all been detected inside and outside the burn perimeter in the years following the Bastrop County Complex Fire. These encounters have substantiated that the Houston toad survived the wildfire and that it could potentially be present in the project area at Piney Ridge. In response to the fire, Houston toads may have migrated and may be continuing to laterally move out from the burn area into areas such as the Piney Ridge subdivision.

No perennial streams are present within the project area, although Piney Creek is within 1,000 feet of the northern portion of the project area. The project area drains to Piney Creek through several intermittent tributaries. There is one ephemeral drainage feature present within the project area. The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps for the project area indicate one potential freshwater pond within 80 feet of the project area. The NWI maps show this pond as created by an impoundment or dike. A close inspection of aerial photography of the Piney Ridge subdivision indicates that the NWI pond likely does not exist; however, there are at least three other impoundments within the subdivision that would be categorized as freshwater ponds. The nearest of these ponds is approximately 100 feet from the project area.

Natural long-term breeding habitat (ephemeral pools) for the Houston toad were not observed in the project area during the ecological field survey. However, the site visit indicated that breeding habitat may be present on nearby properties that have shallow manmade ponds. NRCS soil survey data indicate the presence of a gravelly soil structure in the project area soils. The gravelly soils combined with the dense underbrush mean that it is unlikely that Houston toads would be able to easily burrow into the ground, and they would be unlikely to use the project area for activities other than migration corridors. Additionally, the toad was not observed in the survey area during the July 2013 field survey. Although optimal upland habitat for the Houston toad is not present in the project area given the soil type, there is potential breeding habitat on nearby properties, and individuals could be found moving through the upland project area.

AVOIDANCE AND MINIMIZATION MEASURES

The following avoidance and minimization measures will be implemented by the City of Bastrop for the proposed FEMA-funded wildfire mitigation activities in order to minimize impact to the toad. These measures have been adapted from the USFWS Best Management Practices (2011a, 2011b); the Lost Pines Habitat Conservation Plan (Loomis Austin, 2007) and the Bastrop Utilities Habitat Conservation Plan (2005); and previous FEMA consultations with USFWS for debris removal activities in the Bastrop burn area and hazardous fuels reduction activities outside the burn area. Implementation of these measures is a condition of federal funding.

1. Vegetation management activities can only take place from July 1 to December 31 (generally outside of the Houston toad breeding season and emergence period). This period may begin or be extended, with approval of FEMA and USFWS, prior to July 1 or past December 31 if it is determined that Houston toads are not active in the area.
2. If the project site experiences more than 2 inches of rain over a 2-day period, work will cease for 4 days after the rain ends. Any vegetative debris staged on caliche or asphalt surfaces will be removed immediately to a final disposal site. Suggested sources for real-time rainfall totals in close proximity to the project site include weather gauges at the Colorado River at Bastrop and Lake Bastrop at Sim Gideon Power Plant that are operated by the Lower Colorado River Authority. Real-time rainfall data at these sites is accessible at <http://hydromet.lcra.org/full.aspx> and <http://www.lcra.org/water/conditions/rainfall.html>.
3. FEMA and the City of Bastrop must stage and/or process debris that results from vegetation management activities via one or a combination of the following methods:
 - **Haul to Final Disposal Site:** Vegetative debris resulting from the proposed action can be hauled by the end of that work day to the final disposal site.
 - **Mulching:** Vegetative debris may be mulched on-site the day that it is cut and spread on the forest floor. Any mulch, chips, or other woody debris that is left on site must cover the forest floor in no more than a 1 to 2-inch layer.

