TRAVIS COUNTY
HAZARD MITIGATION ACTION PLAN

UPDATE 2023

Draft

Maintaining a Safe, Secure, and Sustainable Community

H2O PARTNERS

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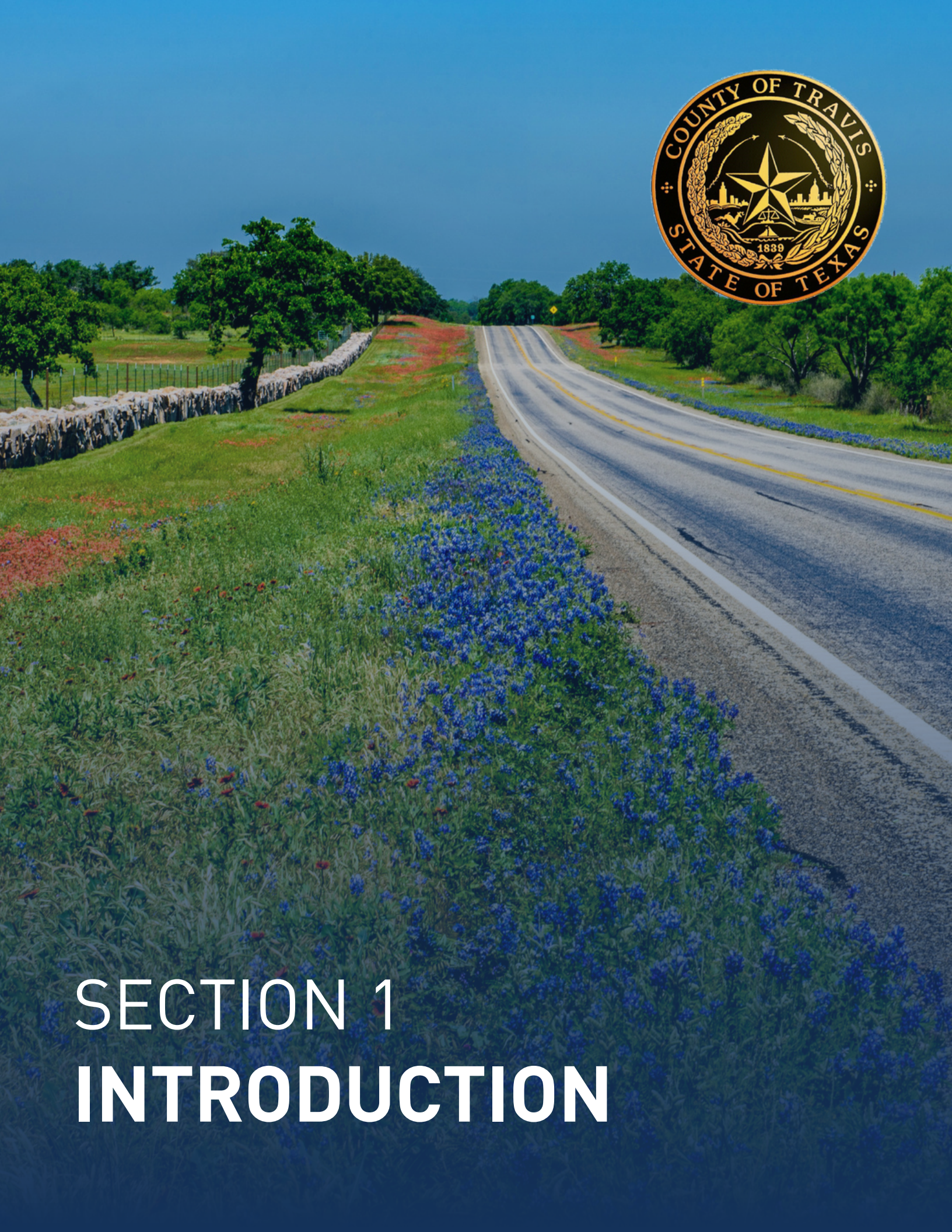


SECTION 1

INTRODUCTION

SECTION 1: INTRODUCTION

BACKGROUND

Travis County is located in south central Texas, between San Antonio and Dallas-Fort Worth. The Colorado River meanders through the county from west to east, forming a series of man-made lakes (Lake Travis, Lake Austin, and Lady Bird Lake). The following counties are located around Travis County: Williamson County to the north, Bastrop County to the east, Caldwell County to the south, Hays County to the southwest, Blanco County to the west, and Burnet County to the northwest. The county seat and largest city is Austin, the capital of Texas.

Texas is prone to extremely heavy rains and flooding with half of the world record rainfall rates (48 hours or less).[1] While flooding is a well-known risk, Travis County is susceptible to a wide range of natural hazards, including but not limited to wildfire, extreme heat, lightning, and drought. These life-threatening hazards can destroy property, disrupt the economy, and lower the overall quality of life for individuals.

While it is impossible to prevent an event from occurring, the impacts from many hazards on people and property can be lessened through mitigation. The Federal Emergency Management Agency (FEMA) defines mitigation as *sustained actions taken to reduce or eliminate long-term risk to people and property from hazards and their effects.*[2] Communities participate in hazard mitigation by developing hazard mitigation plans. The Texas Division of Emergency Management (TDEM) is required to review the plan and FEMA has the authority to review and approve hazard mitigation plans through the Disaster Mitigation Act of 2000.

The Disaster Mitigation Act requires that hazard mitigation plans be reviewed and revised every five years to maintain eligibility for Hazard Mitigation Assistance (HMA) grant funding. FEMA approved the Travis County HMAP Update in 2017 and the Travis County Communities HMP Update in 2017, both of which expired in 2022, therefore the County began the process of developing a Hazard Mitigation Action Plan Update, by incorporated jurisdictions from both plans, in order to regain eligibility for grant funding. The HMAP Update planning process provided an opportunity for Travis County and participating jurisdictions to evaluate successful mitigation actions and explore opportunities to avoid future disaster loss. Travis County selected H2O Partners, Inc. to write and develop the 2023 HMAP Update, hereinafter titled: “Travis County Hazard Mitigation Plan Update 2023: Maintaining a Safe, Secure, and Sustainable Community” (Plan or Plan Update).

This is a multi-jurisdictional plan; the participating jurisdictions include: Travis County, Village of Briarcliff, City of Creedmoor, City of Jonestown, City of Lago Vista, City of Lakeway, City of Manor, City of Mustang Ridge, City of Pflugerville, Village of Point Venture, City of Rollingwood, Village

[1] http://www.floodsafety.com/texas/regional-info/san-antonio-flooding/
[2] http://www.fema.gov/hazard-mitigation-planning-resources

of San Leanna, City of Sunset Valley, Village of The Hills, City of West Lake Hills, and Emergency Services District #6.

Hazard mitigation activities are an investment in a community's safety and sustainability. It is widely accepted that the most effective hazard mitigation measures are implemented at the local government level, where decisions on the regulation and control of development are ultimately made. A comprehensive review of a hazard mitigation plan addresses vulnerabilities to hazards that exist today and in the foreseeable future. Therefore, it is essential that a plan identify projected patterns of how future development will increase or decrease a community's overall hazard vulnerability.

SCOPE

The focus of the Plan Update is to identify activities to mitigate hazards classified as "high" or "moderate" risk, as determined through a detailed hazard risk assessment conducted for Travis County and the participating jurisdictions. The hazard classification enables the participating jurisdictions to prioritize mitigation actions based on hazards which can present the greatest risk to lives and property in the geographic scope.

PURPOSE

The Plan Update was prepared by Travis County, participating jurisdictions, and H2O Partners, Inc. The purpose of the Plan Update is to protect people and structures and to minimize the costs of disaster response and recovery. The goal of the Plan Update is to minimize or eliminate long-term risks to human life, property, operations, and the environment from known hazards by identifying risks and implementing cost-effective hazard mitigation actions. The planning process is an opportunity for participating jurisdictions within Travis County, stakeholders, and the general public to evaluate and develop successful hazard mitigation actions to reduce future risk of loss of life and damage to property resulting from a disaster in Travis County.

The Mission Statement of the Plan Update is, "*Maintaining a secure and sustainable future through the revision and development of targeted hazard mitigation actions to protect life and property.*"

Participating jurisdictions within Travis County, and planning participants identified eleven natural hazards to be addressed by the Plan Update. The specific goals of the Plan Update are to:

- Provide a comprehensive update to the 2017 HMAPs;
- Minimize disruption to participating jurisdictions within Travis County following a disaster;
- Streamline disaster recovery by articulating actions to be taken before a disaster strikes to reduce or eliminate future damage;
- Demonstrate a firm local commitment to hazard mitigation principles;
- Serve as a basis for future funding that may become available through grants and technical assistance programs offered by the State or Federal government. The Plan will enable participating jurisdictions within Travis County to take advantage of rapidly developing mitigation grant opportunities as they arise; and
- Ensure that participating jurisdictions within Travis County maintain eligibility for the full range of future Federal disaster relief.

SECTION 1: INTRODUCTION

AUTHORITY

The Plan is tailored specifically for participating jurisdictions within Travis County and plan participants including Planning Team members, stakeholders, and the general public who participated in the Plan Update development process. The Plan complies with all requirements promulgated by the Texas Division of Emergency Management (TDEM) and all applicable provisions of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Section 104 of the Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390), and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108–264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C. 4001, et al). Additionally, the Plan complies with the Interim Final Rules for the Hazard Mitigation Planning and Hazard Mitigation Grant Program (44 CFR, Part 201), which specify the criteria for approval of mitigation plans required in Section 322 of the DMA 2000 and standards found in FEMA's "Local Mitigation Policy Guide" (Effective April 19, 2023), and the "Local Mitigation Planning Handbook" (March 2013).

SUMMARY OF SECTIONS

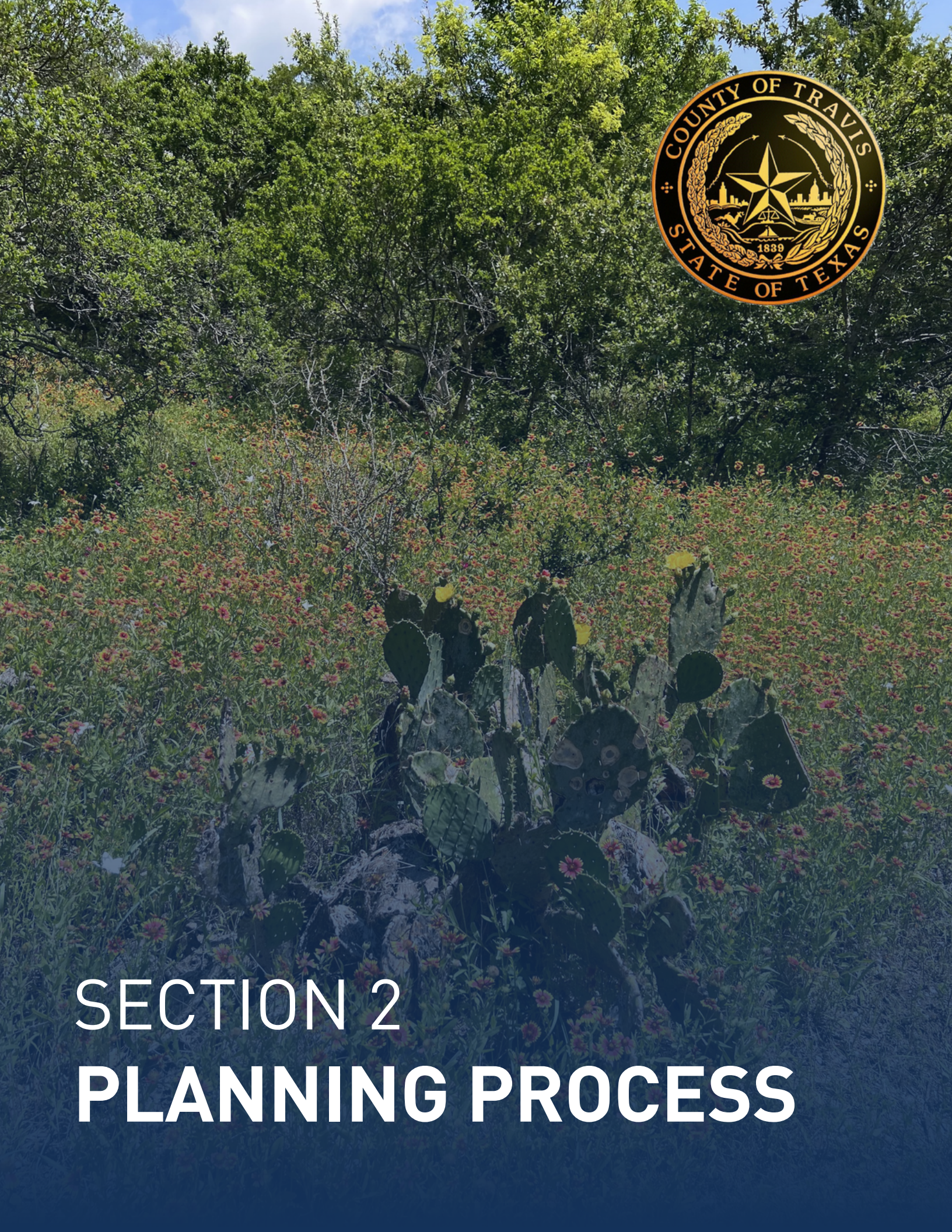
Sections 1 and 2 of the Plan Update outline the Plan's purpose and development, including how Planning Team members, stakeholders, and members of the general public were involved in the planning process. Section 3 profiles Travis County's population and economy.

Sections 4 through 15 present a hazard overview and information on individual natural hazards in the planning area. The hazards generally appear in order of priority based on potential losses to life and property, and other community concerns. For each hazard, the Plan Update presents a description of the hazard, a list of historical hazard events, and the results of the vulnerability and risk assessment process.

Section 16 presents hazard mitigation goals and objectives. Section 17 gives an analysis for the previous actions and Section 18 presents hazard mitigation actions for Travis County and the participating jurisdictions. Section 19 identifies Plan maintenance mechanisms.

The list of planning team members and stakeholders is located in Appendix A. Public survey results are analyzed and presented in Appendix B. Appendix C contains a detailed list of critical facilities for the area. Appendix D contains information regarding Dam locations within Travis County. Appendix E contains information regarding workshops and meeting documentation. Capability Assessment results for participating jurisdictions within Travis County are in Appendix F. Appendix G includes State and Federal Funding Opportunities.[3]

[3] Information contained in some of these appendices are exempt from public release under the Freedom of Information Act (FOIA).



SECTION 2
PLANNING PROCESS

SECTION 2: PLANNING PROCESS

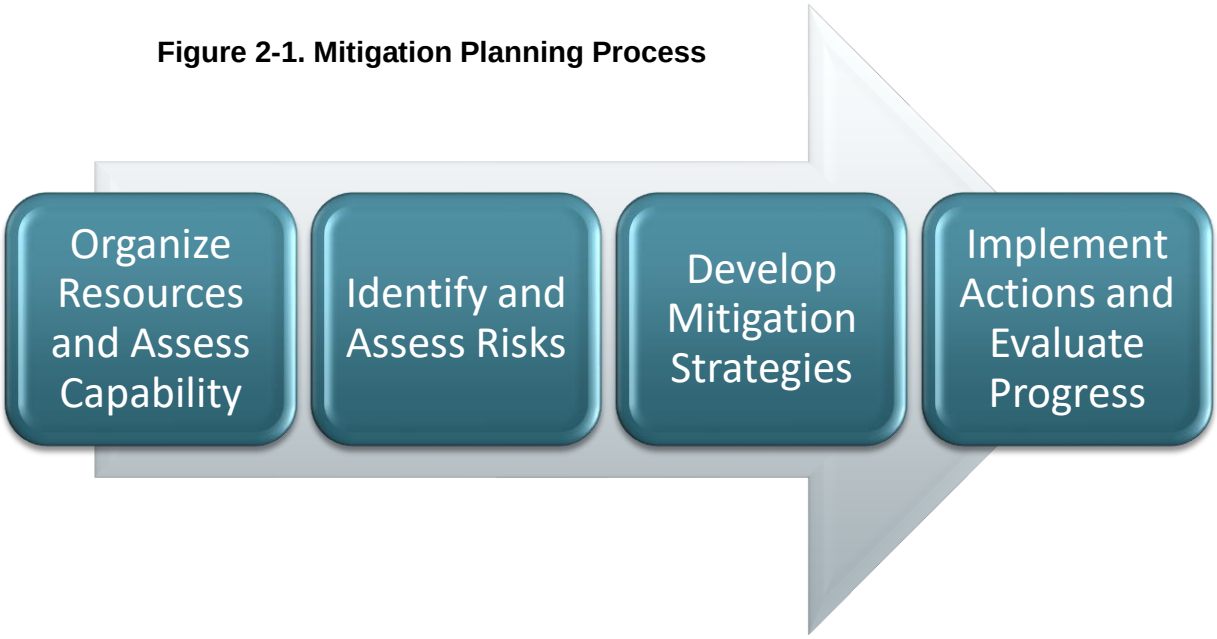
PLAN PREPARATION AND DEVELOPMENT

Hazard mitigation planning involves coordination with various constituents and stakeholders to develop a more disaster-resistant community. Section 2 provides an overview of the planning process including the identification of key steps and a detailed description of how stakeholders and the public were involved.

OVERVIEW OF THE PLAN

Travis County hired H2O Partners, Inc. (Consultant Team), to provide technical support and oversee the development of the Travis County Hazard Mitigation Action Plan Update 2023. The Consultant Team used the FEMA "Local Mitigation Planning Policy Guide" (Effective April 19, 2023), and the "Local Mitigation Planning Handbook" (March 2013) to develop the Plan Update. The overall planning process is shown in Figure 2-1 below.

Figure 2-1. Mitigation Planning Process



Travis County, participating jurisdictions, and the Consultant Team met in November 2022 to begin organizing resources, identify Planning Team members, and conduct a Capability Assessment.

PLANNING TEAM

Key members of H2O Partners, Inc. developed the Plan Update in conjunction with the Planning Team. The Planning Team was established using a direct representation model. Some of the responsibilities of the Planning Team included: completing Capability Assessment surveys, providing input regarding the identification of hazards, identifying mitigation goals, and developing mitigation strategies. An Executive Planning Team consisting of key personnel involved in hazard mitigation activities from each of the participating jurisdictions within Travis County, shown in Table 2-1, was formed to coordinate planning efforts and request input and participation in the planning process. Participation in this planning process is defined as being engaged in the process through attending meetings, providing data and related information, providing updates on previous actions, and reviewing and commenting on draft versions of the plan. Table 2-2 reflects the Advisory Planning Team, consisting of additional representatives from area organizations and departments from the participating jurisdictions within Travis County that participated throughout the planning process. All Executive and Advisory Planning Team members are involved in hazard mitigation activities; those with the authority to regulate development are identified with an asterisk next to their title.

Table 2-1. Executive Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Travis County	Emergency Management Coordinator
Travis County	Deputy Emergency Management Coordinator (Mitigation and Resiliency)

ORGANIZATION / DEPARTMENT	TITLE
Travis County	Deputy Emergency Management Coordinator
Village of Briarcliff	City Administrator*
City of Creedmoor	City Administrator*
City of Creedmoor	Finance
City of Jonestown	City Manager*
City of Lago Vista	City Manager*
City of Lakeway	Emergency Management Coordinator
City of Manor	Police Lieutenant
City of Mustang Ridge	City Administrator*
City of Pflugerville	Emergency Management Coordinator
Village of Point Venture	Village Secretary
City of Rollingwood	Assistant Police Chief
Village of San Leanna	City Administrator*
City of Sunset Valley	Police Chief/Emergency Management Coordinator
Village of The Hills	Interim City Manager*
City of West Lake Hills	City Administrator*
Emergency Services District #6	Assistant Fire Chief/Fire Marshall

Table 2-2. Advisory Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Travis County	Administrative Associate
Travis County	CDBG Planning Manager*
Travis County	CDBG Planner*
Travis County	Economic Development and Strategies Investments Director*
Travis County	Fire Mitigation Officer
Travis County	Floodplain Project Manager*
Travis County	HHS Chief Deputy

ORGANIZATION / DEPARTMENT	TITLE
Travis County	Policy and Planning Manager*
Travis County	Transportation and Natural Resource - Assistant Public Works Director
Travis County	Transportation and Natural Resource - Community Resiliency
Travis County	Transportation and Natural Resource - Community Resiliency
Travis County	Transportation and Natural Resource - Division Director of Development Services & Long-Range Planning*
Travis County	Transportation and Natural Resource - Environmental Project Manager
Travis County	Transportation and Natural Resource - Environmental Quality Manager
Travis County	Transportation and Natural Resource - Floodplain Administrator / Permits Program Manager*
Travis County	Transportation and Natural Resource – GIS Manager
Travis County	Transportation and Natural Resource - Long Range Planning Manager*
Travis County	Transportation and Natural Resource - NREQ Division Director
Travis County	Transportation and Natural Resource - Program Manager
Travis County	Transportation and Natural Resource - Public Works Director*
Travis County	Transportation and Natural Resource - Senior Planner*
Village of Briarcliff	Mayor*
City of Lago Vista	Firewise Coordinator
City of Lago Vista	Mayor*
City of Lakeway	Assistant City Manager*
City of Manor	Assistant Chief of Police / Police Captain
City of Manor	Chief of Police
City of Manor	Community Program Officer
City of Mustang Ridge	City Secretary*
City of Mustang Ridge	Mayor*
City of Pflugerville	Assistant Chief of Police

ORGANIZATION / DEPARTMENT	TITLE
Village of Point Venture	Mayor Pro-Tem*
City of Rollingwood	City Administrator*
City of Rollingwood	Police Sergeant
Village of San Leanna	Mayor*
City of Sunset Valley	City Manager*
Village of the Hills	Mayor Pro-Tem*
City of West Lake Hills	Police Chief
Emergency Services District #6	Fire Chief
Emergency Services District #6	Wildfire Mitigation Specialist
Emergency Services District #6 (Lake Travis Fire Rescue)	Chairman of Steiner Ranch
Emergency Services District #6 (Lake Travis Fire Rescue)	Director of Communications

Additionally, a Stakeholder Group was invited via email to participate in the planning process by attending meetings, commenting on draft versions of the plan, and/or by providing data to inform the planning process. The Consultant Team, Planning Teams, and Stakeholder Group coordinated to identify mitigation goals, and develop mitigation strategies and actions for the Plan. Appendix A provides a complete listing of all participating Planning Team members and stakeholders from participating jurisdictions within Travis County by organization and title. Stakeholder involvement is discussed further below.

Based on results of completed Capability Assessment, participating jurisdictions within Travis County described methods for achieving future hazard mitigation measures by expanding existing capabilities. For example, each jurisdiction has an opportunity to identify opportunities for cross-training or increasing the technical expertise of staff by attending free training available through FEMA and the Texas Division of Emergency Management (TDEM) by monitoring classes and availability through preparingtexas.org. In addition, each jurisdiction can identify Planning Team members with the authority to monitor the Plan and identify grant funding opportunities for expanding staff. Other options for improving capabilities for each jurisdiction include the following:

Table 2-3. Opportunities for Improving and Expanding Existing Capabilities by Jurisdiction

JURISDICTION	OPPORTUNITIES
Travis County	• Integrate risk information from HMAP into future updates to Comprehensive Plan. • Review current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes. • Developing land use and building ordinances that will require all new developments to conform to the highest mitigation standards.

JURISDICTION	OPPORTUNITIES
Village of Briarcliff	• Develop a Capital Improvement Plan based on information in the risk assessment and identified mitigation projects within the HMAP. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes. • Developing land use and building ordinances that will require all new developments to conform to the highest mitigation standards.
City of Creedmoor	• Develop a Capital Improvement Plan based on information in the risk assessment and identified mitigation projects within the HMAP. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes. • Developing land use and building ordinances that will require all new developments to conform to the highest mitigation standards.
City of Jonestown	• Integrate risk information from HMAP into future updates to Comprehensive Plan. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes. • Developing land use and building ordinances that will require all new developments to conform to the highest mitigation standards.
City of Lago Vista	• Integrate risk information from HMAP into future updates to Comprehensive Plan. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes. • Developing land use and building ordinances that will require all new developments to conform to the highest mitigation standards.
City of Lakeway	• Integrate risk information from HMAP into future updates to Comprehensive Plan. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes. • Developing land use and building ordinances that will require all new developments to conform to the highest mitigation standards.
City of Manor	• Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes. • Developing land use and building ordinances that will require all new developments to conform to the highest mitigation standards.
City of Mustang Ridge	• Integrate risk information from HMAP into future updates to Comprehensive Plan. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes. • Developing land use and building ordinances that will require all new developments to conform to the highest mitigation standards.
City of Pflugerville	• Integrate risk information from HMAP into future updates to Comprehensive Plan. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes. • Developing land use and building ordinances that will require all new developments to conform to the highest mitigation standards.

JURISDICTION	OPPORTUNITIES
Village of Point Venture	• Integrate risk information from HMAP into future updates to Comprehensive Plan. • Review current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes.
City of Rollingwood	• Integrate risk information from HMAP into future updates to Comprehensive Plan. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes. • Developing land use and building ordinances that will require all new developments to conform to the highest mitigation standards.
Village of San Leanna	• Develop a Capital Improvement Plan based on information in the risk assessment and identified mitigation projects within the HMAP. • Integrate risk information from HMAP into future updates to Comprehensive Plan. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes.
City of Sunset Valley	• Integrate risk information from HMAP into future updates to Comprehensive Plan. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes. • Developing land use and building ordinances that will require all new developments to conform to the highest mitigation standards.
Village of The Hills	• Integrate risk information from HMAP into future updates to Comprehensive Plan. • Developing land use and building ordinances that will require all new developments to confirm to the highest mitigation standards. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes.
City of West Lake Hills	• Integrate risk information from HMAP into future updates to Comprehensive Plan. • Developing land use and building ordinances that will require all new developments to confirm to the highest mitigation standards. • Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes.
ESD #6	• Develop an all-hazards outreach program in coordination with Travis County and other ESDs in the County.

Sample hazard mitigation actions developed with similar hazard risk were shared at the meetings. These important discussions resulted in the development of multiple mitigation actions that are included in the Plan Update to further mitigate risk from natural hazards in the future.

The Planning Team developed hazard mitigation actions for mitigating risk from all of the identified hazards within this Plan Update, including potential wildfire, tornado, drought, and extreme heat events. These actions include but are not limited to installing generators at critical facilities, developing a Community Wildfire Protection Plan (CWPP), and educating citizens to practice hazard mitigation techniques.

SECTION 2: PLANNING PROCESS

PLANNING PROCESS

The process used to prepare the Plan Update followed the four major steps included at Figure 2-1. After the Planning Team was organized, a capability assessment was developed and distributed at the Kick-Off Workshop. Hazards were identified and assessed, and results associated with each of the hazards were provided at the Risk Assessment Workshop. Based on Travis County's identified vulnerabilities, specific mitigation strategies were discussed and developed at the Mitigation Strategy Workshop. Finally, Plan maintenance and implementation procedures were developed and are included in Section 19. Participation of Planning Team members, stakeholders, and the public at each of the workshops is documented in Appendix E.

At the Plan development workshops held throughout the planning process described herein, the following factors were taken into consideration:

- The nature and magnitude of risks currently affecting the community;
- Hazard mitigation goals to address current and expected conditions;
- Whether current resources will be sufficient for implementing the Plan Update;
- Implementation problems, such as technical, political, legal, and coordination issues that may hinder development;
- Anticipated outcomes; and
- How participating jurisdictions within Travis County, agencies, and partners will participate in implementing the Plan Update.

KICKOFF WORKSHOP

The Kickoff Workshop was held on December 12, 2022 as a virtual Microsoft Teams meeting. The initial workshop informed participating officials and key department personnel about how the planning process pertained to their distinct roles and responsibilities and engaged stakeholder groups that focus on vulnerable populations and underserved communities including, but not limited to Capital Area Council of Governments, Lower Colorado River Authority, local medical partners, local ISDs, and surrounding counties. In addition to the kickoff presentation, participants received the following information:

- Project overview regarding the planning process;
- Public survey access information;
- Hazard Ranking form; and
- Capability Assessment survey for completion.

A risk ranking exercise was conducted at the Kickoff Workshop to get input from the Planning Team and stakeholders pertaining to various risks from a list of natural hazards affecting the planning area. Participants ranked hazards high to low in terms of perceived level of risk, frequency of occurrence, and potential impact.

HAZARD IDENTIFICATION

At the Kickoff Workshop, and through e-mail and phone correspondence, the Planning Team conducted preliminary hazard identification. The Planning Team in coordination with the Consultant Team reviewed and considered a full range of natural hazards. Once identified, the teams narrowed the list to significant hazards by reviewing hazards affecting the area as a whole, the 2018 State of Texas Hazard Mitigation Plan, and initial study results from reputable sources such as federal and state agencies. Based on this initial analysis, the teams identified a total of eleven natural hazards which pose a significant threat to the planning area.

SECTION 2: PLANNING PROCESS

RISK ASSESSMENT

An initial risk assessment for participating jurisdictions within Travis County was completed in February 2023 and results were presented to Planning Team members at the Risk Assessment Workshop held on February 22, 2023, at the Travis County Administration Building. At the workshop, the characteristics and consequences of each hazard were evaluated to determine the extent to which the planning area would be affected in terms of potential danger to property and citizens.

Property and crop damages were estimated by gathering data from the National Centers for Environmental Information (NCEI) and National Oceanic and Atmospheric Administration (NOAA). The assessment also examined the impact of various hazards on the built environment, including general building stock, critical facilities, lifelines, and infrastructure. The resulting risk assessment profiled hazard events provided information on previous occurrences, estimated probability of future events, and detailed the spatial extent and magnitude of impact on people and property. Each participant at the Risk Assessment Workshop was provided a risk ranking sheet that asked participants to rank hazards in terms of the probability or frequency of occurrence, extent of spatial impact, and the magnitude of impact. The results of the ranking sheets identified unique perspectives on varied risks throughout the planning area.

The assessments were also used to set priorities for hazard mitigation actions based on potential loss of lives and dollar losses. A hazard profile and vulnerability analysis for each of the hazards can be found in Sections 4 through 15.

MITIGATION REVIEW AND DEVELOPMENT

Developing the Mitigation Strategy for the Plan involved identifying mitigation goals and new mitigation actions. A Mitigation Workshop was held on April 10, 2023, at the Travis County Administration Building. In addition to the Planning Team, stakeholder groups were invited to attend the workshop. Regarding hazard mitigation actions, workshop participants emphasized the desire for wildfire projects. Additionally, the participating jurisdictions were proactive in identifying mitigation actions to lessen the risk of all the identified hazards included in the Plan Update.

An inclusive and structured process was used to develop and prioritize new hazard mitigation actions for the Plan Update. The prioritization method was based on FEMA's STAPLE+E criteria and included social, technical, administrative, political, legal, economic, and environmental considerations. As a result, each Planning Team Member assigned an overall priority to each hazard mitigation action. The overall priority of each action is reflected in the hazard mitigation actions found in Section 18.

Planning Team Members then developed action plans identifying proposed actions, costs and benefits, the responsible organization(s), effects on new and existing buildings, implementation schedules, priorities, and potential funding sources.

Specifically, the process involved:

- Listing optional hazard mitigation actions based on information collected from previous plan reviews, studies, and interviews with federal, state, and local officials. Workshop participants reviewed the optional mitigation actions and selected actions that were most applicable to their area of responsibility, cost-effective in reducing risk, easily implemented, and likely to receive institutional and community support.

- Workshop participants inventoried federal and state funding sources that could assist in implementing the proposed hazard mitigation actions. Information was collected, including the program name, authority, purpose of the program, types of assistance and eligible projects, conditions on funding, types of hazards covered, matching requirements, application deadlines, and a point of contact.
- Planning Team Members considered the benefits that would result from implementing the hazard mitigation actions compared to the cost of those projects. Although detailed cost-benefit analyses were beyond the scope of the Plan Update, Planning Team Members utilized economic evaluation as a determining factor between hazard mitigation actions.
- Planning Team Members then selected and prioritized mitigation actions.

Hazard mitigation actions identified in the process were made available to the Planning Team for review. The draft Plan Update was maintained on file by Travis County and participating jurisdictions and was made available to the general public for review.

REVIEW AND INCORPORATION OF EXISTING PLANS

REVIEW

Background information utilized during the planning process included various studies, plans, reports, and technical information from sources such as FEMA, the United States Army Corps of Engineers (USACE), the U.S. Fire Administration, National Oceanic and Atmospheric Administration (NOAA), the Texas Water Development Board (TWDB), the Texas Commission on Environmental Quality (TCEQ), the Texas State Data Center, Texas Forest Service, the Texas Division of Emergency Management (TDEM), and local hazard assessments and plans. Section 4 and the hazard-specific sections of the Plan (Sections 5-15) summarize the relevant background information.

Specific background documents, including those from FEMA, provided information on hazard risk, hazard mitigation actions currently being implemented, and potential mitigation actions. Previous hazard events, occurrences, and descriptions were identified through NOAA's National Centers for Environmental Information (NCEI). Results of past hazard events were found through searching the NCEI. The USACE studies were reviewed for their assessment of risk and potential projects in the region. Information from the State Demographer was reviewed for population and other projections and included in Section 3 of the Plan. Data from the Texas Forest Service was used to appropriately rank the wildfire hazard, and to help identify potential grant opportunities. Materials from FEMA and TDEM were reviewed for guidance on Plan Update development requirements.

INCORPORATION OF EXISTING PLANS INTO THE HMAP PROCESS

A Capability Assessment was completed by key departments from the participating jurisdictions within Travis County which provided information pertaining to existing plans, policies, ordinances, and regulations to be integrated into the goals and objectives of the Plan Update. The relevant information was included in a master Capability Assessment, Appendix F.

Existing projects and studies were utilized as a starting point for discussing hazard mitigation actions among Planning and Consultant Team members. For example, Travis County has completed several actions, including fuel reduction projects throughout high-risk areas, enhancing GIS capabilities for high-risk flood, wildfire and dam inundation areas, increasing public

awareness especially for flood risk, insurance and mitigation techniques, and implementing mitigation at multiple low-water crossings throughout the county. The Village of Briarcliff worked with their community to create defensible space to prevent the spread of wildfire, while also acquiring Firewise status. The City of Lago Vista enhanced their local codes by developing an ordinance for xeriscape, enhance floodplain management ordinance and subdivision requires for ingress and egress. The city is still in the progress of assessing and continuation to make necessary improvements to city-wide fire hydrants to enhance wildfire mitigation efforts. The City of Lakeway relocated their Police Department due to being adjacent to a stream that has subjected the department to high water inundation. In addition, the city has completed a fuel reduction project on the Hamilton Green Belt within the city limits. The City of Mustang Ridge has updated their floodplain management ordinance as well as continuation to promote education and awareness to their residents on mitigation techniques to reduce overall risk. The City of Pflugerville has begun multiple projects to address flooding within the community such as continuing to study and implement a drainage utility plan to enhance drainage operations and improvement throughout the community while also identifying actions to protect existing and future development from flooding and erosion which have been incorporated into the city's Comprehensive Plan updates. The city has also established a Flood Protection Plan Study which was published in April 2021 and ultimately will allow the city to incorporate into their drainage plans. The Village of Point Venture enhanced their flood ordinance and developed an emergency evacuation plan while continuing to promote education on mitigation measures residents can take. The Village of San Leanna obtained an alternative water source and still remains in the process of addressing stormwater management projects including expanding culverts and creating detention basing as funding becomes available. The City of Sunset Valley has adopted CRS and incorporated higher standard, in addition they are continuing to assess land and easement acquisition to reduce flood risk within designated special flood hazard areas throughout the community as property in the floodplain becomes available. The city has incorporated maintenance scheduling to address winterization of their outdoor and public facilities, assessment of stormwater system and necessary improvements, debris removal in ditches and tree trimming maintenance. The City of West Lake Hills installed an early warning system in conjunction with ESD #9 for wildfire alerts and updated their floodplain management ordinance.

In addition to completed projects, the Planning Team also discussed related mitigation projects that were recently awarded funding. For example, Travis County is utilizing a 2017 Bond to address multiple low water crossing improvements that have been identified in a county-wide engineering study.

Additionally, policies and ordinances were reviewed by several of the participating jurisdictions. These jurisdictions have included actions to develop and adopt higher building code standards. Other plans were reviewed, such as Capital Improvement Plans and Emergency Operations Plan, to identify any additional mitigation actions. Finally, the 2018 State of Texas Hazard Mitigation Plan, developed by TDEM, was discussed in the initial planning meeting in order to develop a specific group of hazards to address in the planning effort. The 2018 State Plan was also used as a guidance document, along with FEMA materials, in the development of the Travis County Hazard Mitigation Action Plan Update 2023.

INCORPORATION OF THE HMAP INTO OTHER PLANNING MECHANISMS

Planning Team members will integrate implementation of the Plan Update with other planning mechanisms for Travis County, such as the Emergency Operations Plan. Existing plans for participating jurisdictions will be reviewed and incorporated into the Plan Update, as appropriate. This section discusses how the Plan will be implemented by the participating jurisdictions within Travis County. It also addresses how the Plan will be evaluated and improved over time, and how the public will continue to be involved in the hazard mitigation planning process.

Participating jurisdictions within Travis County will be responsible for implementing hazard mitigation actions contained in Section 18. Each hazard mitigation action has been assigned to a specific County, City, Village, or special district department that is responsible for tracking and implementing the action.

A funding source has been listed for each identified hazard mitigation action and may be utilized to implement the action. An implementation time period has also been assigned to each hazard mitigation action as an incentive and to determine whether actions are implemented on a timely basis.

Participating jurisdictions within Travis County will integrate hazard mitigation actions contained in the Plan Update with existing planning mechanisms such as ordinances, Emergency Operations or Management Plans, and other local and area planning efforts. Travis County will work closely with area organizations to coordinate implementation of hazard mitigation actions that benefit the planning area in terms of financial and economic impact.

Upon formal adoption of the Plan Update, Planning Team members from the participating jurisdictions will review existing plans along with building codes to guide development and ensure that hazard mitigation actions are implemented. Each of the jurisdictions will be responsible for coordinating periodic review of the Plan Update with members of the Advisory Planning Team to ensure integration of hazard mitigation strategies into these planning mechanisms and codes. The Planning Team will also conduct periodic reviews of various existing planning mechanisms and analyze the need for any revisions or updates in light of the approved Plan Update. Participating jurisdictions within Travis County will ensure that future long-term planning objectives will contribute to the goals of the Plan to reduce the long-term risk to life and property from moderate and high-risk hazards. Within one year of formal adoption of the Plan, existing planning mechanisms will be reviewed and analyzed as they pertain to the Plan Update.

Planning Team members will review and revise, as necessary, the long-range goals and objectives in its strategic plan and budgets to ensure that they are consistent with the Plan Update.

Furthermore, Travis County will work with neighboring jurisdictions to advance the goals of the Plan Update as it applies to ongoing, long-range planning goals and actions for mitigating risk to natural hazards throughout the planning area.

Table 2-4 identifies types of planning mechanisms and examples of methods for incorporating the Plan into other planning efforts.

Table 2-4. Examples of Methods of Incorporation

Planning Mechanism	Incorporation of Plan
Annual Budget Review	Various departments and key personnel that participated in the planning process for participating jurisdictions within Travis County will review the Plan and mitigation actions therein when conducting their annual budget review. Allowances will be made in accordance with grant applications sought, and mitigation actions that will be undertaken, according to the implementation schedule of the specific action.
Capital Improvement Plans	Several participating jurisdictions within Travis County have a Capital Improvement Plan (CIP) in place or under development. Prior to any revisions to the CIP, County, City, Village, and special district departments will review the risk assessment and mitigation strategy sections of the HMAP, as limiting public spending in hazardous zones is one of the most effective long-term mitigation actions available to local governments.
Comprehensive Plans	Several participating jurisdictions within Travis County have Long-term Comprehensive Development Plans in place. Since comprehensive plans involve developing a unified vision for a community, the mitigation vision and goals of the Plan will be reviewed in the development or revision of a Comprehensive Plan.
Floodplain Management Plans	Floodplain management plans include preventative and corrective actions to address the flood hazard. Therefore, the actions for flooding and information found in Section 9 of this Plan Update discussing the people and property at risk to flood will be reviewed and revised when participating jurisdictions within Travis County update their management plans or develops new plans.
Grant Applications	The Plan will be evaluated by participating jurisdictions within Travis County when grant funding is sought for mitigation projects. If a project is not in the Plan Update, a Plan Revision may be necessary to include the action in the Plan.
Regulatory Plans	Currently, several participating jurisdictions within Travis County have regulatory plans in place, such as Emergency Management Plans, Continuity of Operations Plans, Land Use Plans, and Evacuation Plans. The Plan Update will be consulted when County, City, Village, and special district

Planning Mechanism	Incorporation of Plan
	departments review or revise their current regulatory planning mechanisms, or in the development of regulatory plans that are not currently in place.

Appendix F Capability Assessment provides an overview of Planning Team members' existing planning and regulatory capabilities. These existing capabilities provide the mechanisms to implement the mitigation strategy objectives. For example, the adoption of building codes and implementation of land use regulations have been demonstrated to help communities avoid losses from natural hazard events. Every participating municipality has building codes in place, refer to Appendix F for a complete inventory of each participating jurisdiction's capabilities.

It should be noted for the purposes of the Plan Update that the HMAP has been used as a reference when reviewing and updating all plans and ordinances for the entire planning area, including all participating jurisdictions. The Emergency Management Plans developed for Travis County, City of Creedmoor, City of Lakeway, City of Manor, City of Pflugerville, Village of Point Venture, City of Rollingwood, City of Sunset Valley, Village of The Hills, City of West Lake Hills, and ESD #6 are updated every 5 years and incorporates goals, objectives and actions identified in the mitigation plan.

PLAN REVIEW AND PLAN UPDATE

As with the development of Plan Update, participating jurisdictions within Travis County will oversee the review and update process for relevance and if necessary, make adjustments. At the beginning of each fiscal year, Planning Team Members will meet to evaluate the Plan and review other planning mechanisms to ensure consistency with long-range planning efforts. In addition, planning participants will also meet once a year, by conference call or presentation, to re-evaluate prioritization of the hazard mitigation actions. The plan may be amended to include additional hazard mitigation actions as they are developed.

TIMELINE FOR IMPLEMENTING MITIGATION ACTIONS

Both the Executive Planning Team (Table A-1, Appendix A) and the Advisory Planning Team (Table A-2, Appendix A) will engage in discussions regarding a timeframe for how and when to implement each hazard mitigation action. Considerations include when the action will be started, how existing planning mechanisms' timelines affect implementation, and when the action should be fully implemented. Timeframes may be general, and there will be short, medium, and long-term goals for implementation based on prioritization of each action, as identified on individual Hazard Mitigation Action worksheets included in the Plan Update for participating jurisdictions within Travis County.

Both the Executive and Advisory Planning Team will evaluate and prioritize the most suitable hazard mitigation actions for the community to implement. The timeline for implementation of actions will partially be directed by participating jurisdictions' comprehensive planning process, budgetary constraints, and community needs. Participating jurisdictions within Travis County are committed to addressing and implementing hazard mitigation actions that may be aligned with and integrated into the Plan Update.

Overall, the Planning Team is in agreement that goals and actions of the Plan Update shall be aligned with the timeframe for implementation of hazard mitigation actions with respect to annual review and updates of existing plans and policies.

PUBLIC AND STAKEHOLDER INVOLVEMENT

An important component of hazard mitigation planning is public participation and stakeholder involvement. Input from individual citizens and the community as a whole provides the Planning Team with a greater understanding of local concerns and increases the likelihood of successfully implemented hazard mitigation actions. If citizens and stakeholders, such as local businesses, non-profits, hospitals, and schools are involved, they are more likely to gain a greater appreciation of the risks that hazards may present in their community and take steps to reduce or mitigate their impact.

The public was involved in the development of the Travis County Hazard Mitigation Action Plan Update 2023 at different stages prior to official Plan approval and adoption. Public input was sought using three methods: (1) open public meetings; (2) survey instruments; and (3) making the draft Plan Update available for public review on participating jurisdictions' websites.

The draft Plan Update was made available to the general public for review and comment on participating jurisdictions' websites. The public was notified at the public meetings that the draft Plan Update would be available for review. No feedback was received on the draft Plan Update, although it was given on the public survey, and all relevant information was incorporated into the Plan Update. Public input was utilized to assist in identifying hazards that were of most concern to the citizens of the County and what actions they felt should be included and prioritized.

The Plan Update will be advertised and posted on Travis County and participating jurisdictions' websites upon approval from FEMA, and a copy will be kept at the Travis County Courthouse.

STAKEHOLDER INVOLVEMENT

Stakeholder involvement is essential to hazard mitigation planning since a wide range of stakeholders can provide input on specific topics and from various points of view. Throughout the planning process, members of community groups, local businesses, neighboring jurisdictions, schools, and hospitals were invited to participate in development of the Plan Update. The Stakeholder Group (Table A-3 in Appendix A, and Table 2-4, below), included a broad range of representatives from both the public and private sector and served as a key component in Travis County's outreach efforts for development of the Plan Update. Documentation of stakeholder meetings is found in Appendix E. A list of organizations invited to attend via email is found in Table 2-5.

Table 2-5. Stakeholder Working Group

AGENCY	TITLE	PARTICIPATED
Austin Independent School District	Emergency Management Coordinator	
Bastrop County	Emergency Management Coordinator	
Burnet County	Emergency Management Coordinator	

AGENCY	TITLE	PARTICIPATED
Caldwell County	Chief/Emergency Management Coordinator	
Capital Area Council of Governments	Burnet County Commissioner	
Capital Area Council of Governments	Executive Director	
Capital Area Trauma Regional Advisory Council	Executive Director	
Central Health	Director of Public Health Strategy, Policy, and Disaster Response	
City of Austin Water Utility	Representative	
City of Round Rock	Representative	
County Commissioner Assistants	County Commissioner Assistants (5)	
County Commissioner	Precinct 2 Commissioner	
County Commissioner	Precinct 3 Commissioner	
County Emergency Services	Representative	
County Emergency Services	Executive Director	
County Fire Marshal's Office	Fire Marshal	
County Judge's Office	County Judge	
Environmental Protection Agency, Region 6	Regional Administrator	
Hays County	Director, Office of Emergency Services	
Integral Care	Director of Accountable Care Systems	
Llano County	Emergency Management Coordinator	
Lower Colorado River Authority	Mid-Basin Regional Affairs	
National Weather Service	Warning Coordination Meteorologist	
NOAA	Chief of Policy, Planning & Communications	
Pflugerville ISD	Director, Office of Emergency Management	
Pflugerville ISD	Executive Director of Health, Safety, Crisis, and Emergency Management	

AGENCY	TITLE	PARTICIPATED
Texas A&M Agrilife Extension, District 10	District Extension Administrator	
Texas A&M Forest Service	La Grange Office Mitigation & Prevention Coordinator	
Texas Commission on Environmental Quality	Region 11 Director	
Texas Department of Health Services	Deputy Chief Press Officer	
Texas Department of Housing and Community Affair	Director, Community Affairs Division	
Texas Department of Transportation	Austin District Engineer	
Texas Development Water Board	Region K Project Manager	
Texas Division of Emergency Management	District Coordinator	
Texas Floodplain Management	Region 5 Director	
Travis County	ESD #2 Accountability Officer	X
Travis County	ESD #2 Battalion Chief	X
Travis County	ESD #12 Battalion Chief	X
Travis County	ESD #12 Assistant Chief	X
Travis County	ESD #12 Commissioner	X
Travis County	ESD #12 Public Information Officer	X
Travis County	FMD Director	
Travis County	Intergovernmental Relations Officer	
Travis County	Public Information Officer	
Travis County Parks	Parks Assistant Division Director	
Travis County Parks	Park Land Manager	
Williamson County	Director/Emergency Management Coordinator	

Stakeholders and participants from neighboring communities that attended the Planning Team and public meetings played a key role in the planning process. For example, communication and hazard preparedness were two of the biggest concerns to stakeholders, so participating jurisdictions included actions to promote early warning and communication, community education on mitigation efforts, and establishing partnerships to promote response efforts and extreme weather event.