- **Temporary Staging:** Any debris that is not mulched or hauled to a final disposal site by the end of the work day, must be temporarily staged on asphalt or caliche road surfaces for a maximum of 72 hours. All debris must be mulched and spread or moved to final disposal within 72 hours of being deposited at that temporary staging site.
4. Hand-clearing of vegetation shall be used when practical. The use of track equipment for clearing shall be minimized.
 5. The number and size of entry and exit points for heavy equipment to move into and out of forested areas will be kept to the minimum needed for conducting safe and effective vegetation management.
 6. Operation of heavy equipment (for example, tractors, large trucks, bulldozers, skidders, trenchers) cannot occur within 200 feet (61 meters) of potential Houston toad breeding sites or riparian areas. These may include ephemeral wet weather ponds and other water features, such as stock tanks, creeks, streams, drainages, wetlands, seeps, and springs. Hand cutting and clearing is required in these areas.
 7. Mowing equipment will be set at a height of at least 12 inches above the ground to minimize the potential for striking toads.
 8. Streams, riparian zones, wetlands, and areas near potential Houston toad breeding sites will not be used for staging equipment or refueling. Equipment must be stored, serviced, and fueled at least 200 feet away from these sensitive areas.
 9. Gasoline- and diesel- fueled field equipment must be inspected daily for signs of fuel or hydraulic leaks; such leaks must be repaired promptly and measures will be taken to prevent soil contamination. All hazardous materials related to construction or maintenance activities will be properly contained, used, and/or disposed of.
 10. FEMA and the City of Bastrop must not cut down living pine trees and oak trees that are larger than 3 inches in diameter at breast height (dbh) except in the rare case when the living tree interferes with overhead power lines and there is no alternative to cutting the entire tree for achieving hazardous fuels mitigation.
 11. Following vegetation management activities, FEMA and the City of Bastrop will ensure that equipment used on undisturbed ground has not resulted in potential artificial breeding sites. For example, large tire ruts will be smoothed so as not to create an undesirable breeding area.
 12. Under no circumstances will stumps be removed mechanically (i.e., excavated or pushed).

13. FEMA and the City of Bastrop shall dispose of all waste materials in accordance with Texas Commission on Environmental Quality (TCEQ) standards and requirements, including obtaining any required permits for temporary staging. Final disposal of all debris will be conducted in accordance with TCEQ regulations.
14. Should a Houston toad be encountered during debris activities, work must cease immediately. The U.S. Fish and Wildlife Service's Clear Lake Ecological Services Office will be contacted at (281) 286-8282 and FEMA will be contacted at (940) 435-9275.

DETERMINATION

As noted above, the federal actions covered by this consultation are taking place in designated critical habitat and FEMA has a responsibility to ensure that its actions will not likely result in the destruction or adverse modification of this habitat. Destruction or adverse modification of critical habitat is defined as a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include those adversely modifying any physical or biological features that were the basis for determining the habitat to be critical. Primary constituent elements have not been designated for the critical habitat of the Houston toad, but typical habitat for the species includes areas with a soil type that allows for the weak burrowing behavior of the species and both temporary and permanent ponds (White et al, 2006). NRCS soil survey data indicate the presence of a gravelly soil structure in the project area, which is not conducive to burrowing. The activities proposed by the City of Bastrop will not impact temporary or permanent ponds. Measures are being taken to minimize the work that is conducted immediately adjacent to breeding areas (ephemeral wet-weather ponds, creeks, streams, wetlands, seeps, and springs). The vegetation management activities do not involve the removal of large living trees, though trees will be pruned to reduce fuels for wildfire. The overall canopy, which provides shaded habitat for toad dispersal, will largely remain intact and will not be adversely impacted.

There is a potential that Houston toads may disperse across the project site. Work in forested areas will not be allowed during chorusing season (January 1 to June 30). In general, Houston toads aestivate during the hot summer months and their movement along the surface is not as prevalent as during chorusing season. However, toads may be encouraged to surface and move from their sheltering locations after heavy rain events. This movement on the surface outside of chorusing season is addressed by the avoidance and minimization measures above.

Based on a review of the Houston toad and its habitat requirements; the assumption that adult toad population numbers are likely low in the project area based on recent past population surveys; the location of work; the restriction of work in forested areas to outside of chorusing season; and the implementation of required avoidance and minimization measures, FEMA has determined that the federally funded work described above may affect, but is not likely to adversely affect the Houston toad. FEMA has also determined that its actions will not adversely modify critical habitat.

Ms. Edith Erling
December 3, 2013
Page 7

FEMA requests your concurrence with this effect determination and input on any additional conservation measures required to ensure accuracy of this determination. Thank you for your attention and assistance. Should you have any questions, please contact FEMA Environmental Specialist, Dorothy Weir at Dorothy.Weir@fema.dhs.gov or at 940-435-9275.

Sincerely,



Kevin Jaynes
Regional Environmental Officer
FEMA Region 6

Attachments: Maps of the Project Area
Photos
Field Notes from Biological Site Visit

REFERENCES

Brown, D., J. Baccus, D. Means, and M.R. Forstner. 2011. Potential positive effects for fire on juvenile amphibians in a southern USA pine forest. *Journal of Fish and Wildlife Management* 2(2): 135-145.

Forstner, M. R. J., D. Wallace, J. Bell, D. Stout, and J.T. Jackson. 2011. Houston toad 2011 data and final report for the LPHCP annual monitoring, Bastrop County, Texas. Bastrop County Lost Pines Habitat Conservation Plan Office, Bastrop, Texas.

Loomis Austin. 2007. Lost Pines Habitat Conservation Plan for Bastrop County, Texas. Available online at <http://www.co.bastrop.tx.us/uploads/documents/Lost%20Pines%20Habitat%20Conservation%20Plan.pdf>. Accessed July 2, 2012.

LPRT (Lost Pines Recovery Team). 2011. Bastrop County Complex Fire—Lost Pines Region—Resources Assessment and Response Report. Available online at <http://www.co.bastrop.tx.us/bcdisaster/index.php/protecting-natural-resources1>. Accessed July 2, 2012.

SSAR (Society for the Study of Amphibian and Reptiles). 2012. *Natural History Notes*. *Herpetological Review* 43(2): 117-118.

USFWS (U.S. Fish and Wildlife Service). 2011a. Post-Wildfire Clean-Up and Response in Houston Toad Habitat Best Management Practices. Available online at http://www.fws.gov/southwest/es/Documents/R2ES/Fire_CleanUp_and_Response_BMPs20110924.pdf. Accessed July 2, 2012.

USFWS. 2011b. Post-Wildfire Habitat Restoration Activities in Houston Toad Habitat Best Management Practices. Available online at http://www.co.bastrop.tx.us/bcdisaster/files/PDF_Files/Habitat_Restoration_BMPs_FINAL.pdf. Accessed July 2, 2012.

USFWS. 2011c. Houston toad (*Bufo houstonensis*) 5-Year Review: Summary and Evaluation. Available online at http://www.fws.gov/southwest/es/Documents/R2ES/HoustonToad_5-yr_Review_Nov2011.pdf. Accessed July 2, 2012.

White, J., C. Giggelman, and P. Connor. 2006. Recommended Water Quality for Federally Listed Species in Texas. Available online at http://www.fws.gov/southwest/es/Documents/R2ES/Recommended_Water_Quality_for_Federally_Listed_Species_in_Texas.pdf. Accessed July 2, 2012.



In Reply Refer To:
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U.S. DEPARTMENT OF THE INTERIOR
United States Department of the Interior

FISH AND WILDLIFE SERVICE
Coastal Ecological Services Field Office
625 E. Calumet Real, Suite 211
Houston, Texas 77058
281/286-3282 / (FAX) 281/488-5882



January 31, 2014

Kevin Jaynes
U.S. Department of Homeland Security
FEMA Region 6
800 North Loop 288
Denton, Texas 76209-3698

Dear Mr. Jaynes:

Thank you for your letter dated December 3, 2013, initiating consultation pursuant to Section 7 of the Endangered Species Act (Act) for the Federal Emergency Management Agency's (FEMA) funding of recovery operations related to the Bastrop County Complex Fire of September 2011. FEMA is providing Hazard Mitigation Grant Program (HMGP) funding to undertake wildfire mitigation (mechanical thinning of understory vegetation) along 16,678 linear feet of electric utility rights-of-way (ROW) in the Piney Ridge subdivision of the City of Bastrop, Bastrop County, Texas. The fire recovery actions considered herein occur within Bastrop County, Texas.

The U.S. Fish and Wildlife Service (Service) understands from the original request and revised request, via email dated January 10, 2014, the project includes removal of ladder fuels (understory vegetation) that will reduce the wildfire fuel load on the properties along the ROW. FEMA determined that the wildfire mitigation actions may affect, but are not likely to adversely affect the federally endangered Houston toad *Bufo houstonensis*. The determination is based on the following information:

1. Vegetation management activities can only take place from July 1 to December 31 (generally outside of the Houston toad breeding season and emergence period). This period may begin or be extended, with approval of FEMA and the Service prior to July 1 or past December 31 if it is determined that Houston toads are not active in the area.
2. If the project site experiences more than 2 inches of rain over a 2-day period, work will cease for 4 days after the rain ends. Any vegetative debris staged on caliche or asphalt surfaces will be removed immediately to a final disposal site. Suggested sources for real-time rainfall totals in close proximity to the project site include weather gauges at the Colorado River at Bastrop and Lake Bastrop at Sim Gideon Power Plant that are operated by the Lower Colorado River Authority. Real-time rainfall data at these sites is

accessible at <http://hydromet.lcra.org/full.aspx> and <http://www.lcra.org/water/conditions/rainfall.html>.