SECTION 2: PLANNING PROCESS

PUBLIC MEETINGS

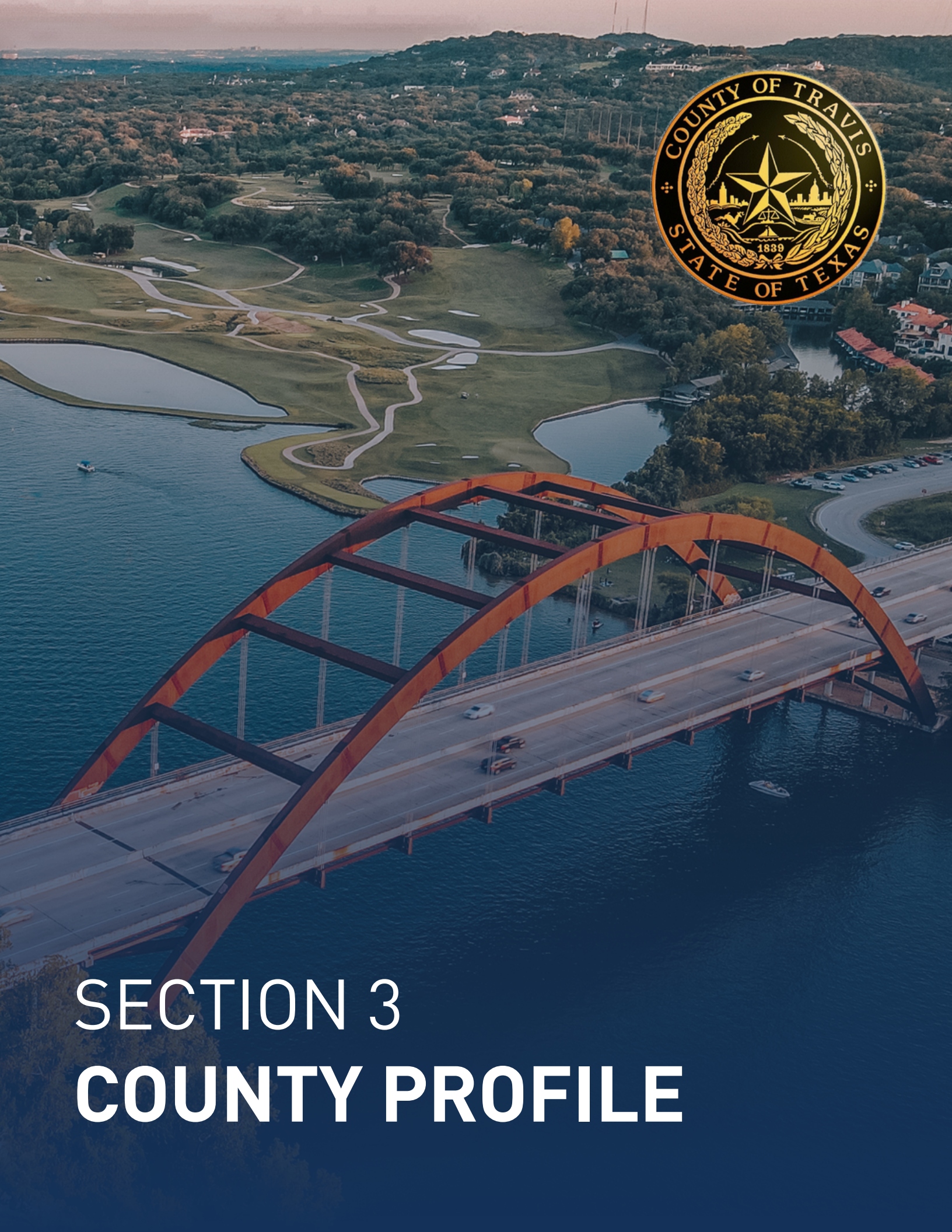
A series of public meetings were held throughout the planning area to collect public and stakeholder input. Topics of discussion included the purpose of hazard mitigation, discussion of the planning process, and types of natural hazards. Each participating jurisdiction within Travis County released information regarding the public meetings in their area to increase public participation in the Plan Update development process, through posting on their website, on social media sources including Facebook and Twitter, through the local media, and/or posting the information on bulletin boards in public facilities. A sampling of these notices can be found in Appendix E, along with the documentation on the public meetings. Representatives from area neighborhood associations and area residents were invited to participate.

Public meetings were held on the following dates:

- March 28, 2023, City of Manor City Hall
- April 12, 2023, Creedmoor Community Center
- April 17, 2023, City of Lago Vista City Hall
- April 27, 2023, City of Lakeway Police Department
- May 2, 2023, City of Pflugerville Municipal Court

PUBLIC PARTICIPATION SURVEY

In addition to public meetings, the Planning and Consultant Teams developed a public survey designed to solicit public input during the planning process from citizens and stakeholders and to obtain data regarding the identification of any potential hazard mitigation actions or problem areas. The survey was promoted by local officials and a link to the survey was posted on participating jurisdictions' websites. A total of 273 surveys were completed online. The survey results are analyzed in Appendix B. Participating jurisdictions within Travis County reviewed the input from the surveys and decided which information to incorporate into the Plan as hazard mitigation actions. For example, results indicate that wildfire and winter storm are the hazards of highest concern for the public and community education and preparedness as well as implementing burn bans were the actions indicated that the local government should take to mitigate risk to these hazards. As a result, the Planning Team has included mitigation actions related to public education around severe weather and wildfire risk, developing a Community Wildfire Protection Plan (CWPP) for those participating jurisdictions without one, as well as installing warning signs at hazardous bridges and roadways subject to ice.



SECTION 3

COUNTY PROFILE

SECTION 3: COUNTY PROFILE

OVERVIEW

Travis County is located in Central Texas, 150 miles inland from the Gulf of Mexico. The City of Austin is the state capital and county seat and is located at the intersection of Interstate Highway 35 and U.S. highways 183 and 290, one hundred miles southwest of the City of Waco and seventy-five miles northeast of the City of San Antonio. Travis County is the fifth-most populous county in Texas.

The County is comprised of 994 square miles of land[1] with an elevation ranging from 400 to 1,300 feet above sea level. It is located on the eastern edge of the Edwards Plateau and is divided by the Balcones Escarpment. The land west of the escarpment is more arid than to the east, and the vegetation varies accordingly, ranging from juniper, mesquite, and scrub brush to oak, cottonwood, redbud, and pecan trees. Between twenty-one and thirty percent of the land is considered prime farmland. The Colorado River, which bisects the county from northwest to southeast, flows from the Hill Country onto the Coastal Plain and provides drainage for the entire area. The climate is subtropical, with an average low temperature in January of 38°F and an average high in July of 96°F. The average yearly rainfall is thirty-two inches, and the growing season is 270 days a year.[2]

In 1840, the Congress of the Republic of Texas chose Waterloo as the site of the new capital, which was renamed Austin in honor of Stephen F. Austin and approved on January 19, 1840. A few days later the Congress established Travis County, naming it in honor of William Barrett Travis and making Austin its county seat. The initial boundaries of Travis County included roughly 40,000 square miles. Counties that were later carved from Travis County include Callahan, Coleman, Comal, Gillespie, Hays, Burnet, Brown, Lampasas, Eastland, Runnels, and Taylor.[3]

Travis County offers many recreational and cultural activities for its residents and visitors, including hunting, boating, and fishing, the South by Southwest film and music festivals in the spring, Austin's Sixth Street entertainment and music district, the Bob Bullock Texas State History Museum, and the Lady Bird Johnson Wildflower Center.

[1] U.S. Census Bureau https://www.census.gov/quickfacts/traviscountytexas

[2] Smyrl, Vivian Elizabeth, Travis County, Texas Almanac https://www.texasalmanac.com/places/travis-county

[3] Smyrl, Vivian Elizabeth, Travis County, Texas State Historical Association https://www.tshaonline.org/handbook/entries/travis-county

SECTION 3: COUNTY PROFILE

Figure 3-1 shows the general location of Travis County along with the Cities and Villages that are located within the County.

Figure 3-1. Location of Travis County

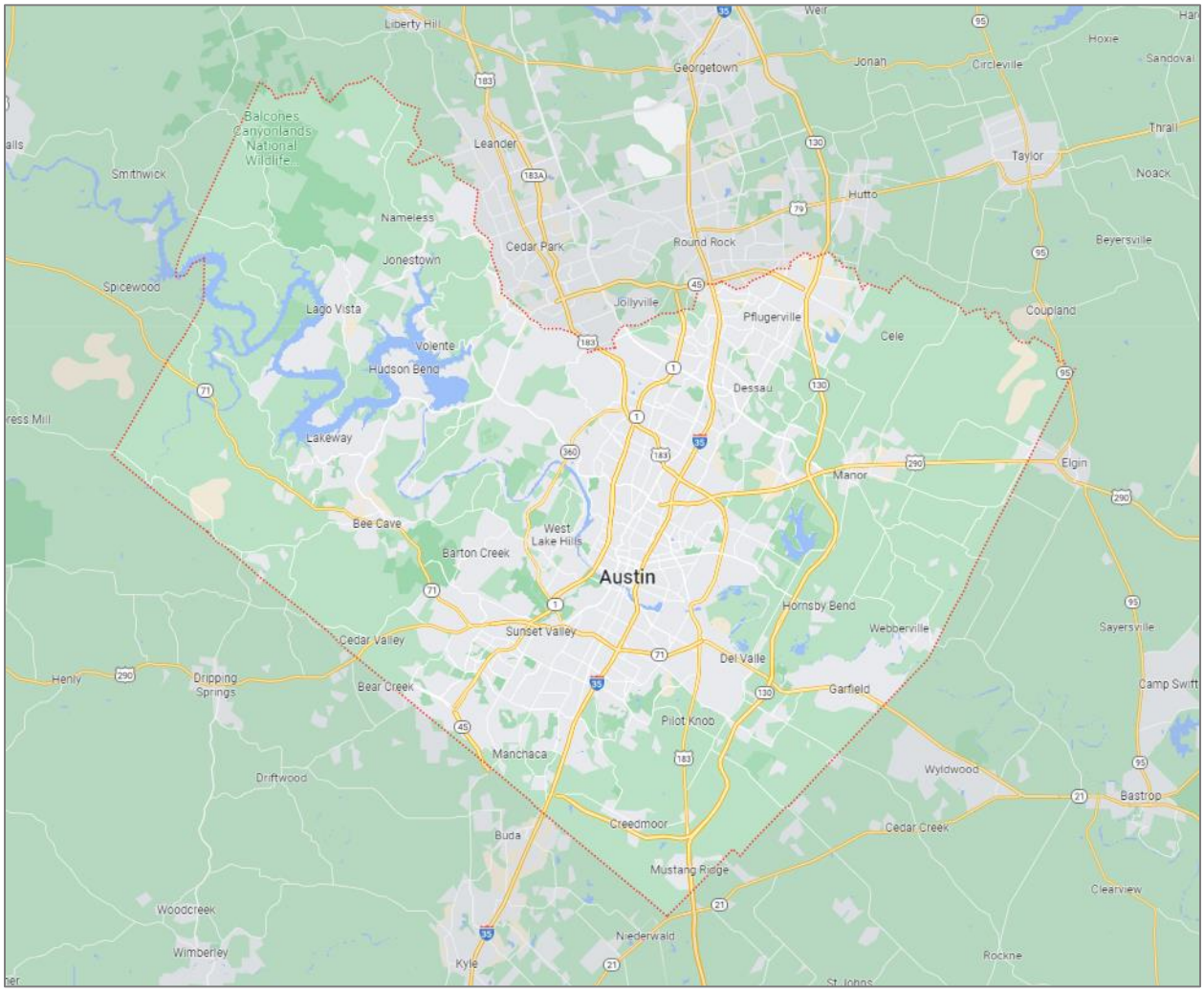
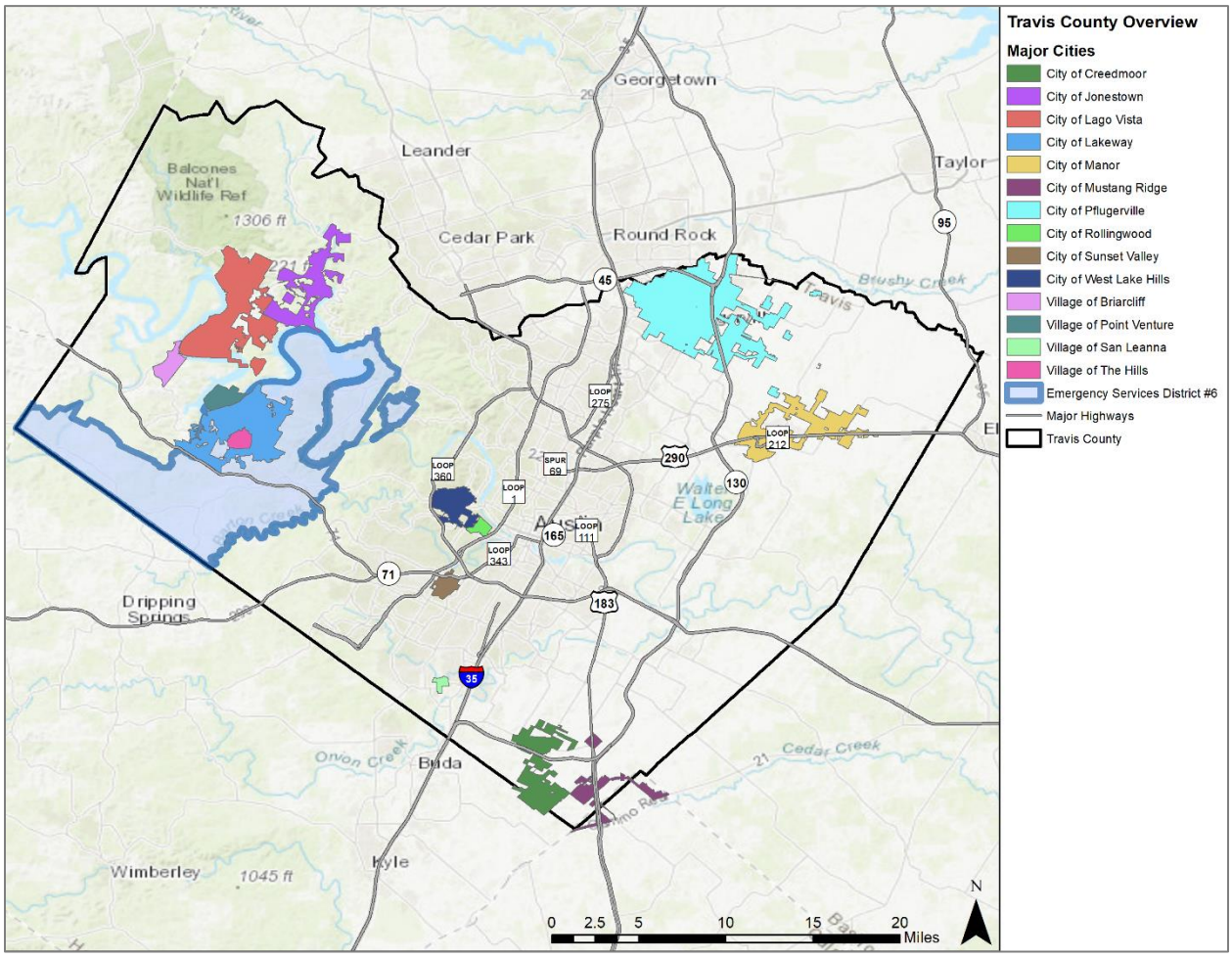


Figure 3-2 shows the participating jurisdictions within Travis County that are covered in the risk assessment analysis of the Plan Update. The participating Emergency Services District (ESD) can be seen in Figure 3-3 below.

Figure 3-2. Travis County Planning Area



Provided in Table 3-1 below is a listing of the jurisdictions and special district in Travis County that participated in the Travis County Hazard Mitigation Action Plan Update 2023.

Table 3-1. Participating Jurisdictions

PARTICIPATING JURISDICTIONS	
Travis County	City of Pflugerville
Village of Briarcliff	Village of Point Venture
City of Creedmoor	City of Rollingwood
City of Jonestown	Village of San Leanna
City of Lago Vista	City of Sunset Valley
City of Lakeway	Village of The Hills
City of Manor	City of West Lake Hills
City of Mustang Ridge	Emergency Services District #6

POPULATION AND DEMOGRAPHICS

According to the 2020 Census population count, Travis County has an official population of 1,290,188 residents, a 26 percent increase since the 2010 census. Table 3-2 summarizes select characteristics of vulnerable or sensitive populations in Travis County and the participating jurisdictions using data from the U.S. Census Bureau 2021 American Community Survey (ACS) five-year estimates. Note that in some cases the 2021 ACS estimates may differ from the 2020 Census counts; the ACS estimates are used throughout this section for consistency.[4]

Between official U.S. Census population counts, the estimate uses a formula based on new residential building permits and household size. It is simply an estimate and there are many variables involved in achieving an accurate estimation of people living in a given area at a given time.

Table 3-2. Population Distribution by Jurisdiction

JURISDICTION	TOTAL 2010 POPULATION	TOTAL 2021 POPULATION	PERCENTAGE (based on 2021 Population)	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS[5]		
				Youth (Under 5)	Elderly (Over 65)	Below Poverty Level
Village of Briarcliff	1,438	2,202	0.17%	173	277	66
City of Creedmoor	202	349	0.03%	0	95	60
City of Jonestown	1,834	2,484	0.20%	39	525	229
City of Lago Vista	6,041	8,769	0.69%	275	2,477	316
City of Lakeway	11,391	18,471	1.46%	686	4,154	554
City of Manor	5,037	13,928	1.10%	1,821	345	975
City of Mustang Ridge	861	1,302	0.10%	123	105	85
City of Pflugerville	46,936	64,007	5.05%	4,718	6,009	3,392
Village of Point Venture	800	1,531	0.12%	40	279	47
City of Rollingwood	1,412	1,397	0.11%	42	238	0
Village of San Leanna	497	483	0.04%	28	132	9
City of Sunset Valley	749	554	0.04%	28	169	26
Village of The Hills	2,472	2,602	0.21%	109	857	62

[4] Source: https://demographics.texas.gov/Data/Decennial/2010/, https://www.census.gov/en.html and https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2021/

[5] The Estimated Vulnerable or Sensitive Populations are based off the 2021 American Community Survey 5-Year Estimates Data Profiles.

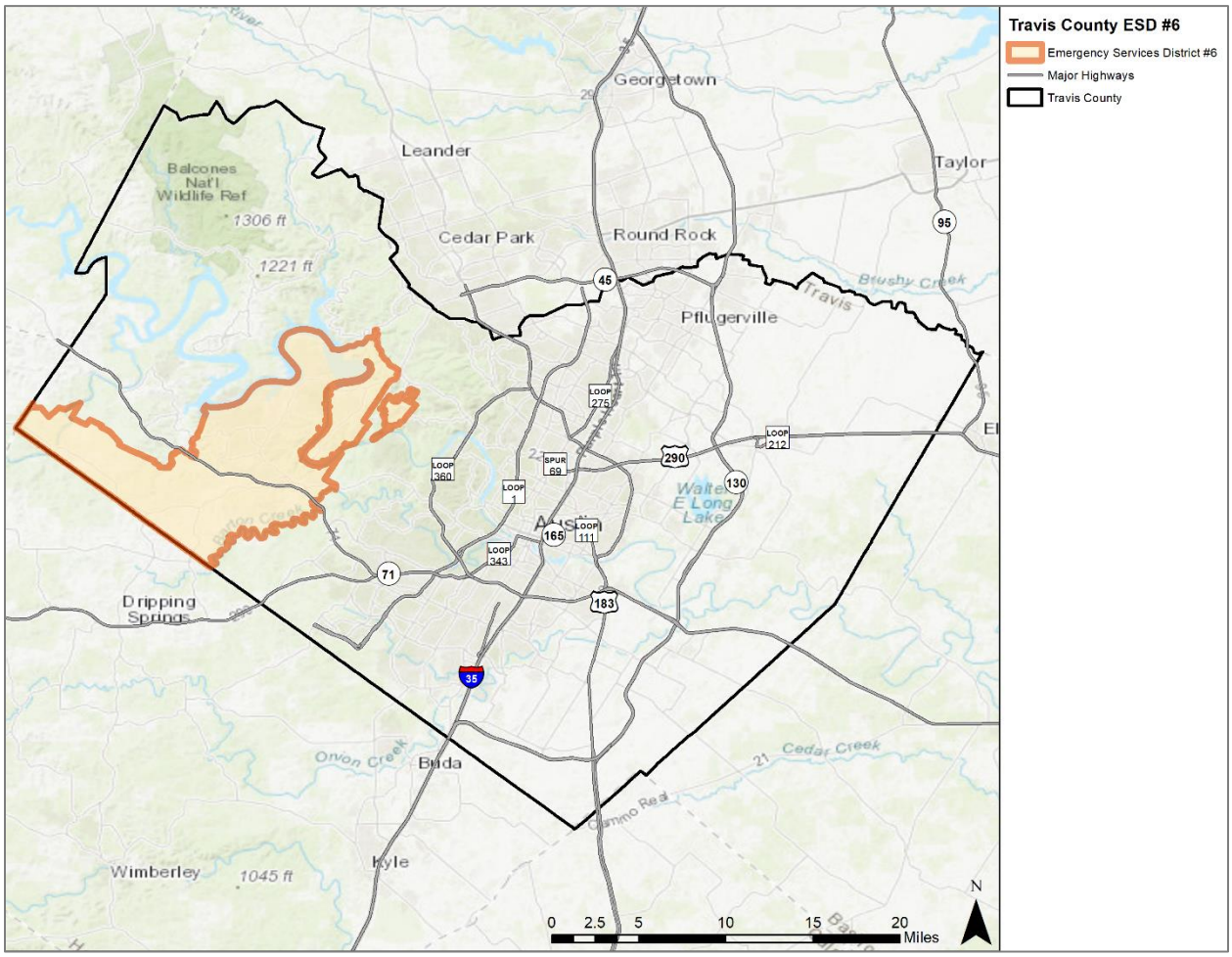
JURISDICTION	TOTAL 2010 POPULATION	TOTAL 2021 POPULATION	PERCENTAGE (based on 2021 Population)	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS[5]		
				Youth (Under 5)	Elderly (Over 65)	Below Poverty Level
City of West Lake Hills	3,063	3,373	0.27%	68	799	209
City of Austin[6]	790,390	944,658	74.51%	55,111	88,203	118,083
Unincorporated Travis County	151,143	201,685	15.90%	12,693	21,816	11,541
Travis County	**1,024,266**	**1,267,795**	**100%**	**75,954**	**126,480**	**135,654**

EMERGENCY SERVICES DISTRICT

Figure 3-3 shows the participating Emergency Services District within Travis County that is covered in the risk assessment analysis of the Plan Update.

[6] The City of Austin is not participating in the Travis County Hazard Mitigation Plan Update but has been included on the *Population Distributed by Jurisdiction* table. For the purposes of this plan, the City of Austin is being considered only within the total population of Travis County.

Figure 3-3. Participating ESD within the Travis County Planning Area



In 1995, Travis County Emergency Services District #6 was formed, and could provide the citizens of Lake Travis with firefighters and state-of-the-art equipment to ensure the level of fire protection was adequate. In 2008, Travis County ESD #6 Commissioners changed the name of the department from Hudson Bend Fire Department to Lake Travis Fire Rescue. Their mission is to minimize loss of life and property through Emergency Response, Prevention and Community Involvement. Their success is built upon the foundation of their commitment to Professionalism, Leadership, Integrity, Respect, Compassion and Safety. Their vision is that their organization is recognized by those they serve as exceptional and innovative.

Table 3-3 provides the number of people employed by ESD #6.

Table 3-3. ESD Population

EMERGENCY SERVICES DISTRICT	EMPLOYEES	POPULATION SERVED	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS
			Staff Works Outdoors
ESD #6	134	70,000	108

POPULATION GROWTH

The official 2020 Travis County population is 1,290,188. Overall, Travis County experienced an increase in population between 1980 and 2020 of 208 percent, or an increase by 879,615 residents. Between 2010 and 2020, the City of Sunset (-9%) was the only jurisdiction to experience a population decline, while the other participating jurisdictions, including Travis County experienced a population growth. Table 3-4 provides historic growth rates in Travis County.

Table 3-4. Population Growth by Jurisdictions 1980-2020[7]

JURISDICTIONS	1980	1990	2000	2010	2020	POP CHANGE 1980-2020	PERCENT OF CHANGE	POP CHANGE 2010-2020	PERCENT OF CHANGE
Village of Briarcliff	-	335	895	1,438	2,062	-	-	624	43%
City of Creedmoor	-	194	211	202	458	-	-	256	127%
City of Jonestown	-	1,250	1,681	1,834	2,365	-	-	531	29%
City of Lago Vista	-	2,199	4,507	6,041	8,896	-	-	2,855	47%
City of Lakeway	790	4,044	8,002	11,391	19,189	18,399	2,329%	7,798	68%
City of Manor	1,044	1,041	1,204	5,037	13,652	12,608	1,208%	8,615	171%
City of Mustang Ridge	-	257	409	861	944	-	-	83	10%
City of Pflugerville	745	4,444	16,335	46,936	65,191	64,446	1,450%	18,255	39%
Village of Point Venture	-	-	-	800	1,260	-	-	460	58%
City of Rollingwood	1,027	1,388	1,403	1,412	1,467	440	43%	55	4%
Village of San Leanna	290	325	384	497	522	232	80%	25	5%
City of Sunset Valley	420	327	365	749	683	263	63%	-66	-9%
Village of The Hills	-	-	1,492	2,472	2,613	-	-	141	6%
City of West Lake Hills	2,166	2,542	3,166	3,063	3,444	1,278	59%	381	12%
City of Austin[8]	345,890	465,622	656,562	790,390	961,855	615,965	178%	171,465	22%
Unincorporated Travis County	67,201	92,439	115,714	151,143	205,587	138,386	206%	54,444	36%
Travis County	**419,573**	**576,407**	**812,280**	**1,024,266**	**1,290,188**	**870,615**	**208%**	**265,922**	**26%**

[7] U.S. Census Bureau

[8] The City of Austin is not participating in the Travis County Hazard Mitigation Plan Update but has been included on the *Population Growth by Jurisdictions, 1980-2020* table.

ECONOMIC IMPACT

Building and maintaining infrastructure depends on the economy, and therefore, protecting infrastructure from risk due to natural hazards in the planning area is important to the participating jurisdictions within Travis County. Whether it's expanding culverts under a road that washes out during flash flooding, shuttering a fire station, or flood-proofing a wastewater facility, infrastructure must be mitigated from natural hazards in order to continue providing essential utility and emergency response services in a fast-growing planning area.

Based on the American Community Survey 2021 estimates, 70 percent of the population 16 years and over is employed in the labor force. The per capita income is $49,191 and the median household income countywide is $85,043. It is estimated that 28.5 percent of households have incomes below $50,000. Families with incomes below the poverty level in 2021 made up 7.5 percent of all families. Of families that have children under 18 years old, 10.6 percent are below the poverty level.

Table 3-5 and Table 3-6 show the various occupations and industries within Travis County, according to the 2021 estimates by the American Community Survey.

Table 3-5. Occupations of Employed Population in Travis County[9]

OCCUPATION	ESTIMATE	PERCENT
Civilian employed population 16 years and over	717,250	-
Management, business, science, and arts occupations	379,331	52.9%
Sales and office occupations	141,073	19.7%
Service occupations	96,658	13.5%
Production, transportation, and material moving occupations	53,244	7.4%
Natural resources, construction, and maintenance occupations	46,944	6.5%

Table 3-6. Industries of Employed Population in Travis County[10]

INDUSTRY	ESTIMATE	PERCENT
Civilian employed population 16 years and over	717,250	-
Educational services, and health care and social assistance	141,687	19.8%
Professional, scientific, and management, and administrative and waste management services	141,612	19.7%

[9] 2021 American Community Survey 5-Year Estimates Data Profiles.

[10] 2021 American Community Survey 5-Year Estimates Data Profiles.

INDUSTRY	ESTIMATE	PERCENT
Arts, entertainment, and recreation, and accommodation and food services	66,706	9.3%
Retail trade	65,386	9.1%
Manufacturing	53,714	7.5%
Finance and insurance, and real estate and rental and leasing	51,679	7.2%
Construction	48,684	6.8%
Public administration	41,299	5.8%
Other services, except public administration	33,192	4.6%
Transportation and warehousing, and utilities	28,753	4.0%
Information	25,901	3.6%
Wholesale trade	14,389	2.0%
Agriculture, forestry, fishing and hunting, and mining	4,248	0.6%

NATURAL, CULTURAL, AND HISTORIC RESOURCES

Travis County's territory is composed of 994 square miles of land with an elevation ranging from 400 to 1,300 feet above sea level. Travis County is almost totally within the watershed of the Colorado River. The county's water resources include not only the Colorado River, aquifers, springs, and lakes, but also the creeks, streams, and storm water drainage channels that flow to them. The rain and runoff collect into tributaries of the Colorado watershed, including the Pedernales River Barton Creek, Onion Creek, Williamson Creek, Big Sandy Creek, Cow Creek, Gilleland Creek, Walnut Creek, Wilbarger Creek, and other waterways that converge into the Colorado River as they flow towards the Texas Coastal Plain.[11]

Travis County is underlain by significant groundwater aquifers that supply approximately 27,500 acre-feet of fresh water per year for domestic, agricultural, and industrial usage. Groundwater in Travis County emerges at springs and water courses providing critical habitat to biological communities that support endangered and other aquatic species. These underground freshwater sources of groundwater include Barton Springs and Northern Segments of the Edwards Aquifer, Trinity Group Aquifers, and Colorado River Alluvial Aquifer. The recharge of water into these aquifers is almost completely dependent upon rainfall and the flow of surface water in streams that pass over surface outcrops of these aquifers.[12]

Travis County is located within three ecoregions: the Edwards Plateau in the southwest portion, Cross Timbers and Prairies in the northwest and central portions, and the Blackland Prairies in

[11] Travis County, https://www.traviscountytx.gov/tnr/environmental-quality/water-quality/colorado-river-watershed
[12] Travis County, https://www.traviscountytx.gov/tnr/environmental-quality/water-quality/travis-county-aquifers

the eastern portion of the county. The Edwards Plateau comprises the Texas Hill Country and has many springs, stony hills and steep canyons. The Edwards Plateau region also contains several rare plants and animals, and the soil is shallow and underlain by limestone. The Edwards Aquifer is a major asset of the Edwards Plateau ecoregion. Areas in southern Travis County are considered to be both contributing and recharge zones for the Edwards Aquifer. The Cross Timbers and Prairies ecoregion is comprised of high density of trees and irregular plains and prairies. Soil within the ecoregion is mostly sandy to loamy. The Blackland Prairie ecoregion is underlain by Upper Cretaceous chalks, marls and limestone which yield high alkalinity soils making them ideal for cropland, grazing and agricultural use. Common trees that inhabit this region include pecan, cedar elm, various oaks and mesquite.

Natural resources are an important asset to the Travis County planning area. Travis County parks system encompass 9,666 acres of parkland and 26 parks that offer a variety of activities for the public to enjoy.[13] While the park system has evolved over the years, recent focus has been on natural resource-based recreation. The 2016 Travis County Parks Master Plan, along with a 2005 and 2011 voter-approved bonds, established a capital improvement program with priorities for acquiring parkland and implementing capital improvement projects.[14]

Two important natural assets to the planning area are the Balcones Canyonlands Preserve (BCP) and the Balcones Canyonlands National Wildlife Refuge. The Balcones Canyonlands Preserve (BCP) is located in western Travis County and is among the largest urban preserves in the United States, encompassing over 33,000 acres and 50 square miles. The Preserve was created in 1996 because of the rapid growth in the City of Austin and surrounding areas, that resulted in habitat loss for eight federally endangered species. The Preserve is comprised of 140 individual tracts managed by public and private partners, including Travis County.[15] The Balcones Canyonlands National Wildlife Refuge was established in 1992 and is managed by U.S. Fish and Wildlife Service to protect the nesting grounds of the black-capped vireo and the golden-cheeked warbler.[16] In total the National Wildlife Refuge protects 27,000 acres and together with the Balcones Canyonlands Preserve provides protected habitat areas for natural resources and federally endangered animals in Travis, Burnet, and Williamson Counties.

To further understand natural resources that may be vulnerable to a hazard event, as well as those that need consideration when implementing mitigation activities, it is important to identify at-risk species (i.e., endangered species) in the planning area. A federally endangered species is any species of fish, plant life, or wildlife that is in danger of extinction throughout all or most of its range. A threatened species is a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Both endangered and threatened species are protected by federal law and any future hazard mitigation projects are subject to these laws. Candidate species are plants and animals that have been proposed as endangered or threatened but are not currently listed.

[13] Travis County Parks Master Plan Executive Summary, https://parks.traviscountytx.gov/files/docs/1_parks_master_plan_summary.pdf

[14] Travis County Parks Master Plan (2016), https://parks.traviscountytx.gov/files/docs/2_parks_master_plan.pdf

[15] Travis County, https://www.traviscountytx.gov/tnr/nr/bcp

[16] U.S. Fish & Wildlife Service, https://www.fws.gov/refuge/balcones-canyonlands/about-us

According to the U.S. Fish and Wildlife Service, as of May 2023, there are twenty-two federally endangered, threatened, or candidate species in Travis County, listed in Table 3-8.

Table 3-8. Endangered Species in Travis County[17]

TYPE of SPECIES	COMMON NAME	SCIENTIFIC NAME	SPECIES STATUS
Amphibians	Barton Springs Salamander	Eurycea sosorum	Endangered
Amphibians	Austin Blind Salamander	Eurycea waterlooensis	Endangered
Amphibians	Jollyville Plateau Salamander	Eurycea tonkawae	Threatened
Amphibians	Georgetown Salamander	Eurycea naufragia	Threatened
Arachnids	Bone Cave Harvestman	Texella reyesi	Endangered
Arachnids	Tooth Cave Spider	Tayshaneta myopica	Endangered
Arachnids	Bee Creek Cave Harvestman	Texella reddelli	Endangered
Arachnids	Tooth Cave Pseudoscorpion	Tartarocreagris texana	Endangered
Birds	Whooping Crane	Grus americana	Endangered
Birds	Red Knot	Calidris canutus rufa	Threatened
Birds	Golden-cheeked warbler	Setophaga chrysoparia	Endangered
Birds	Piping Plover	Charadrius melodus	Threatened
Clams	Texas Fawnsfoot	Truncilla macrodon	Proposed Threatened
Clams	Guadalupe Orb	Cyclonaias necki	Proposed Endangered
Clams	False Spike	Fusconaia mitchelli	Proposed Endangered
Clams	Texas Pimpleback	Cyclonaias petrina	Proposed Endangered
Clams	Texas Fatmucket	Lampsilis bracteate	Proposed Endangered
Flowering Plants	Bracted Twistflower	Streptanthus bracteatus	Threatened
Insects	Monarch Butterfly	Danaus plexippus	Candidate
Insects	Kretschmarr Cave Mold Beetle	Texamaurops reddelli	Endangered
Insects	Tooth Cave Ground Beetle	Rhadine Persephone	Endangered

[17] U.S. Fish and Wildlife Service, Environmental Conservation Online System https://ecos.fws.gov/ecp/report/species-listings-by-current-range-county?fips=48453

TYPE of SPECIES	COMMON NAME	SCIENTIFIC NAME	SPECIES STATUS
Mammals	Tricolored Bat	Perimyotis Subflavus	Proposed Endangered

Travis County has a rich history that is preserved through its designated historic buildings and sites. Throughout the County there are over 200 buildings and sites listed on the National Register of Historic Places, a majority of which are in the City of Austin.[18] Historic buildings are vulnerable to natural hazards as their construction pre-dates modern building codes. There are also historic preservation considerations and requirements for historic structures when they are included in mitigation or recovery projects.

Table 3-9. Historic Properties Listed on the National Register of Historic Places[19]

PROPERTY NAME	LOCATION	ADDRESS
East Main Street Historic District	City of Pflugerville	111, 113, 115, & 117 East Main Street

EXISTING LAND USE AND DEVELOPMENT TRENDS

Zoning ordinance sets forth regulations and standards related to the extent of uses of land and structures that are allowed in certain areas. A zoning map shows the areas within a community where the various zoning districts and standards are located and gives an overall picture of what types of development are located in a community and how a community intends to continue to grow. The following jurisdictions have a zoning ordinance: Travis County, Village of Briarcliff, City of Creedmoor, City of Jonestown, City of Lago Vista, City of Lakeway, City of Manor, City of Mustang Ridge, City of Pflugerville, City of Rollingwood, Village of San Leanna, City of Sunset Valley, and the City of West Lake Hills.

A review of building permits can also give a picture of the built environment and the number of buildings that are being constructed in the County and each jurisdiction. Table 3-10 lists the number of residential buildings and total units authorized through a permit from each jurisdiction, where data was available, between 2017 and 2021. The data includes total buildings and total units permitted. Permits are reported annually in September and the data includes that from 2017 through 2021 to demonstrate growth. Of the residential building permits issued in this period, over 90 percent were for single-family buildings and 5 percent for multi-family buildings. Housing type can also be an indication of an individual's ability to recover from a disaster.

[18] The City of Austin has 205 buildings and sites listed on the National Register of Historic Places, which have not been included within this Plan Update.

[19] National Register of Historic Places

Table 3-10. Building Permits, By Jurisdiction, 2017-2021[20]

JURISDICTION	2017		2018		2019		2020		2021	
	Total Buildings	Total Units	Total Buildings	Total Units	Total Buildings	Total Units	Total Buildings	Total Units	Total Buildings	Total Units
Unincorporated Travis County	2,573	3,229	2,705	3,907	2,832	4,496	4,070	5,682	3,332	8,316
Village of Briarcliff*	-	-	-	-	-	-	-	-	-	-
City of Creedmoor	4	4	0	0	1	1	0	0	0	0
City of Jonestown	18	18	35	35	64	64	79	79	125	125
City of Lago Vista	204	206	287	299	264	270	325	330	390	394
City of Lakeway	312	312	256	267	238	251	324	327	367	397
City of Manor	633	633	549	957	690	690	731	1,597	526	526
City of Mustang Ridge	3	3	1	1	11	13	11	15	0	0
City of Pflugerville	417	657	716	716	867	867	727	1,333	449	503
Village of Point Venture	52	52	27	27	32	32	28	28	16	27
City of Rollingwood	13	13	13	13	6	6	6	6	18	18
Village of San Leanna	1	1	1	1	4	4	5	5	7	7
City of Sunset Valley	0	0	1	1	1	1	2	2	2	2
Village of The Hills	3	3	2	2	3	3	4	4	2	2
City of West Lake Hills	15	19	11	11	10	10	12	12	13	13
City of Austin[21]	4,632	11,579	4,692	13,283	4,916	14,709	4,495	17,690	4,581	18,722
Grand Total	**8,880**	**16,729**	**9,296**	**19,520**	**9,939**	**21,417**	**10,819**	**27,110**	**9,828**	**29,052**

*Data for jurisdiction was not included in the database

[20] U.S. Census Bureau, Building Permit Survey, 1992-2021, https://www.census.gov/construction/bps/

[21] The City of Austin is not participating in the Travis County Hazard Mitigation Plan Update but has been included on the *Building Permits, By Jurisdiction, 2017-2021* table.

FUTURE GROWTH AND DEVELOPMENT

To better understand how future growth and development in the County might affect hazard vulnerability, it is useful to consider population growth, occupied and vacant land, the potential for future development in hazard areas, and current planning and growth management efforts. This section includes an analysis of the projected population change and economic impacts.

Population projections from 2010 to 2050 are listed in Table 3-11, as provided by the Office of the State Demographer, Texas State Data Center, and the Institute for Demographic and Socioeconomic Research. Population projections are based on a 0.5 scenario growth rate, which is 50 percent of the population growth rate that occurred during 2000-2010. This information is only available at the County level; however, the population projection shows an increase in population density for the County, which would mean overall growth for the County.

Table 3-11. Travis County Population Projections[22]

LAND AREA (SQ MI)	2010		2020		2030		2040		2050	
	Population									
	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)
994	1,024,266	1,030.4	1,291,502	1,299.3	1,540,812	1,550.1	1,775,204	1,785.9	1,980,918	1,992.9

Comprehensive Plans are guiding documents in a community that sets forth a vision, goals, policies, and guidelines to direct future physical, social and economic development that will occur within a jurisdiction. Comprehensive Plans are part of a continuous process to provide an environment for the citizens and to consider the general desire of the community to conserve, preserve, and protect the natural environment of their jurisdiction. These plans are used to guide city staff, decision-makers, and citizens in making decisions which affect the community with the understanding of the long-term effects. The following is a summary of a sample of Comprehensive Plans participating jurisdictions in Travis County have in place. Refer to Appendix F Capability Assessment for a complete list of participating jurisdictions with Comprehensive Plans.

The City of Lago Vista 2030 Comprehensive Plan was adopted on May 5, 2016 and will be used as a guiding document for the future growth and development of the city, to make decisions and set policies. The plan contains elements and recommendation topics, including: a city snapshot; land use; housing and neighborhood livability; transportation; parks, recreation, and open space; city facilities and services; along with implementation.

The City of Lakeway 2020 Comprehensive Plan, adopted in 2020, reflects the community vision for quality of life. It describes Lakeway's current issues, goals, objectives, and makes policy and action recommendations to progress toward achieving those goals. The recommendations in the plan should be used to guide city leaders in decisions regarding community identity, environment, land use, transportation strategies, infrastructure, community recreational and cultural programs,

[22] Office of the State Demographer, Texas State Data Center, and the Institute for Demographic and Socioeconomic Research

community facilities and parks, business and economic development, and principles for working cooperatively with neighbors with a commitment to long-term planning.

The City of Manor comprehensive plan Destination 2050 focuses on areas of transportation, infrastructure, land use, library/recreation/parks, economic development, community branding, and more. This plan will be a useful development tool to help establish key economic development strategies to expand tax base and create jobs for high-tech and manufacturing industries. This plan will allow the residents of the City of Manor to create a shared vision of what they want the community to become. Additionally, it provides recommendations for how the City of Manor can effectively implement this vision.

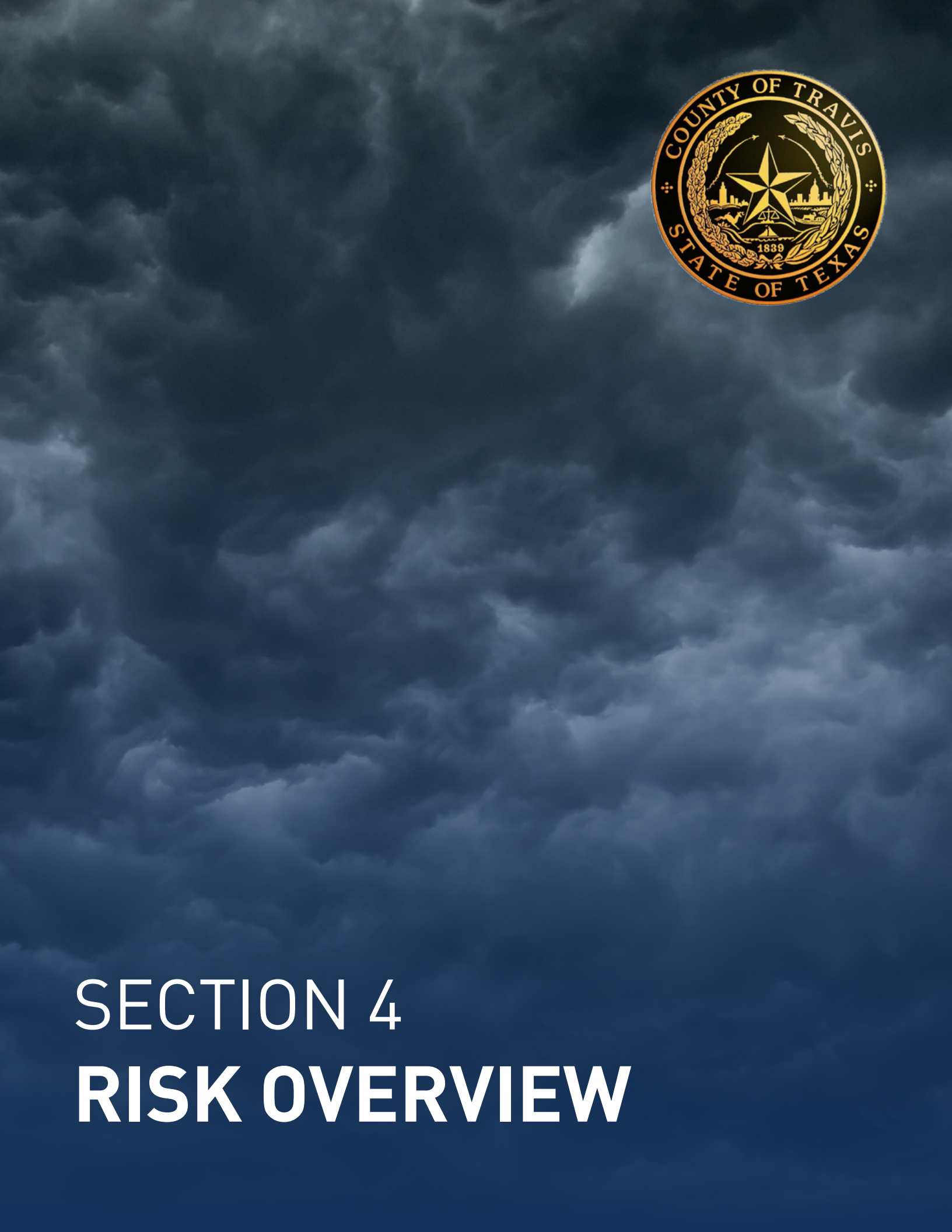
The City of Pflugerville 2040 Aspire Comprehensive Plan was adopted on April 26, 2022 and provides direction, vision and an outline to continue to improve the city. The community goals and aspirations are utilized by the city to express public policy initiatives regarding land use, community character, parks and recreation, neighborhood vitality, economic development, transportation, utilities, community facilities and public service.

The Village of Point Venture Comprehensive Plan 2020 includes, but is not limited to, provisions on land use, transportation, and public facilities, and is to be used to coordinate and guide the development regulations of the village, its extraterritorial jurisdiction and future growth areas that is consistent with and supportive of the residents' expectations and desires for the village.

The City of Rollingwood Comprehensive Plan, approved on May 19, 2022, outlines a long-term vision that provides a framework for decision-makers to guide development and future growth of Rollingwood. The process of comprehensive planning determines the aspirations and goals of a community in terms of development, as well as social, economic, and environmental ambitions. This forms the basis for the policies and recommendations within the plan. The plan's recommendations should be used to guide city leaders in decisions regarding community identity, land use, parks & recreation, public facilities & infrastructure, economic development, and mobility.

The City of Sunset Valley Comprehensive Plan reflects the desire of the city of preserve the rural history and pleasant quality of life while balancing the complementary current and future needs of residents, commercial businesses, and visitors to the city. The comprehensive plan guides all other development regulations within the city.

The City of West Lake Hills Master Plan is designed to achieve the following general goals: provide for the health, safety, and public welfare of our citizens; preserve the natural, wooded, rural character of West Lake Hills and its wildlife; protect the unique environment and quality of life enjoyed by its residents; permit reasonable and appropriate development consistent with these goals; provide the services of a city in these circumstances; promote cooperation with other political subdivisions in this area; and promulgate the need for cleanliness of the street rights-of-way and beautification throughout the area.



SECTION 4
RISK OVERVIEW

SECTION 4: RISK OVERVIEW

HAZARD DESCRIPTION

Section 4 is the first phase of the Risk Assessment, providing background information for the hazard identification process and descriptions for the hazards identified. The Risk Assessment continues with Sections 5 through 15, which include hazard descriptions and vulnerability assessments.

Upon a review of the full range of natural hazards suggested under FEMA planning guidance, participating jurisdictions within Travis County identified eleven natural hazards that are addressed in the Hazard Mitigation Plan Update and were identified as significant, as shown in Table 4-1. The hazards were identified through input from Planning Team members and a review of the current 2018 State of Texas Hazard Mitigation Plan (State Plan). Readily available online information from reputable sources such as federal and state agencies were also evaluated and utilized to supplement information as needed.

In general, there are three main categories of natural hazards: atmospheric, hydrologic, and technological. Atmospheric hazards are events or incidents associated with weather generated phenomenon. The following have been identified as significant for the Planning Area include extreme heat, hail, lightning, thunderstorm wind, tornado, and winter storm (Table 4-1).

Hydrologic hazards are events or incidents associated with water-related damage and account for over 75 percent of federal disaster declarations in the United States. Hydrologic hazards identified as significant for the planning area include flood and drought.

Technological hazards refer to the origins of incidents that can arise from human activities, such as the construction and maintenance of dams. They are distinct from natural hazards primarily because they originate from human activity. The risks presented by natural hazards may be increased or decreased as a result of human activity, however they are not inherently human-induced. Therefore, dam failure is classified as a quasi-technological hazard and referred to as “technological” in Table 4-1 for purposes of description.

For the Risk Assessment, the wildfire and expansive soils hazards are considered “other,” since these hazards are not considered atmospheric, hydrologic, nor technological.

Table 4-1. Hazard Descriptions

HAZARD	DESCRIPTION
ATMOSPHERIC	
Extreme Heat	Extreme heat is the condition whereby temperatures hover ten degrees or more above the average high temperature in a region for an extended period of time.
Hail	Hailstorms are a potentially damaging outgrowth of severe thunderstorms. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and subsequent cooling of the air mass.
Lightning	Lightning is a sudden electrostatic discharge that occurs during an electrical storm. This discharge occurs between electrically charged regions of a cloud, between two clouds, or between a cloud and the ground.
Thunderstorm Wind	A thunderstorm occurs when an observer hears thunder. Radar observers use the intensity of the radar echo to distinguish between rain showers and thunderstorms. Lightning detection networks routinely track cloud-to-ground flashes, and therefore thunderstorms.
Tornado	A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. Its vortex rotates cyclonically with wind speeds ranging from as low as 40 mph to as high as 300 mph. The destruction caused by tornadoes ranges from light to catastrophic, depending on the location, intensity, size, and duration of the storm.
Winter Storm	Severe winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Blizzards, the most dangerous of all winter storms, combine low temperatures, heavy snowfall, and winds of at least 35 mph, reducing visibility to only a few yards. Ice storms occur when moisture falls and freezes immediately upon impact on trees, power lines, communication towers, structures, roads, and other hard surfaces. Winter storms and ice storms can down trees, cause widespread power outages, damage property, and cause fatalities and injuries to human life.
HYDROLOGIC	
Drought	A prolonged period of less than normal precipitation such that the lack of water causes a serious hydrologic imbalance. Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality.