3. FEMA and the City of Bastrop must stage and/or process debris that results from vegetation management activities via one or a combination of the following methods:
 - **Haul to Final Disposal Site:** Vegetative debris resulting from the proposed action can be hauled by the end of that work day to the final disposal site.
 - **Mulching:** Vegetative debris may be mulched on-site the day that it is cut and spread on the forest floor. Any mulch, chips, or other woody debris that is left on site must cover the forest floor in no more than a 1 to 2-inch layer.
 - **Temporary Staging:** Any debris that is not mulched or hauled to a final disposal site by the end of the work day, must be temporarily staged on asphalt or caliche road surfaces for a maximum of 72 hours. All debris must be mulched and spread or moved to final disposal within 72 hours of being deposited at that temporary staging site.
4. Hand-clearing of vegetation shall be used when practical. The use of track equipment for clearing shall be minimized.
5. The number and size of entry and exit points for heavy equipment to move into and out of forested areas will be kept to the minimum needed for conducting safe and effective vegetation management.
6. Operation of heavy equipment (for example, tractors, large trucks, bulldozers, skidders, trenchers) will not occur within 200 feet of potential Houston toad breeding sites or riparian areas. These may include ephemeral wet weather ponds and other water features, such as stock tanks, creeks, streams, drainages, wetlands, seeps, and springs. Hand cutting and clearing is required in these areas.
7. Mowing equipment will be set at a height of at least 12 inches above the ground.
8. Streams, riparian zones, wetlands, and areas near potential Houston toad breeding sites will not be used for staging equipment or refueling. Equipment must be stored, serviced, and fueled at least 200 feet away from these sensitive areas.
9. Gasoline- and diesel- fueled field equipment must be inspected daily for signs of fuel or hydraulic leaks; such leaks must be repaired promptly and measures will be taken to prevent soil contamination. All hazardous materials related to construction or maintenance activities will be properly contained, used, and/or disposed of.
10. FEMA and the City of Bastrop must not cut down living pine trees and oak trees that are larger than 3 inches in diameter at breast height except in the rare case when the living tree interferes with overhead power lines and there is no alternative to cutting the entire tree for achieving hazardous fuels mitigation.

11. Following vegetation management activities, FEMA and the City of Bastrop will ensure that equipment used on undisturbed ground has not resulted in potential artificial breeding sites. For example, large tire ruts will be smoothed so as not to create an undesirable breeding area.
12. Under no circumstances will stumps be removed mechanically (i.e., excavated or pushed).
13. FEMA and the City of Bastrop shall dispose of all waste materials in accordance with Texas Commission on Environmental Quality (TCEQ) standards and requirements, including obtaining any required permits for temporary staging. Final disposal of all debris will be conducted in accordance with TCEQ regulations.
14. Should a Houston toad be encountered during debris activities, work must cease immediately. The U.S. Fish and Wildlife Service's Coastal Ecological Services Office will be contacted at (281) 286-8282 and FEMA will be contacted at (940) 435-9275.

Based on the aforementioned information, the Service concurs that the fuel reduction/wildfire mitigation is not likely to adversely affect the Houston toad. Our concurrence with FEMA's determination of may affect, but not likely to adversely affect pursuant to Section 7 of the Act, is based upon a review of the Service's files, our multiple site inspections in Bastrop County since the fire, communications with species experts and others, and is contingent upon adherence to the measures enumerated herein. In the event the project changes or additional information on listed or proposed species becomes available, the project should be reanalyzed for effects not previously considered.

Our concurrence is provided in accordance with the provisions of the Act of 1973 (16 U.S.C. 1531 et seq.). If you have any questions, or need additional information, please contact Mr. Jeff Hill, staff biologist or myself at 281/286-8282.

Sincerely,



Edith Erling
Field Supervisor