HAZARD	DESCRIPTION
Flood	The accumulation of water within a body of water, which results in the overflow of excess water onto adjacent lands, usually floodplains. The floodplain is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding. Most floods fall into the following three categories: riverine flooding, coastal flooding, and shallow flooding.
OTHER	
Expansive Soils	Expansive soils are soils and soft rock that tend to swell or shrink due to changes in moisture content. Changes in soils volume present a hazard primarily to structures built on top of expansive soils.
Wildfire	A wildfire is an uncontrolled fire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Heavier fuels with high continuity, steep slopes, high temperatures, low humidity, low rainfall, and high winds all work to increase the risk for people and property located within wildfire hazard areas or along the urban/wildland interface. Wildfires are part of the natural management of forest ecosystems, but most are caused by human factors.
TECHNOLOGICAL	
Dam Failure	Dam failure is the collapse, breach, or other failure of a dam structure resulting in downstream flooding. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and severe property damage if development exists downstream of the dam.

Hazards that were not considered significant and were not included in the Plan Update are located in Table 4-2, along with the evaluation process used for determining the significance of each of these hazards. Hazards not identified for inclusion at this time may be addressed during future evaluations and updates.

Table 4-2. Other Hazards Deferred

HAZARD CONSIDERED	REASON FOR DETERMINATION
Coastal Erosion	The planning area is not located on the coast, therefore coastal erosion does not pose a risk.
Earthquake	According to the State Plan, an earthquake occurrence for the Travis County planning area is considered exceedingly rare. Although a small event is possible, it would pose little to no risk for the area. There is no history of impact to critical structures, systems, populations or other community assets or vial services as a result of earthquake and none is expected in the future.

HAZARD CONSIDERED	REASON FOR DETERMINATION
Hurricane Wind	The planning area is not located within 200 miles of the coast; therefore, direct hurricane wind impacts do not pose a risk. Any remnants of a hurricane or tropical storm system would only include secondary impacts such as thunderstorm winds and rainfall and would be covered under thunderstorm wind or flood mitigation measures.
Land Subsidence	There are no historical occurrences of land subsidence for the planning area and it is located in an area where occurrences are considered rare. There is no history of impact to critical structures, systems, populations or other community assets or vital services as a result of land subsidence and none is expected in the future.

DISASTER DECLARATION HISTORY

One method of understanding hazards that pose a risk to Travis County is to identify past hazard events that triggered federal or state disaster declarations. Federal and state declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. Table 4-3 lists state and federal disaster declarations received by Travis County. Many of the disaster events were regional or statewide.

Between 1953 and January 2023 Travis County received 36 federal disaster declarations. Out of the 36 federally declared disasters, a majority (11) were related to wildfire, followed by declarations for hurricane (8), flood (6), severe storms (5), winter weather (3), biological (2), and drought (1).

In addition to the 36 federally declared disaster there have been 31 U.S. Department of Agriculture (USDA) Secretarial disaster designations between 2013 and 2022. The Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency loans available to producers suffering losses in those counties and in counties that are contiguous to a designated county.[1] Of the USDA designations 29 have been for drought, 1 for winter weather and 1 for excessive moisture.

Table 4-3. Disaster Declaration History in Travis County, 1953-2022

YEAR	DECLARATION TITLE	HAZARD	DECLARATION TYPE	DISASTER No.
1991	Severe Thunderstorms	Flood	DR	DR-930
1993	Extreme Fire Hazard	Drought	EM	EM-3113
1996	Extreme Fire Hazard	Fire	EM	EM-3117
1997	Severe Storms and Flooding	Flood	DR	DR-1179

[1] United States Department of Agriculture https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/FactSheets/emergency_disaster_designation_declaration_process-factsheet.pdf

YEAR	DECLARATION TITLE	HAZARD	DECLARATION TYPE	DISASTER No.
1998	Tropical Storm Charley	Severe Storm	DR	DR-1239
1998	TX-Flooding 10/18/98	Flood	DR	DR-1257
1999	Extreme Fire Hazards	Fire	EM	EM-3142
2002	Severe Storms and Flooding	Flood	DR	DR-1425
2005	Hurricane Katrina Evacuation	Hurricane	EM	EM-3216
2005	Hurricane Rita	Hurricane	EM	EM-3261
2005	Hurricane Rita	Hurricane	DR	DR-1606
2006	Extreme Wildfire Threat	Fire	DR	DR-1624
2006	Moore Road Fire	Fire	FM	FM-2675
2007	Severe Storms, Tornadoes, and Flooding	Severe Storm	DR	DR-1709
2007	Hurricane Dean	Hurricane	EM	EM-3277
2008	Wildfires	Fire	EM	EM-3284
2008	Hurricane Gustav	Hurricane	EM	EM-3290
2008	Hurricane Ike	Hurricane	EM	EM-3294
2011	Pinnacle Fire	Fire	FM	FM-2898
2011	Grand Mesa Fire	Fire	FM	FM-2922
2011	Hodde Fire	Fire	FM	FM-2957
2011	Steiner Ranch Fire	Fire	FM	FM-2960
2011	Pedernales Bend Fire	Fire	FM	FM-2959
2011	Wildfires	Fire	DR	DR-4029
2014	Severe Storms and Flooding	Severe Storm	DR	DR-4159
2015	Severe Storms, Tornadoes, Straight-line Winds and Flooding	Severe Storm	DR	DR-4223
2016	Severe Storms, Tornadoes, Straight-line Winds, and Flooding	Severe Storm	DR	DR-4245
2016	Severe Storms and Flooding	Flood	DR	DR-4272

YEAR	DECLARATION TITLE	HAZARD	DECLARATION TYPE	DISASTER No.
2017	Hurricane Harvey	Hurricane	DR	DR-4332
2019	Severe Storms and Flooding	Flood	DR	DR-4416
2020	COVID-19	Biological	EM	EM-3458
2020	COVID-19 Pandemic	Biological	DR	DR-4485
2020	Tropical Storms Marco and Laura	Hurricane	EM	EM-3540
2021	Severe Winter Storm	Severe Ice Storm	EM	EM-3554
2021	Severe Winter Storms	Severe Ice Storm	DR	DR-4586
2023	Texas Severe Winter Storm	Winter Storm	DR	DR-4705

NATURAL HAZARDS AND CLIMATE CHANGE

Climate change is defined as a long-term shift in temperature and weather patterns. These shifts can increase or decrease the risk of natural hazards. Global climate change is expected to exacerbate the risks of certain types of natural hazards impacted through rising sea levels, warmer ocean temperatures, higher humidity, the possibility of stronger storms, and an increase in wind and flood damages due to storm surges. Texas is considered one of the more vulnerable states in the U.S. to both abrupt climate changes and to the impact of gradual climate changes to the natural and built environments.

Climate change is expected to lead to an increase in average temperatures as well as an increase in frequency, duration, and intensity of extreme heat events. With no reductions in emissions worldwide, the state of Texas is projected to experience an additional 30 to 60 days per year above 100°F than what is experienced now.[2]

The State Climatologist's *Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036* identifies ongoing and likely future trends out to the year 2036 based on analysis of historic observations of temperatures, precipitation, and extreme weather. Table 4-4 highlights future trends in extreme weather from the report.

[2] Kloesel, K., B. Bartush, J. Banner, D. Brown, J. Lemery, X. Lin, C. Loeffler, G. McManus, E. Mullens, J. Nielsen-Gammon, M. Shafer, C. Sorensen, S. Sperry, D. Wildcat, and J. Ziolkowska, 2018: Southern Great Plains. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 987–1035. doi: 10.7930/NCA4.2018.CH23. https://nca2018.globalchange.gov/chapter/23/

Table 4-4. Future Trends in Extreme Weather in Texas[34]

HAZARDS	EXPECTED TRENDS
Extreme Temperatures	• The average annual surface temperature in 2036 is expected to be 3.0°F warmer than the 1950-1999 average and 1.8°F warmer than the 1991-2020 average. • Nearly double the number of 100°F days by 2036 compared to 2001-2020. • Higher frequency of 100°F days in urban areas. • The number of nighttime temperatures below 32°F are expected to decrease. • The number of frost days per year are expected to decrease. • The coolest days of the summer are expected to continue becoming warmer. • The number of heatwaves per year and number of days per year classified as heatwaves are expected to increase.
Precipitation	• Precipitation has increased by 10 percent or more in eastern Texas, but little trend is present in western Texas. • Precipitation trends to 2036 are likely to be dominated by natural variability. • Extreme precipitation is expected to increase in intensity on average statewide by 6-10 percent compared to the 1950-1999 averages and 2-3 percent relative to the 2001-2020 averages. • This translates to an increase in the frequency of extreme rain of 30-50 percent relative to the climatological expected frequency in 1950-1999 and 10-15 percent relative to 2001-2020. • Annual precipitation is projected to increase while the number of extreme precipitation (>2") will remain relatively consistent.
Drought	• Increasing temperatures, rainfall variability, and other factors will on balance decrease water availability, but impact changes will vary strongly across applications. • Impact trends to be highly sector-specific, with the impacts possibly smaller for agriculture than for surface water supply.
Flood	• No long-term river flooding trend has been identified in the observations, nor is such a trend projected at this point, except perhaps for the most extreme floods and areas with normally high rainfall. • Urban flooding is projected to increase, both as a simple matter of urban population increase and because of the projected increase of precipitation intensity, which drives

[3] Gammon-Nielsen, John, Holman, Sara, Buley, Austin and Jorgensen, Savannah. Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, 2021 Update. Texas A&M University Office of the Texas State Climatologist. October 7, 2021. https://climatexas.tamu.edu/files/ClimateReport-1900to2036-2021Update

[4] University of Texas at Austin, February 2023, Austin Future Climate, Climate Change Predictions for the City of Austin 2022, Technical Report.

HAZARDS	EXPECTED TRENDS
	flooding in fast-response drainages like those usually found in urban areas. • The climate-driven trend in urban flood frequency should be similar to the climate-driven trend in extreme precipitation frequency: 30-50 percent in 2036 relative to 1950-1999 and 10-15 percent relative to 2001-2020. • Areas already experiencing flooding are likely to see an increase in frequency and magnitude of events.
Winter Weather	• As the climate warms, the likelihood of winter weather decreases. • Both extreme cold and snowfall either become less frequent or are expected to do so. • Widespread snowfall events in Texas such as the one that took place in February 2021 are extremely rare. • Fewer cold spells are projected to occur per year, but the length of cold spells will be longer when they do occur.
Thunderstorms (Wind, Hail, Lightning)	• Historical trend data is unreliable. • Indirect evidence supports an increase in the number of days capable of producing severe thunderstorms and an increase in the frequency of very large hail in early springtime, but these possible trends are too uncertain to quantify.
Wildfire	• Weather and climate drivers of wildfire risk are projected to increase the risk of wildfires throughout the state, primarily due to increased rates of drying and increased fuel load.

OVERVIEW OF HAZARD ANALYSIS

The methodologies utilized to develop the Risk Assessment are a historical analysis and a statistical approach. Both methodologies provide an estimate of potential impact by using a common, systematic framework for evaluation.

Records retrieved from National Centers for Environmental Information (NCEI) and National Oceanic and Atmospheric Administration (NOAA) were reported for participating jurisdictions within Travis County. Remaining records identifying the occurrence of hazard events in the planning area and the maximum recorded magnitude of each event were also evaluated.

The use of geographic information system (GIS) technology to identify and assess risks for Travis County and evaluate community assets and their vulnerability to the hazards.

The four general parameters that are described for each hazard in the Risk Assessment include frequency of return, approximate annualized losses, a description of general vulnerability, and a statement of the hazard's impact.

Frequency of return was calculated by dividing the number of events in the recorded time period for each hazard by the overall time period that the resource database was recording events. Frequency of return statements are defined in Table 4-5, and impact statements are defined in Table 4-6 below.

Table 4-5. Frequency of Return Statements

PROBABILITY	DESCRIPTION
Highly Likely	Event is probable in the next year.
Likely	Event is probable in the next three years.
Occasional	Event is probable in the next five years.
Unlikely	Event is probable in the next ten years.

Table 4-6. Impact Statements

POTENTIAL SEVERITY	DESCRIPTION
Substantial	Multiple deaths. Complete shutdown of facilities for 30 days or more. More than 50 percent of property destroyed or with major damage.
Major	Injuries and illnesses resulting in permanent disability. Complete shutdown of critical facilities for at least two weeks. More than 25 percent of property destroyed or with major damage.
Minor	Injuries and illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than one week. More than 10 percent of property destroyed or with major damage.
Limited	Injuries and illnesses are treatable with first aid. Shutdown of critical facilities and services for 24 hours or less. Less than 10 percent of property destroyed or with major damage.

Each of the hazard profiles includes a description of a general Vulnerability Assessment. Vulnerability is the total of assets that are subject to damages from a hazard, based on historic recorded damages. Assets in the region were inventoried and defined in hazard zones where appropriate. The total amount of damages, including property and crop damages, for each hazard is divided by the total number of assets (building value totals) in that community to determine the percentage of damage that each hazard can cause to the community. Risk and consequences will be addressed and covered within each hazard profile under the Vulnerability and Impact section as well as under the Assessment of Impact sections, where applicable.

To better understand how future growth and development in the Travis County region might affect hazard vulnerability, it is useful to consider population growth, occupied and vacant land, the potential for future development in hazard areas, and current planning and growth management efforts. Hazard vulnerability for all participating jurisdictions within Travis County was reviewed based on recent development changes that occurred throughout the planning area. The population of Travis County has grown by 26 percent between 2010 and 2020, according to the

U.S. Census Bureau, therefore the vulnerability to the population, infrastructure, and buildings has increased for hazards that do not have a geographical boundary.

Once loss estimates and vulnerability were known, an impact statement was applied to relate the potential impact of the hazard on the assets within the area of impact.

HAZARD RANKING

During the 2023 planning process, the Planning Team conducted a risk raking exercise to get input from the Planning Team and stakeholders. Table 4-7 portrays the results of the risk assessment analysis including the frequency of occurrence and potential severity and the Planning Team's self-assessment for hazard ranking, based on local knowledge of past hazard events and impacts for each of the identified hazards. The definitions for frequency of occurrence and potential severity can be found in Table 4-5 and Table 4-6.

Table 4-7. Hazard Risk Ranking

HAZARD	FREQUENCY OF OCCURENCE	POTENTIAL SEVERITY	RANKING
Wildfire	Highly Likely	Minor	High
Lightning	Highly Likely	Substantial	High
Drought	Likely	Limited	High
Extreme Heat	Highly Likely	Substantial	High
Flood	Highly Likely	Substantial	Moderate
Thunderstorm Wind	Highly Likely	Substantial	Moderate
Hail	Highly Likely	Limited	Moderate
Winter Storm	Highly Likely	Substantial	Moderate
Tornado	Highly Likely	Substantial	Low
Dam Failure	Unlikely	Substantial	Low
Expansive Soils	Likely	Limited	Low

SECTION 5
WILDFIRE

SECTION 5: WILDFIRE

HAZARD DESCRIPTION

Wildfire is an unplanned fire burning in natural or wildland areas such as forests, shrub lands, grasslands, or prairies.[1] Texas is one of the fastest growing states in the Nation, with much of this growth occurring adjacent to metropolitan areas. This increase in population across the state will impact counties and communities that are located within the Wildland Urban Interface (WUI). The WUI is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases the risk from wildfire. In Texas nearly 85 percent of wildfires occur within two miles of a community. The Travis County planning area has an estimated 45.1 percent of the total planning area population that live within the WUI.[2]

Wildfires have the potential to spread quickly given the right environmental conditions, particularly within the wildland urban interface and intermix. Most ignition sources for wildfires are a result of human activities, such as an electrical line sparking dry grasses, an improperly discarded cigarette, burning debris, or arson.

Development has increased drastically in central Texas, resulting in more populated areas within the wildland interface/intermix. Additionally, the area is experiencing hotter, drier climatic conditions. These factors combine to make central Texas at risk from wildfires. While the planning area is continually at some risk for wildfires, that risk is elevated during two periods each year: the winter wildfire season (February through April) and the summer wildfire season (August through October).[3]

The Austin/Travis County Community Wildfire Protection Plan indicates the City of Austin population is expected to double in the next 30 years with continued outward expansion into and urbanization of previously rural, undeveloped lands throughout Travis County. Continued housing development in the WUI will continue to put more people at a greater risk of catastrophic wildfire and put more pressure on land managers and fire department personnel to mitigate fire risk.

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[1] Source: FEMA: https://hazards.fema.gov/nri/wildfire
[2] Source: Texas A&M Forest Service, Texas Wildfire Risk Assessment Summary Report, Travis County: https://texaswildfirerisk.com/
[3] Austin American Statesman, “Winter wildfire risk is rising in Central Texas. Here’s what you should know.” January 2023: https://www.statesman.com/story/news/environment/2023/01/30/wildfire-risk-is-rising-in-central-texas-what-you-should-know/69845234007/

SECTION 5: WILDFIRE

Wildfires spread based on the type and quantity of fuel that surrounds it. Fuel can include everything from trees, underbrush and dry grassy fields to homes. The amount of flammable material that surrounds a fire is referred to as the fuel load. Conditions in the weather and environment, such as drought, winds and extreme heat, can cause a fire to spread more quickly.[4] Wildfires in the Travis County planning area are often ground level and fast moving. A wildfire event often begins unnoticed and spreads quickly, lighting brush, trees, and homes on fire. For example, a wildfire may be started by a campfire that was not doused properly, a tossed cigarette, burning debris, or arson.

Texas has seen a significant increase in the number of wildfires in the past 30 years, which included wildland, urban interface, or intermix fires. Wildland fires are fueled almost exclusively by natural vegetation, while interface or intermix fires are urban/wildland fires in which vegetation and the built environment provide the fuel.

LOCATION

A wildfire incident can face devastating consequence due to human activities, drought conditions, lightning, or wind event, if the conditions allow. Wildfires can vary greatly in terms of size, location, intensity, and duration. While wildfires are not confined to any specific geographic location, they are most likely to occur in open grasslands. The Texas State Fire Marshal's Office (SFMO) collects data on fire incidents through the Texas Fire Incident Reporting System. Documented incident types in Travis County were nearly equally distributed between natural vegetation fires, wildland fires, brush and grass-mixture fuel fires, and grass fires.[5]

The Texas A&M Forest Service Wildfire Risk Assessment Portal (TxWRAP) provides historical wildfire data for Texas counties along with mapping resources that includes data layers on the WUI, ignition density, and fire intensity scales for communities throughout the Travis County planning area, along with multiple tips, recommendations and mitigation solutions for communities and residents. The TxWRAP portal was utilized to produce the maps found in this profile.

The threat to people and property from a wildfire event is greater in the fringe areas where developed areas meet open grass lands, such as the Wildland Urban Interface (WUI) (Figures 5-1 through 5-16). It is estimated that 45 percent of the total population in the Travis County planning area live within the WUI. However, the entire planning area is at some risk for wildfires.

[4] NOAA Weather Forecasting: https://scijinks.gov/wildfires/

[5] Austin Travis County Community Wildfire Protection Plan: https://www.traviscountytx.gov/emergency-services/community-wildfire-protection-plan

Figure 5-1. Wildland Urban Interface Map – Travis County

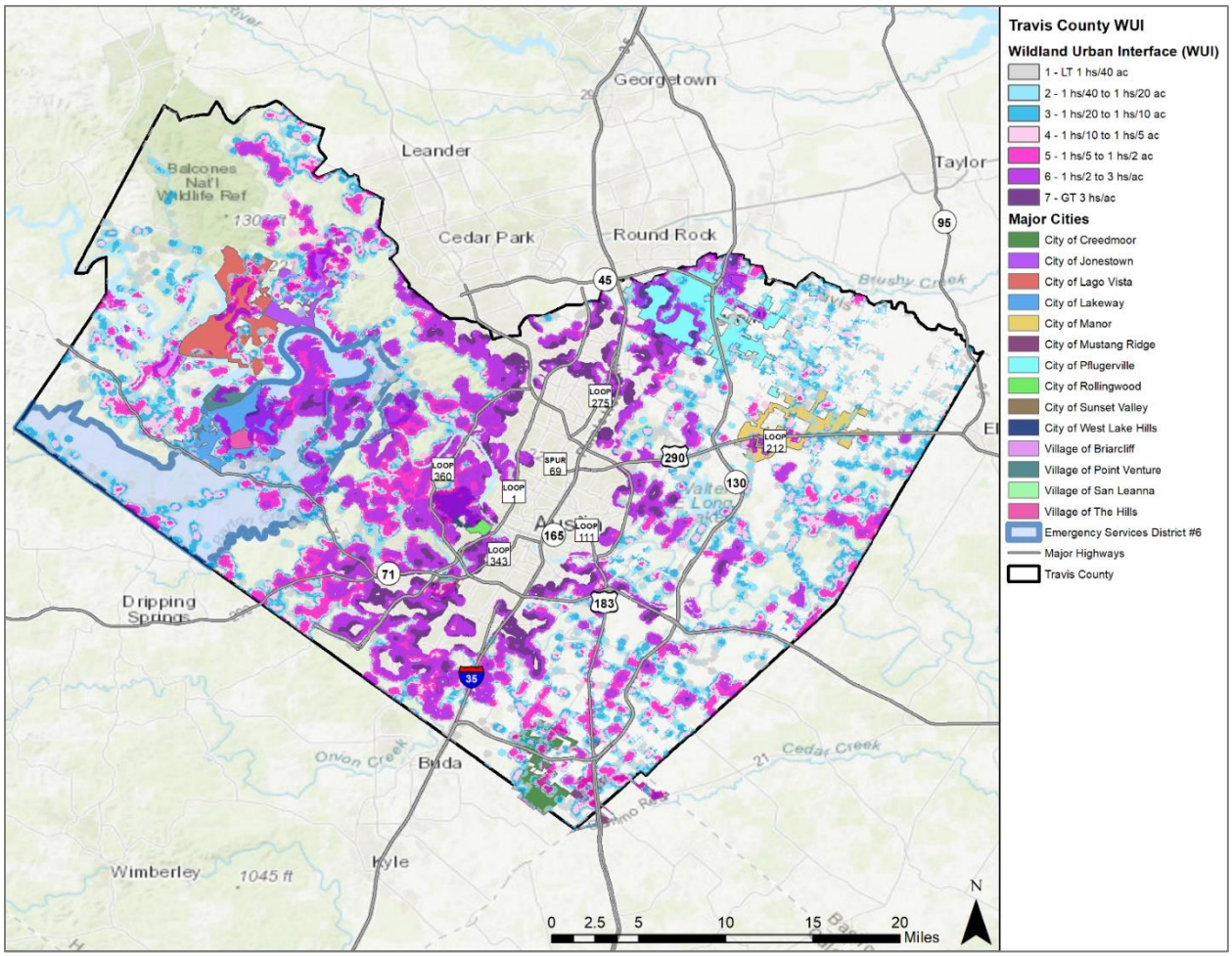
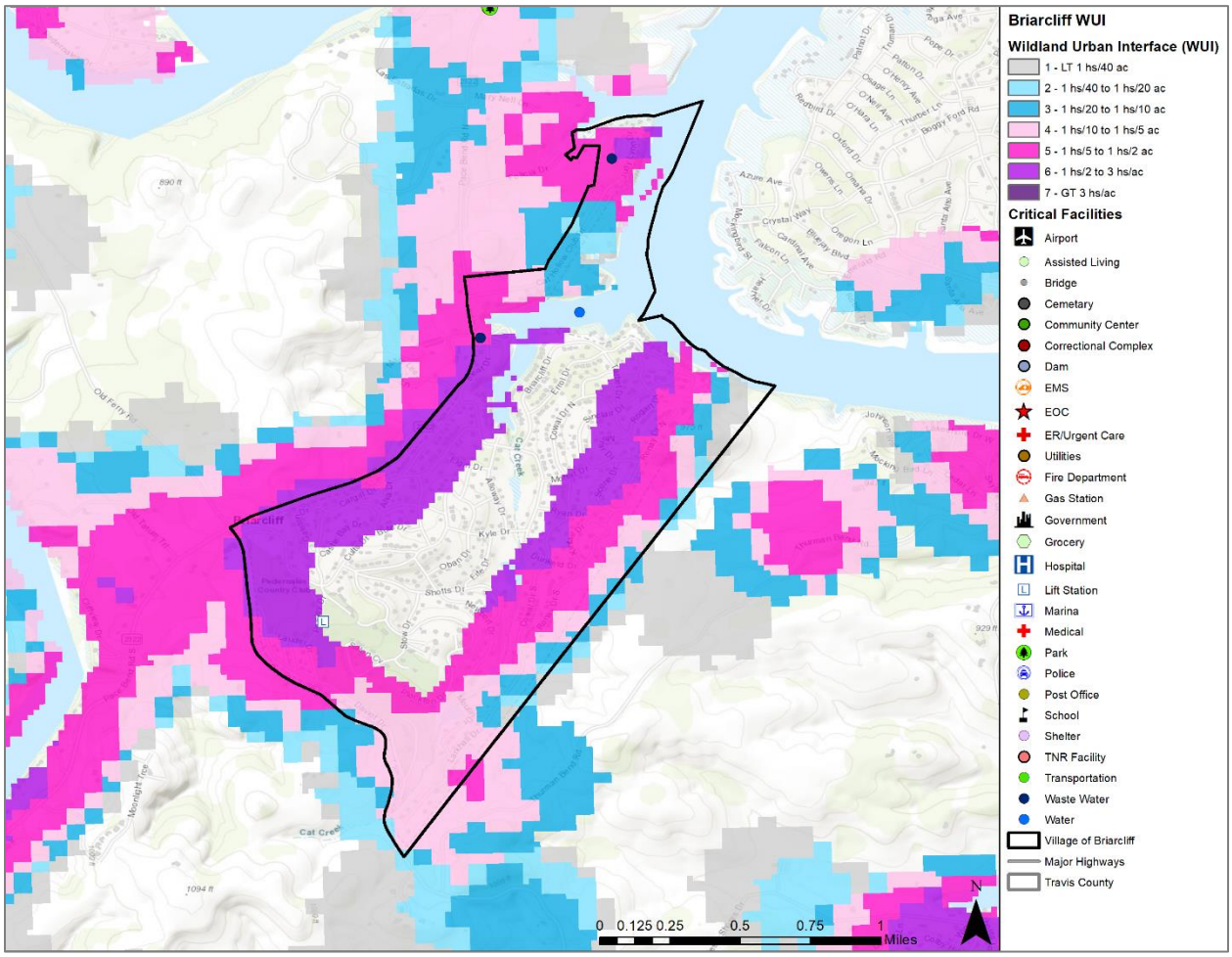
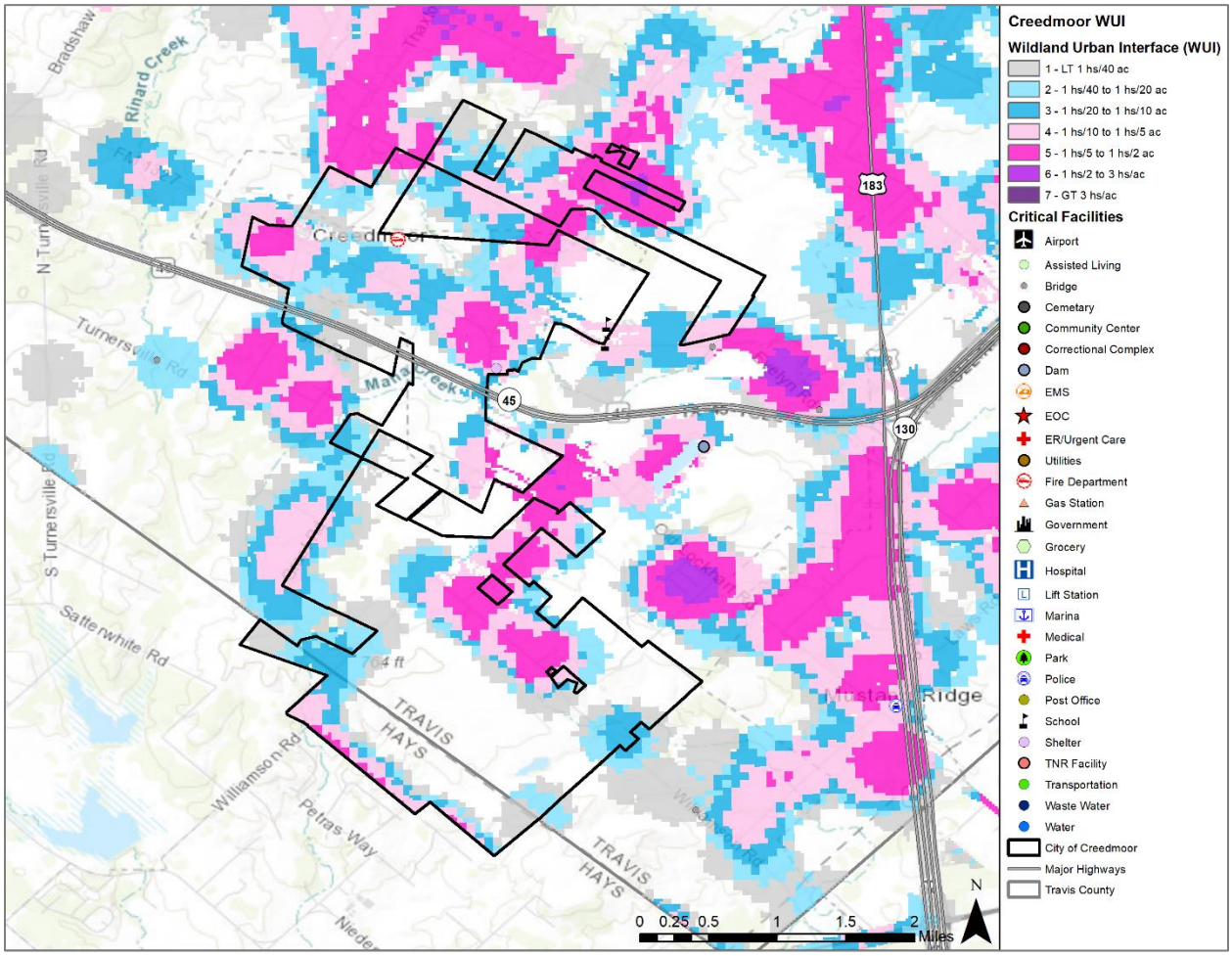


Figure 5-2. Wildland Urban Interface Map – Village of Briarcliff



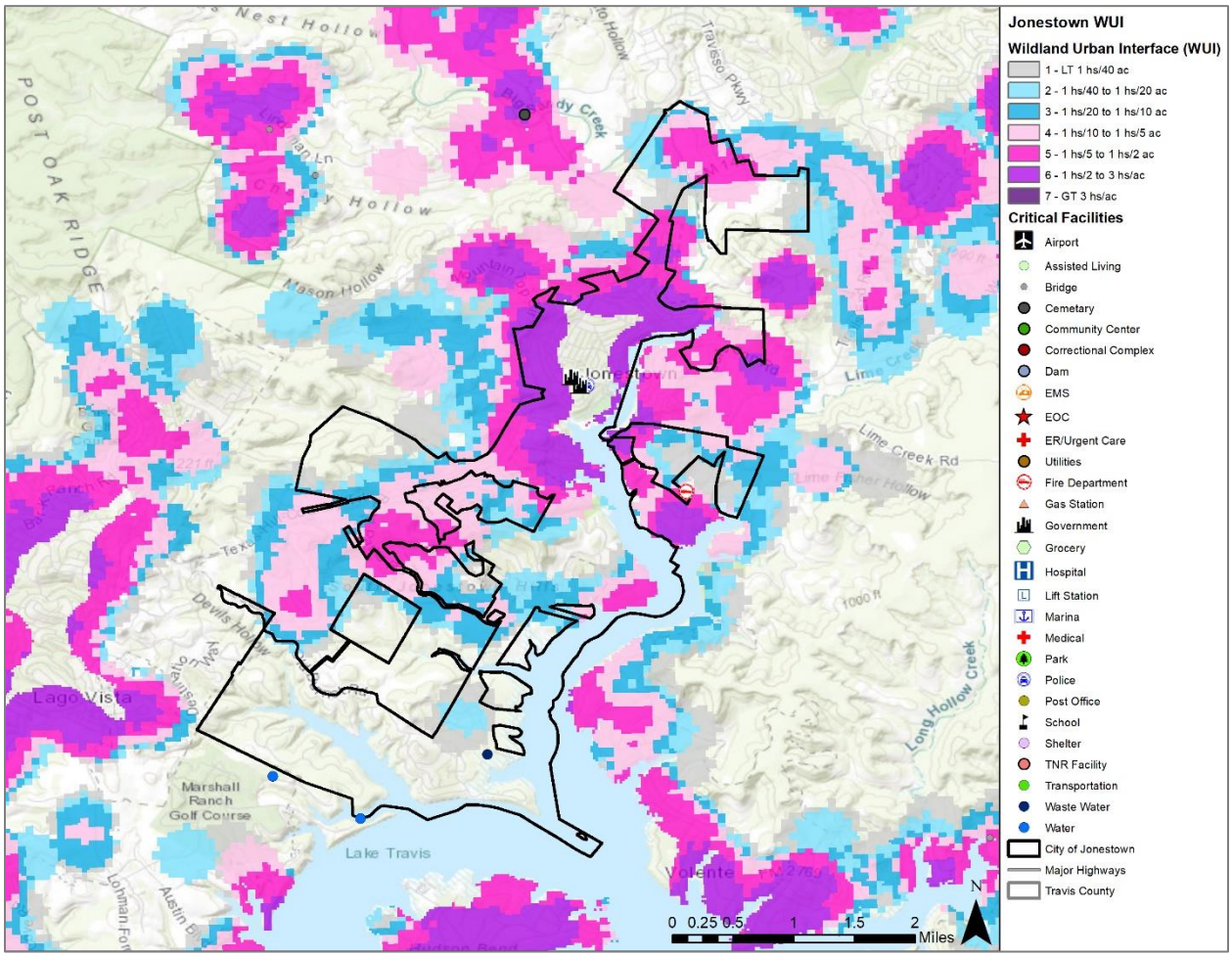
It is estimated that 59 percent of the total population in the Village of Briarcliff live within the WUI. However, the entire village is at some risk for wildfires.

Figure 5-3. Wildland Urban Interface Map – City of Creedmoor



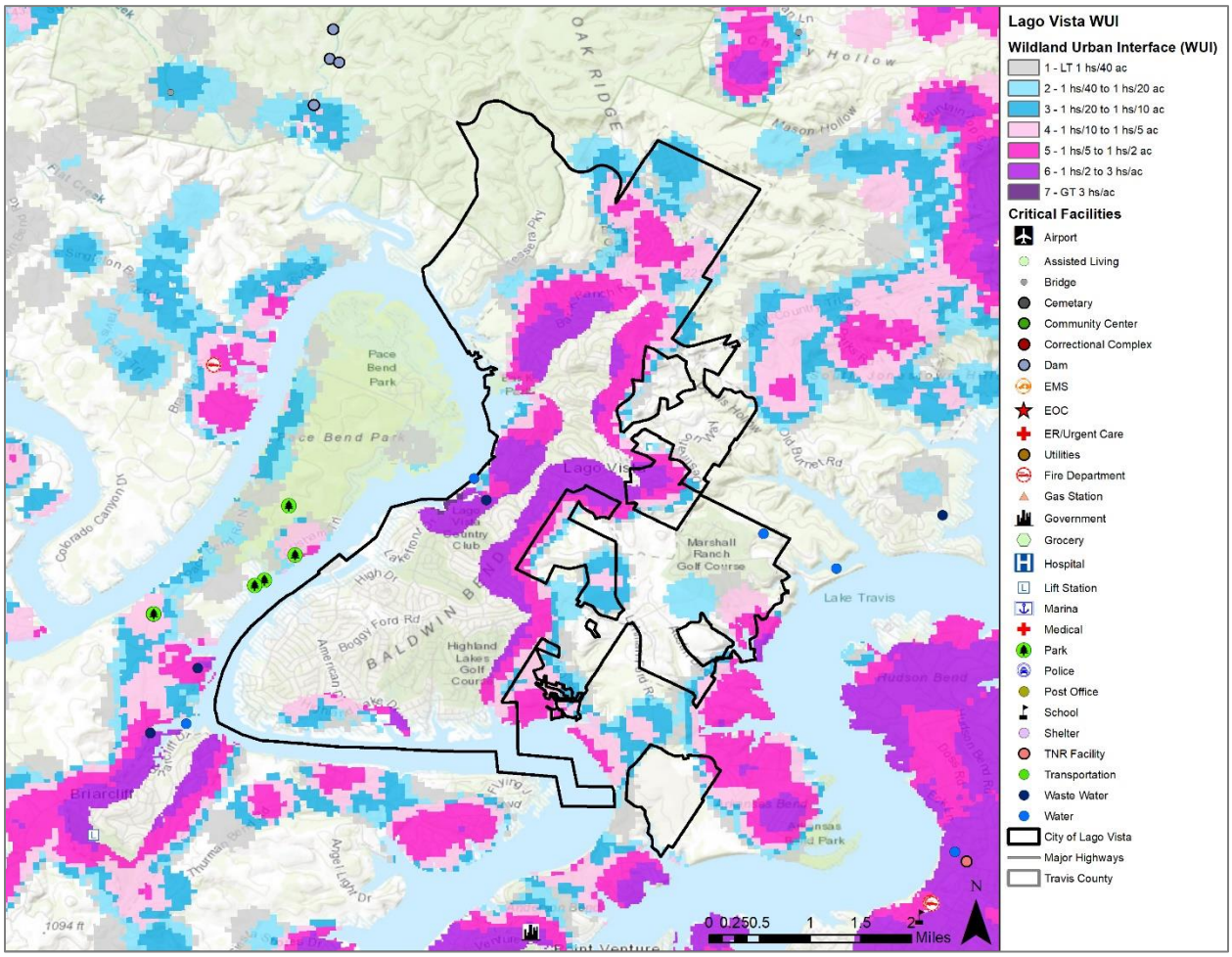
It is estimated that 96 percent of the total population in the City of Creedmoor live within the WUI. However, the entire city is at some risk for wildfires.

Figure 5-4. Wildland Urban Interface Map – City of Jonestown



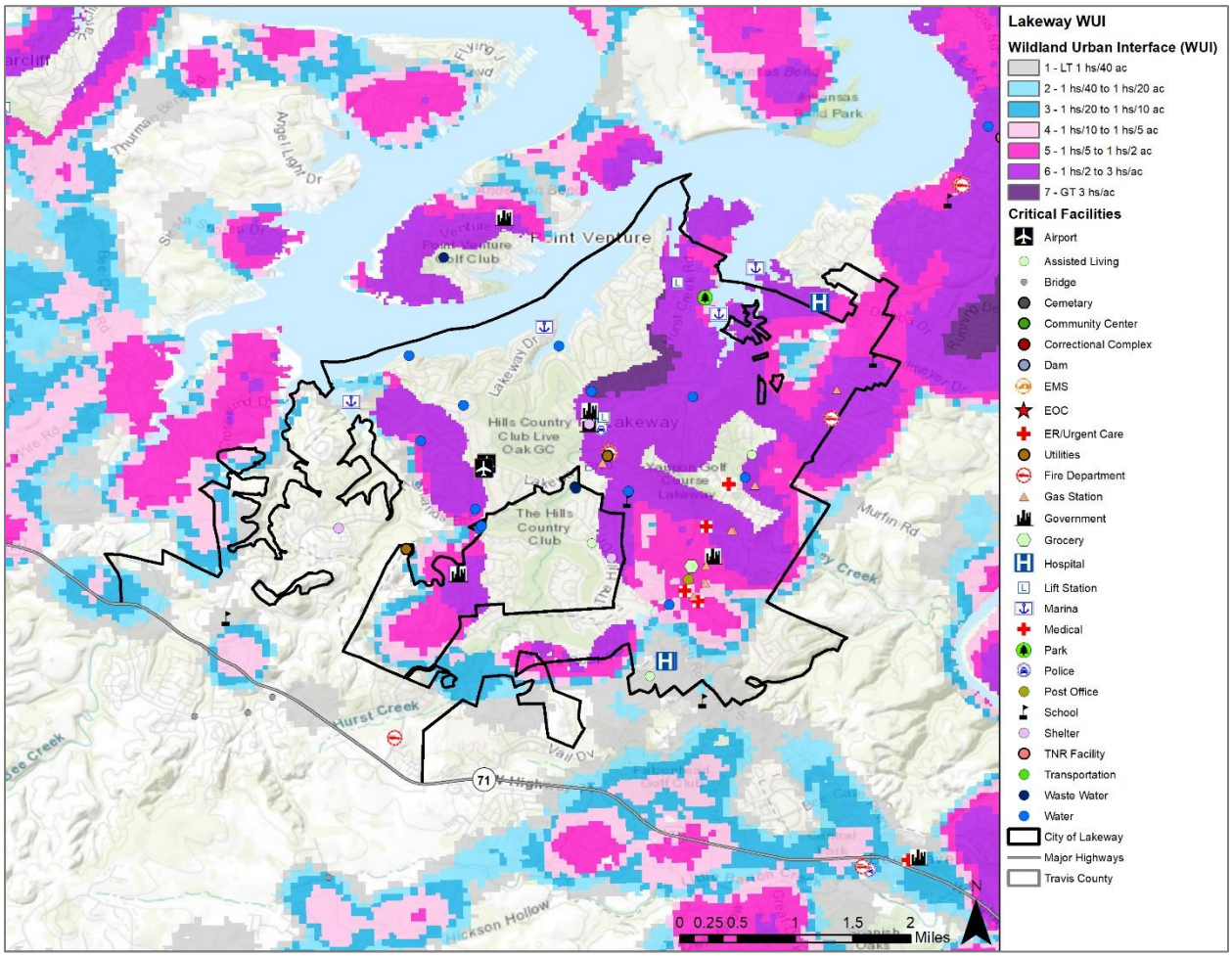
It is estimated that 69 percent of the total population in the City of Jonestown live within the WUI. However, the entire city is at some risk for wildfires.

Figure 5-5. Wildland Urban Interface Map – City of Lago Vista



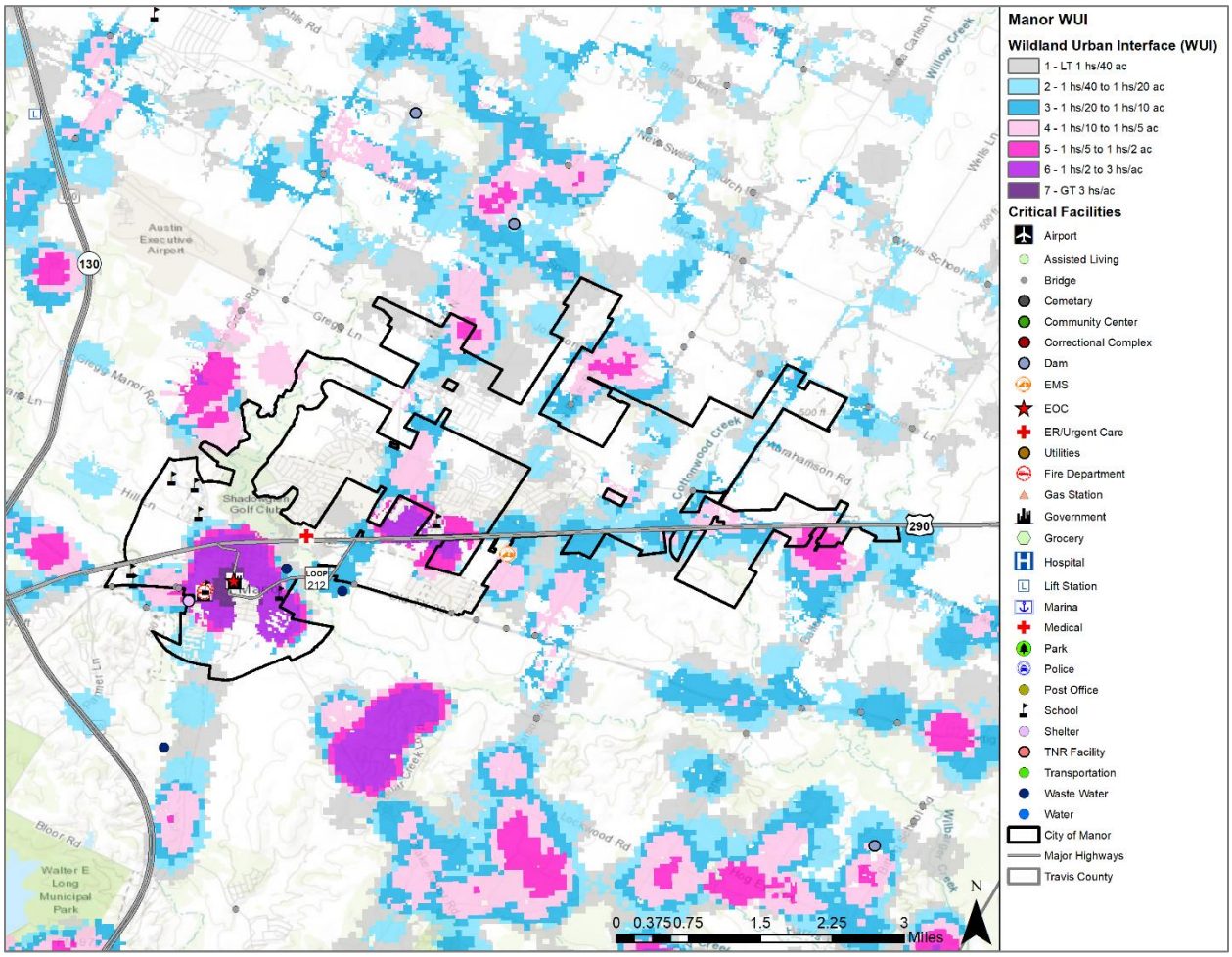
It is estimated that 34 percent of the total population in the City of Lago Vista live within the WUI. However, the entire city is at some risk for wildfires.

Figure 5-6. Wildland Urban Interface Map – City of Lakeway



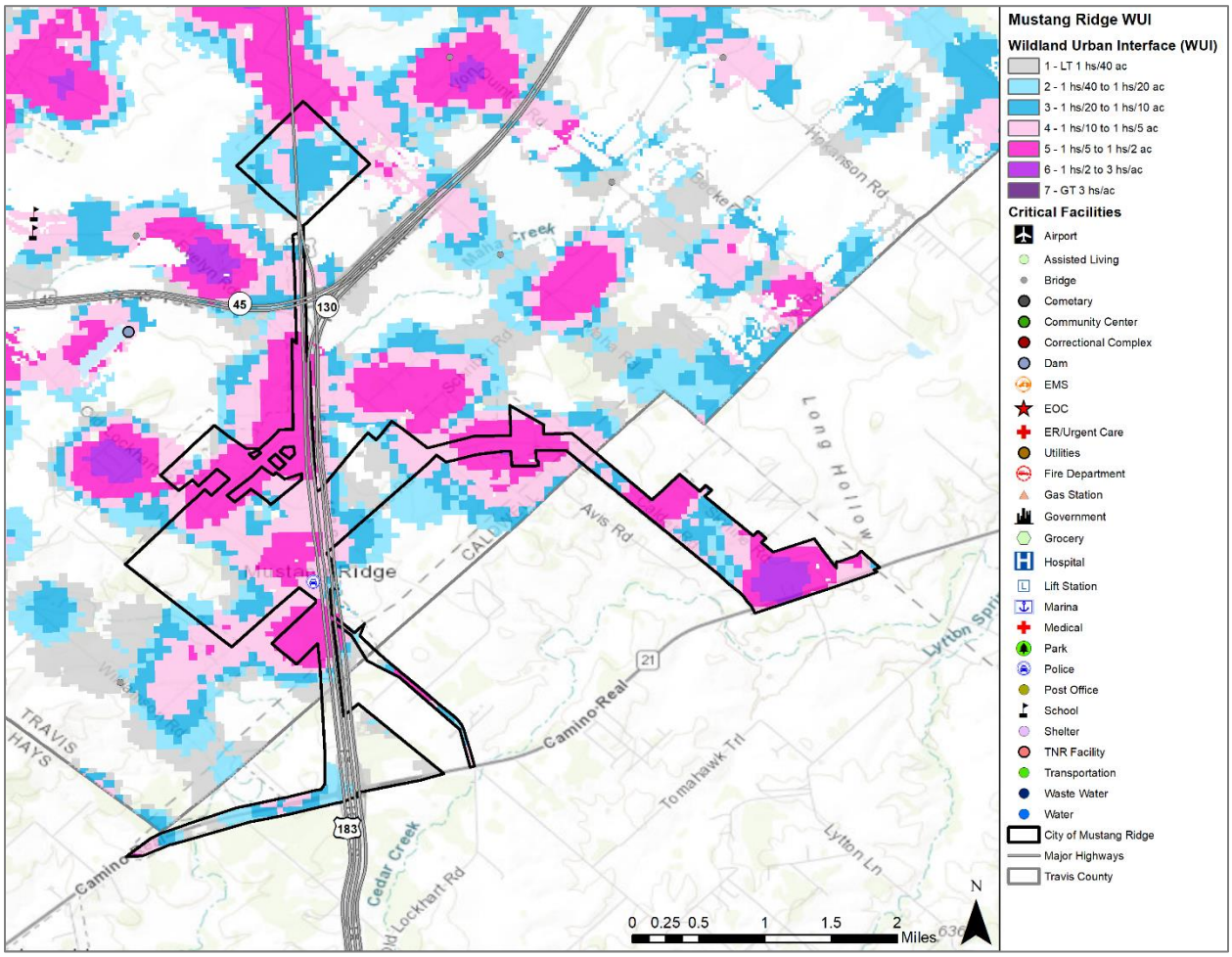
It is estimated that 55 percent of the total population in the City of Lakeway live within the WUI. However, the entire city is at some risk for wildfires.

Figure 5-7. Wildland Urban Interface Map – City of Manor



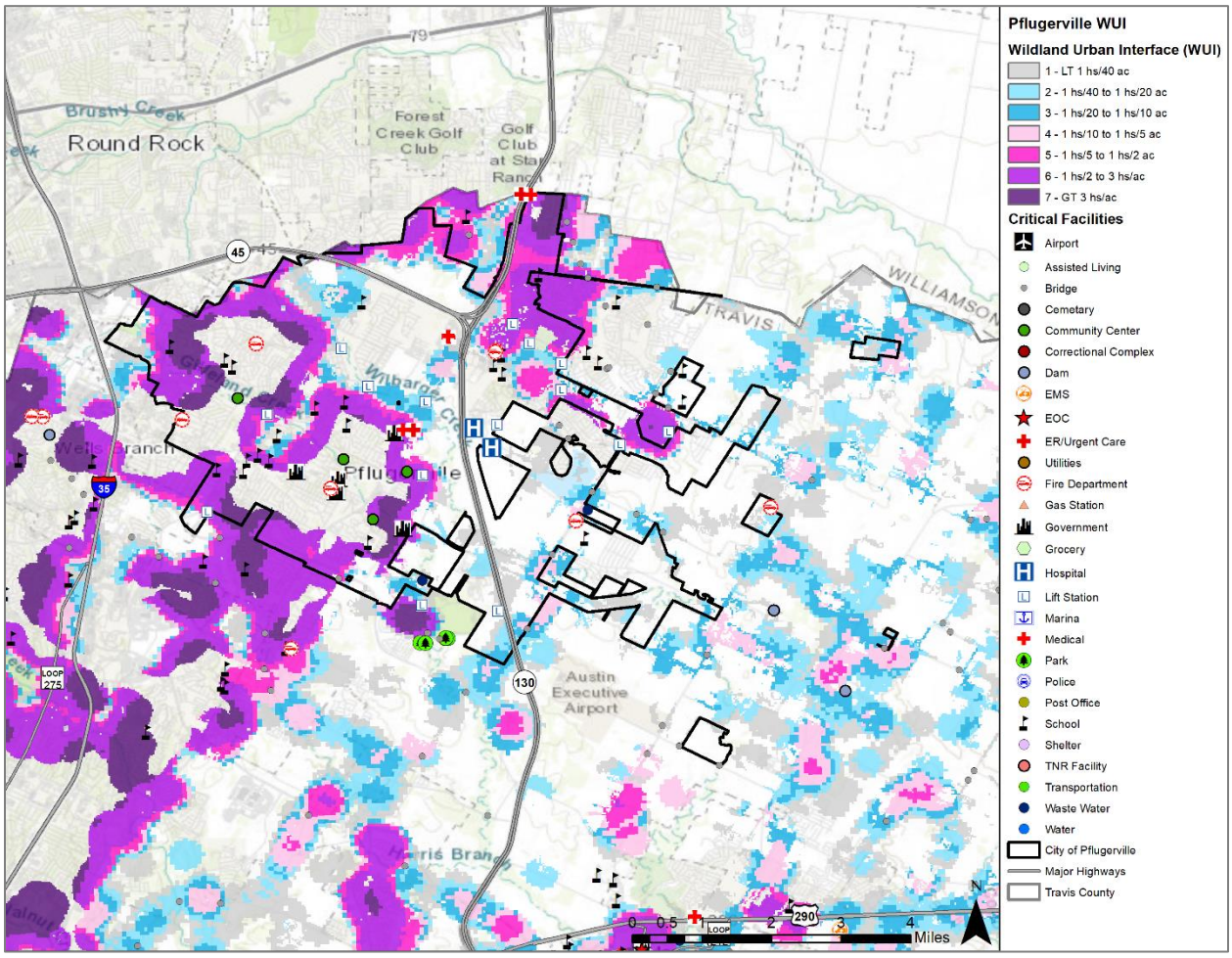
It is estimated that 79 percent of the total population in the City of Manor live within the WUI. However, the entire city is at some risk for wildfires.

Figure 5-8. Wildland Urban Interface Map – City of Mustang Ridge



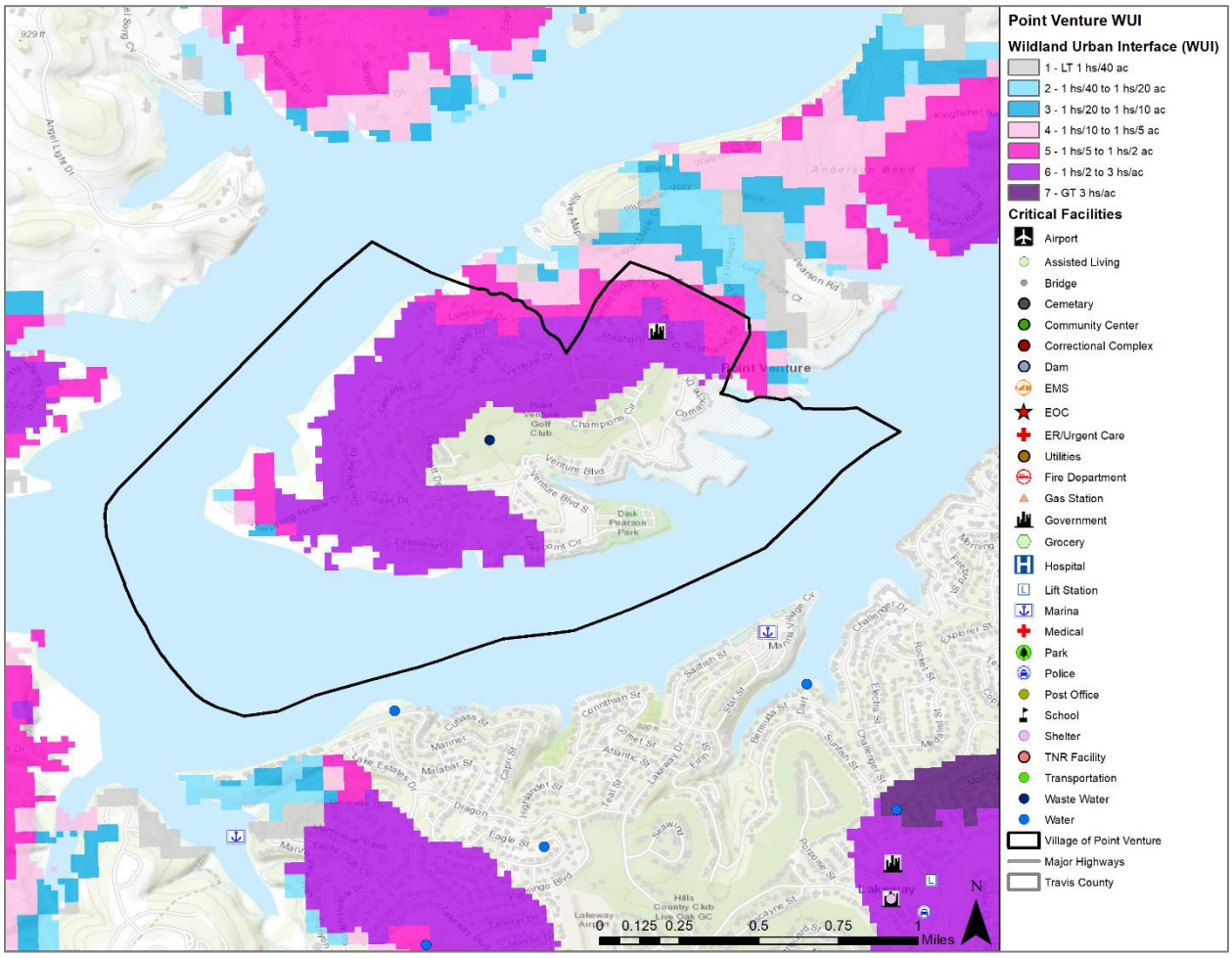
It is estimated that 99 percent of the total population in the City of Mustang Ridge live within the WUI.

Figure 5-9 Wildland Urban Interface Map – City of Pflugerville



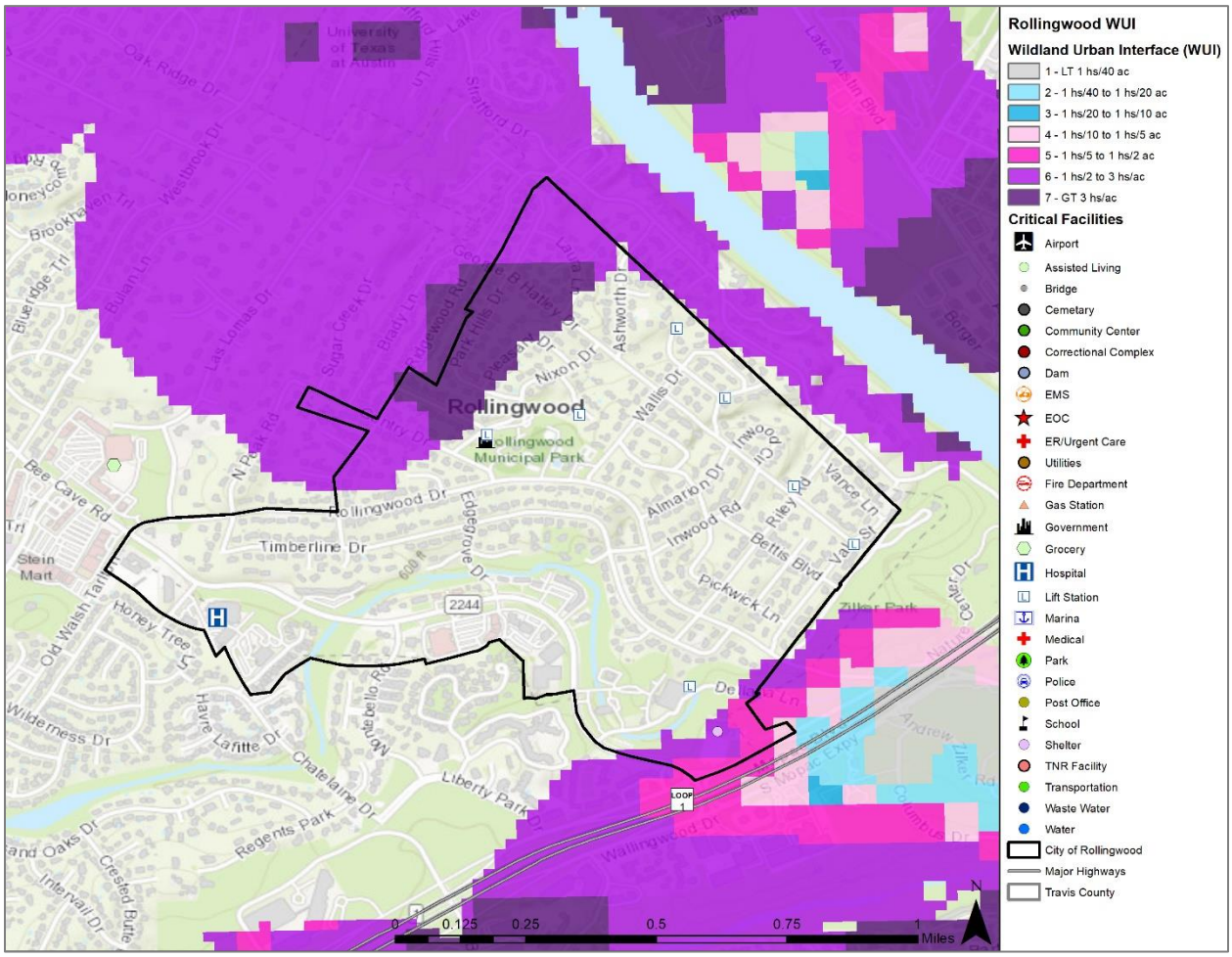
It is estimated that 48 percent of the total population in the City of Pflugerville live within the WUI. However, the entire city is at some risk for wildfires.

Figure 5-10. Wildland Urban Interface Map – Village of Point Venture



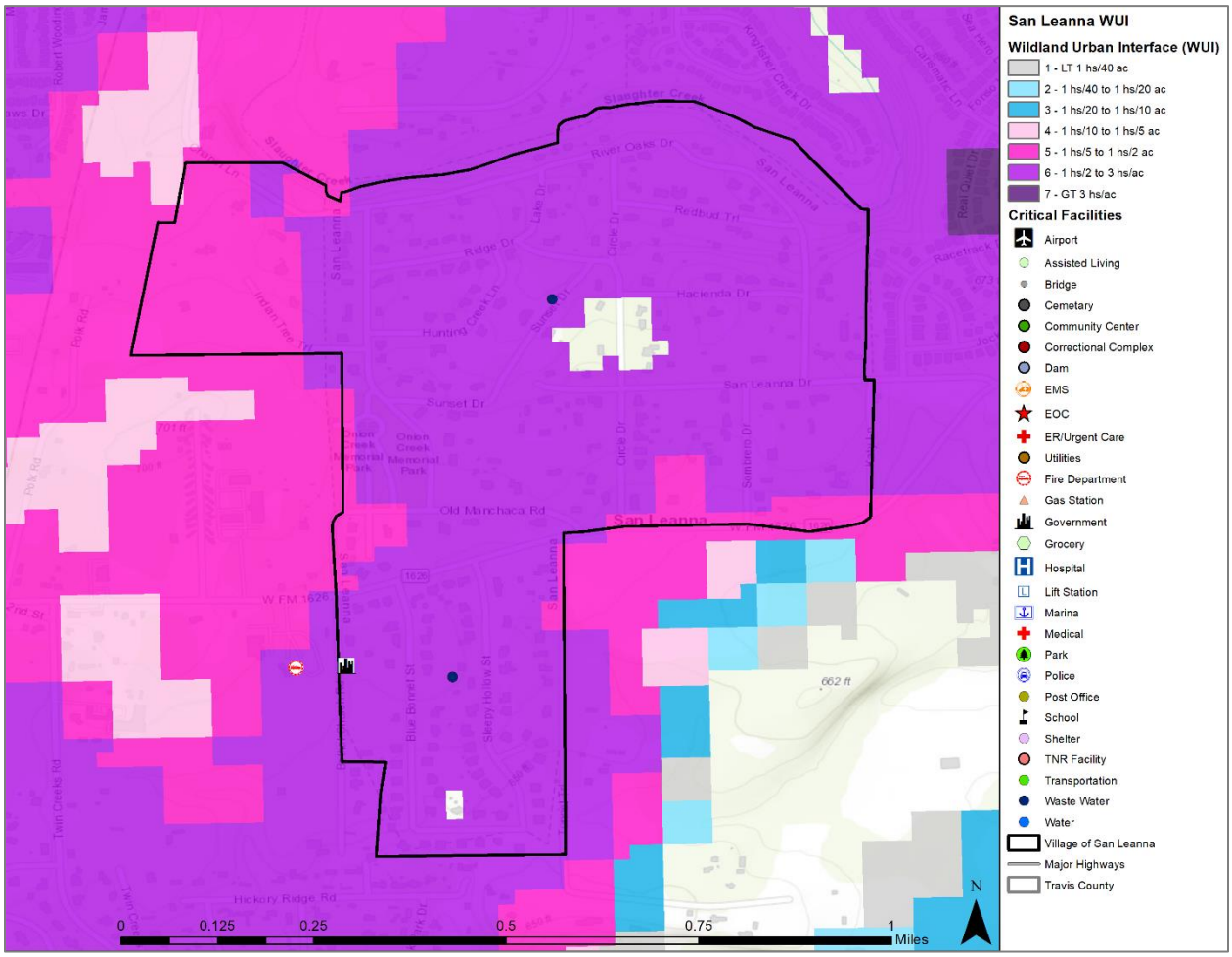
It is estimated that 65 percent of the total population in the Village of Point Venture live within the WUI. However, the entire village is at some risk for wildfires.

Figure 5-11. Wildland Urban Interface Map – City of Rollingwood



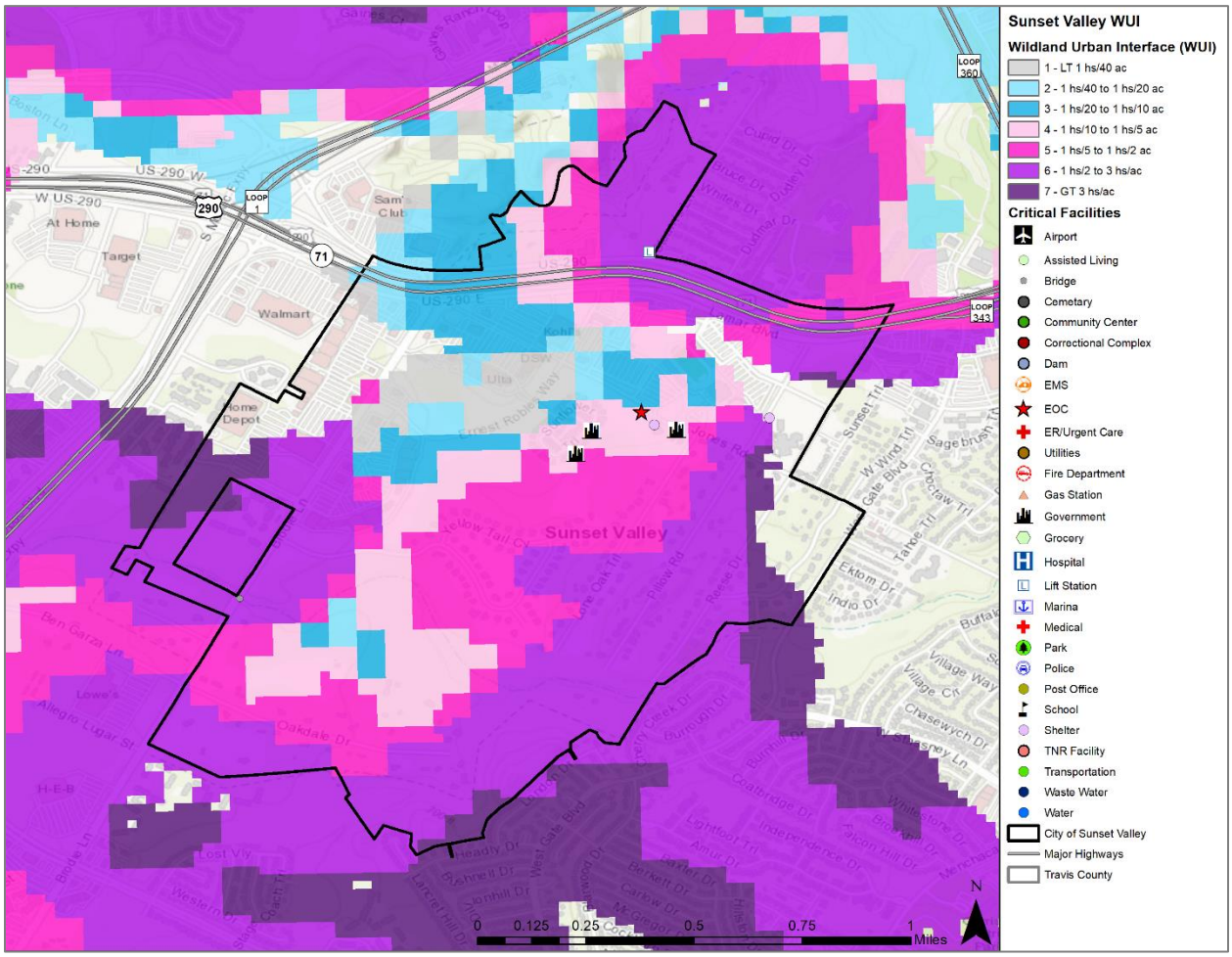
It is estimated that 19 percent of the total population in the City of Rollingwood live within the WUI. However, the entire city is at some risk for wildfires.

Figure 5-12. Wildland Urban Interface Map – Village of San Leanna



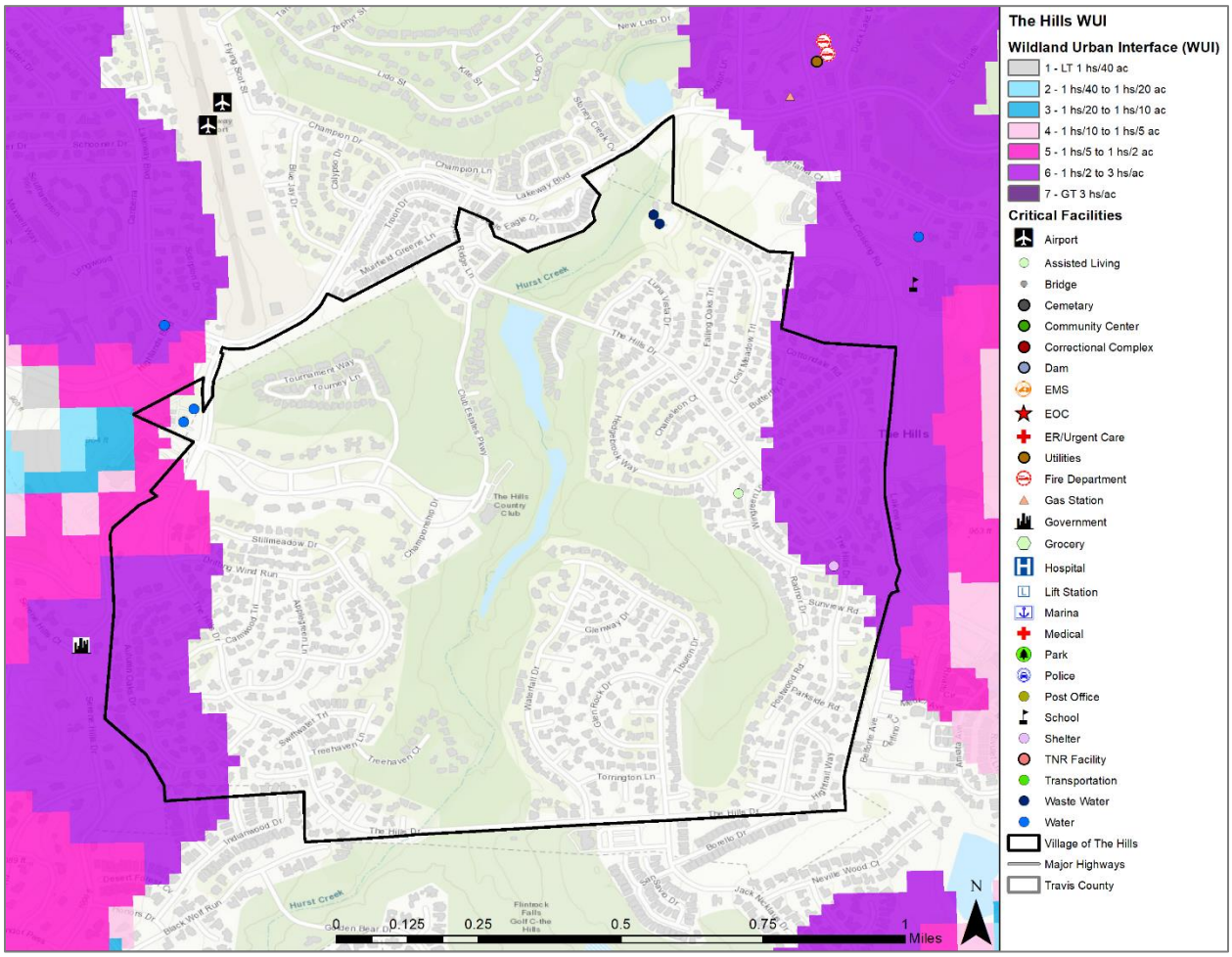
It is estimated that 97 percent of the total population in the Village of San Leanna live within the WUI. However, the entire village is at some risk for wildfires.

Figure 5-13. Wildland Urban Interface Map – City of Sunset Valley



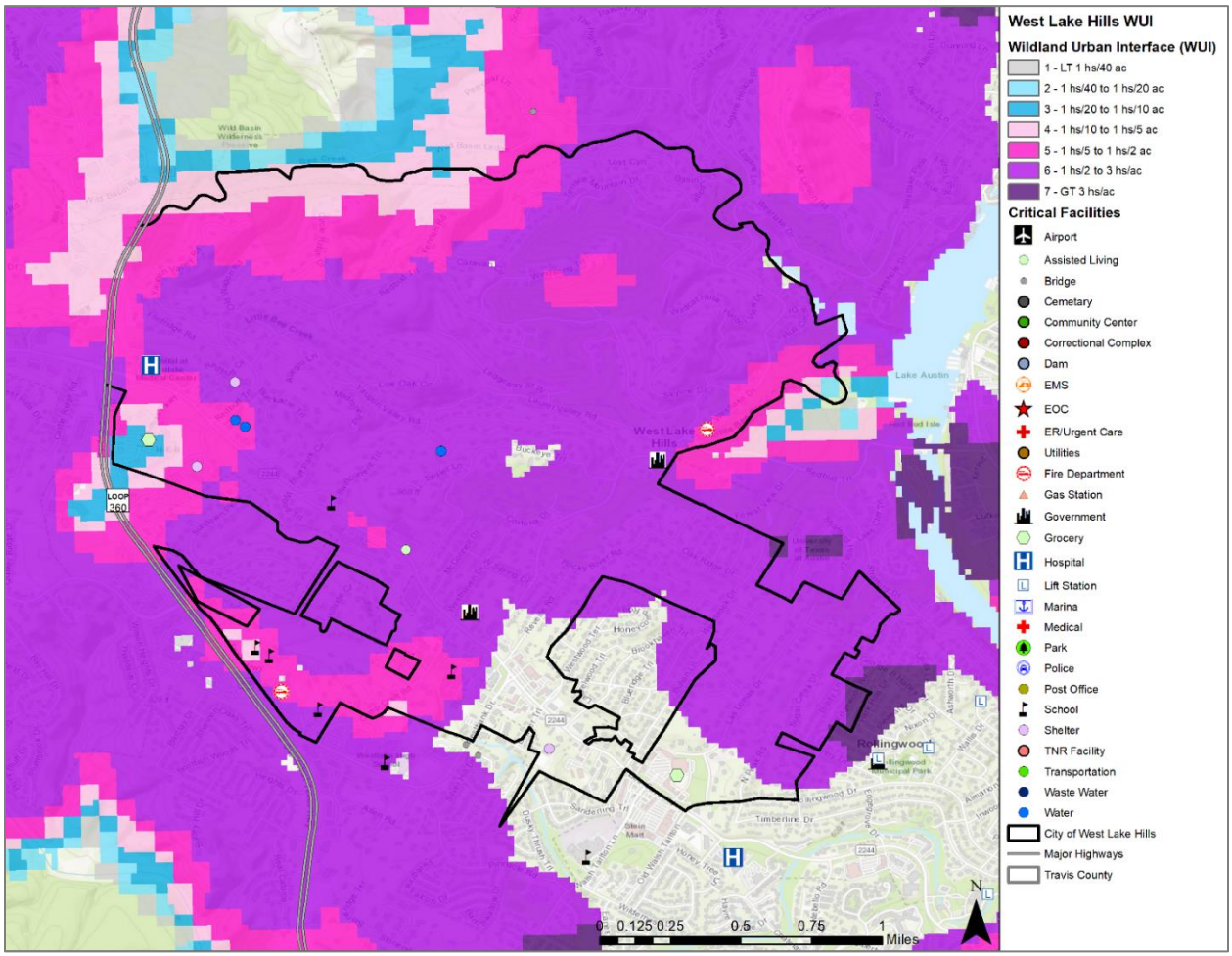
It is estimated that 77 percent of the total population in the City of Sunset Valley live within the WUI. However, the entire city is at some risk for wildfires.

Figure 5-14. Wildland Urban Interface Map – Village of The Hills



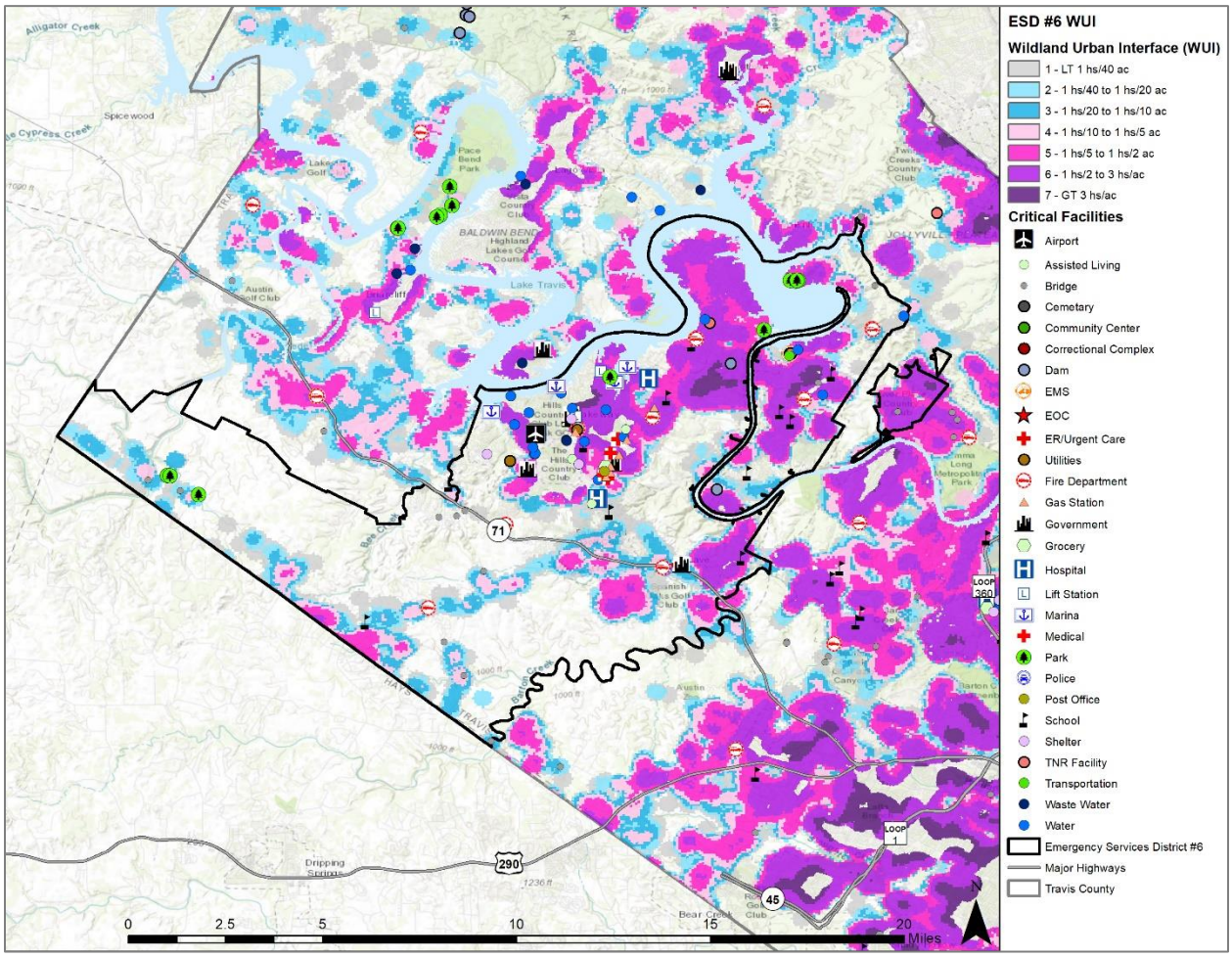
It is estimated that 17 percent of the total population in the Village of The Hills live within the WUI. However, the entire village is at some risk for wildfires.

Figure 5-15. Wildland Urban Interface Map – City of West Lake Hills



It is estimated that 93 percent of the total population in the City of West Lake Hills live within the WUI. However, the entire city is at some risk for wildfires.

Figure 5-16. Wildland Urban Interface Map – Emergency Services District #6



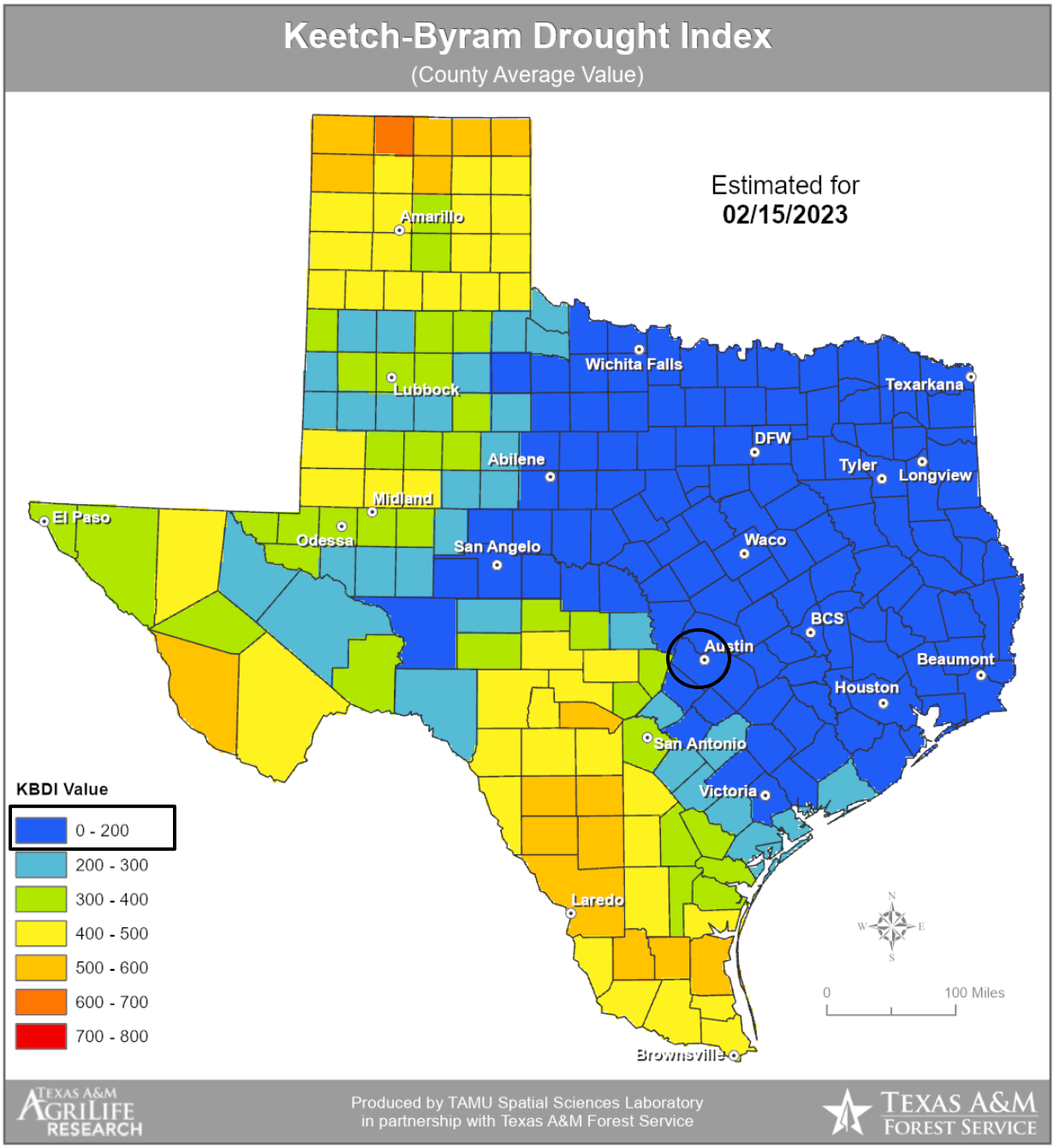
All seven fire station facilities in ESD #6 are located in the WUI. In addition, an estimated 80 percent of the total population within the Travis County ESD #6 boundaries live within the WUI. However, the entire district is at some risk for wildfires.

EXTENT

Risk for a wildfire event is measured in terms of magnitude and intensity using the Keetch Byram Drought Index (KBDI), a mathematical system for relating current and recent weather conditions to potential or expected fire behavior. The KBDI determines forest fire potential based on a daily water balance, derived by balancing a drought factor with precipitation and soil moisture (assumed to have a maximum storage capacity of eight inches), and is expressed in hundredths of an inch of soil moisture depletion.

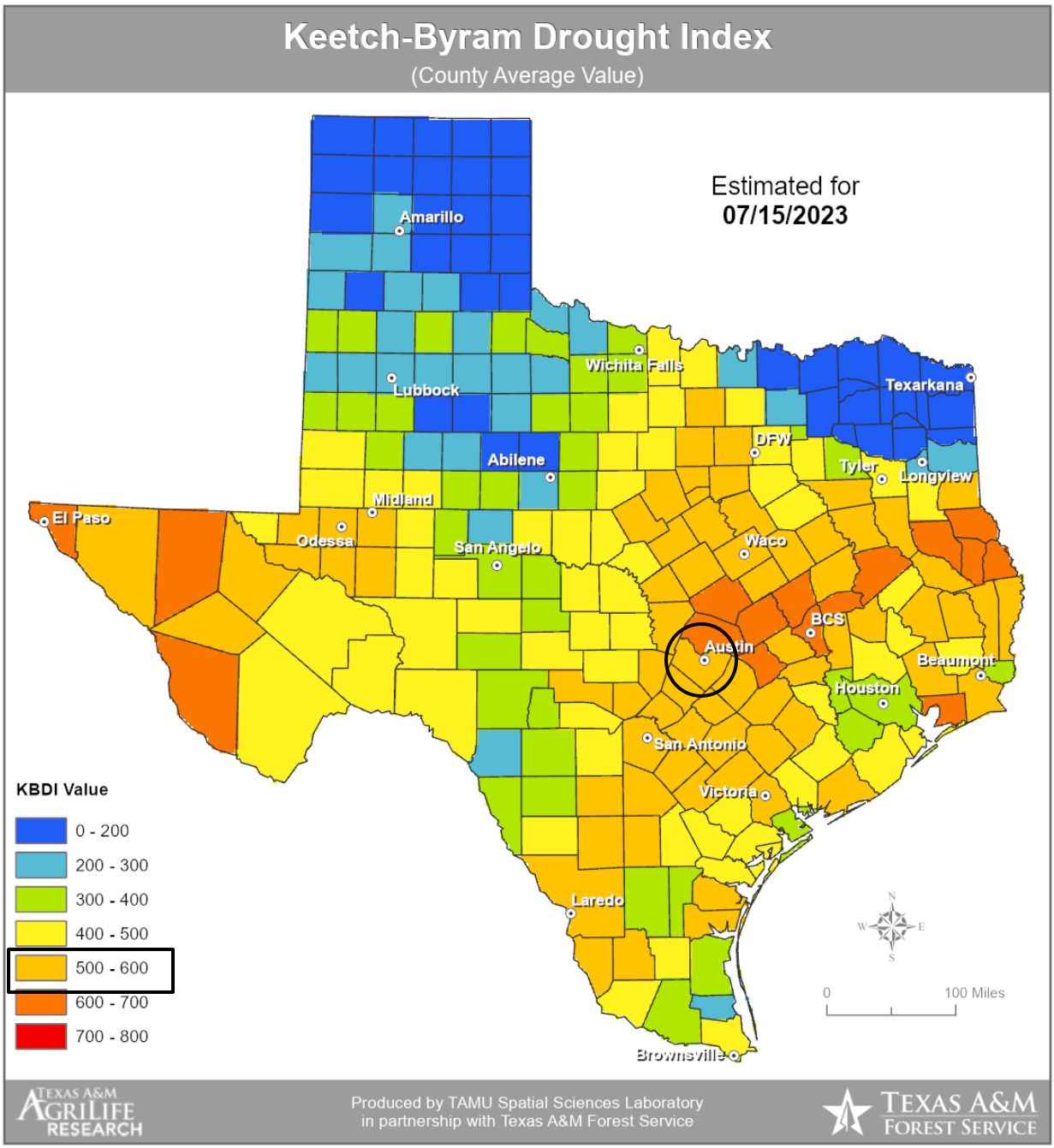
Each color in Figure 5-17 and 5-18 represents the drought index at that location, by date. The drought index ranges from 0 to 800. A drought index of 0 represents no moisture depletion, and a drought index of 800 represents absolutely dry conditions.

Figure 5-17. Keetch-Byram Drought Index (KBDI) for the State of Texas, 2/15/2023[6]



[6] Travis County planning area is located within the black circle.

Figure 5-18. Keetch-Byram Drought Index (KBDI) for the State of Texas, 2023



Fire behavior can be categorized at four distinct levels on the KBDI:

- **0 -200:** Soil and fuel moisture are high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches.
- **200 -400:** Fires more readily burn and will carry across an area with no gaps. Heavier fuels will not readily ignite and burn. Expect smoldering and the resulting smoke to carry into and possibly through the night.

- **400 -600:** Fires intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.
- **600 -800:** Fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn through the night and heavier fuels will actively burn and contribute to fire intensity.

The KBDI is a good measure of the readiness of fuels for a wildfire event. It should be referenced as the area experiences changes in precipitation and soil moisture, while caution should be exercised in dryer, hotter conditions.

The range of intensity for the Travis County planning area, including participating jurisdictions and ESD #6, in a wildfire event is within 600 to 700. The average extent to be mitigated for the planning area, is a KBDI of 575. At this level, fire intensity begins to significantly increase. Fire will readily burn in all directions exposing mineral soils in some locations. It is also noted that at this level Travis County burn bans are initiated. Based on historical occurrences and readily available fuel, the planning area can anticipate a KBDI range from 15 to 780. At the high end of this range fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn through the night and heavier fuels will actively burn and contribute to fire intensity.

The Texas Forest Service's Fire Intensity Scale identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on weighted average of four percentile weather categories. The Travis County planning area has a potential for limited to moderate wildfire intensities. Figure 5-19 through 5-34 identifies the wildfire intensity for the planning area, including participating jurisdictions and ESD #6.

Figure 5-19. Fire Intensity Scale Map – Travis County

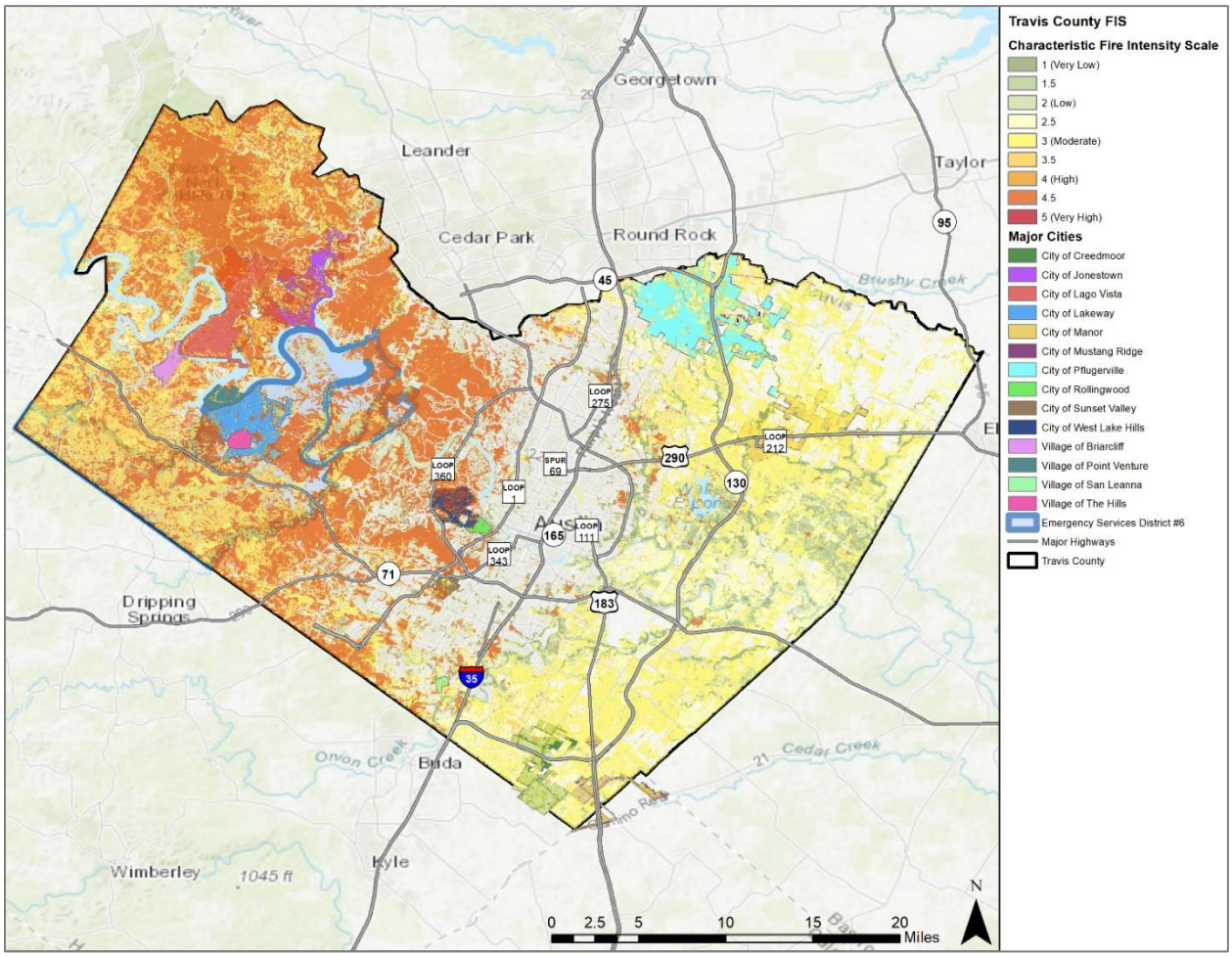


Figure 5-20. Fire Intensity Scale Map – Village of Briarcliff

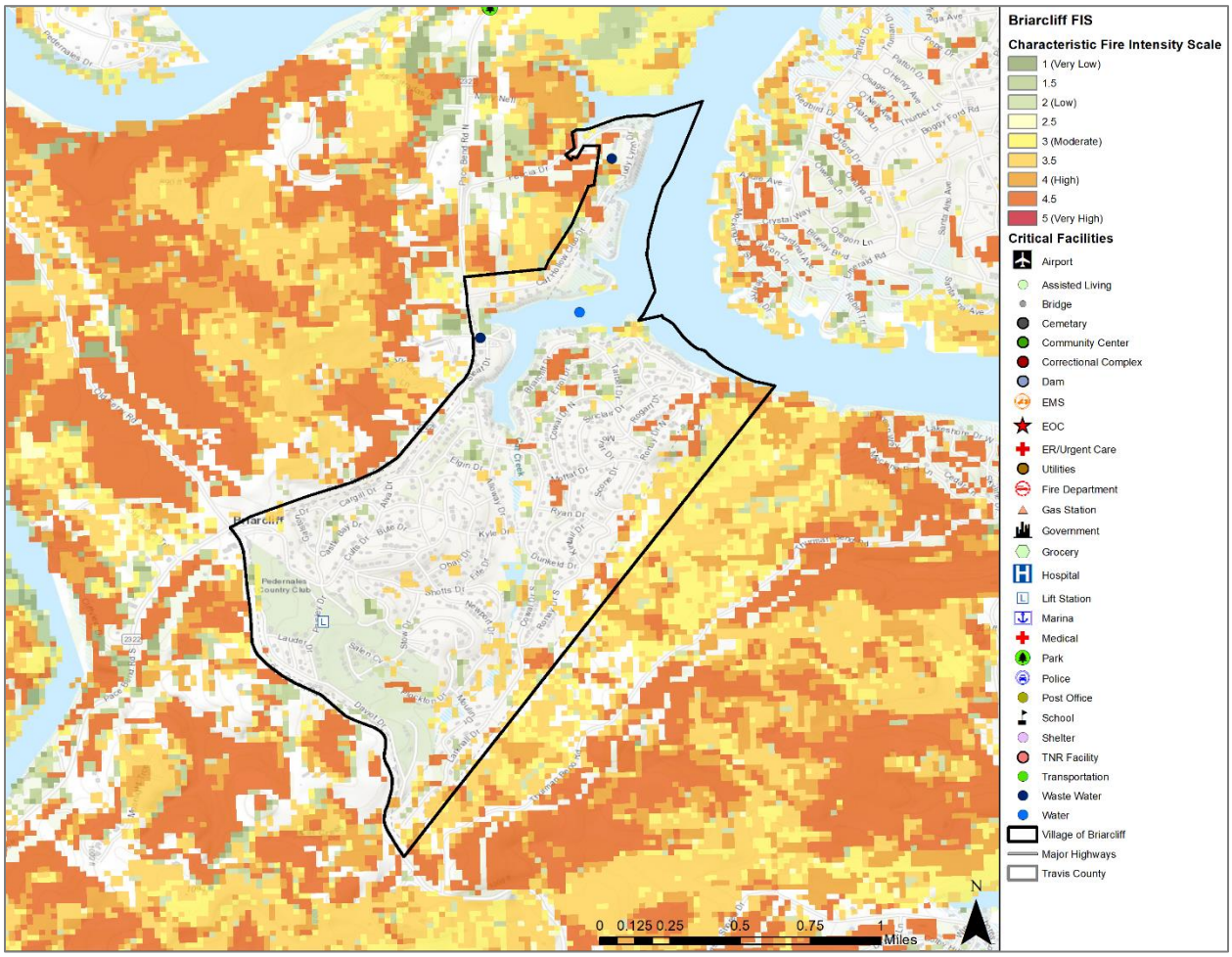


Figure 5-21. Fire Intensity Scale Map – City of Creedmoor

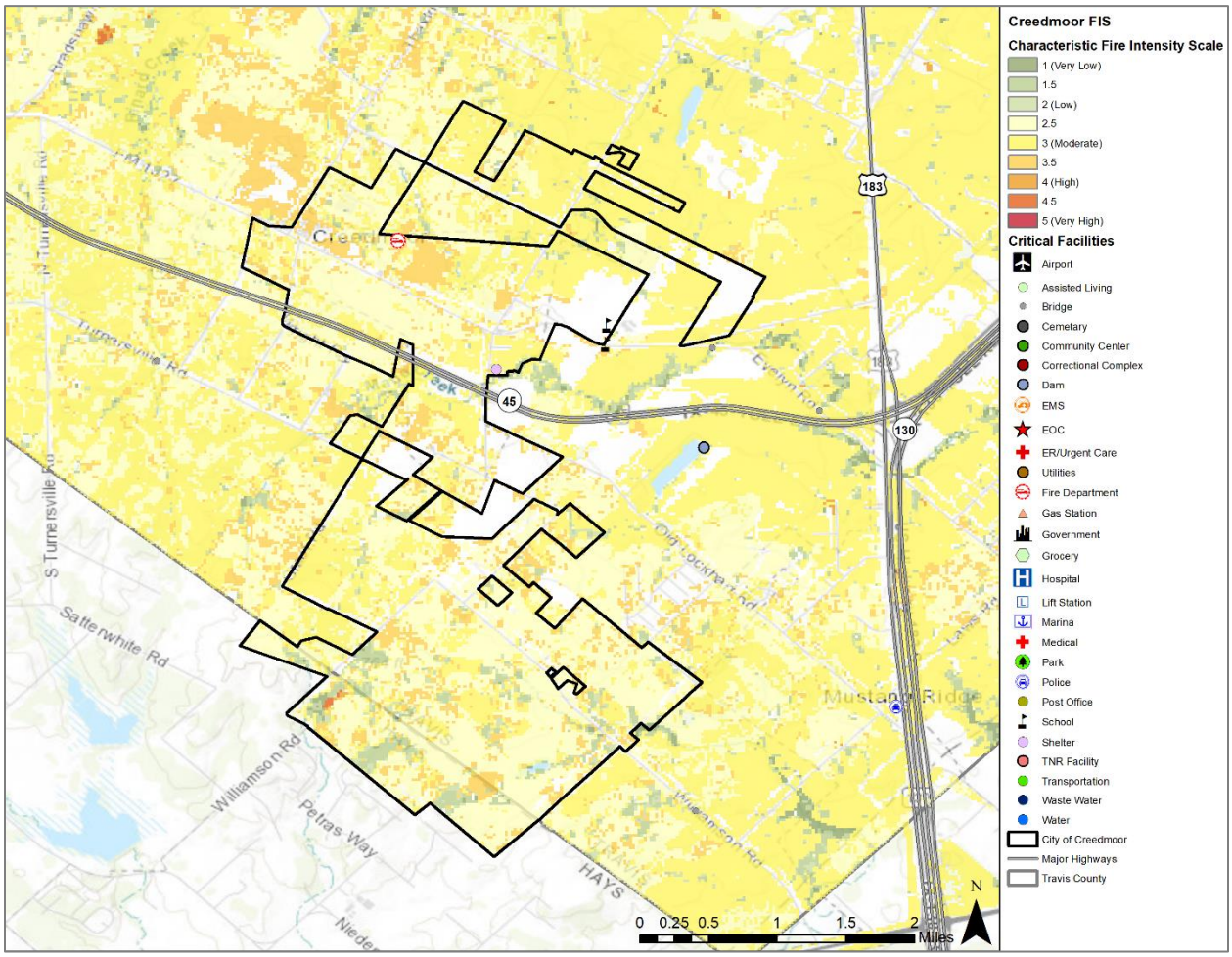


Figure 5-22. Fire Intensity Scale Map – City of Jonestown

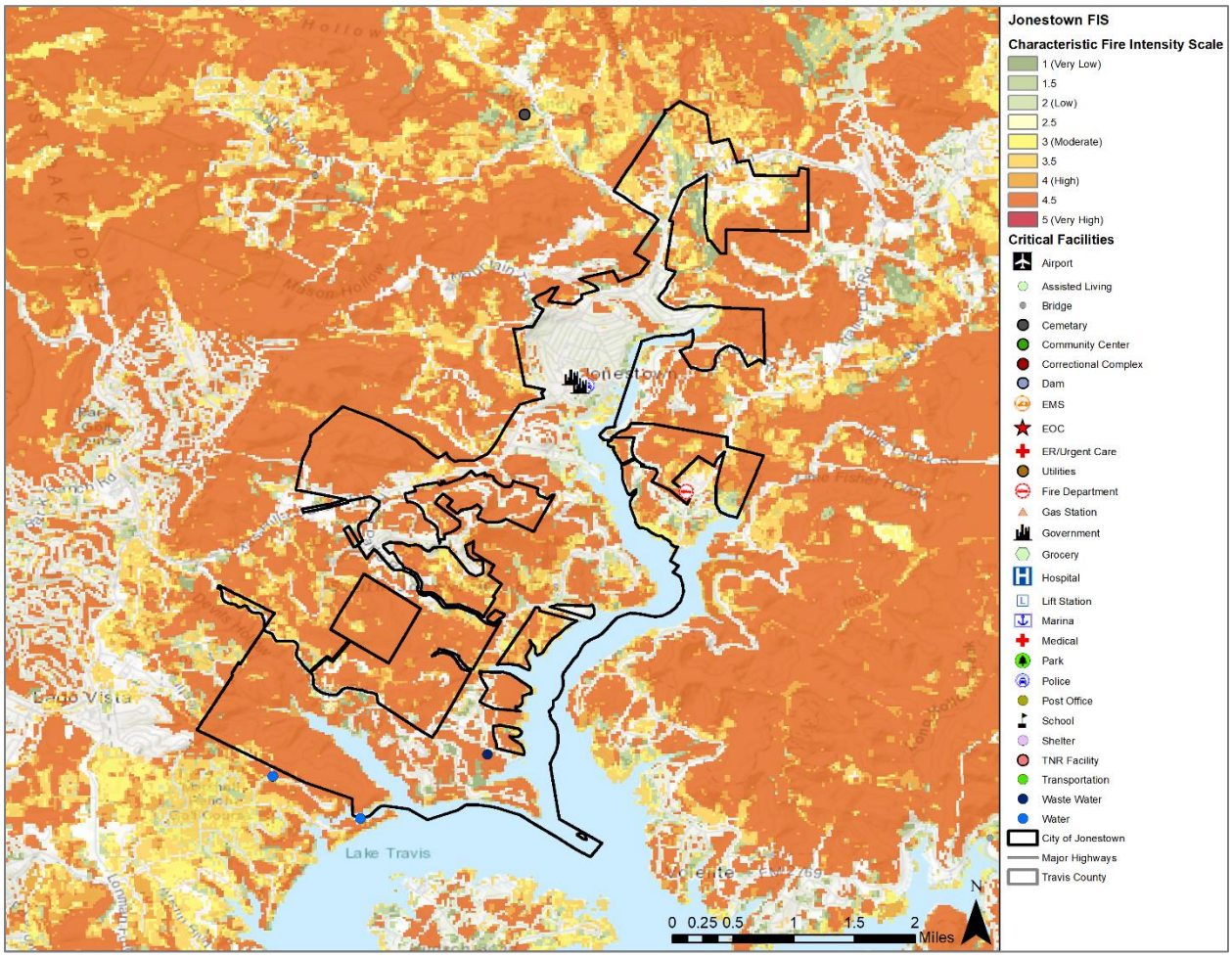


Figure 5-23. Fire Intensity Scale Map – City of Lago Vista

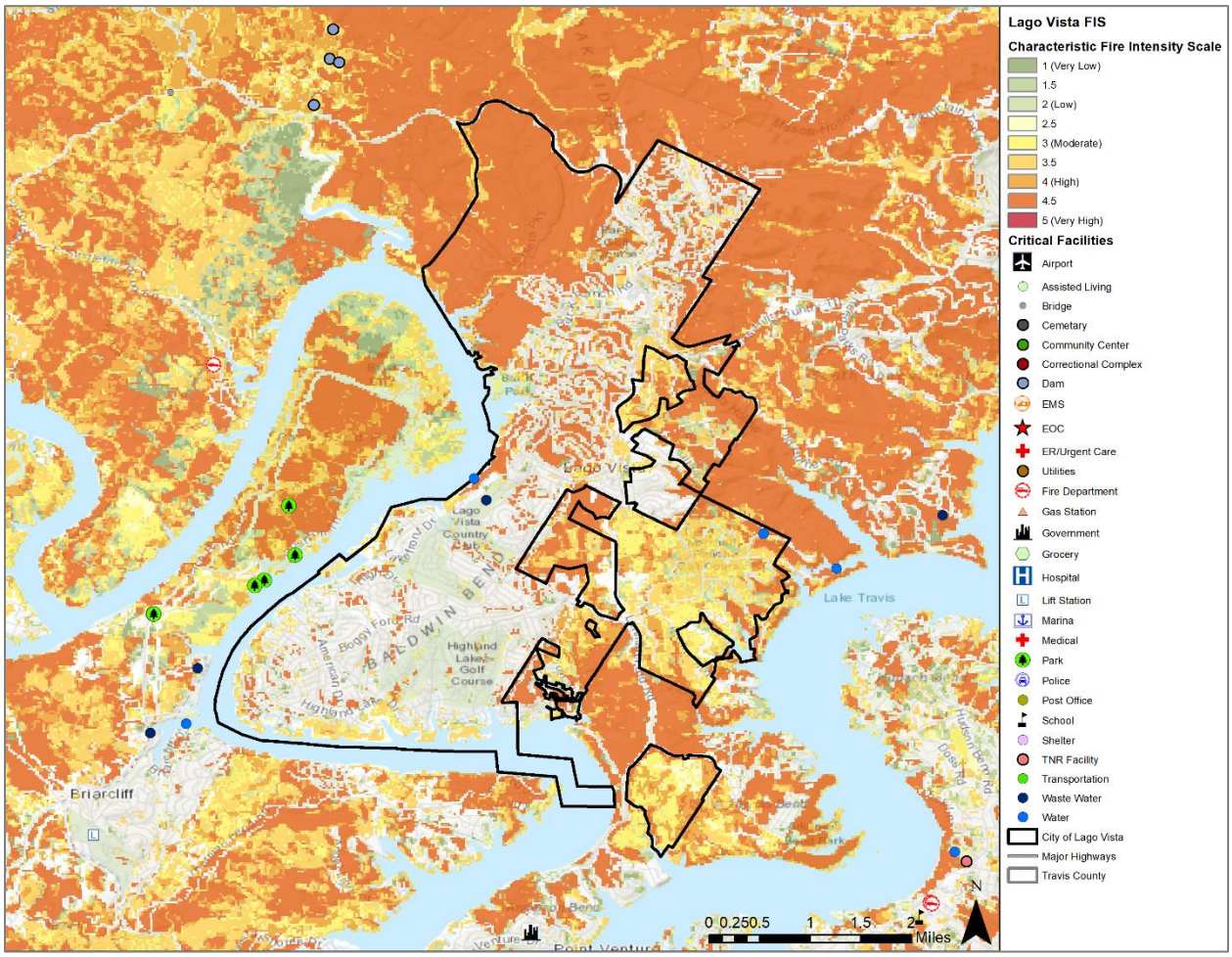


Figure 5-24. Fire Intensity Scale Map – City of Lakeway

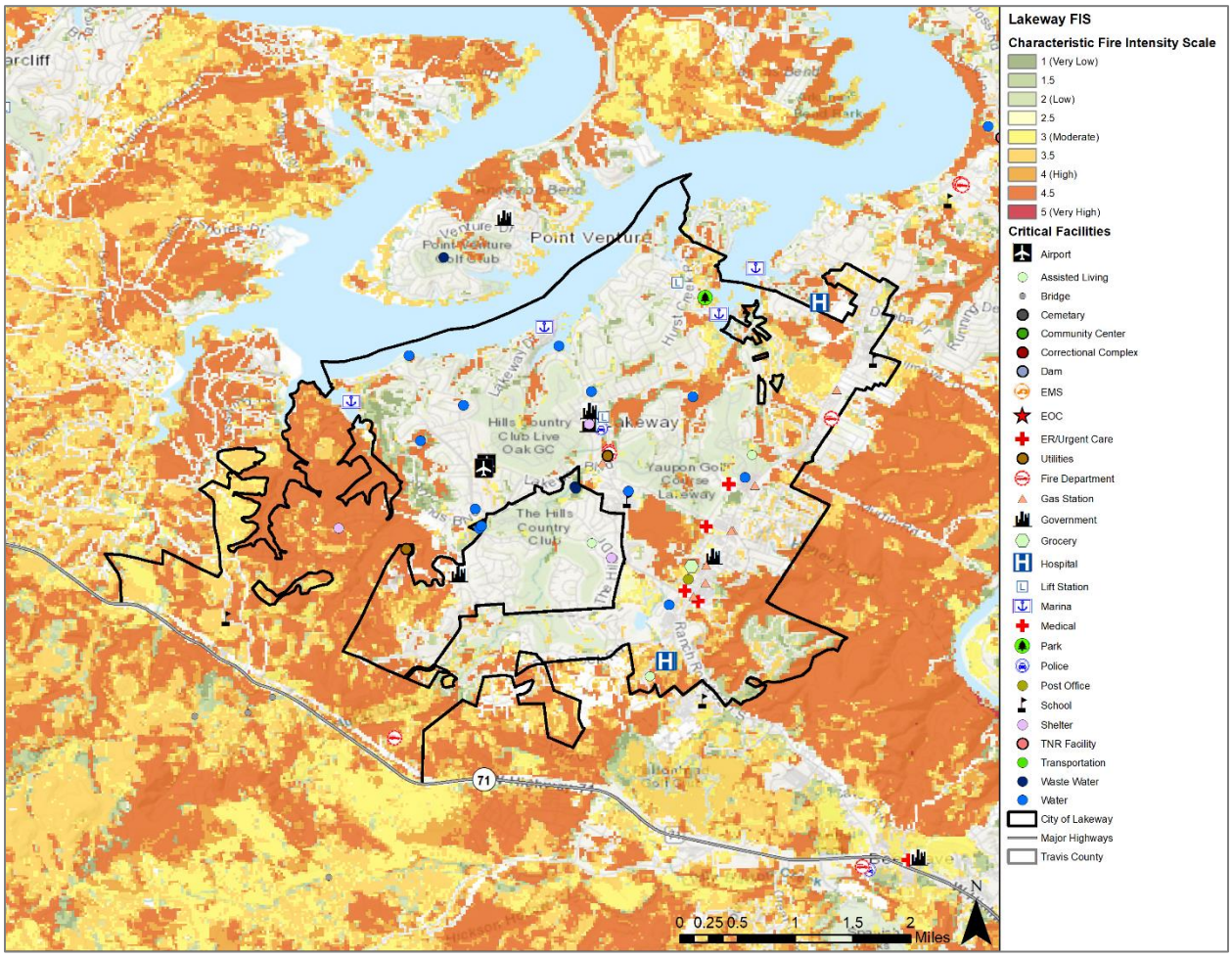


Figure 5-25. Fire Intensity Scale Map – City of Manor

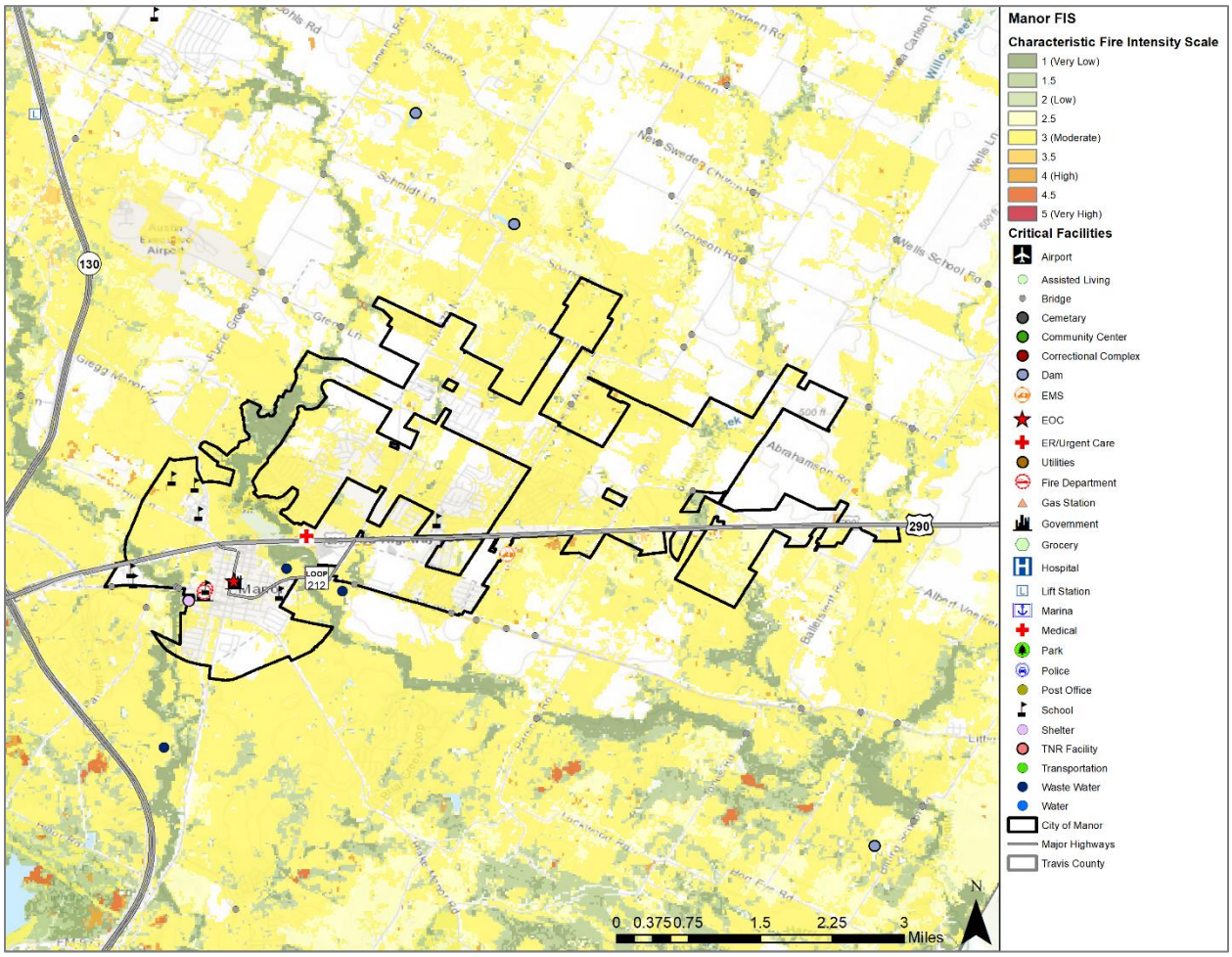


Figure 5-26. Fire Intensity Scale Map – City of Mustang Ridge

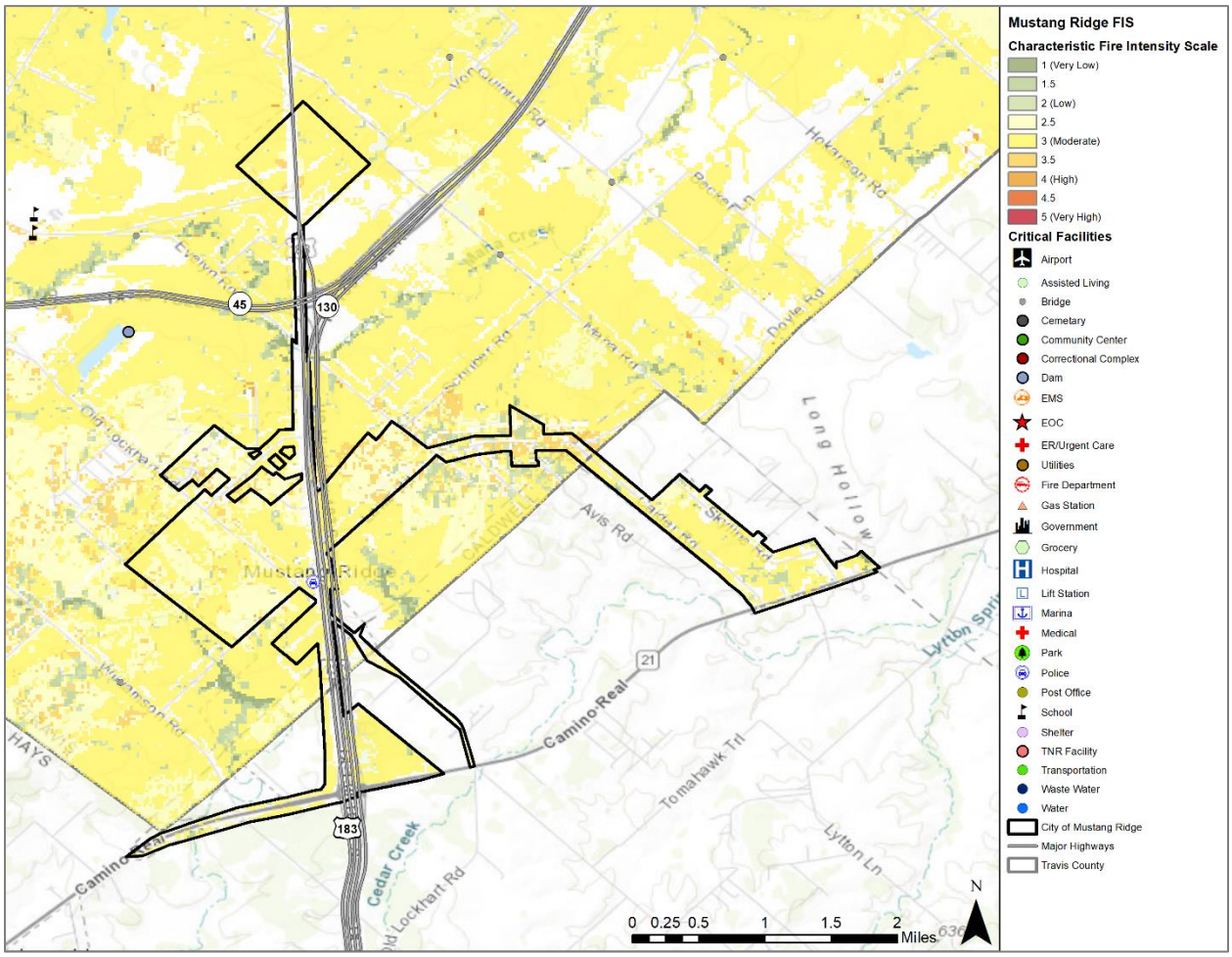


Figure 5-27. Fire Intensity Scale Map – City of Pflugerville

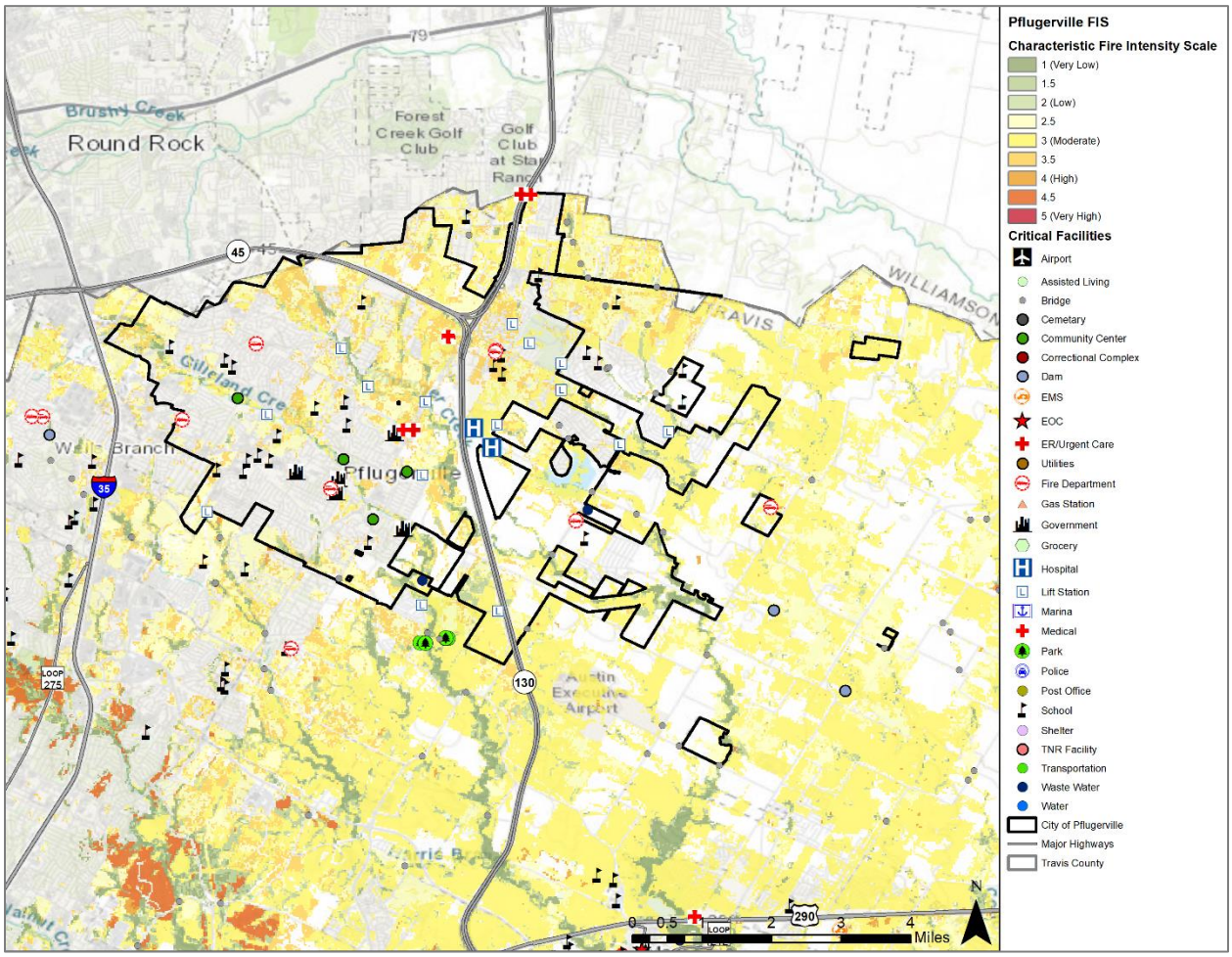


Figure 5-28. Fire Intensity Scale Map – Village of Point Venture

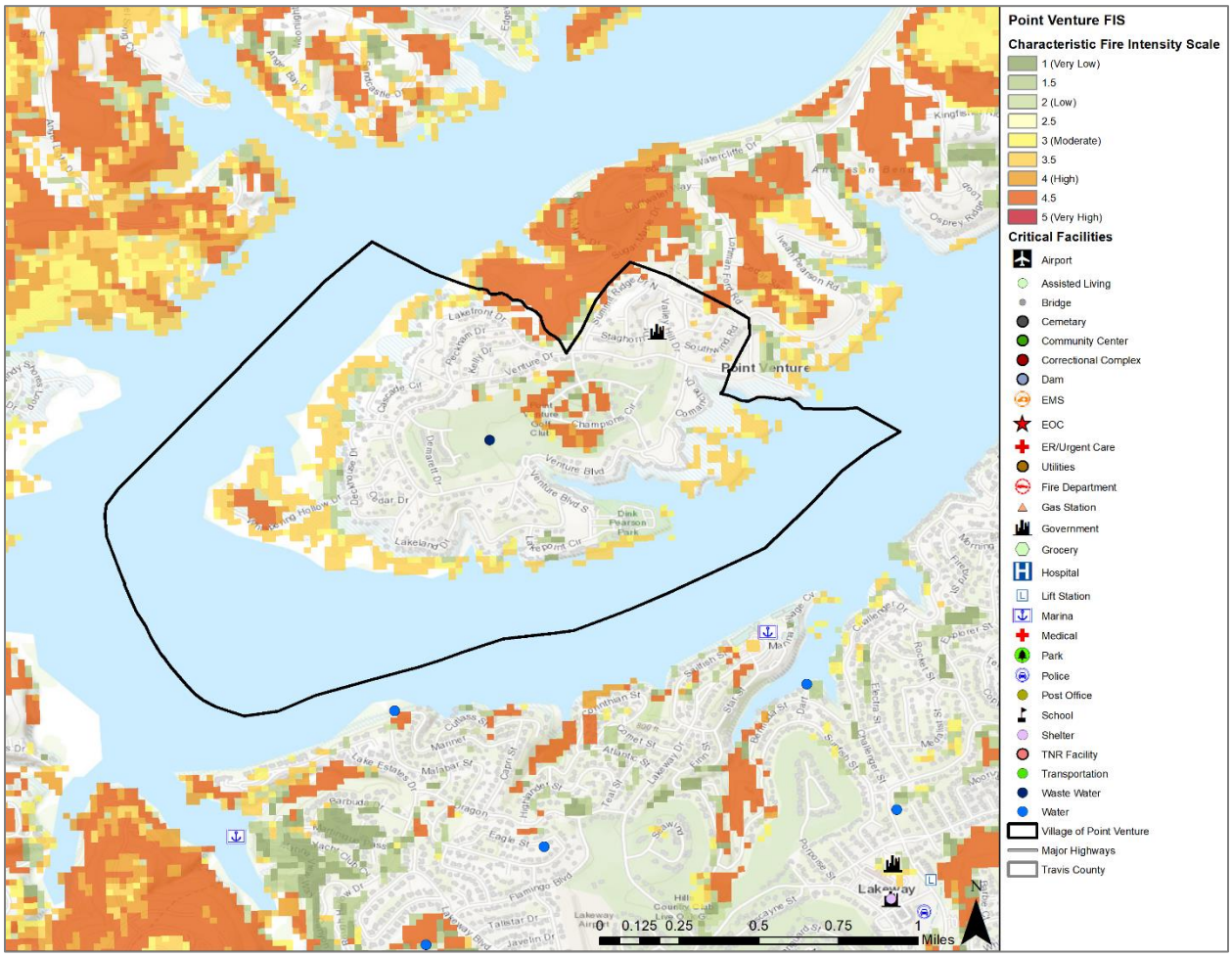


Figure 5-29. Fire Intensity Scale Map – City of Rollingwood

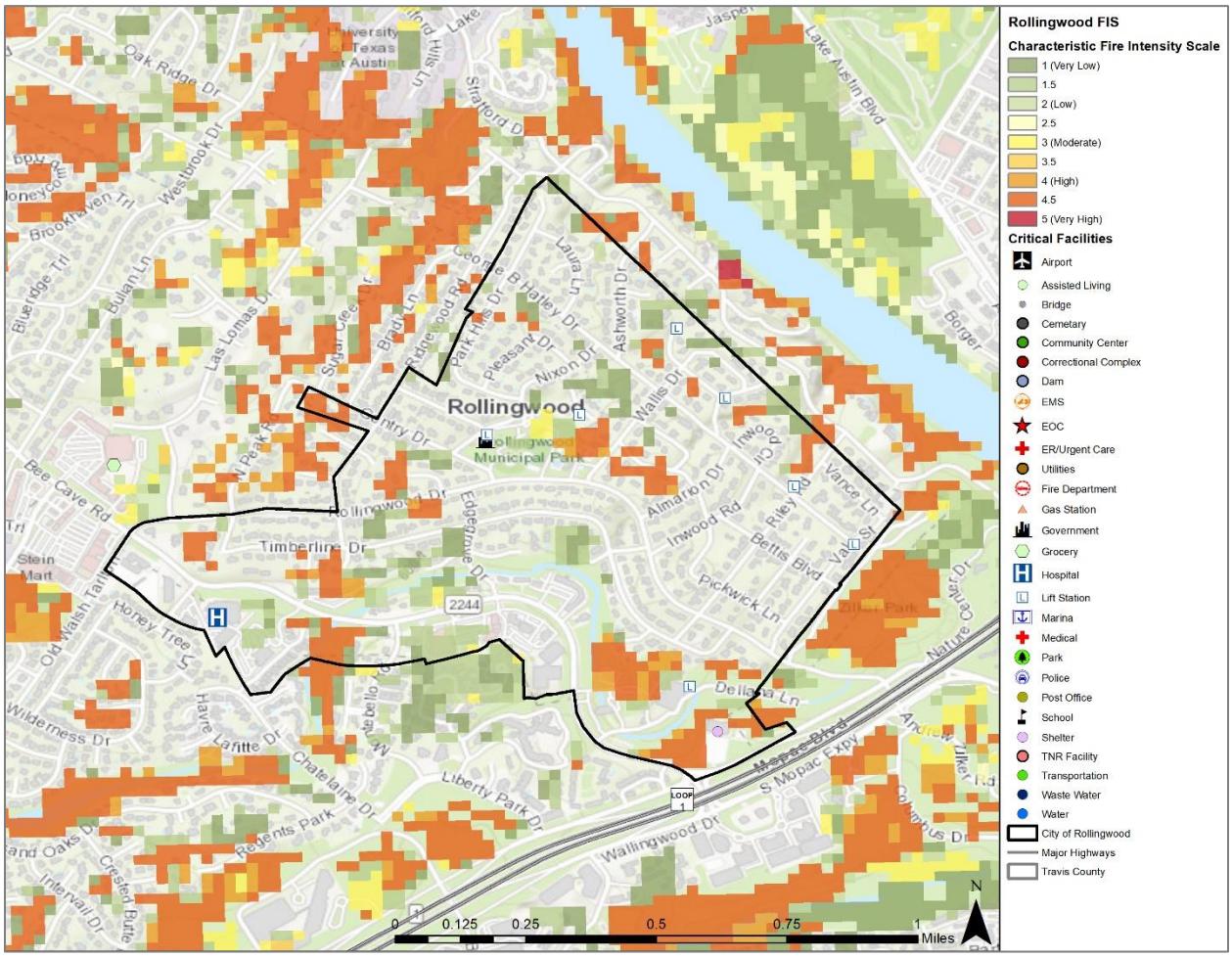


Figure 5-30. Fire Intensity Scale Map – Village of San Leanna

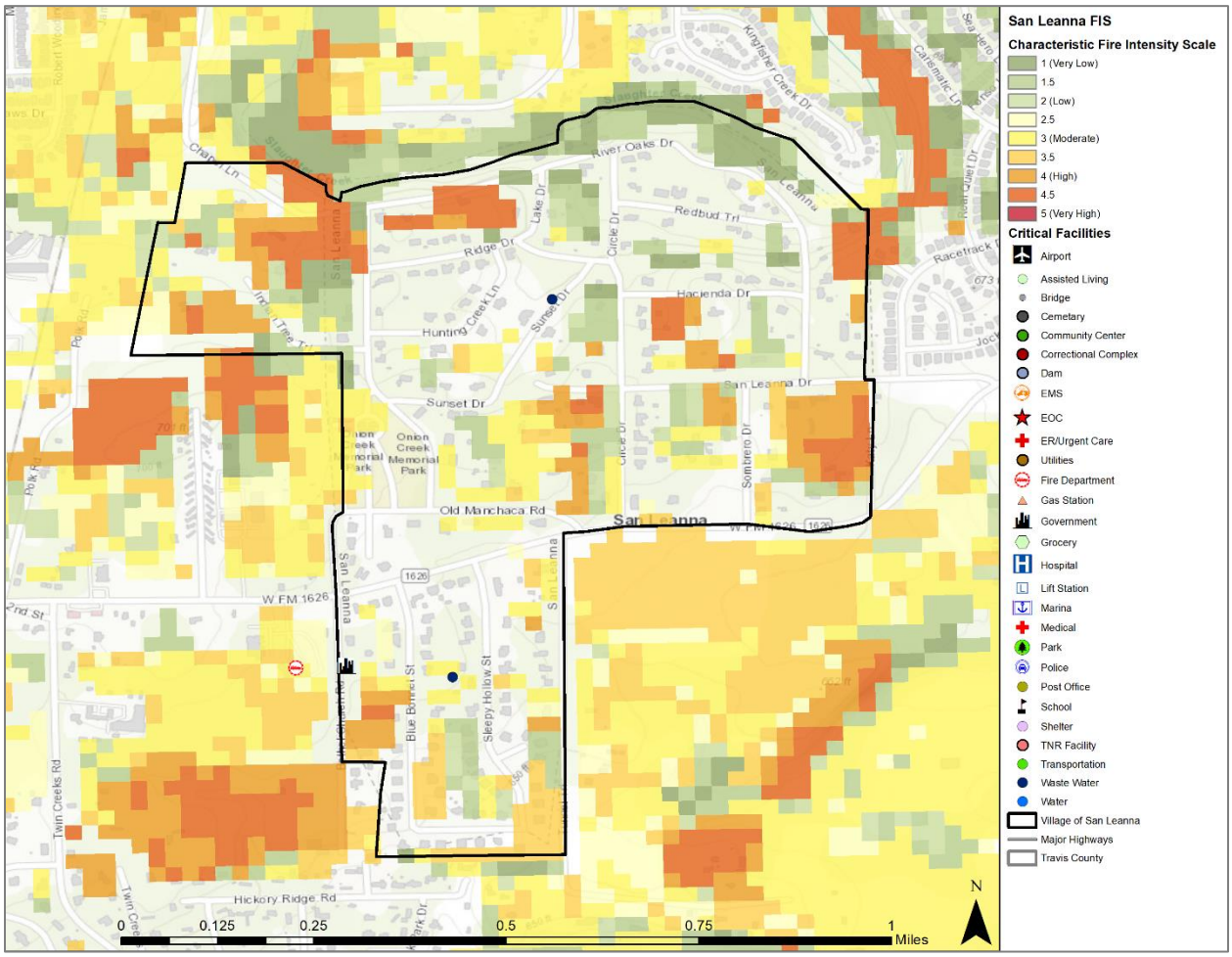


Figure 5-31. Fire Intensity Scale Map – City of Sunset Valley

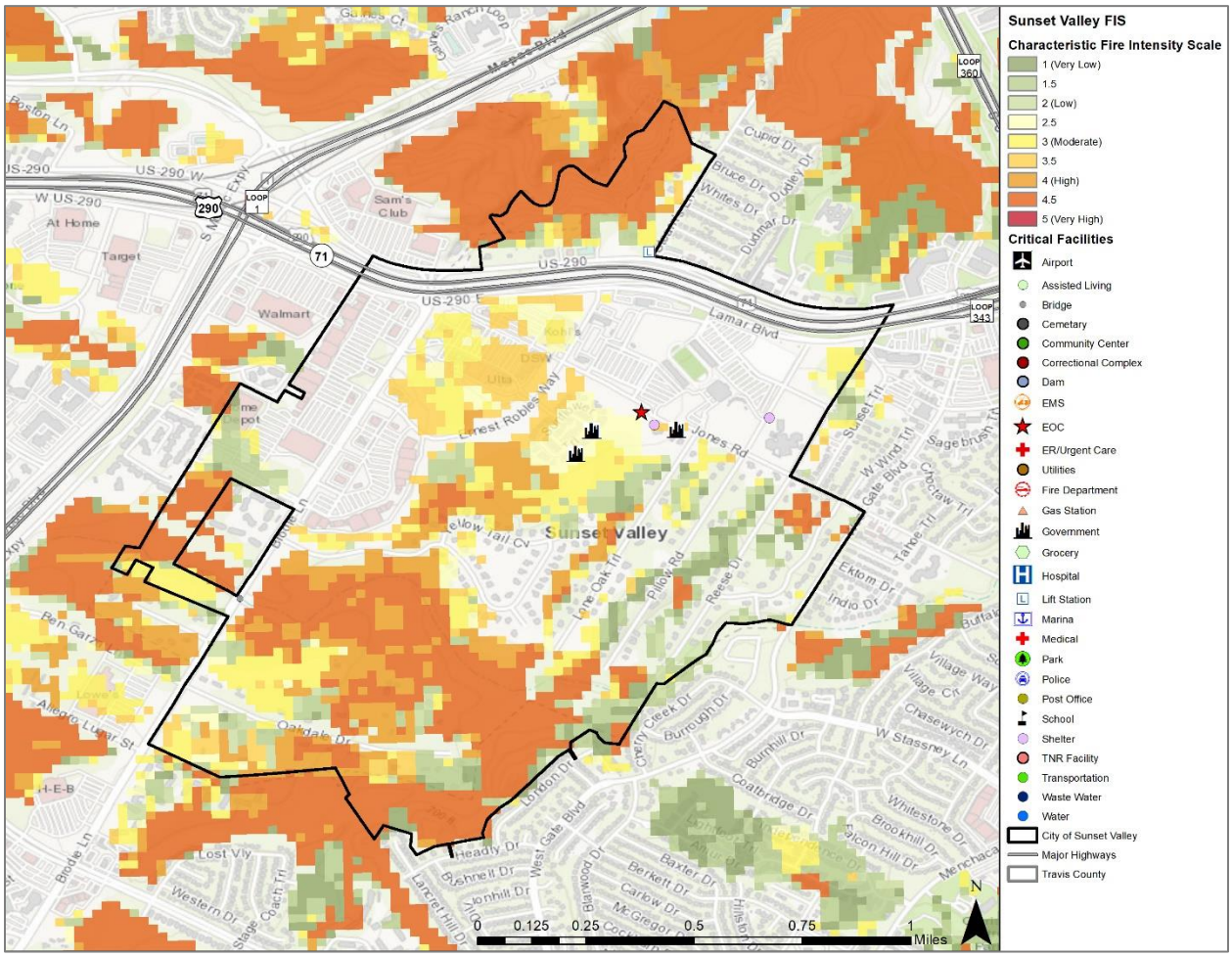


Figure 5-32. Fire Intensity Scale Map – Village of The Hills

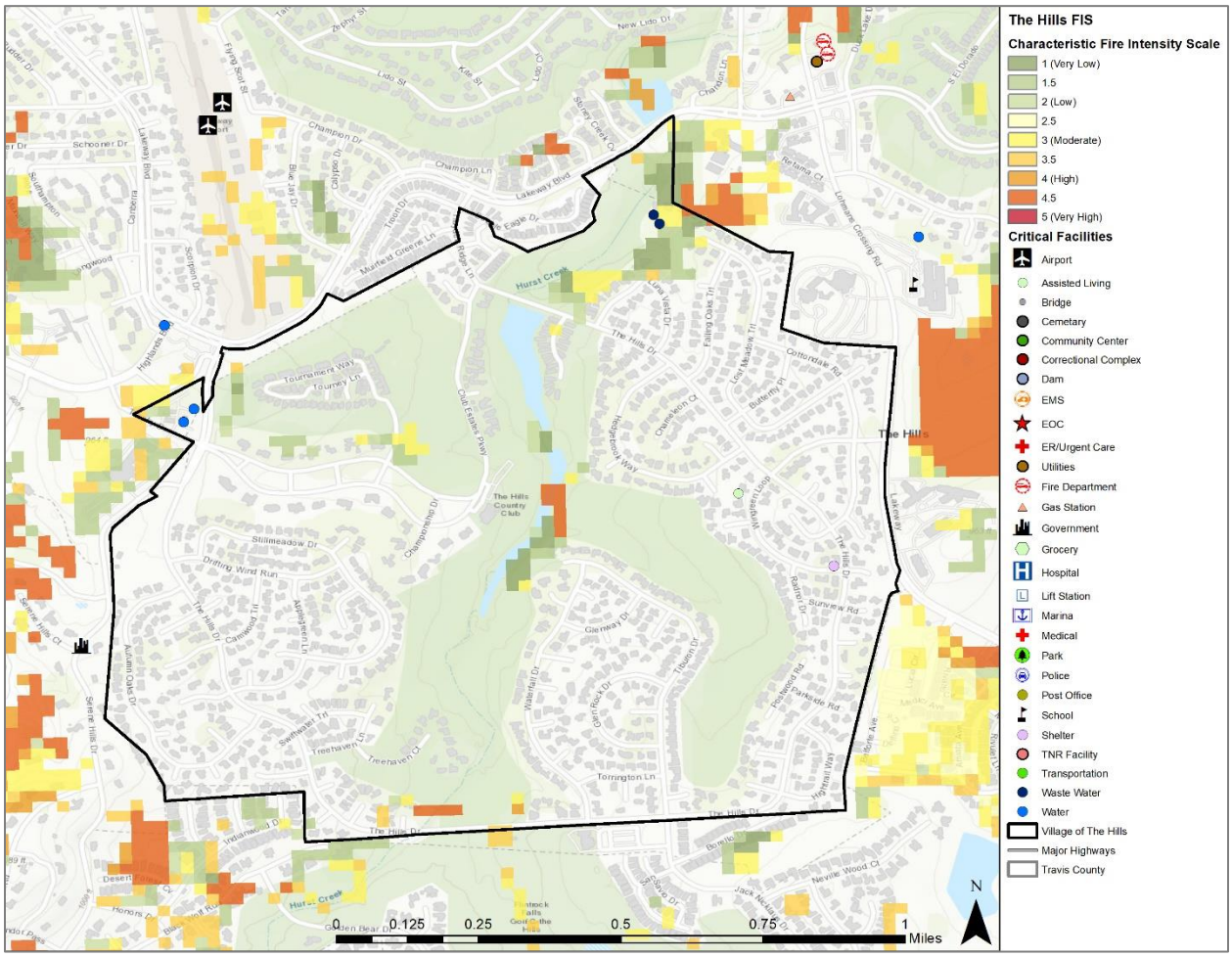


Figure 5-33. Fire Intensity Scale Map – City of West Lake Hills

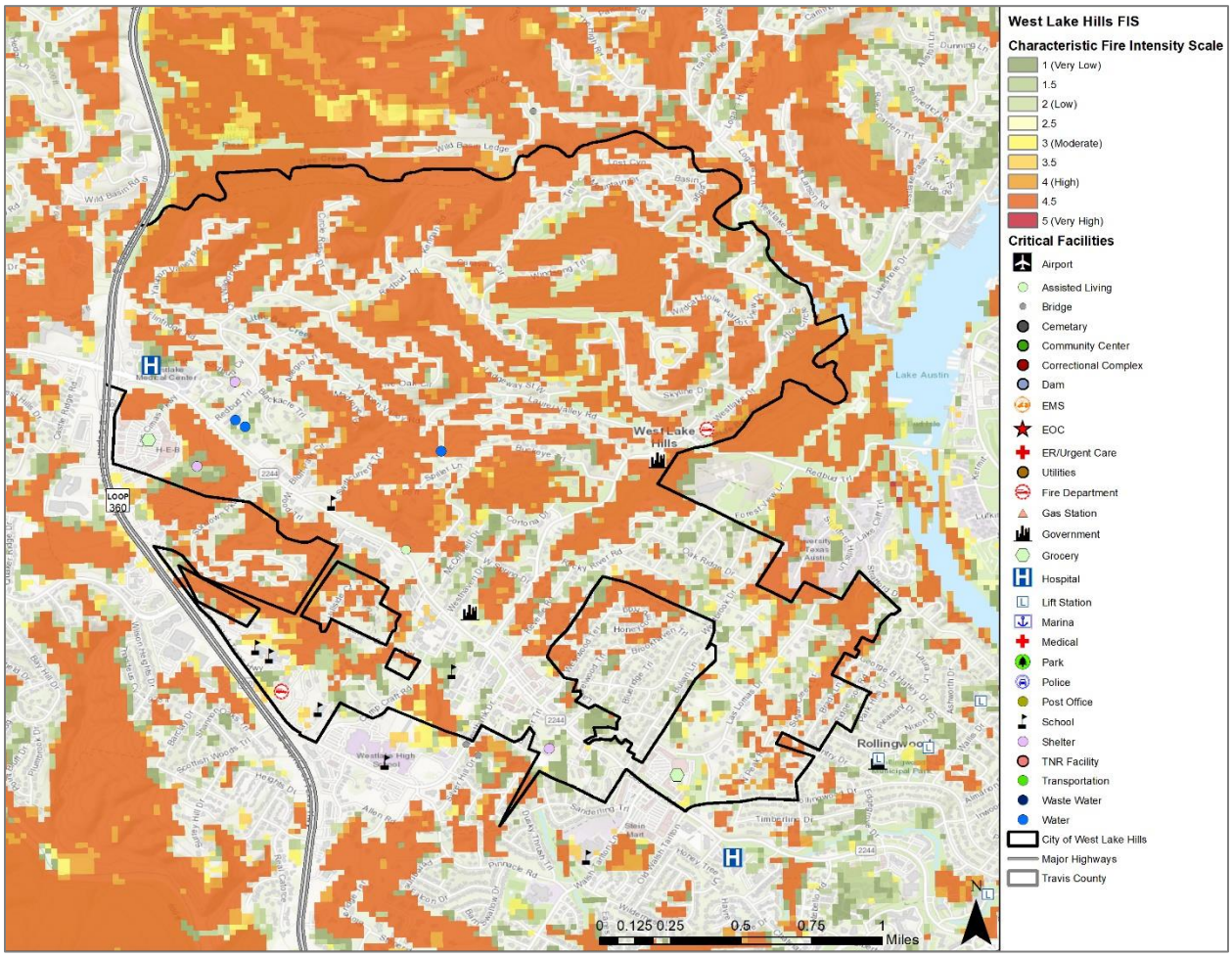
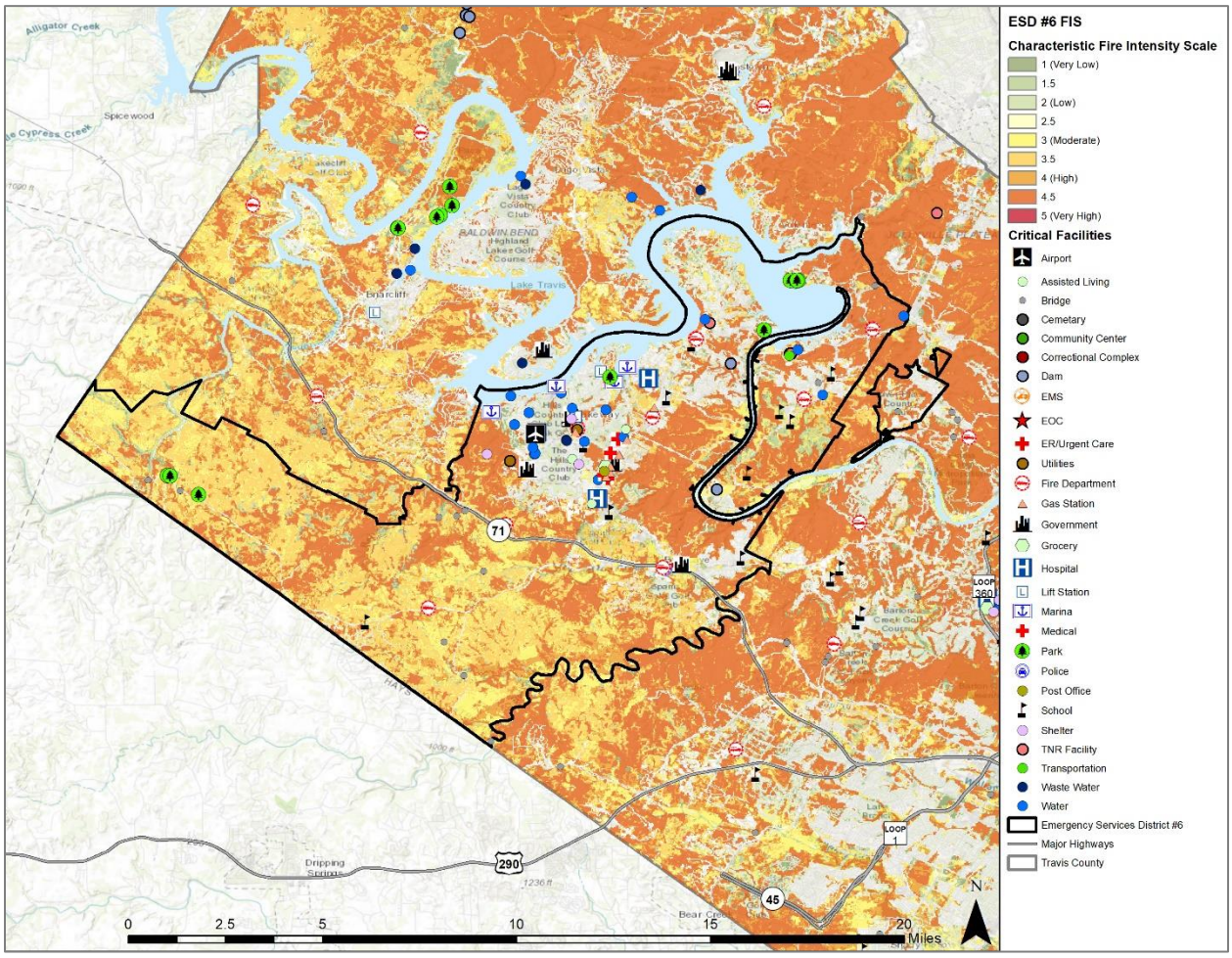


Figure 5-34. Fire Intensity Scale Map – ESD #6



HISTORICAL OCCURRENCES

The Texas Forest Service reported 909 wildfire events for the Travis County planning area between 2005 and 2021. The National Centers for Environmental Information (NCEI) includes three records of wildfire events from 1996 through 2022. All three events took place in 2011 and resulted in an estimated $23,569,145 in damages. The Texas Forest Service (TFS) started collecting wildfire reported by volunteer fire departments in 2005. Due to a lack of recorded data for wildfire events prior to 2005 and after 2021, frequency calculations are based on a 17-year reporting period, using only data from recorded years. The map below shows approximate locations of wildfires, which can be grass or brushfires of any size (Figure 5-35). Tables 5-1 through 5-3 identify the number of wildfires and total acreage burned each year within the county boundaries.

Figure 5-35. Location and Historic Wildfire Events in Travis County

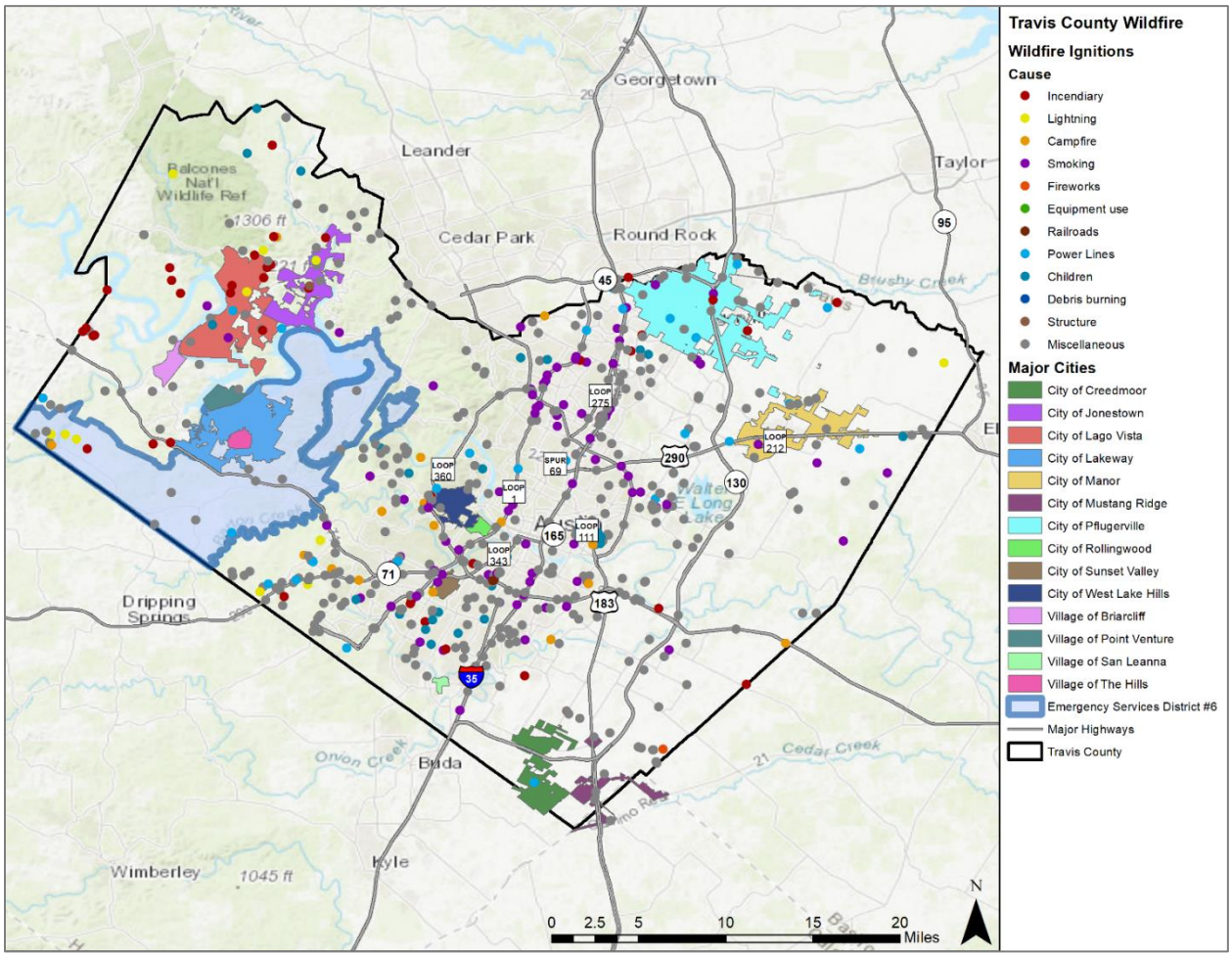


Table 5-1. Historical Wildfire Events Summary, 2005 - 2021

JURISDICTION	NUMBER OF EVENTS	ACRES BURNED
Travis County	908	21,432
Village of Briarcliff	2	4
City of Creedmoor	1	80
City of Jonestown	8	141
City of Lago Vista	29	43
City of Lakeway	0	0
City of Manor	6	21
City of Mustang Ridge	16	62
City of Pflugerville	22	764

JURISDICTION	NUMBER OF EVENTS	ACRES BURNED
Village of Point Venture	2	0
City of Rollingwood	0	0
Village of San Leanna	0	0
City of Sunset Valley	3	3
Village of The Hills	0	0
City of West Lake Hills	2	0
ESD #6[7]	38	1,259

Table 5-2. Historical Wildfire Events by Year

JURISDICTION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Travis County	55	189	86	156	53	17	101	25	49	27	7	25	31	12	6	48	21
Village of Briarcliff	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Creedmoor	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Jonestown	0	2	0	0	2	0	0	0	1	1	0	0	0	0	0	2	0
City of Lago Vista	0	0	0	0	3	0	5	3	3	2	0	1	0	0	1	8	3
City of Lakeway	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Manor	3	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Mustang Ridge	4	1	2	3	2	0	1	1	0	0	0	1	0	0	1	0	0
City of Pflugerville	4	6	2	1	0	2	0	0	1	1	3	1	1	0	0	0	0
Village of Point Venture	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
City of Rollingwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Village of San Leanna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Sunset Valley	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0

[7] It is noted that data provided for wildfires within the ESD #6 district boundaries overlaps with county and city data provided for the same area. This data is provided for the ESD risk analysis only and the event data is not duplicated in the totals for the planning area.

JURISDICTION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Village of The Hills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of West Lake Hills	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
ESD #6[8]	1	4	5	1	1	0	13	0	1	7	1	0	3	0	0	1	0
Total	**67**	**202**	**90**	**162**	**62**	**19**	**107**	**30**	**55**	**32**	**10**	**28**	**32**	**13**	**8**	**58**	**24**

Table 5-3. Acreage of Suppressed Wildfire by Year

JURISDICTION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Travis County	781	614	674	609	99	196	16,510	9	109	180	1,206	46	82	34	69	50	164
Village of Briarcliff	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Creedmoor	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Jonestown	0	41	0	0	1	0	95	0	0	0	0	0	0	0	0	4	0
City of Lago Vista	0	0	0	0	2	0	6	6	7	3	0	1	0	0	5	10	3
City of Lakeway	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Manor	16	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Mustang Ridge	4	5	34	8	2	0	2	3	0	0	0	1	0	0	3	0	0
City of Pflugerville	552	14	6	1	0	172	0	0	0	5	3	1	10	0	0	0	0
Village of Point Venture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Rollingwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Village of San Leanna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Sunset Valley	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
Village of The Hills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of West Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[8] It is noted that data provided for wildfires within the ESD #6 district boundaries overlaps with county and city data provided for the same area. This data is provided for the ESD risk analysis only and the event data is not duplicated in the totals for the planning area.

JURISDICTION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EDS #6[9]	2	126	130	1	0	0	990	0	0	6	0	0	3	0	0	1	0
Total	**1,433**	**682**	**714**	**620**	**104**	**368**	**16,613**	**19**	**117**	**188**	**1,209**	**49**	**92**	**34**	**77**	**64**	**167**

Based on the list of historical wildfire events for the Travis County planning area (listed above), 135 events have occurred since the 2017 plan.

SIGNIFICANT EVENTS

There have been 11 declared disasters related to wildfire between 1996 and 2022 (Table 5-4). Additional details on certain wildfire events are described below.

Table 5-4. Disaster Declarations for Wildfire, 1996-2022

YEAR	DECLARATION TITLE	DECLARATION TYPE	DISASTER NO.
1996	Extreme Fire Hazard	EM	EM-3117
1999	Extreme Fire Hazards	EM	EM-3142
2005	Extreme Wildfire Threat	DR	DR-1624
2006	Moore Road Fire	FM	FM-2675
2008	Wildfires	EM	EM-3284
2011	Pinnacle Fire	FM	FM-2898
2011	Grand Mesa Fire	FM	FM-2922
2011	Hodde Fire	FM	FM-2957
2011	Steiner Ranch Fire	FM	FM-2960
2011	Pedernales Bend Fire	FM	FM-2959
2011	Wildfires	DR	DR-4029

September 5, 2011 – Travis County

The Steiner Ranch Fire destroyed 24 homes in early September 2011. According to the Travis County Fire Marshal's Office, the fire was likely started by arcing electrical lines that touched each other, causing them to spark and ignite the grass. The exceptional drought conditions, low humidity, high winds, and high temperatures all contributed to the ignition and spread of the wildfire. The Steiner Ranch Fire resulted in a FEMA Fire Management Assistance Declaration (FM-2960), which provided more than $235,000 in federal fire suppression assistance.

[9] It is noted that data provided for wildfires within the ESD #6 district boundaries overlaps with county and city data provided for the same area. This data is provided for the ESD risk analysis only and the event data is not duplicated in the totals for the planning area.

September 4, 2011 – Travis & Burnet County
The 2011 Pedernales Bend wildfire, also known as the Spicewood Fire, destroyed more than 60 structures and burned more than 6,500 acres in western Travis County and eastern Burnet County. According to the Travis County Fire Marshal's Office, the fire was likely started by arcing electrical lines that touched each other, causing them to spark and ignite the grass. The exceptional drought conditions, low humidity, high winds, and high temperatures all contributed to the ignition and spread of the wildfire. The fire burned for 11 days. The wildfire resulted in a FEMA Fire Management Assistance Declaration (FM-2959), which provided more than $450,000 in federal fire suppression assistance.

September 4, 2011 – City of Pflugerville & Travis County
The 2011 Hodde Fire destroyed 2 homes in the City of Pflugerville and burned 300-500 acres. According to the Travis County Fire Marshal's Office, the fire was likely started by arcing electrical lines that touched each other, causing them to spark and ignite the grass. The exceptional drought conditions, low humidity, high winds, and high temperatures all contributed to the ignition and spread of the wildfire. The wildfire resulted in a FEMA Fire Management Assistance Declaration (FM-2957), which provided more than $25,000 in federal fire suppression assistance.

PROBABILITY OF FUTURE EVENTS

Wildfires can occur at any time of the year. As Travis County communities move into wildland, the potential area of occurrence of wildfire increases. With 909 events in a 17-year period, an event within the Travis County planning area is highly likely, meaning an event is probable within the next year. According to NOAA, research shows that changes in climate create warmer, drier conditions, leading to longer and more active fire seasons, indicating an increase in the frequency and severity of events in the planning area going forward. See additional information on climate change at the end of this section.

VULNERABILITY AND IMPACT

Periods of drought, dry conditions, high temperatures, and low humidity are factors that contribute to the occurrence of a wildfire event. Less developed areas, such as along interstates or in more remote areas where fuels are more prevalent have an increased risk of being affected by wildfire.

The more heavily populated areas of the planning area are not highly likely to experience large, sweeping fires. Unoccupied buildings and open spaces that have not been maintained have the greatest vulnerability to wildfire. The overall level of concern for wildfires is located across the county where wildland and urban areas interface. Figure 5-36 through 5-51[10] illustrates the areas that are the most vulnerable to wildfire throughout the Travis County planning area, including all participating jurisdictions and ESD #6.

The Travis County Planning Team identified the following critical facilities (Table 5-5) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by wildfire events. For a comprehensive list by participating jurisdiction see Appendix C.

[10] Source: TxWRAP portal at the following site: https://texaswildfirerisk.com/

Table 5-5. Critical Facilities/Critical Services Vulnerable to Wildfire Events

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers (1 EOC; 4 Fire Stations; 5 Police Stations; 1 Hospital located in the WUI)	• Emergency services may be disrupted during a wildfire if facilities are impacted, roadways are inaccessible, or personnel are unable to report for duty. • First responders are at greater risk of injury when in close proximity to the hazard while extinguishing flames, protecting property, or evacuating residents in the area. • Critical city departments may not be able to function and provide necessary services depending on the location of the fire and the structures or personnel impacted. • Roadways in or near the WUI could be damaged or closed due to smoke and limited visibility, slowing or preventing access for emergency response vehicles. • Fire suppression costs can be substantial, exhausting the financial resources of the community. • First responders can experience heart disease, respiratory problems, and other long-term related illnesses from prolonged exposure to smoke, chemicals, and heat. • Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Power outages could disrupt communications, delaying emergency response times. • Structures can be damaged or destroyed in the path of the wildfire. • Power outages could disrupt critical care. • Backup power sources could be damaged or destroyed. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities (1 Animal Shelter; 20 Governmental Facilities; 68 School Facilities located in the WUI)	• Facilities or infrastructure may be damaged, destroyed or otherwise inaccessible. • Essential supplies like medicines, water, food, and equipment deliveries may be significantly delayed. • Additional emergency responders and critical aid workers may not be able to reach the area for days. • Power outages and infrastructure damage may prevent larger airports from acting as temporary command centers for logistics, communications, and emergency operations.
Commercial Supplier (food, fuel, etc.)	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable.

CRITICAL FACILITIES	POTENTIAL IMPACTS
(10 Fuel/Grocery Facilities located in the WUI)	• Essential supplies like medicines, water, food, and equipment deliveries may be delayed. • Economic disruption due to power outages and fires negatively impact services as well as area businesses reliant on commercial suppliers.
Utility Services and Infrastructure (electric, water, wastewater, communications) (33 electric, water, wastewater, communications;15 Lift Stations; 2 Pump Stations located in the WUI)	• Wastewater and drinking water facilities and infrastructure may be damaged or destroyed resulting in service disruption or outage for multiple days or weeks. • Disruptions and outages impact public welfare as safe drinking water is critical. • A break in essential and effective wastewater collection and treatment is a health concern, potentially spreading disease. • Exposure to untreated wastewater is harmful to people and the environment. • Any service disruptions can negatively impact or delay emergency management operations. • Power losses

Within the Travis County planning area, a total of 909 fire events were reported from 2005 through 2021. All of these events were suspected wildfires. Historic loss and annualized estimates due to wildfires are presented in Table 5-6 below. The average frequency is approximately 21 events every year.

Table 5-6. Potential Annualized Acreage Losses[11]

JURISDICTION	TOTAL ACRES BURNED	AVERAGE ANNUAL ACRE LOSSES
Travis County	21,432	1,261
Village of Briarcliff	4	0.2
City of Creedmoor	80	5
City of Jonestown	141	8.3
City of Lago Vista	43	2.5
City of Lakeway	0	0
City of Manor	21	1.2
City of Mustang Ridge	62	3.6
City of Pflugerville	764	45
Village of Point Venture	0	0
City of Rollingwood	0	0

[11] Events divided by 17 years of data.

JURISDICTION	TOTAL ACRES BURNED	AVERAGE ANNUAL ACRE LOSSES
Village of San Leanna	0	0
City of Sunset Valley	3	0.2
Village of The Hills	0	0
City of West Lake Hills	0	0
ESD #6[12]	1,259	74
TOTAL	**22,550**	**1,327**

Wildfire Ignition Density shows the likelihood of a wildfire starting based on historical ignition patterns. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. The ignition rate is measured in the number of fires per year per 1,000 acres. Wildfire Ignition Density is a key input into the calculation of the Wildfire Threat output. In particular, with most Texas fires being human caused, there is a repeatable spatial pattern of fire ignitions over time. This pattern identifies areas where wildfires are most likely to ignite and prevention efforts can be planned accordingly.[13]

Figures 5-36 through 5-51 show the threat of wildfire to the Travis County planning area.

[12] It is noted that data provided for wildfires within the ESD #6 district boundaries overlaps with county and city data provided for the same area. This data is provided for the ESD risk analysis only and the event data is not duplicated in the totals for the planning area.

[13] Source: TxWRAP portal at the following site: https://texaswildfirerisk.com/

Figure 5-36. Wildfire Ignition Density – Travis County

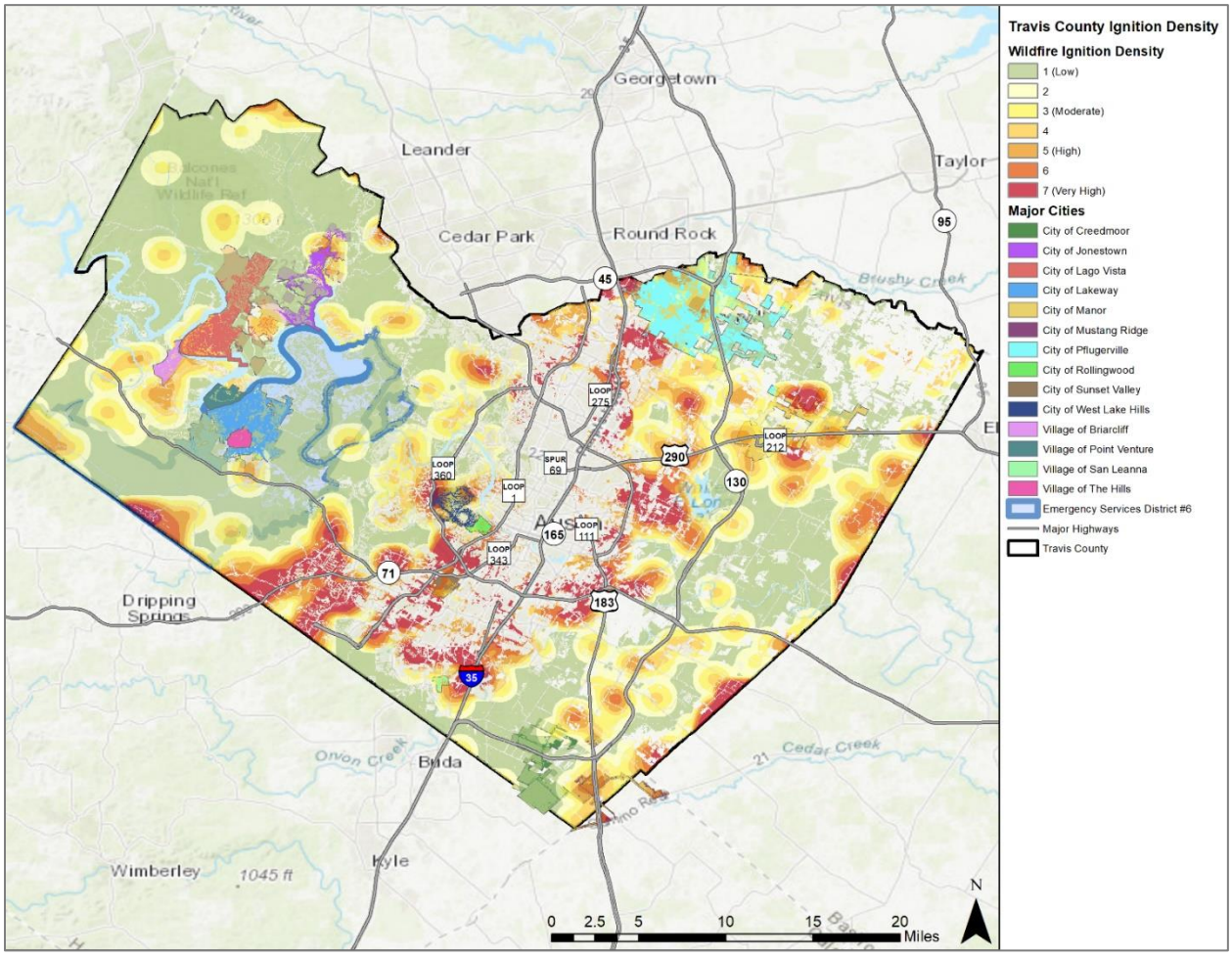


Figure 5-37. Wildfire Ignition Density – Village of Briarcliff

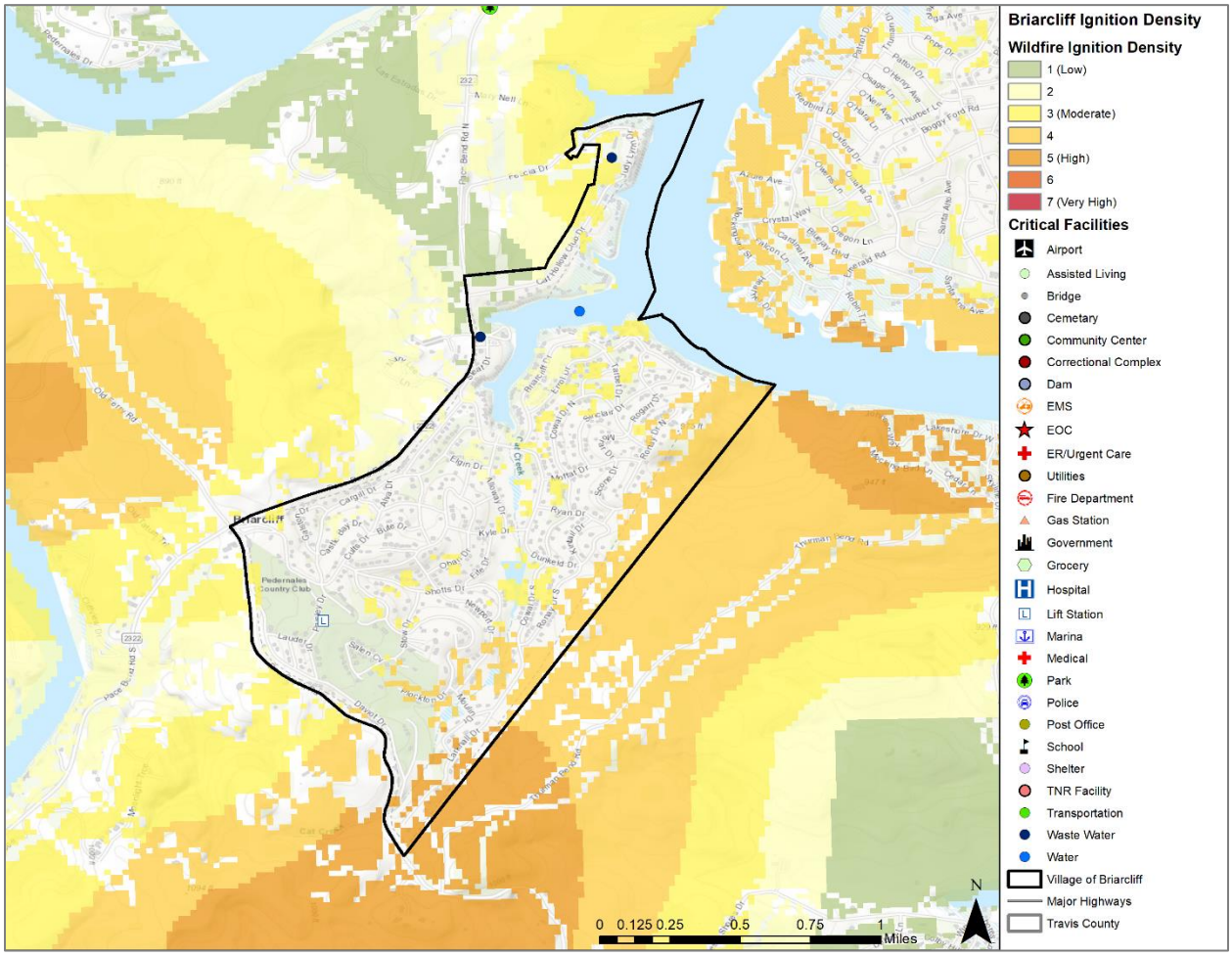


Figure 5-38. Wildfire Ignition Density – City of Creedmoor

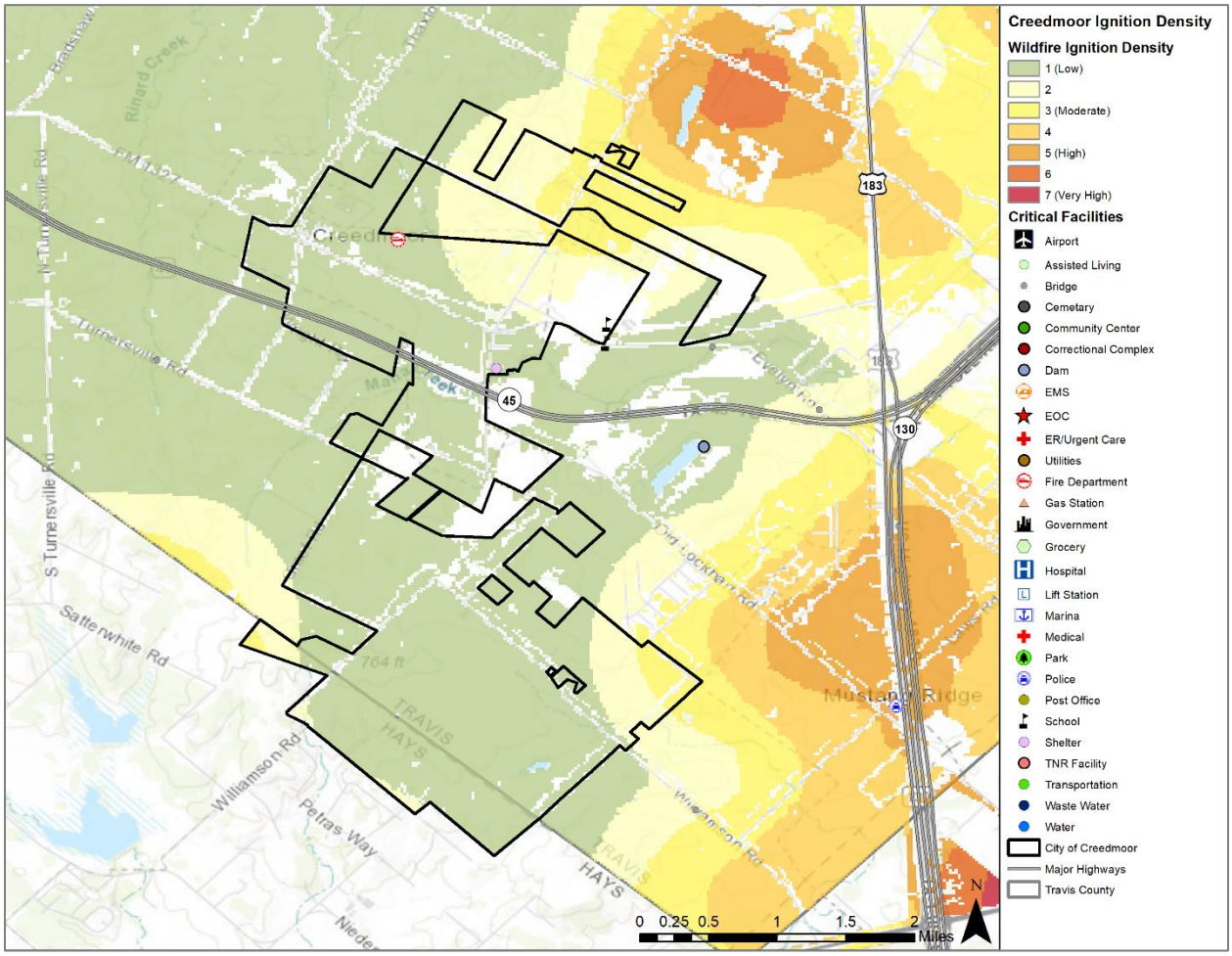


Figure 5-39. Wildfire Ignition Density – City of Jonestown

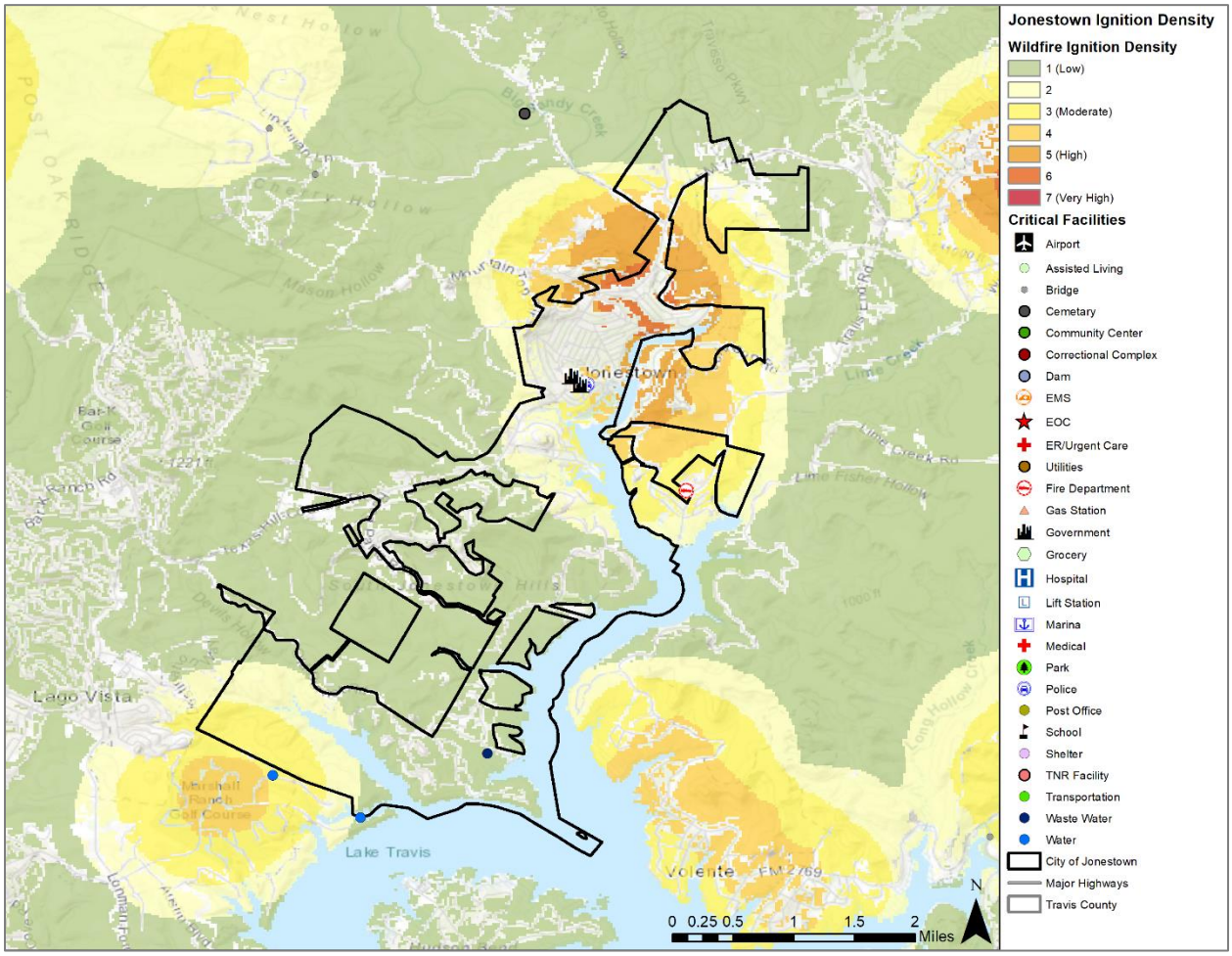


Figure 5-40. Wildfire Ignition Density – City of Lago Vista

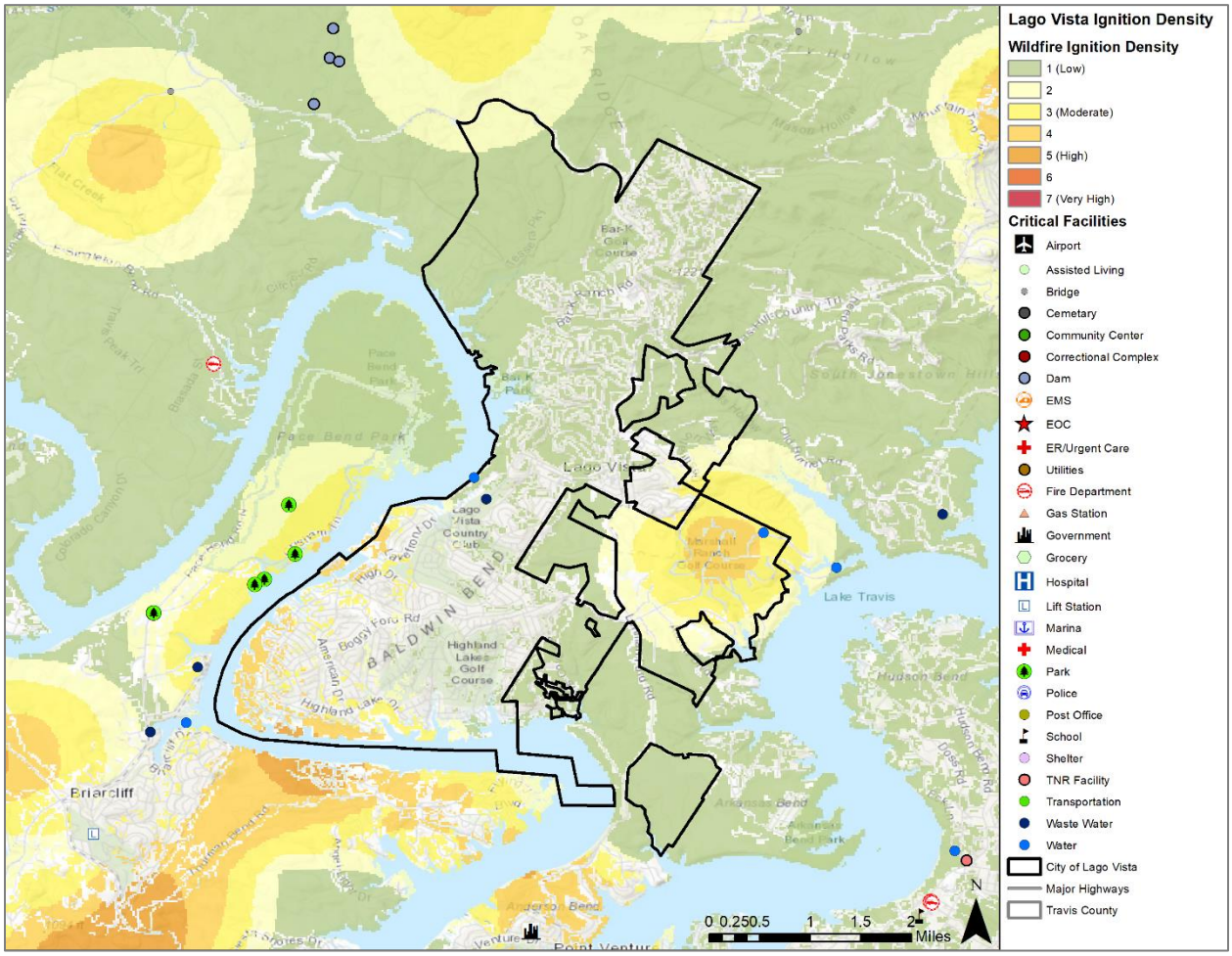


Figure 5-41. Wildfire Ignition Density – City of Lakeway

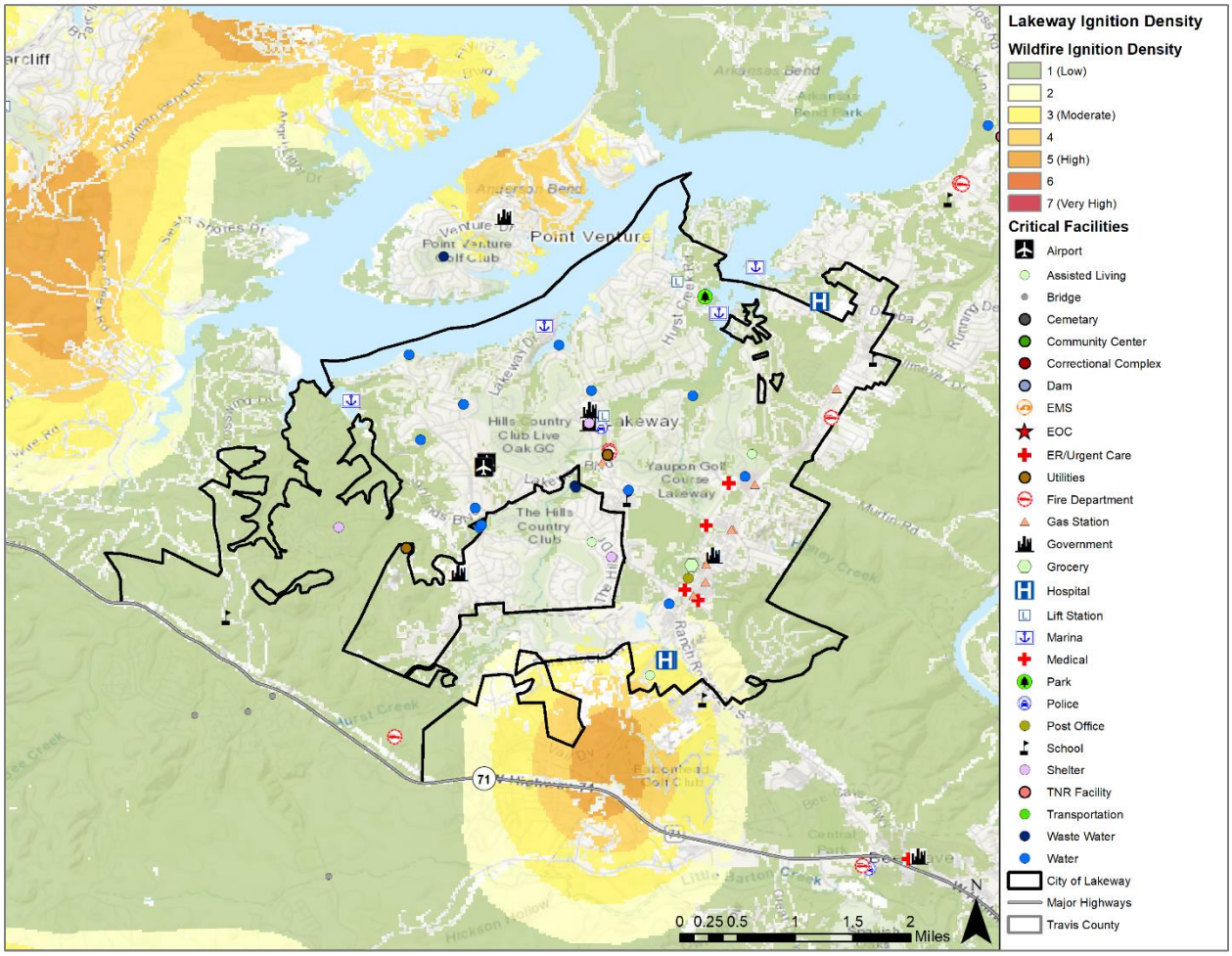


Figure 5-42. Wildfire Ignition Density – City of Manor

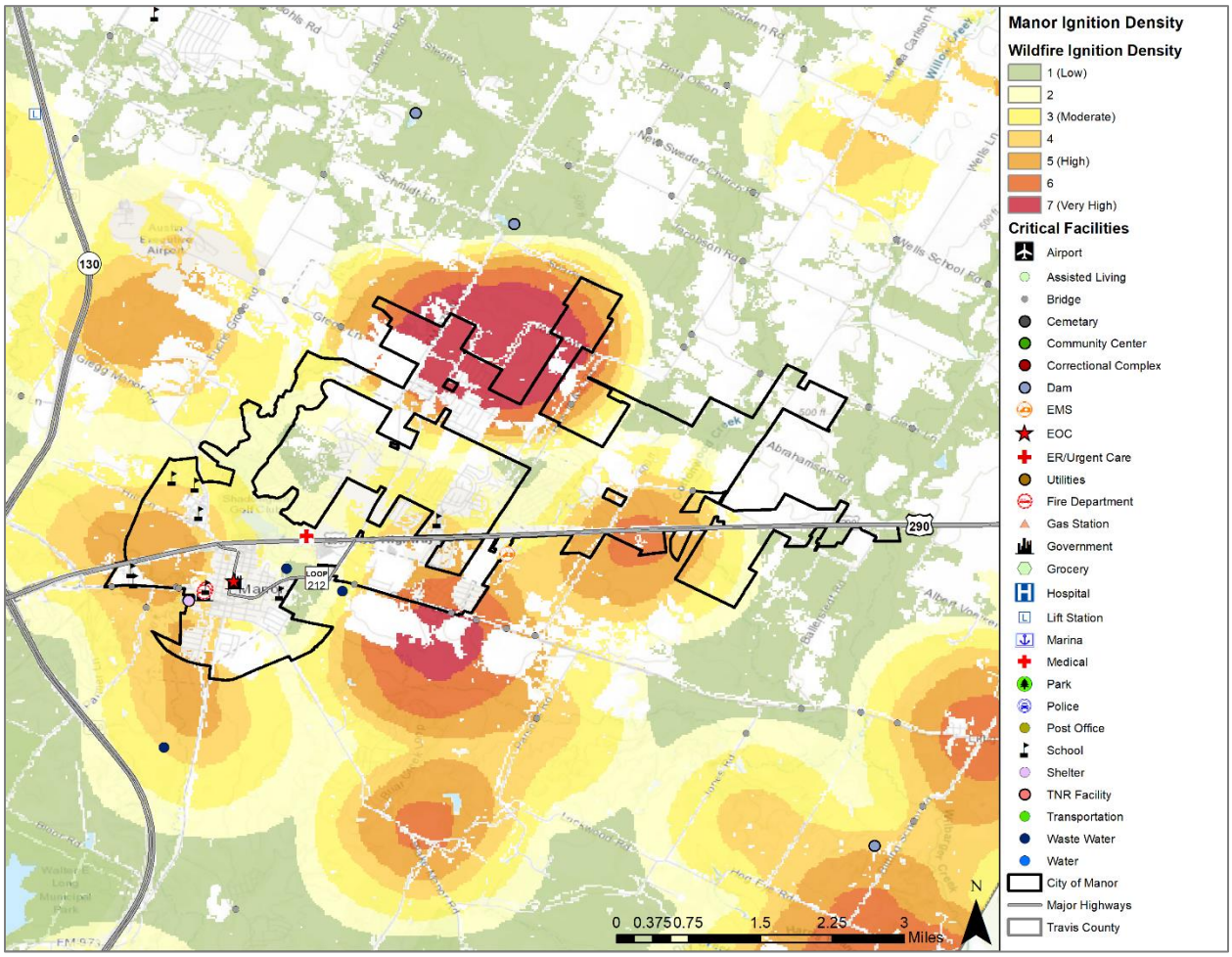


Figure 5-43. Wildfire Ignition Density – City of Mustang Ridge

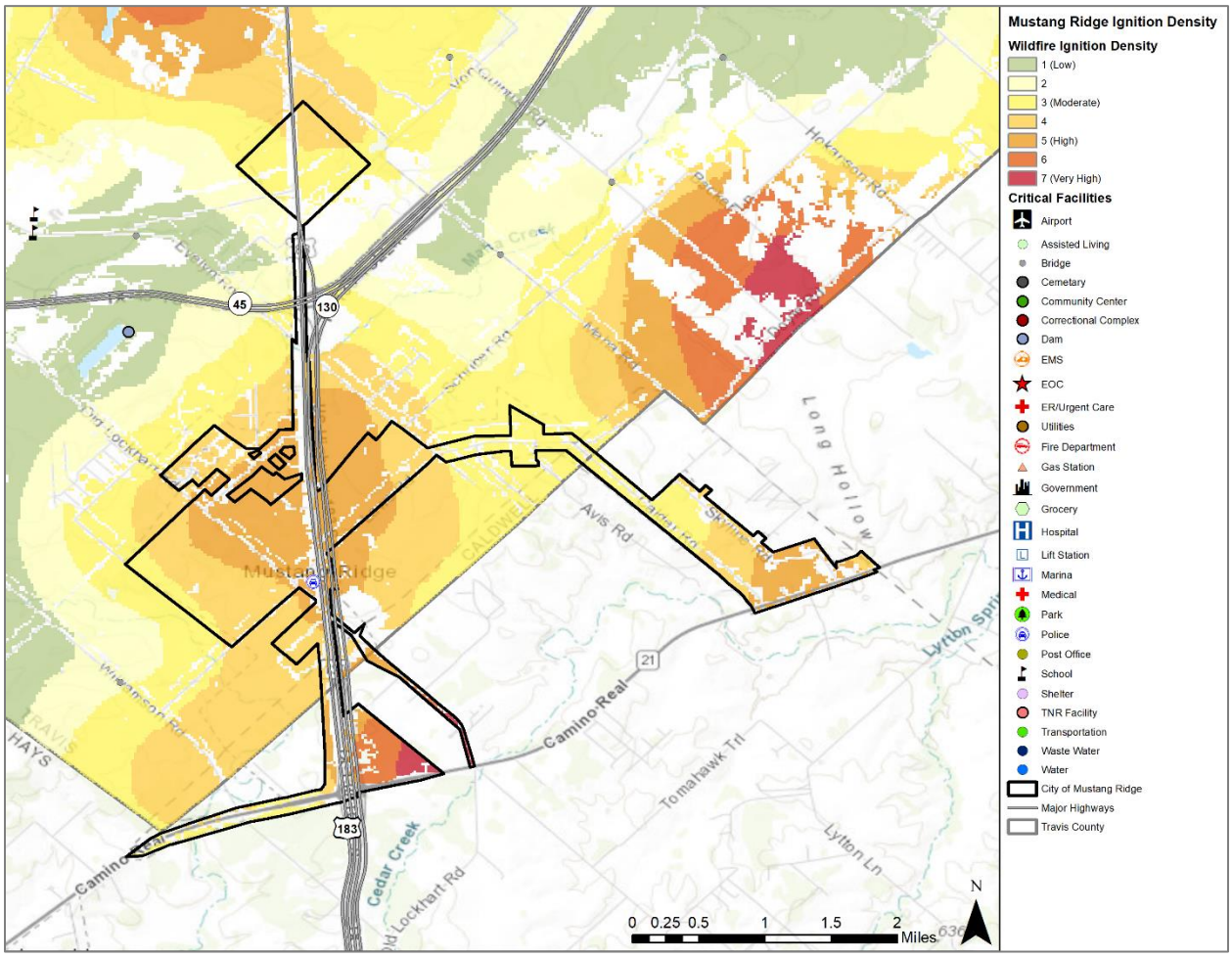


Figure 5-44. Wildfire Ignition Density – City of Pflugerville

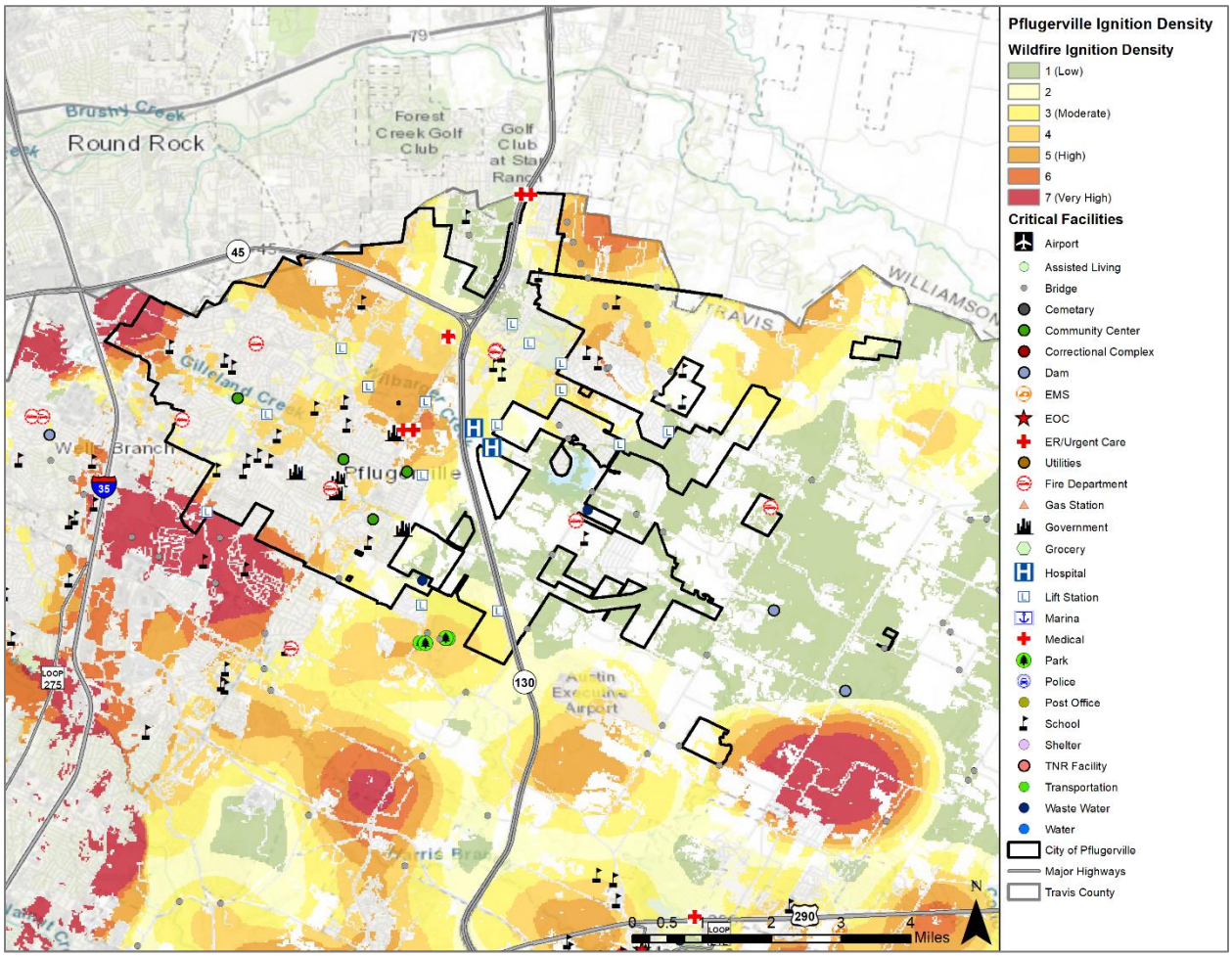


Figure 5-45. Wildfire Ignition Density – Village of Point Venture

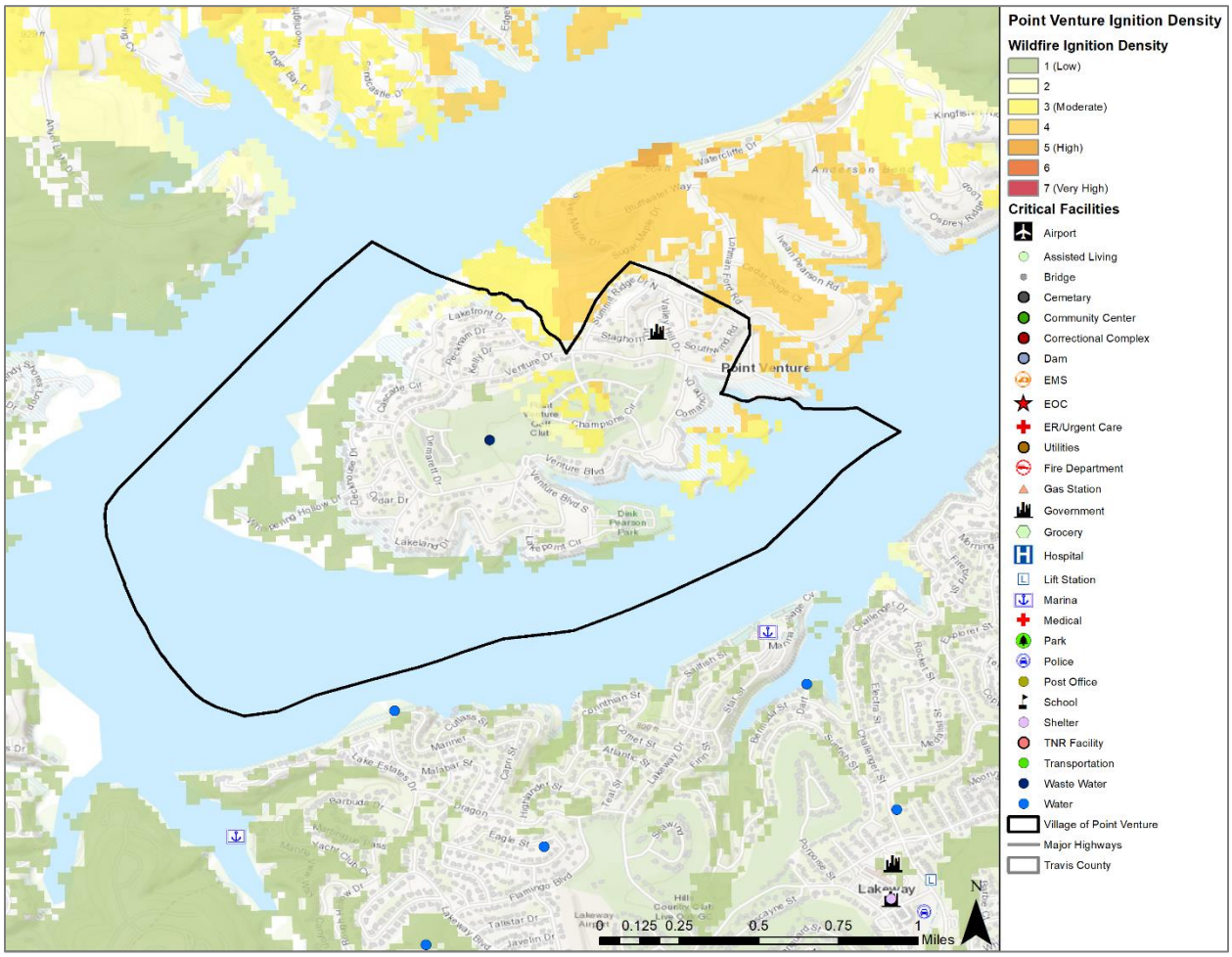


Figure 5-46. Wildfire Ignition Density – City of Rollingwood

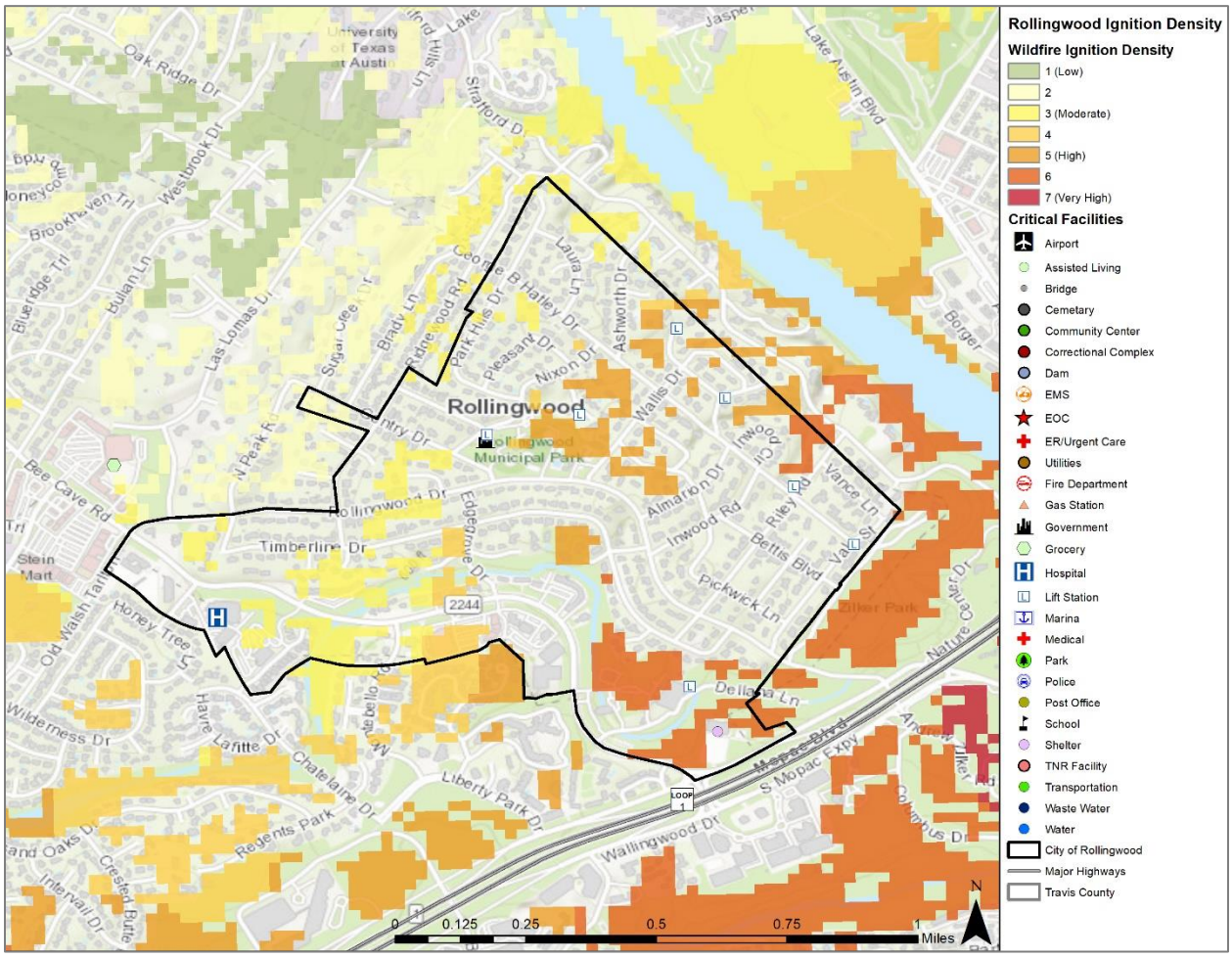


Figure 5-47. Wildfire Ignition Density – Village of San Leanna

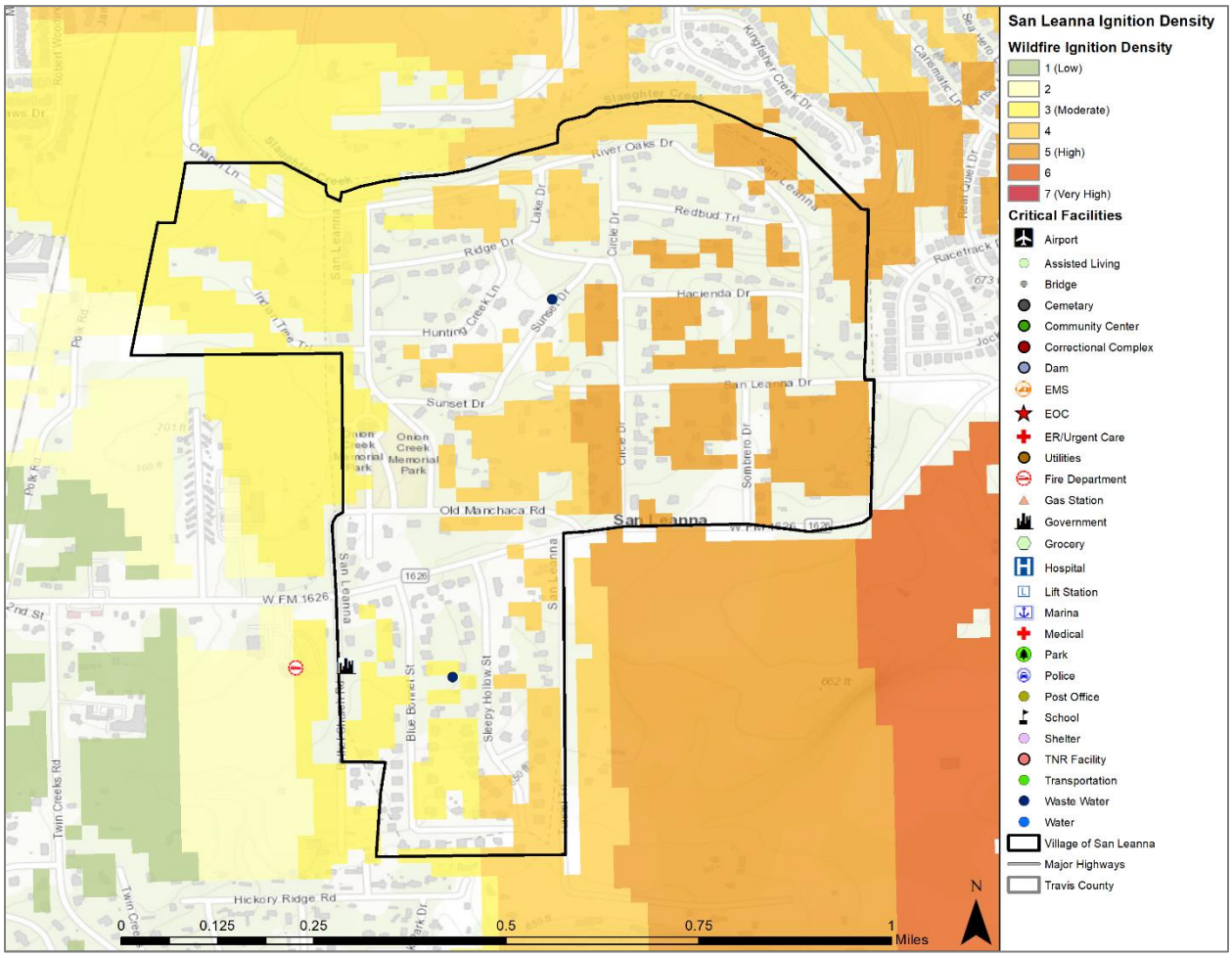


Figure 5-48. Wildfire Ignition Density – City of Sunset Valley

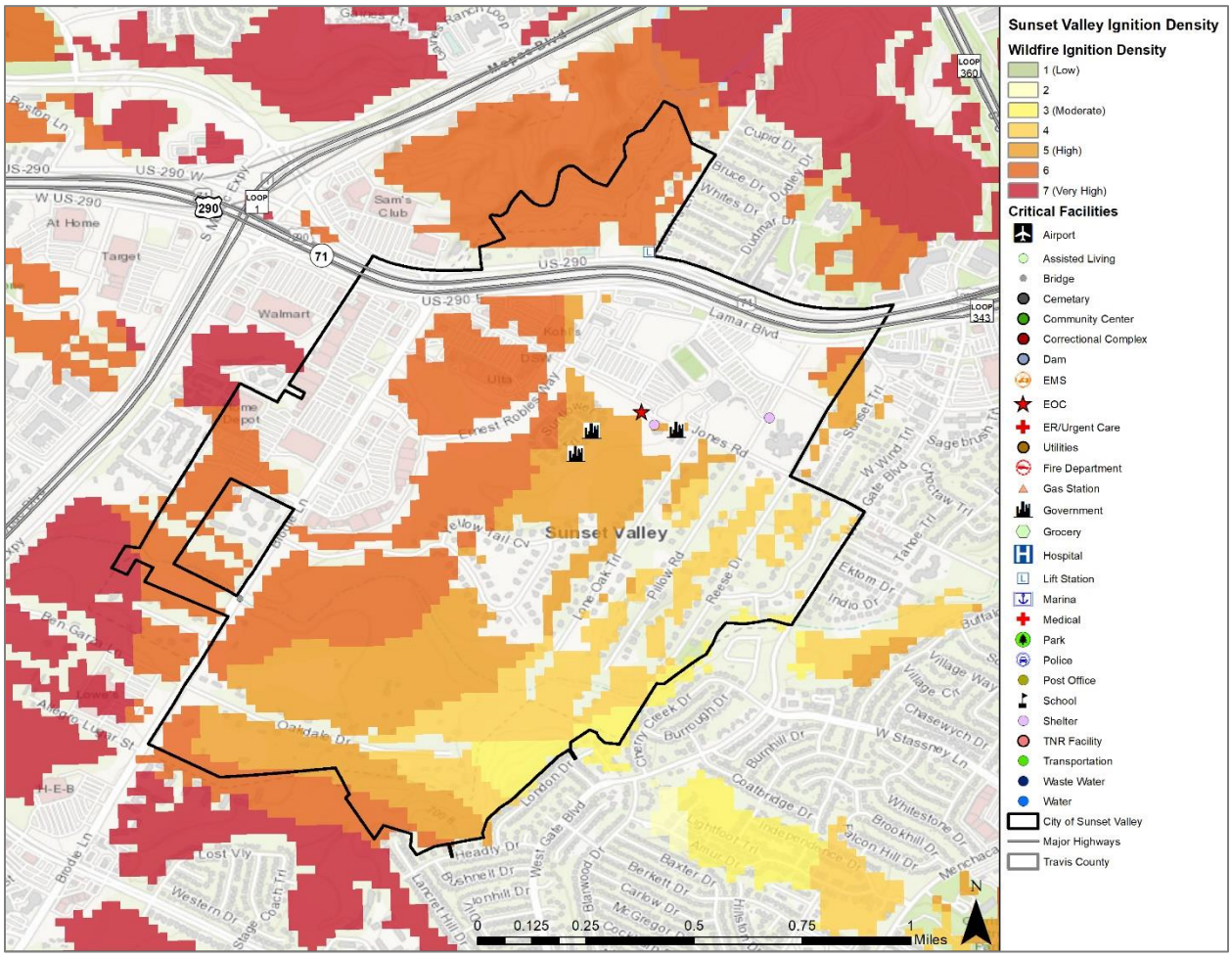


Figure 5-49. Wildfire Ignition Density – Village of The Hills

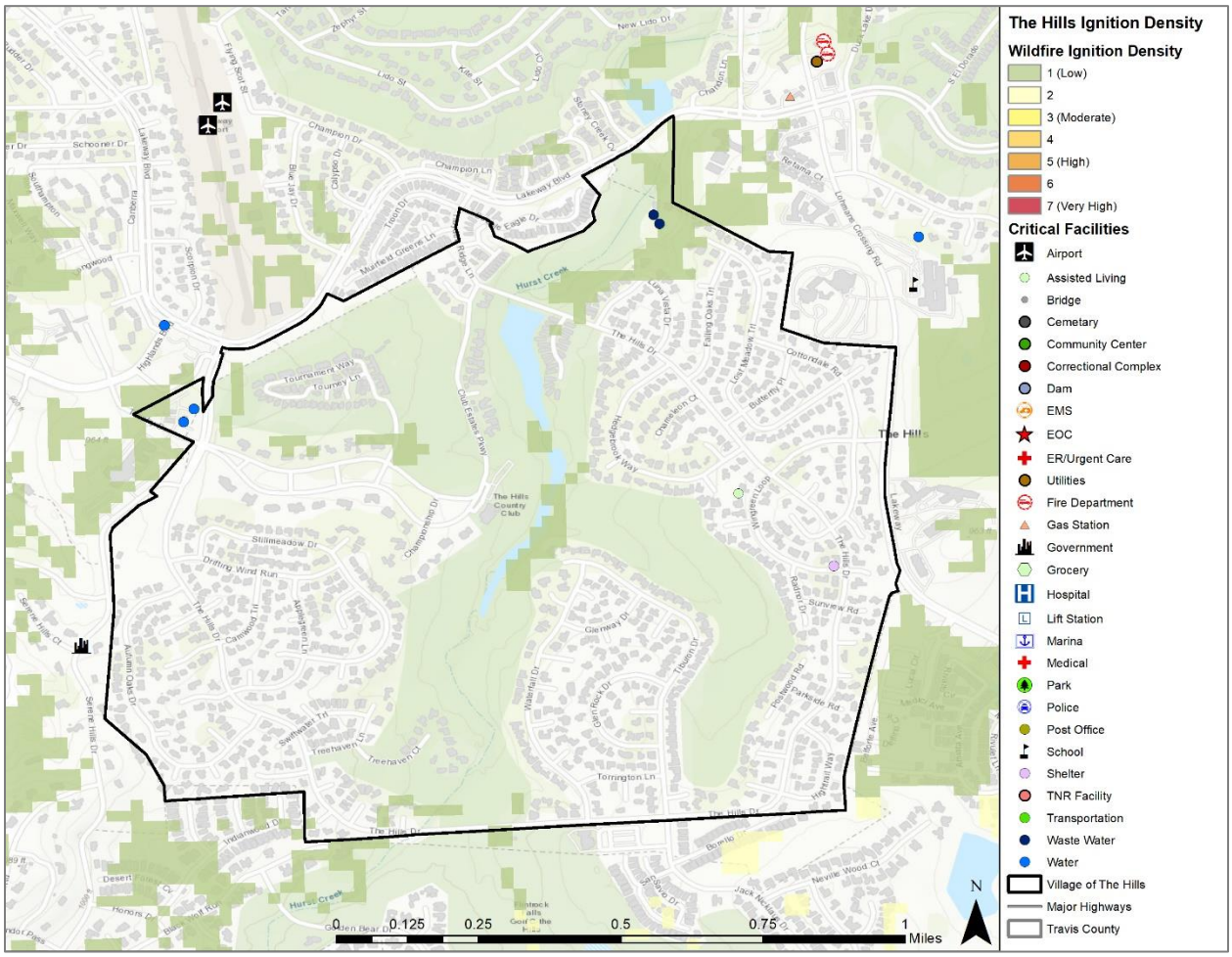


Figure 5-50. Wildfire Ignition Density – City of West Lake Hills

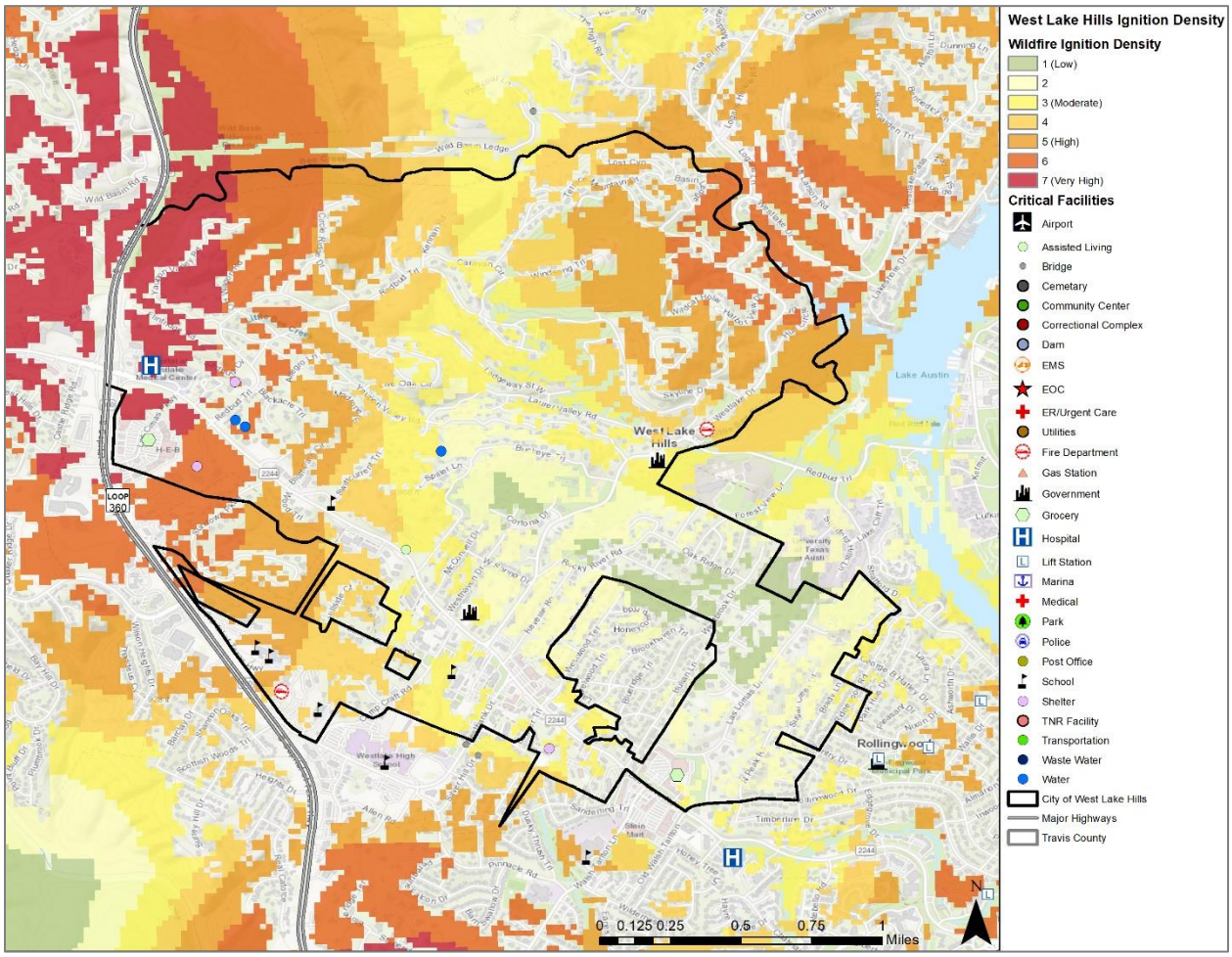
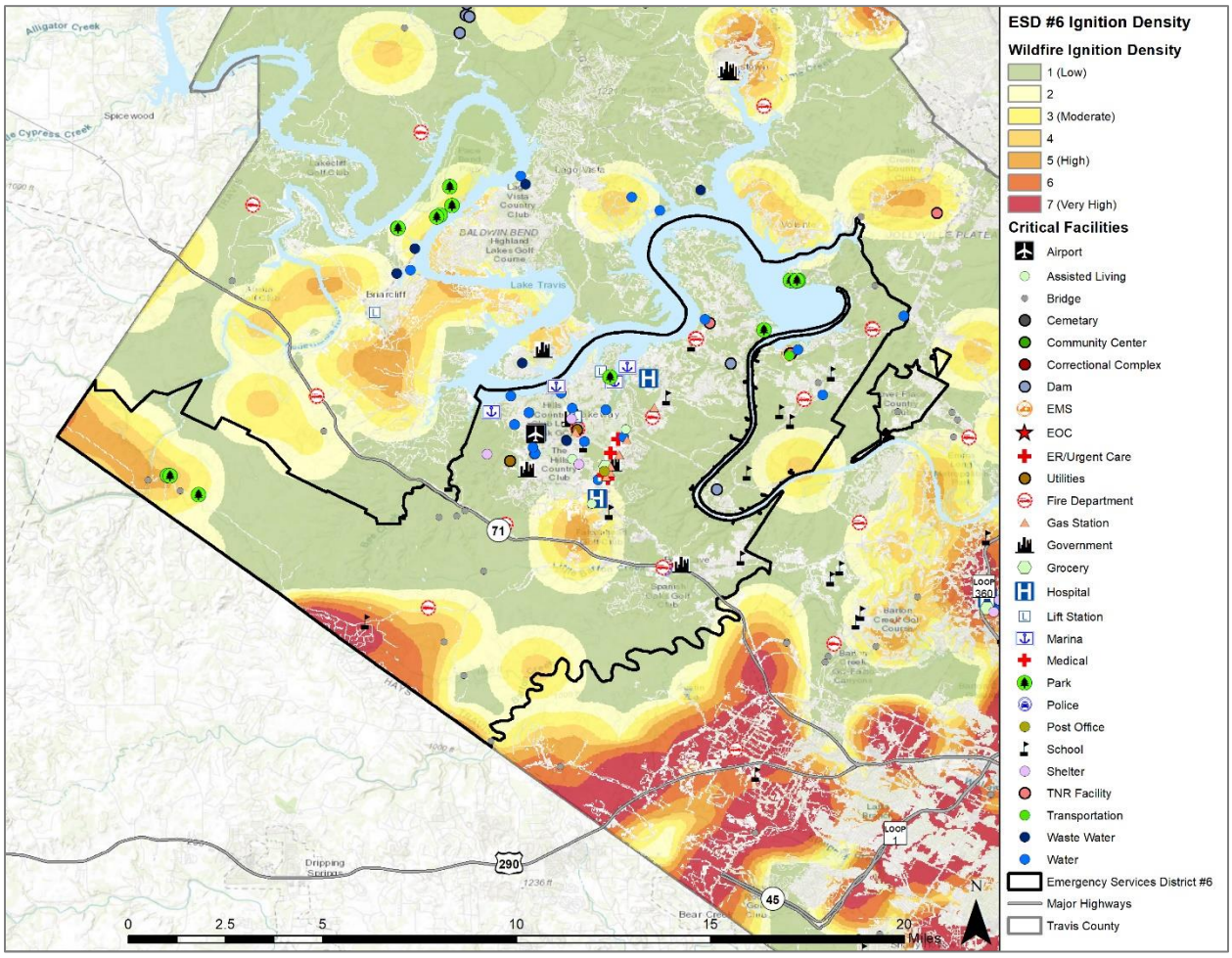


Figure 5-51. Wildfire Ignition Density – ESD #6



Diminished air quality is an environmental impact that can result from a wildfire event and pose a potential health risk. The smoke plumes from wildfires can contain potentially inhalable carcinogenic matter. Fine particles of invisible soot and ash that are too small for the respiratory system to filter can cause immediate and possibly long-term health effects. The elderly or those individuals with compromised respiratory systems may be more vulnerable to the effects of diminished air quality after a wildfire event.

Climatic conditions such as severe freezes and drought can significantly increase the intensity of wildfires since these conditions kill vegetation, creating a prime fuel source for wildfires. The intensity and rate at which wildfires spread are directly related to wind speed, temperature, and relative humidity.

The severity of impact from major wildfire events can be substantial. Such events can cause multiple deaths, shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage. Severity of impact is gauged by acreage burned, homes and structures lost, and the number of resulting injuries and fatalities.

For the Travis County planning area, including participating jurisdictions and ESD #6, the impact from a wildfire event can be considered “Minor," meaning injuries and/or illnesses do not result in permanent disability, complete shutdown of facilities and services for more than one week and

more than 10 percent of property is destroyed or with major damage. Severity of impact is gauged by acreage burned, homes and structures lost, injuries and fatalities.

Table 5-7. Impact for Travis County

JURISDICTION	IMPACT	DESCRIPTION
Travis County	Limited	Travis County has an estimated 463,278 people or 45% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. County residents may suffer injuries that are treatable with first aid. Critical facilities could be shut down for less than one week, and less than 10 percent of total property could be damaged.
Village of Briarcliff	Minor	Within the Village of Briarcliff, it is estimated 793 people or 59% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. Village residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
City of Creedmoor	Minor	Within the City of Creedmoor, it is estimated 755 people or 96% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 1 house per 2 acres. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
City of Jonestown	Minor	Within the City of Jonestown, it is estimated 1,812 people or 69% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.

JURISDICTION	IMPACT	DESCRIPTION
City of Lago Vista	Limited	Within the City of Lago Vista, it is estimated 2,719 people or 34% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. City residents may suffer injuries that are treatable with first aid. Critical facilities could be shut down for less than one week, and less than 10 percent of total property could be damaged.
City of Lakeway	Minor	Within the City of Lakeway, it is estimated 6,689 people or 55% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
City of Manor	Minor	Within the City of Manor, it is estimated 2,194 people or 79% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
City of Mustang Ridge	Minor	Within the City of Mustang Ridge, it is estimated 1,611 people or 99% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 1 house per 2 acres. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.

JURISDICTION	IMPACT	DESCRIPTION
City of Pflugerville	Limited	Within the City of Pflugerville, it is estimated 18,432 people or 48% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. City residents may suffer injuries that are treatable with first aid. Critical facilities could be shut down for less than one week, and less than 10 percent of total property could be damaged.
Village of Point Venture	Minor	Within the Village of Point Venture, it is estimated 843 people or 65% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. Village residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
City of Rollingwood	Limited	Within the City of Rollingwood, it is estimated 396 people or 19% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. City residents may suffer injuries that are treatable with first aid. Critical facilities could be shut down for less than one week, and less than 10 percent of total property could be damaged.
Village of San Leanna	Minor	Within the Village of San Leanna, it is estimated 564 people or 97% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. Village residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.

JURISDICTION	IMPACT	DESCRIPTION
City of Sunset Valley	Minor	Within the City of Sunset Valley, it is estimated 450 people or 78% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. Village residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
Village of The Hills	Limited	Within the Village of The Hills, it is estimated 398 people or 17% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. Village residents may suffer injuries that are treatable with first aid. Critical facilities could be shut down for less than one week, and less than 10 percent of total property could be damaged.
City of West Lake Hills	Minor	Within the City of West Lake Hills, it is estimated 3,816 people or 93% of the total population that live within the Wildland Urban Interface (WUI). Average housing density is most commonly 3 houses per 1 acre. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
Emergency Services District #6	Minor	Emergency Services District #6 has 7 facilities located within the WUI and has a low to moderate risk of wildfire. Employees of the district and residents within the district boundaries could be injured or suffer illnesses, but not permanent disability. Critical facilities could be shut down for a week, and 10 percent or more of total property could be damaged.

ASSESSMENT OF IMPACTS

A Wildfire event poses a potentially significant risk to public health and safety, particularly if the wildfire is initially unnoticed and spreads quickly. The impacts associated with a wildfire are not limited to direct damage. Significant wildfire events can be frequently associated with a variety of impacts, including:

- The Travis County planning area contains numerous public parks, nature preserves and open space areas. Community assets such as the Balcones Canyonlands Preserve and the Balcones Canyonlands National Wildlife Refuge are vulnerable to wildfire events.

Wildfire may adversely affect or destroy endangered species habitat, reduce air quality, increase erosion and risk of flash flooding, contribute to increased local temperatures, and disrupt other ecological functions.

- Recreation activities throughout county, city, and village parks may be unavailable and tourism can be unappealing for years following a large wildfire event, devastating directly related local businesses and negatively impacting economic recovery.
- Persons, pets, and wildlife in the area at the time of the fire are at risk for injury or death from burns and/or smoke inhalation. First responders are at greater risk of physical injury when in close proximity to the hazard while extinguishing flames, protecting property, or evacuating residents in the area.
- First responders can experience heart disease, respiratory problems, and other long-term related illnesses from prolonged exposure to smoke, chemicals, and heat.
- Emergency services may be disrupted during a wildfire if facilities are impacted, roadways are inaccessible, or personnel are unable to report for duty.
- Critical county, city, and village departments may not be able to function and provide necessary services depending on the location of the fire and the structures or personnel impacted.
- Non-critical businesses may be directly damaged, suffer loss of utility services, or be otherwise inaccessible, delaying normal operations and slowing the recovery process.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Roadways in or near the WUI could be damaged or closed due to smoke and limited visibility.
- Older homes are generally exempt from modern building code requirements, which may require fire suppression equipment in the structure. 27 percent of homes in the planning area were built before 1980. Similarly, historic buildings may lack fire mitigation materials or measures due to their historic status. One site in the Travis County planning area, the City of Pflugerville East Main Street Historic District, is listed on the National Register of Historic Places.
- Some high-density neighborhoods feature small lots with structures close together, increasing the potential for fire to spread rapidly.
- Air pollution from smoke may exacerbate respiratory problems of vulnerable residents.
- Charred ground after a wildfire cannot easily absorb rainwater, increasing the risk of flooding and potential mudflows.
- Wildlife may be displaced or destroyed.
- Historical or cultural resources may be damaged or destroyed.
- Tourism can be significantly disrupted, further delaying economic recovery for the area.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Fire suppression costs can be substantial, exhausting the financial resources of the community.
- Residential structures lost in a wildfire may not be rebuilt for years, reducing the tax base for the community.

- Direct impacts to municipal water supply may occur through contamination of ash and debris during the fire, destruction of aboveground delivery lines, and soil erosion or debris deposits into waterways after the fire.

The economic and financial impacts of a wildfire event on local government will depend on the scale of the event, what is damaged, costs of repair or replacement, lost business days in impacted areas, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by government, businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a wildfire event.

CLIMATE CHANGE CONSIDERATIONS

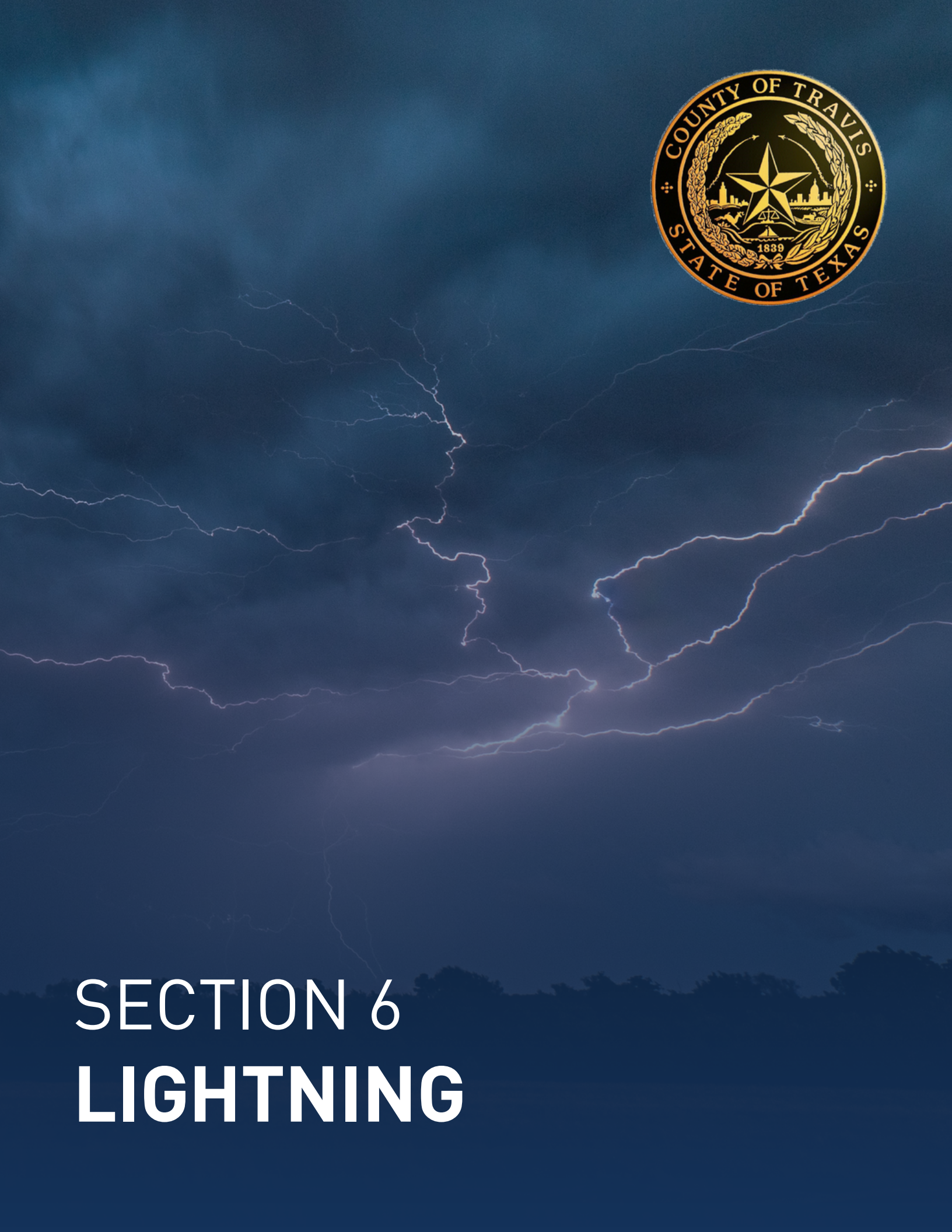
Wildfires require the alignment of a number of factors, including temperature, humidity, and the lack of moisture in fuels, such as trees, shrubs, grasses, and forest debris. All these factors have strong direct or indirect ties to climate variability and climate change. Research shows that changes in climate create warmer, drier conditions, leading to longer and more active fire seasons. Increases in temperatures and the thirst of the atmosphere due to human--caused climate change have increased aridity of forest fuels during the fire season.[14]

Vapor pressure deficit, an indicator of the ability of moisture to evaporate, is projected to increase as temperatures rise and carbon dioxide fertilization reduces transpiration, leading to both lower humidity and increased surface dryness. Overall, increased dryness should extend the wildfire season in places where the fire season is presently constrained by low levels of aridity, such as eastern Texas.[15]

Key findings of the University of Texas at Austin technical report for the City of Austin indicate that overall temperatures are rising, with summer highs expected to exceed 110°F more frequently. Heatwaves are expected to become more frequent and last longer, potentially reaching 80 days per year by the end of the century, contributing to favorable wildfire conditions.[16]

Extreme heat and extended periods of drought contribute to wildfire risk in the planning area. Extreme temperatures and periods of drought destroy vegetation in the area, contributing to available fuels that spread wildfires. Additional climate change impacts from drought and extreme heat are discussed in Sections 7 and 8 of this Plan. The projected increases in favorable wildfire conditions, including drought and extreme heat, indicate an increase in favorable wildfire conditions. Additional information and studies are needed to determine the degree and rate of any increased wildfire risk.

[14] NOAA Wildfire Climate Connection, August 2022: wildfire-climate-connection.
[15] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.
[16] University of Texas at Austin, February 2023, *Austin Future Climate, Climate Change Predictions for the City of Austin 2022, Technical Report.*



SECTION 6
LIGHTNING

SECTION 6: LIGHTNING

HAZARD DESCRIPTION

Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a "bolt" when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes the thunder which often accompanies lightning strikes. While most often affiliated with severe thunderstorms, lightning often strikes outside of heavy rain and might occur as far as 10 miles away from any rainfall.

According to the National Weather Service (NWS), the 10-year (2012–2021) average for fatalities is 23 people with an average of 300 injuries in the United States each year by lightning. Lightning can occur as cloud-to-ground flashes or as intra-cloud lightning flashes. Direct lightning strikes can cause significant damage to buildings, critical facilities, infrastructure, and communication equipment affecting emergency response. Lightning is also responsible for igniting wildfires that can result in widespread damages to property before firefighters have the ability to contain and suppress the resultant fire.

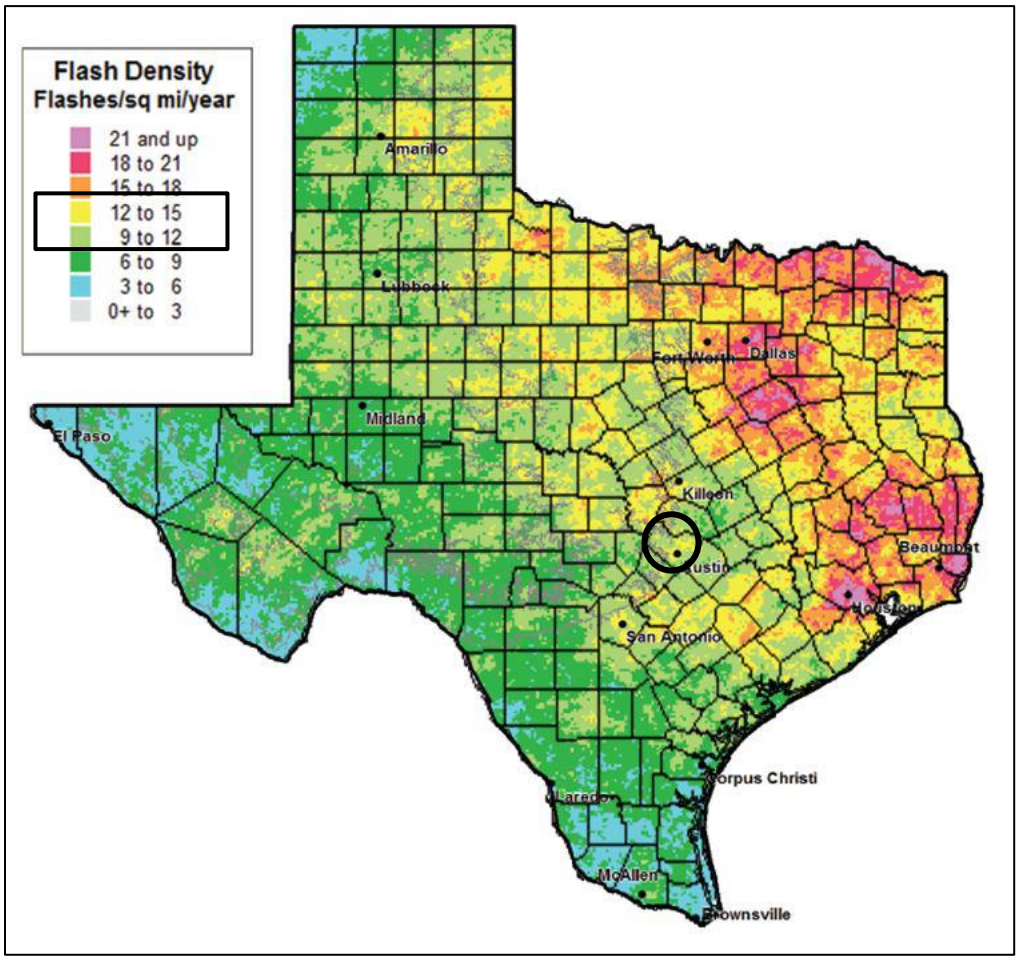
LOCATION

Lightning can strike in any geographic location and is considered a common occurrence in Texas. The Travis County planning area is in a region of the country that is moderately susceptible to lightning strikes. Therefore, lightning could occur at any location within the entire planning area. It is assumed that the entire Travis County planning area, including participating jurisdictions and ESD #6, are uniformly exposed to the threat of lightning.

EXTENT

According to NOAA, the average number of cloud-to-ground flashes for the State of Texas between 2006 and 2016 was 11.3 flashes per square mile. Vaisala's U.S. National Lightning Detection Network lightning flash density map (Figure 6-1) shows a range of 9 to 15 cloud-to-ground lightning flashes per square mile per year for the entire Travis County planning area, including participating jurisdictions and ESD #6. This rate equates to approximately 8,910 to 14,850 flashes per year for the entire planning area.

Figure 6-1. Lightning Flash Density, 2006-2016



The extent for lightning can be expressed in terms of the number of strikes in an interval. NOAA utilizes lightning activity levels (LALs) on a scale from 1-6. LAL rankings reflect the frequency of cloud-to-ground lightning either forecast or observed (Table 6-1).

Table 6-1. NOAA Lightning Activity Levels (LAL)

LAL	CLOUD & STORM DEVELOPMENT	LIGHTNING STRIKES/15 MIN
1	No thunderstorms.	-
2	Cumulus clouds are common but only a few reach the towering cumulus stage. A single thunderstorm must be confirmed in the observation area. The clouds produce mainly virga, but light rain will occasionally reach the ground. Lightning is very infrequent.	1-8
3	Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two to three must occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	9-15

LAL	CLOUD & STORM DEVELOPMENT	LIGHTNING STRIKES/15 MIN
4	Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered and more than three must occur within the observation area. Moderate rain is common, and lightning is frequent.	16-25
5	Towering cumulus and thunderstorms are numerous. They cover more than three-tenths and occasionally obscure the sky. Rain is moderate to heavy, and lightning is frequent and intense.	>25
6	Similar to LAL 3 except thunderstorms are dry.	9-15

The NCEI does not include the LAL for historical lightning events, therefore in order to determine the extent of lightning strikes, the yearly average range of estimated number of lightning strikes within the planning area (8,910 to 14,850 flashes) and a cloud-to-ground flash density of 9 to 15 per square mile were divided by the number[1] of thunderstorm events that occur annually in the planning area. Travis County should expect an average range of 4 to 7 lightning strikes within 15 minutes at any given time during a lightning or combined lightning and thunderstorm event, indicating lightning strikes have an average LAL range of 1 to 2. The highest anticipated being a 2 on the LAL for the planning area in the future.

HISTORICAL OCCURRENCES

Since January 1996, there have been 27 recorded events for the Travis County planning area. It is highly likely multiple lightning occurrences have gone unreported before and during the recording period. The NCEI is a national data source organized under the National Oceanic and Atmospheric Administration and considered a reliable resource for hazards. However, the flash density for the planning area along with input from local team members indicates regular lightning occurrences that simply have not been reported.

Historical lightning data for ESD #6 are provided within the county or city events per the NCEI database as they do not have events reported separate and apart from those jurisdictions. According to the Planning Team, there have been no reported losses as a result of lightning events for the district.

Table 6-2. Historical Lightning Events, 1996-2022[2]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	4/5/1996	1	0	$0	$0
City of Manor	8/12/1996	0	1	$0	$0
Travis County	7/4/1998	0	6	$0	$0

[1] Analysis includes the highest number of events recorded in a given year during the reporting period in order to account for typical under reporting of thunderstorm and lightning events.

[2] Values are in 2022 dollars. Database was search for events between 1996 and 2022. No events were reported for the Travis County planning area in the database after February 3, 2022.

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	8/16/1998	0	2	$0	$0
Travis County	7/16/2000	0	1	$0	$0
City of Lago Vista	8/8/2002	0	3	$0	$0
Travis County	3/18/2008	0	0	$6,950	$0
City of Lakeway	4/27/2008	0	0	$41,448	$0
Travis County	10/7/2008	0	0	$685,212	$0
Travis County	6/3/2009	0	0	$13,760	$0
Travis County	6/30/2009	0	0	$137,602	$0
Travis County	6/30/2009	0	0	$206,402	$0
Travis County	6/9/2010	0	0	$817,004	$0
Travis County	4/29/2013	0	3	$0	$0
Travis County	7/26/2013	0	0	$165,172	$0
Travis County	7/26/2013	0	0	$63,528	$0
Travis County	7/26/2013	0	0	$95,292	$0
Travis County	8/26/2014	0	3	$0	$0
Travis County	5/23/2015	0	0	$12,481	$0
Travis County	9/25/2016	1	0	$0	$0
Travis County	5/9/2017	0	0	$181,911	$0
Travis County	5/28/2017	0	0	$145,529	$0
Travis County	7/23/2017	0	0	$242,492	$0
Travis County	4/6/2018	0	0	$11,846	$0
Travis County	4/6/2018	0	0	$11,846	$0
Travis County	7/19/2021	0	0	$108,716	$0
Travis County	7/19/2021	0	0	$108,716	$0
TOTALS		**2**	**19**	**$3,055,907**	

Table 6-3. Historical Lightning Events Summary, 1996-2022[3]

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGES	CROP DAMAGES
Travis County	24	2	15	$3,014,459	$0
Village of Briarcliff	0	-	-	-	-

[3] Participating jurisdictions with no reported events show a "-" in table columns where damages, deaths or injuries would be otherwise reported.

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGES	CROP DAMAGES
City of Creedmoor	0	-	-	-	-
City of Jonestown	0	-	-	-	-
City of Lago Vista	1	0	3	$0	$0
City of Lakeway	1	0	0	$41,488	$0
City of Manor	1	0	1	$0	$0
City of Mustang Ridge	0	-	-	-	-
City of Pflugerville	0	-	-	-	-
Village of Point Venture	0	-	-	-	-
City of Rollingwood	0	-	-	-	-
Village of San Leanna	0	-	-	-	-
City of Sunset Valley	0	-	-	-	-
Village of The Hills	0	-	-	-	-
City of West Lake Hills	0	-	-	-	-
ESD #6	0	-	-	-	-
TOTALS	**27**	**2**	**19**	**$3,055,907**	**$0**

Based on the list of historical lightning events for the Travis County planning area, including participating jurisdictions and ESD #6, there have been 4 reported events since the 2017 Plan.

SIGNIFICANT EVENTS

May 28, 2017 – Travis County

Thunderstorms developed along a cold front producing severe hail and damaging wind gusts. Within Travis County, a thunderstorm produced lightning that caused a house fire at 1142 Delores Avenue in the City of Austin. Total damages as a result of this event were approximately $145,529 (2022 dollars).

September 25, 2016 – Travis County

An upper-level trough brought a surface frontal system through South Central Texas, producing thunderstorms and severe rainfall. The Travis County Sheriff's Office reported that a woman was struck and killed by lightning in northwestern City of Austin. She was found dead on a hiking trail off of River Place Blvd.

August 26, 2014 – Travis County

Thunderstorms moved across the eastern half of South-Central Texas within some of these storms producing strong wind gusts. Within Travis County, three children were struck by lightning

during a soccer practice at the Field of Dreams near Highway 71 and Hamilton Pool Rd. They were all taken to a hospital and treated, one of which was for severe injuries.

June 9, 2010 – Travis County
An upper-level area of low pressure combined with deep boundary layer moisture to produce a slow-moving mesoscale convective system (MCS). This MCS produced excessive rainfall from Atascosa to Comal counties, with heavy rains more than 11+ inches fell. Within Travis County, thunderstorms produced lightning which started a fire causing approximately $817,004 (2022 dollars) of damage as a result. There were no reported injuries or fatalities within the planning area as a result of the storm event.

PROBABILITY OF FUTURE EVENTS

Based on historical records and input from the planning team the probability of occurrence for future lightning events in the Travis County planning area is considered highly likely, or an event probable in the next year. The planning team stated that lightning occurs regularly in the area. According to NOAA, the Travis County planning area, including participating jurisdictions and ESD #6, are in an area of the country that experiences approximately nine to fifteen lightning flashes per square mile per year (approximately 8,910 to 14,850 flashes per year). Given this estimated probability of events, it can be expected that future lightning events will continue to threaten life and cause minor property damage throughout the planning area. Impacts of climate change are not expected to increase the average frequency of lightning events but may lead to an increase in the intensity of events when they do occur. See additional information on climate change at the end of this section.

VULNERABILITY AND IMPACT

Vulnerability is difficult to evaluate since lightning events can occur at different strength levels, in random locations, and can create a broad range of damage depending on the strike location. Due to the randomness of these events, all existing and future structures and facilities in the Travis County planning area could potentially be impacted and remain vulnerable to possible injury and property loss from lightning strikes.

The direct and indirect losses associated with these events include injury and loss of life, damage to structures and infrastructure, agricultural losses, utility failure (power outages), and stress on community resources. The entire population of the Travis County planning area, including participating jurisdictions and ESD #6, are considered exposed to the lightning hazard. The peak lightning season in the State of Texas is from June to August; however, the most fatalities occur in July. Fatalities occur most often when people are outdoors and/or participating in some form of recreation. Population located outdoors is considered at risk and more vulnerable to a lightning strike compared to being inside a structure (Table 6-5). Moving to a lower risk location will decrease a person’s vulnerability.

The entire general building stock and all infrastructure of the Travis County planning area, are considered exposed to the lightning hazard. Lightning can be responsible for damages to buildings, cause electrical, forest and/or wildfires, and damage infrastructure such as power transmission lines and communication towers.

SECTION 6: LIGHTNING

While all citizens are at risk to the impacts of lightning, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 10.7 percent of the planning area population live below the poverty level (Table 6-4).

Table 6-4. Populations at Greatest Risk by Jurisdiction[4]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Travis County	135,654
Village of Briarcliff	66
City of Creedmoor	60
City of Jonestown	229
City of Lago Vista	316
City of Lakeway	554
City of Manor	975
City of Mustang Ridge	85
City of Pflugerville	3,392
Village of Point Venture	47
City of Rollingwood	0
Village of San Leanna	9
City of Sunset Valley	26
Village of The Hills	62
City of West Lake Hills	209
ESD #6	N/A

Table 6-5. Outdoor Employees by Participating Special District

ESD	EMPLOYEES WORKING OUTDOORS
ESD #6	108

[4] US Census Bureau, American Community Survey Five-Year Estimates, 2021

SECTION 6: LIGHTNING

The Travis County Planning Team identified the following critical facilities (Table 6-6) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by lightning events. For a comprehensive list by participating jurisdiction see Appendix C.

Table 6-6. Critical Facilities Vulnerable to Lightning Events

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Emergency operations and services may be significantly impacted due to power outages, damaged facilities, fires and/or loss of communications as a result of lightning strikes. • Emergency vehicles, including critical equipment, can be damaged by lightning strikes or by falling trees damaged by lightning. • Power outages could disrupt communications, delaying emergency response times. • Downed trees due to lightning strikes can impede emergency response vehicle access to areas. • Lightning strikes can be associated with structure fires and wildfires, further straining the capacity and resources of emergency personnel. • Extended power outages may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Structures can be damaged by falling trees damaged by lightning. • Power outages could disrupt critical care. • Backup power sources could be damaged. • Evacuations may be necessary due to extended power outages, fires, or other associated damages to facilities.
Commercial Supplier (food, fuel, etc.)	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed. • Economic disruption due to power outages and fires negatively impact airport services as well as area businesses reliant on airport operations.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations and critical services may be significantly impacted due to power outages, damaged facilities, fires and/or loss of communications as a result of lightning strikes. • Emergency vehicles, including critical equipment, can be damaged by lightning strikes or by falling trees damaged by lightning. • Power outages could disrupt communications, delaying emergency response times.

CRITICAL FACILITIES	POTENTIAL IMPACTS
	• Downed trees due to lightning strikes can impede emergency response vehicle access to areas. • Lightning strikes can be associated with structure fires and wildfires, further straining the capacity and resources of emergency personnel. • Extended power outages may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.

Historical losses and damages as a result of lightning events can be considered “Limited” with critical facilities and services shut down for 24 hours or less, and less than 10 percent of property destroyed. However, the historical injuries and fatalieis indicate a “Substantial” impact with multiple deaths and injuries. Impact of lightning experienced in the Travis County planning area has resulted in 15 injuries and 2 fatalities. Overall, the average loss estimate for the planning area (in 2022 dollars) is considered $3,055,907 with an average annualized loss of $113,182 (Table 6-7).

Table 6-7. Potential Annualized Losses by Jurisdiction[5]

JURISDICTION	TOTAL PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATE
Travis County	$3,014,459	$111,647
Village of Briarcliff	-	-
City of Creedmoor	-	-
City of Jonestown	-	-
City of Lago Vista	$0	$0
City of Lakeway	$41,448	$1,535
City of Manor	$0	$0
City of Mustang Ridge	-	-
City of Pflugerville	-	-
Village of Point Venture	-	-
City of Rollingwood	-	-
Village of San Leanna	-	-
City of Sunset Valley	-	-

[5] Damage values are in 2022 dollars. Participating jurisdictions with no reported events show a “-“ in table columns where damages would be otherwise reported.

JURISDICTION	TOTAL PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATE
Village of The Hills	-	-
City of West Lake Hills	-	-
ESD #6	-	-
PLANNING AREA	**$3,055,907**	**$113,182**

ASSESSMENT OF IMPACTS

Lightning events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. Additional impacts to the planning area can include:

- The Travis County planning area features park space developed parks and green spaces. Lightning events could impact recreational activities, placing residents and visitors in imminent danger, potentially requiring emergency services or park evacuation.
- Older structures built to less stringent building codes may suffer greater damage from a lightning strike as they are typically built with less fire-resistant materials and often lack any fire mitigation measures such as sprinkler systems. 27 percent of homes in the county were built before 1980. Similarly, historic buildings may lack fire mitigation materials or measures due to their historic status. One site in the Travis County planning area, the City of Pflugerville East Main Street Historic District, is listed on the National Register of Historic Places.
- Vegetation in urban parks, the Balcones Canyonlands Preserve or the National Wildlife Refuge may be destroyed by lightning caused brush fires and result in poor air quality impacting public health.
- Individuals exposed to the storm can be directly struck, posing significant health risks and potential death.
- Structures can be damaged or crushed by falling trees damaged by lightning, which can result in physical harm to the occupants.
- Lightning strikes can result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- Lightning strikes can be associated with structure fires and wildfires, creating additional risk to residents and first responders.
- Emergency operations and services may be significantly impacted due to power outages and/or loss of communications.
- County, city, and village departments may be damaged, delaying response and recovery efforts for the entire community.
- Economic disruption due to power outages and fires negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Some businesses not directly damaged by lightning events may be negatively impacted while utilities are being restored, further slowing economic recovery.

- Businesses that are more reliant on utility infrastructure than others may suffer greater damage without a backup power source.

The economic and financial impacts of lightning on the area will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the county, city, village, ESD, local businesses, and citizens will also contribute to the overall economic and financial conditions in the aftermath of any significant lightning event.

CLIMATE CHANGE CONSIDERATIONS

As CO_2 increases and the land surface warms, stronger updrafts are more likely to produce lightning. In a climate with double the amount of CO_2, we may see fewer lightning storms overall, but 25 percent stronger storms, with a 5 percent increase in lightning. Lightning damage is also likely to increase because of its role in igniting forest fires, where dry vegetation, also caused by rising temperatures, creates more 'fuel' for fires, so even a small climate change may have huge consequences. While the impact climate change will have on our weather still remains uncertain, researchers agree that implementing simple measures like lightning detection systems and installing grounding systems in buildings could go a long way in avoiding deaths and injuries.[6]

Lightning events have the potential to pose a significant risk to people and property throughout the planning area. The economic and financial impacts of lightning on the area will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. While no increase in the number of hazard events is anticipated, the impact of the hazard may see an increase in losses. As populations grow and urban development continues to rise, the overall vulnerability and impact are expected to increase in the next five years.

[6] Environmental Journal, Nathan Neal, January 11, 2021.

SECTION 7
DROUGHT

SECTION 7: DROUGHT

HAZARD DESCRIPTION

Drought is a period of time without substantial rainfall that persists from one year to the next. Drought is a normal part of virtually all climatic regions, including areas with high and low average rainfall. Drought is the consequence of anticipated natural precipitation reduction over an extended period of time, usually a season or more in length. Droughts can be classified as meteorological, hydrologic, agricultural, and socioeconomic. Table 7-1 presents definitions for these different types of droughts.

Droughts are one of the most complex of all natural hazards as it is difficult to determine their precise beginning or end. In addition, droughts can lead to other hazards such as extreme heat and wildfires. Their impact on wildlife and area farming is enormous, often killing crops, grazing land, edible plants, and even in severe cases, trees. A secondary hazard to drought is wildfire because dying vegetation serves as a prime ignition source. Therefore, a heat wave combined with a drought is a very dangerous situation.

Table 7-1. Drought Classification Definitions[1]

METEOROLOGICAL DROUGHT	The degree of dryness or departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
HYDROLOGIC DROUGHT	The effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
AGRICULTURAL DROUGHT	Soil moisture deficiencies relative to water demands of plant life, usually crops.
SOCIOECONOMIC DROUGHT	The effect of demands for water exceeding the supply as a result of a weather-related supply shortfall.

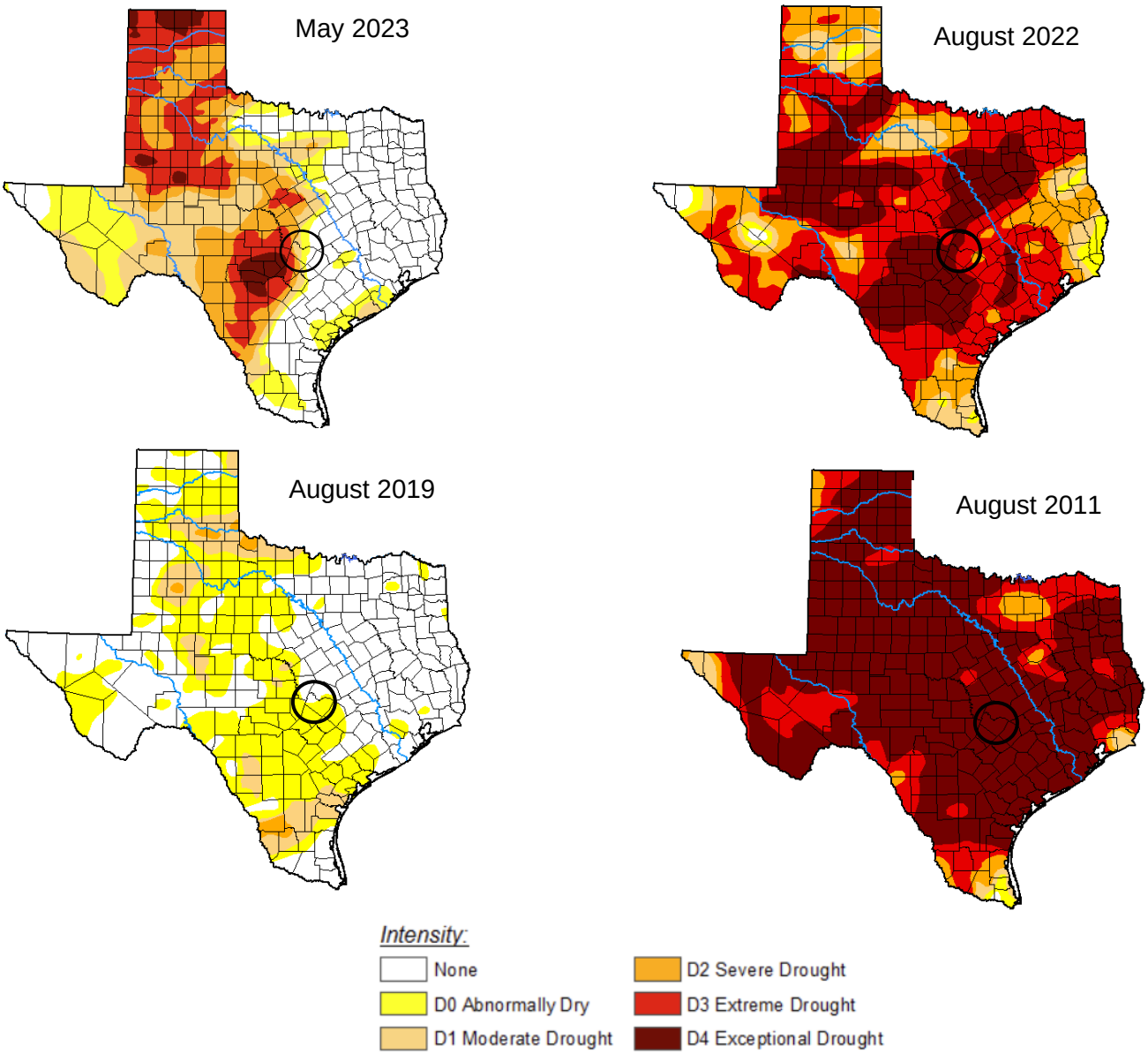
LOCATION

Droughts occur regularly throughout Texas and the Travis County planning area, including participating jurisdictions and ESD #6, and are considered a normal condition. However, they can vary greatly in their intensity and duration. The U.S. Drought Monitor, produced through a

[1] Source: Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy, FEMA

partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, U.S. Department of Agriculture and the National Oceanic and Atmospheric Administration, shows the planning area is currently experiencing abnormally dry to moderate drought conditions but has experienced a range of conditions from none to extreme drought conditions over the last decade. There is no distinct geographic boundary to drought; therefore, it can occur throughout the Travis County planning area equally.

Figure 7-1. U.S. Drought Monitor, August 2011, August 2019, August 2022, May 2023



EXTENT

The U.S. Drought Monitor (USDM) identifies areas in drought and labels them by intensity. The map uses four categories of drought, from D1—the least intense—to D4, the most (Table 7-2). It also highlights areas with no drought and uses the D0 category to indicate abnormally dry areas that could be entering or recovering from drought.[2] Travis County has experienced a range of drought conditions from D0 to D4 (Figure 7-1) over the 27-year reporting period. The driest period during that time saw Exceptional Drought (D4) conditions from March 2011 through February 2012 for the Travis County planning area.

Table 7-2. US Drought Monitor: Drought Intensity Categories

CATEGORY	DESCRIPTION	POSSIBLE IMPACTS
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures; fire risk above average. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.
D1	Moderate Drought	Some damage to crops, pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing, or imminent, voluntary water use restrictions requested.
D2	Severe Drought	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.
D3	Extreme Drought	Major crop/pasture losses; extreme fire danger; widespread water shortages or restrictions.
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells, creating water emergencies.

Drought is monitored nationwide by the National Drought Mitigation Center (NDMC). Indicators are used to describe broad scale drought conditions across the U.S. and correspond to the intensity of drought.

Based on the historical occurrences for drought and the location of the Travis County planning area, including participating jurisdictions and ESD #6, the area can anticipate a range of drought from abnormally dry to exceptional, or D0 to D4, based on the U.S. Drought Monitor drought categories. The entire planning area has experienced exceptional drought conditions. These are the most extreme drought conditions the planning area can anticipate in the future.

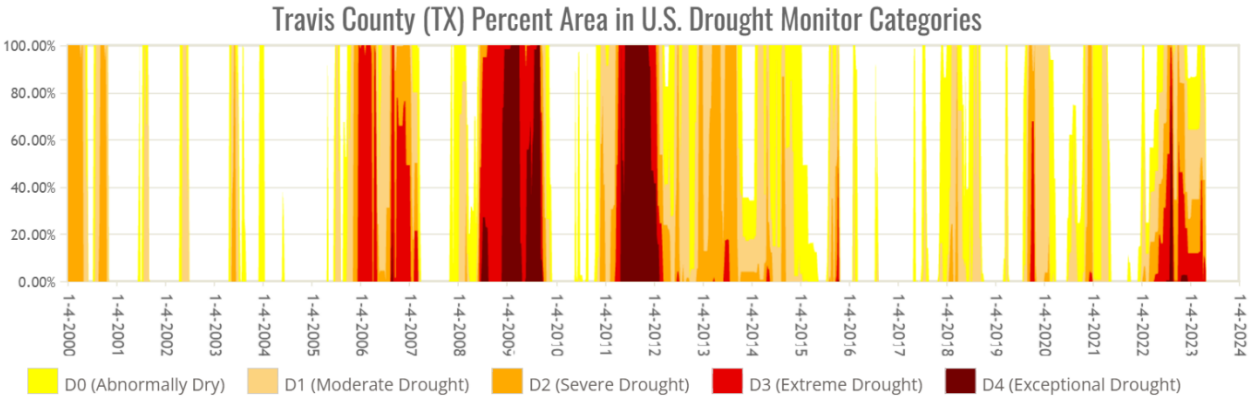
[2] Source: US Drought Monitor: https://droughtmonitor.unl.edu/About/AbouttheData/DroughtClassification.aspx

Travis County and the participating jurisdictions monitor drought conditions and follow and distribute the conservation methods as identified by local and private water supply providers specific to each municipality during periods of higher-than-normal temperatures and lower-than-normal rainfall. There are multiple water utility providers within the planning area; additional information from water utility providers can be found on their respective websites.

HISTORICAL OCCURRENCES

The Travis County planning area may experience an extreme drought in any given year. According to the U.S. Drought Monitor, between January 2000 and December 2022, the Travis County planning area spent 599 weeks (50 percent) in some level of drought as defined as Abnormally Dry (D0) or worse conditions. Travis County has received 28 USDA disaster declarations for drought from 2012 through 2022.

Figure 7-2. Travis County Drought Intensity, January 2000-December 2022[3]



Historical drought information shows drought activity across a multi-county forecast area for each event, the appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event. Historical drought data is provided on a county-wide basis per the National Centers for Environmental Information Storm Events Database (NCEI).

Table 7-5 lists historical events that have occurred in Travis County as reported in the NCEI Storm Events database. A total of 39 historical drought conditions were reported in the NCEI, with 8 unique drought periods impacting Travis County between 1996 and 2022. Historical drought events reported in the NCEI database for the Travis County planning area, including all participating jurisdictions and ESD #6, over the 27-year reporting period has resulted in negligible property and crop damages.

Table 7-5. Historical Drought Years, 1996-2022[4]

DROUGHT YEAR
1996

[3] U.S. Drought Monitor

[4] Historical data is reported from January 1996 through December 2022.

DROUGHT YEAR
2000
2011
2012[5]
2013
2014
2019
2022
8 unique events

Table 7-6. Historical Drought Events, 1996-2022

JURISDICTION	DATE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Travis County	4/1/1996	0	0	$0	$0
Travis County	5/1/1996	0	0	$0	$0
Travis County	6/1/1996	0	0	$0	$0
Travis County	7/1/1996	0	0	$0	$0
Travis County	8/1/1996	0	0	$0	$0
Travis County	7/1/2000	0	0	$0	$0
Travis County	8/1/2000	0	0	$0	$0
Travis County	9/1/2000	0	0	$0	$0
Travis County	10/1/2000	0	0	$0	$0
Travis County	5/1/2011	0	0	$0	$0
Travis County	6/1/2011	0	0	$0	$0
Travis County	7/1/2011	0	0	$0	$0
Travis County	8/1/2011	0	0	$0	$0
Travis County	9/1/2011	0	0	$0	$0
Travis County	10/1/2011	0	0	$0	$0

[5] Two separate drought periods were reported in 2012.

SECTION 7: DROUGHT

JURISDICTION	DATE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Travis County	11/1/2011	0	0	$0	$0
Travis County	12/1/2011	0	0	$0	$0
Travis County	1/1/2012	0	0	$0	$0
Travis County	2/1/2012	0	0	$0	$0
Travis County	6/1/2012	0	0	$0	$0
Travis County	12/1/2012	0	0	$0	$0
Travis County	2/1/2013	0	0	$0	$0
Travis County	3/1/2013	0	0	$0	$0
Travis County	4/1/2013	0	0	$0	$0
Travis County	6/1/2013	0	0	$0	$0
Travis County	7/1/2013	0	0	$0	$0
Travis County	8/1/2013	0	0	$0	$0
Travis County	8/1/2014	0	0	$0	$0
Travis County	9/1/2019	0	0	$0	$0
Travis County	10/1/2019	0	0	$0	$0
Travis County	11/1/2019	0	0	$0	$0
Travis County	11/1/2020	0	0	$0	$0
Travis County	12/1/2020	0	0	$0	$0
Travis County	1/1/2021	0	0	$0	$0
Travis County	6/1/2022	0	0	$0	$0
Travis County	7/1/2022	0	0	$0	$0
Travis County	8/1/2022	0	0	$0	$0
Travis County	9/1/2022	0	0	$0	$0
Travis County	10/1/2022	0	0	$0	$0
TOTALS		**0**	**0**	**$0**	**$0**

Table 7-7. Historical Drought Events Summary, 1996-2022

JURISDICTION	DROUGHT PERIODS	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Travis County	8	0	0	$0	$0

Based on the historical drought events for the Travis County planning area, including participating jurisdictions and ESD #6, 11 drought events were reported during 2 unique drought periods since the 2017 Plan.

SIGNIFICANT EVENTS

June 2022 – November 2022

Across South Central Texas, June 2022 was another month with below normal precipitation and worsening drought conditions, putting Travis County into Severe Drought (D2) conditions. Public water systems encouraged at least voluntary water restrictions, and many had mandatory restrictions in effect. The Edwards Aquifer dropped 1.9 feet and was 28.3 feet below normal. Lake Travis dropped 2.5 feet to 31.0 feet below normal. Outdoor burn bans went into effect. Drought conditions continued into July with below normal precipitation across nearly all of South Central Texas. Travis County moved from Severe (D2) to Extreme (D3) drought conditions, Water restrictions and outdoor burn bans continued. Several heavy rain episodes during August led to above normal precipitation across South Central Texas. The result was an improvement on the drought in all but two counties. Travis County improved from Extreme (D3) category to less than D2. After beneficial rain in August, dry weather returned in September. Conditions in Travis County worsened to D2. Outdoor burn bans went into effect and all public water systems encouraged at least voluntary water restrictions and many had mandatory restrictions in effect. The Edwards Aquifer dropped 1.3 feet and was 27.2 feet below normal. Area reservoirs continued to fall further below normal conservation pool levels. Lake Travis dropped 3.5 feet to 34.5 feet below normal.

September 2019 – November 2019

South Central Texas received less than 50 percent of normal precipitation from July through November. Putting Travis County into Severe Drought (D2) and then Extreme Drought (D3) conditions. Burn bans were in effect for all of the counties in South Central Texas including Travis County. Public Water Systems in Travis County were in Voluntary or Stage 1 water restrictions. Texas A&M AgriLife reported rangelands were dry with very short soil moisture levels. Livestock were in fair condition and supplemental feeding continued.

August 2014

August was a mainly dry month for South Central Texas. Most of the region had below normal precipitation and much of that area had 50 percent or less than normal. Travis County moved into the severe category drought, Stage D2. Fire danger was moderate to high across the area at the end of August. Area lakes and reservoirs continued well below normal pool elevations. Lake Travis dropped more than 3 feet to 57.4 feet below normal.

May 2011-February 2012

Persistent drought conditions continued across portions of South Central Texas through the month of May. Most of the area was in exceptional drought conditions, Stage D4. Lack of rain this month moved Bandera, Bexar, Blanco, Caldwell, Comal, Frio, Gillespie, Gonzales, Guadalupe, Hays, Kendall, Medina, Travis, and Williamson counties into this stage, and De Witt and Karnes

counties into extreme drought conditions, Stage D3. This means all of South Central Texas was in either extreme or exceptional drought conditions. Fire danger in South Central Texas remained moderate to high and burn bans were in effect for all of the counties except Llano. The Texas A&M agricultural program report indicated the agricultural situation was rapidly deteriorating. Forage availability remained below average. Many stock tanks remained extremely low and some were in danger of drying up. At the end of the month the seven-day stream flow average remained in the below or much-below-normal range for basins across South Central Texas and the Rio Grande Plains. Area lakes and reservoirs remained below normal pool elevations, with Lake Travis around 32 feet below normal.

PROBABILITY OF FUTURE EVENTS

Based on available records of historic events, there have been 8 extended time periods of drought (ranging in length from approximately 30 days to over 90 days) within a 27-year reporting period, which provides a probability of one to two events every year. This frequency supports a "Likely" probability of future events for the Travis County planning area, including all participating jurisdictions and ESD #6. The impact of climate change could produce longer, more severe droughts, exacerbating the current drought impacts. See additional information on climate change at the end of this section.

VULNERABILITY AND IMPACT

Loss estimates were based on 27 years of statistical data from the NCEI. A drought event frequency-impact was then developed to determine an impact profile on agriculture products and estimate potential losses due to drought in the area. All existing and future buildings, facilities, and populations are exposed to this hazard and could potentially be impacted. However, drought impacts are mostly experienced in water shortages, breaks in water lines, or crop and livestock losses on agricultural lands and typically have minimal impact on buildings.

The Travis County Planning Team identified the following critical facilities (Table 7-8) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by drought events. For a comprehensive list by participating jurisdiction see Appendix C.

Table 7-8. Critical Facilities Vulnerable to Drought Events

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS) Hospitals and Medical Centers	• Increased law enforcement activities may be required to enforce water restrictions. • Firefighters may have limited water resources to aid in firefighting and suppression activities, increasing risk to lives and property. • Potential for increased number of emergency calls as drought events can lead to cascading hazard events such as wildfires and flash flooding.

CRITICAL FACILITIES	POTENTIAL IMPACTS
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/Assisted Living Facilities	• Strain on staff as drought may cause health problems related to low water flows and poor water quality. • Water main breaks due to soil shrinking and swelling cycles could lead to facility closures. • Building foundations may crack due to soil shrinking and swelling cycles. • Operations dependent on water supply may be adversely impacted. • Economic disruptions due to cracked foundations and infrastructure damages as a result of soil shrinking and swelling cycles.
Commercial Suppliers (food, gas, etc.)	• Operations dependent on water supply may be adversely impacted. • Economic disruptions due to cracked foundations and infrastructure damages as a result of soil shrinking and swelling cycles.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Potential for increased number of emergency calls as drought events can lead to cascading hazard events such as wildfires and flash flooding. • Water main breaks due to soil shrinking and swelling cycles could lead to facility closures. • Operations dependent on water supply may be adversely impacted.

Even with the planning area relying on multiple water utility providers, local and private service, high demand can still deplete these resources during extreme drought conditions. As resources are depleted, potable water is in short supply and overall water quality can suffer, elevating health concerns for all residents but especially vulnerable populations – typically children, the elderly, and the ill. In addition, potable water is used for drinking, sanitation, patient care, sterilization, equipment, heating and cooling systems, and many other essential functions in medical facilities.

The average person will survive only a few days without potable water, and this timeframe can be drastically shortened for those people with more fragile health – typically children, the elderly, and the ill. The population over 65 in the Travis County planning area is estimated at 10 percent of the total population and children under the age of 5 are estimated at 6 percent, or an estimated total of 202,434 potentially vulnerable residents in the planning area based on age. During summer drought or hot and dry conditions, elderly persons, small children, infants, and the chronically ill who do not have adequate cooling units in their homes may become more vulnerable to injury and/or death. In addition, an estimated 10.7 percent of the planning area population live below the poverty level (Table 7-9) which may contribute to overall health impacts.

Table 7-9. Populations at Greater Risk by Participating Entity

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
Travis County	126,480	75,954	135,654
Village of Briarcliff	277	173	66

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
City of Jonestown	525	39	229
City of Lago Vista	2477	275	316
City of Lakeway	4154	686	554
City of Manor	345	1821	975
City of Mustang Ridge	105	123	85
City of Pflugerville	6009	4718	3392
Village of Point Venture	279	40	47
City of Rollingwood	238	42	0
City of Sunset Valley	169	28	26
Village of The Hills	857	109	62
City of West Lake Hills	799	68	209
City of Creedmoor	95	0	60
Village of San Leanna	132	28	9
ESD #6	N/A	N/A	N/A

The population is also vulnerable to food shortages when drought conditions exist, and potable water is in short supply. Potable water is used for drinking, sanitation, patient care, sterilization, equipment, heating and cooling systems, and many other essential functions in medical facilities. All residents in the Travis County planning area could be adversely affected by drought conditions, which could limit water supplies and present health threats.

The economic impact of droughts can be significant as they produce a complex web of impacts that spans many sectors of the economy and reach well beyond the area experiencing physical drought. This complexity exists because water is integral to our ability to produce goods and provide services. If droughts extend over a number of years, the direct and indirect economic impact can be significant.

Crop production can also suffer greatly during extreme drought conditions, limiting fresh local food supplies, driving up costs, and negatively impacting the local economy. Drought conditions could adversely affect the agricultural industry throughout the Travis County planning area, including participating jurisdictions and ESD #6.

Habitat damage is a vulnerability of the environment during periods of drought for both aquatic and terrestrial species. The Travis County Park system includes 9,666 acres of land and 26 public

parks[6]. The Balcones Canyonlands Preserve is one of the nation's largest urban preserves, covering more than 35,000 acres. The Preserve provides habitat for several migratory birds, 7 federally endangered species, one recently delisted species, and 27 species of concern.

Park systems and natural habitats are assets to the planning area and susceptible to extreme or prolonged drought due to changing climatic conditions, particularly when the Travis County planning area is expected to become hotter, drier, and windier in the future. Severe erosion, land degradation, and tree canopy loss may exacerbate the effects of drought. Extended periods of extreme drought have high potential to adversely affect endangered species and their habitat in central Texas.

Impacts of past droughts experienced in the Travis County planning area, including participating jurisdictions and ESD #6, have not resulted injuries or fatalities supporting a "Limited" severity of impact meaning injuries and/or illnesses are treatable with first aid, shutdown of facilities and services for less than 24 hours, and less than 10 percent of property is destroyed or with major damage. The annualized estimated losses due to drought over the 27-year reporting period in the Travis County planning area are considered negligible. Table 7-10 shows annualized exposure.

Table 7-10. Estimated Annualized Losses for Travis County

JURISDICTION	TOTAL PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Travis County	$0	$0

ASSESSMENT OF IMPACTS

The Drought Impact Reporter was developed in 2005 by the University of Nebraska-Lincoln to provide a national database of drought impacts. Droughts can have an impact on agriculture, business and industry; energy; fire; plants and wildlife; relief, response, and restrictions; society and public health; tourism and recreation; and water supply and quality. The reports are submitted from individuals to federal, state, and local agencies, as well as the general public. Table 7-11 lists the drought impacts to Travis County from 2005 to 2022 based on reports received by the Drought Impact Reporter.

Table 7-11. Drought Impacts, 2005-2022

DROUGHT IMPACTS 2005-2021	
Agriculture	102
Business & Industry	10
Energy	3
Fire	52
Plants & Wildlife	76
Relief, Response & Restrictions	79

[6] Travis County Parks Master Plan, August 9, 2016.

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DROUGHT IMPACTS 2005-2021	
Society & Public Health	21
Tourism & Recreation	19
Water Supply & Quality	91

Drought has the potential to impact people in the Travis County planning area, including participating jurisdictions and ESD #6. While it is rare that drought, in and of itself, leads to a direct risk to the health and safety of people in the U.S., severe water shortages could result in inadequate supply for human needs. With consideration for future growth, Travis County is expected to have a 64 percent growth percentage by 2050 which can cause concern for the current water infrastructure and demand for the planning area. Severe drought conditions can be frequently associated with a variety of impacts, including:

- Dry clay soil can lead to water main lines shifting and breaking. Often repair to water lines includes shutting off water to multiple homes at one time.
- The number of health-related low-flow issues (e.g., diminished sewage flows, increased pollution concentrations, reduced firefighting capacity, and cross-connection contamination) will increase as the drought intensifies.
- Public safety from forest/range/wildfires will increase as water availability and/or pressure decreases.
- Respiratory ailments may increase as the air quality decreases.
- There may be an increase in disease due to wildlife concentrations (e.g., rabies, Rocky Mountain spotted fever, Lyme disease, Chronic Wasting Disease).
- Residents may disagree with the County and participating Cities and Villages over water use/water rights, creating conflict.
- Political conflicts may increase between municipalities, counties, states, and regions.
- Water management conflicts may arise between competing interests.
- Increased law enforcement activities may be required to enforce water restrictions.
- Severe water shortages could result in inadequate supply for human needs as well as lower quality of water for consumption.
- Firefighters may have limited water resources to aid in firefighting and suppression activities, increasing risk to lives and property.
- During drought there is an increased risk for wildfires, dust storms, and flash flooding.
- The community may need increased operational costs to enforce water restriction or rationing.
- Prolonged drought can lead to increases in illness and disease related to drought.
- Utility providers can see decreases in revenue as water supplies diminish.
- Utilities providers may cut back energy generation and service to their customers to prioritize critical service needs.
- Hydroelectric power generation facilities and infrastructure would have significantly diminished generation capability. Dams simply cannot produce as much electricity from low water levels as they can from high water levels.

- Fish and wildlife food and habitat will be reduced or degraded over time during a drought and disease will increase, especially for aquatic life.
- Wildlife will move to more sustainable locations creating higher concentrations of wildlife in smaller areas, increasing vulnerability, and further depleting limited natural resources.
- There are twenty-two federally endangered, threatened or candidate species in Travis County. Severe and prolonged drought can result in the reduction of a species or cause the extinction of a species altogether.
- Plant life will suffer from long-term drought. Wind and erosion will also pose a threat to plant life as soil quality will decline. The urban tree canopy, including county and city parks, as well as the natural habitats within the planning area are vulnerable to the impacts of prolonged drought and climate change may lead to altering habitat types and vegetative shifts.
- Dry and dead vegetation will increase the risk of wildfire.
- Drought poses a significant risk to annual and perennial crop production and overall crop quality leading to higher food costs.
- Drought-related declines in production may lead to an increase in unemployment.
- Drought may limit livestock grazing resulting in decreased livestock weight, potential increased livestock mortality, and increased cost for feed.
- Negatively impacted water suppliers may face increased costs resulting from the transport water or develop supplemental water resources.
- Long term drought may negatively impact future economic development.

The overall extent of damage caused by periods of drought is dependent on its extent and duration. The level of preparedness and pre-event planning done by government, businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a drought event. The water service providers in the Travis County planning area, including all participating jurisdictions and ESD #6, will implement a drought contingency plan/protocol based on their area during time of drought.

CLIMATE CHANGE CONSIDERATIONS

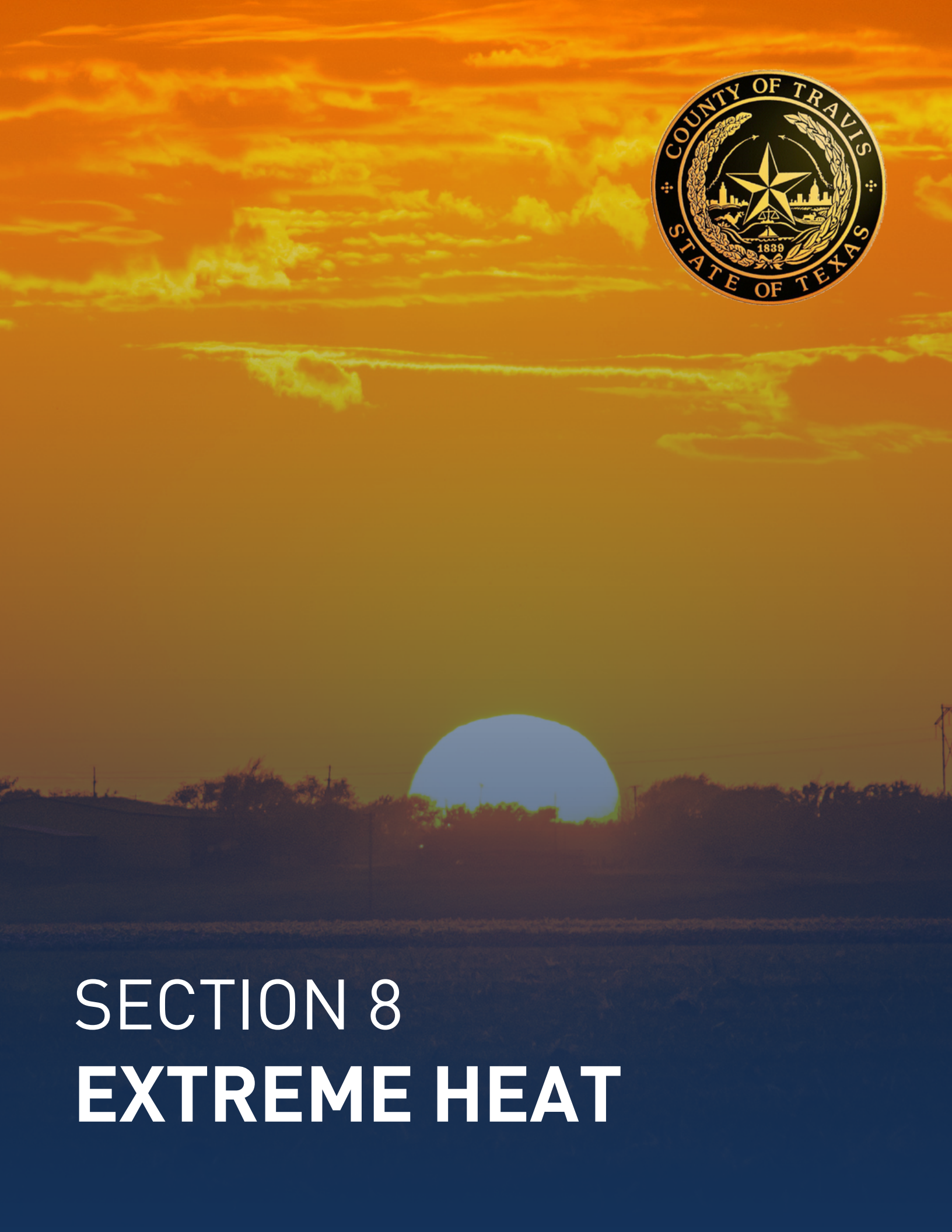
With the range of factors influencing drought conditions, it is impossible to make quantitative statewide projections of drought trends; however, many factors point toward increased drought severity. Drought will continue to be driven largely by precipitation variability over multiple decades, with long-term precipitation trends expected to be relatively small. Other factors affecting drought impacts, such as increased temperatures and improved plant water use efficiency, decrease water availability but will cause drought impact trends to be highly sector-specific, with the impacts possibly smaller for agriculture than for surface water supply.[7]

The Travis County planning area can anticipate an increased likelihood of droughts in the future due to an estimated increase in the number of dry days in the Travis County area. In addition, it is projected that future changes to Travis County and the participating jurisdictions and ESD #6

[7] Cleaveland, M. K., T. H. Votteler, D. K. Stahle, R. C. Casteel, and J. L. Banner, 2011: Extended Chronology of Drought in South Central, Southeastern and West Texas. Texas Water Journal, 2, 54-96, as cited in as cited in Assessment of

will include increased temperatures, longer multi-day heatwaves and greater variability in precipitation, with an expected decrease in precipitation in the summer and increase in the fall.[8]

[8] University of Texas at Austin, February 2023, Austin Future Climate, Climate Change Predictions for the City of Austin 2022, Technical Report.



SECTION 8
EXTREME HEAT

SECTION 8: EXTREME HEAT

HAZARD DESCRIPTION

Extreme heat is a prolonged period of excessively high temperatures and exceptionally humid conditions. Extreme heat during the summer months is a common occurrence throughout the State of Texas, and the Travis County planning area, including participating jurisdictions and ESD #6, is no exception. The county typically experiences extended heat waves or an extended period of extreme heat and is often accompanied by high humidity.

Although heat can damage buildings and facilities, it presents a more significant threat to the safety and welfare of citizens. The major human risks associated with extreme heat include heat cramps; sunburn; dehydration; fatigue; heat exhaustion; and even heat stroke. The most vulnerable population to heat casualties are children and the elderly or infirmed who frequently live on low fixed incomes and cannot afford to run air-conditioning on a regular basis. This population is sometimes isolated, with no immediate family or friends to look out for their well-being.

LOCATION

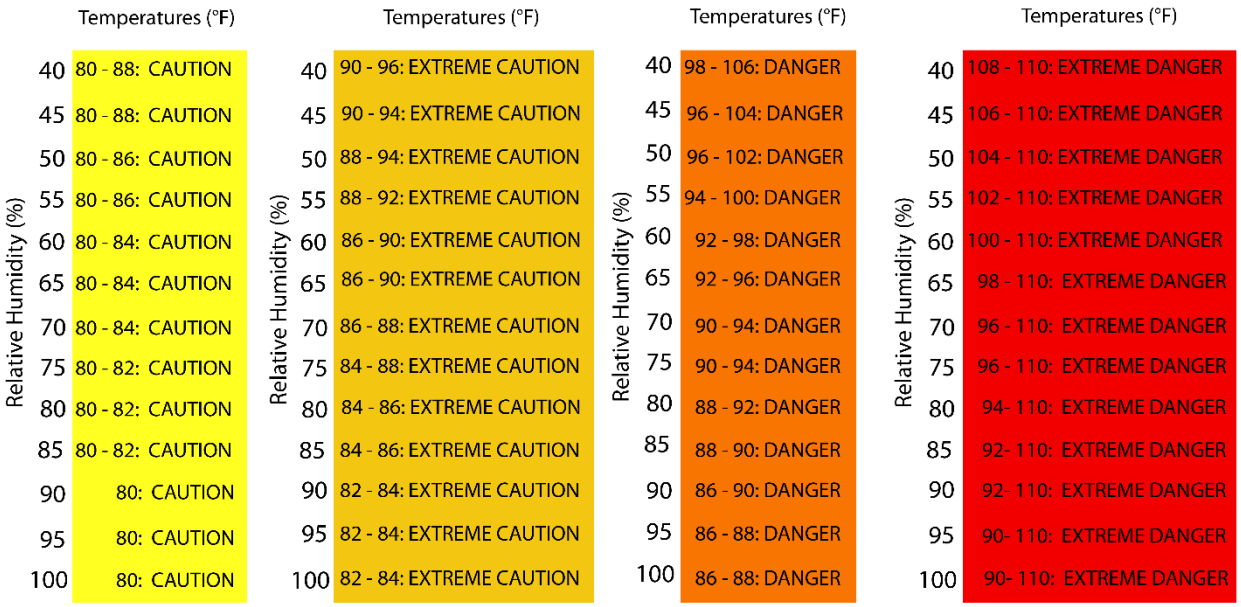
Extreme heat events can occur throughout the Travis County planning area as there is no specific geographic scope to the extreme heat hazard. Extreme heat could occur anywhere within the Travis County planning area, including all participating jurisdictions and ESD #6.

EXTENT

The magnitude or intensity of an extreme heat event is measured according to temperature in relation to the percentage of humidity. According to the National Oceanic Atmospheric Administration (NOAA), this relationship is referred to as the “Heat Index” and is depicted in Figure 8-1. This index measures how hot it feels outside when humidity is combined with high temperatures.

SECTION 8: EXTREME HEAT

Figure 8-1. Extent Scale for Extreme Summer Heat[1]



Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

The Extent Scale in Figure 8-1 displays varying categories of caution depending on the relative humidity combined with the temperature. For example, when the temperature is between 80 and 90 degrees Fahrenheit (°F), caution should be exercised if the humidity level is at or above 40 percent.

The shaded zones on the chart indicate varying symptoms or disorders that could occur depending on the magnitude or intensity of the event. “Caution” is the first category of intensity, and it indicates when fatigue due to heat exposure is possible. “Extreme Caution” indicates that sunstroke, muscle cramps, or heat exhaustion are possible, and a “Danger” level means that these symptoms are likely. “Extreme Danger” indicates that heat stroke is likely. The National Weather Service (NWS) initiates alerts based on the Heat Index as shown in Table 8-1.

Table 8-1. Heat Index and Warnings

CATEGORY	HEAT INDEX	POSSIBLE HEAT DISORDERS	WARNING TYPE
Extreme Danger	125°F and higher	Heat stroke or sun stroke likely.	An Excessive Heat Warning is issued if the Heat Index rises above 105°F at least 3 hours during the day or above 80°F at night.
Danger	103 – 124°F	Sunstroke, muscle cramps, and/or heat exhaustion are likely. Heatstroke possible with prolonged exposure and/or physical activity.	

[1] Source: NOAA

SECTION 8: EXTREME HEAT

CATEGORY	HEAT INDEX	POSSIBLE HEAT DISORDERS	WARNING TYPE
Extreme Caution	90 – 103°F	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.	A heat advisory will be issued to warn that the Heat Index may exceed 105°F.
Caution	80 – 90°F	Fatigue is possible with prolonged exposure and/or physical activity.	

Hotter than average conditions can compromise the body's ability to regulate temperature and can result in a cascade of illnesses, including heat cramps, heat exhaustion, heatstroke, and hyperthermia. Deaths and hospitalizations from heat can occur extremely quickly (same day) or have a lagged effect (several days later) and result in increases in deaths or illness in vulnerable populations that may already by frail, particularly in the first days of a heatwave. Even small differences from seasonal average temperatures are associated with increased illness and death. Extreme temperatures can also worsen chronic conditions, including cardiovascular, respiratory, and cerebrovascular disease and diabetes-related conditions.[2]

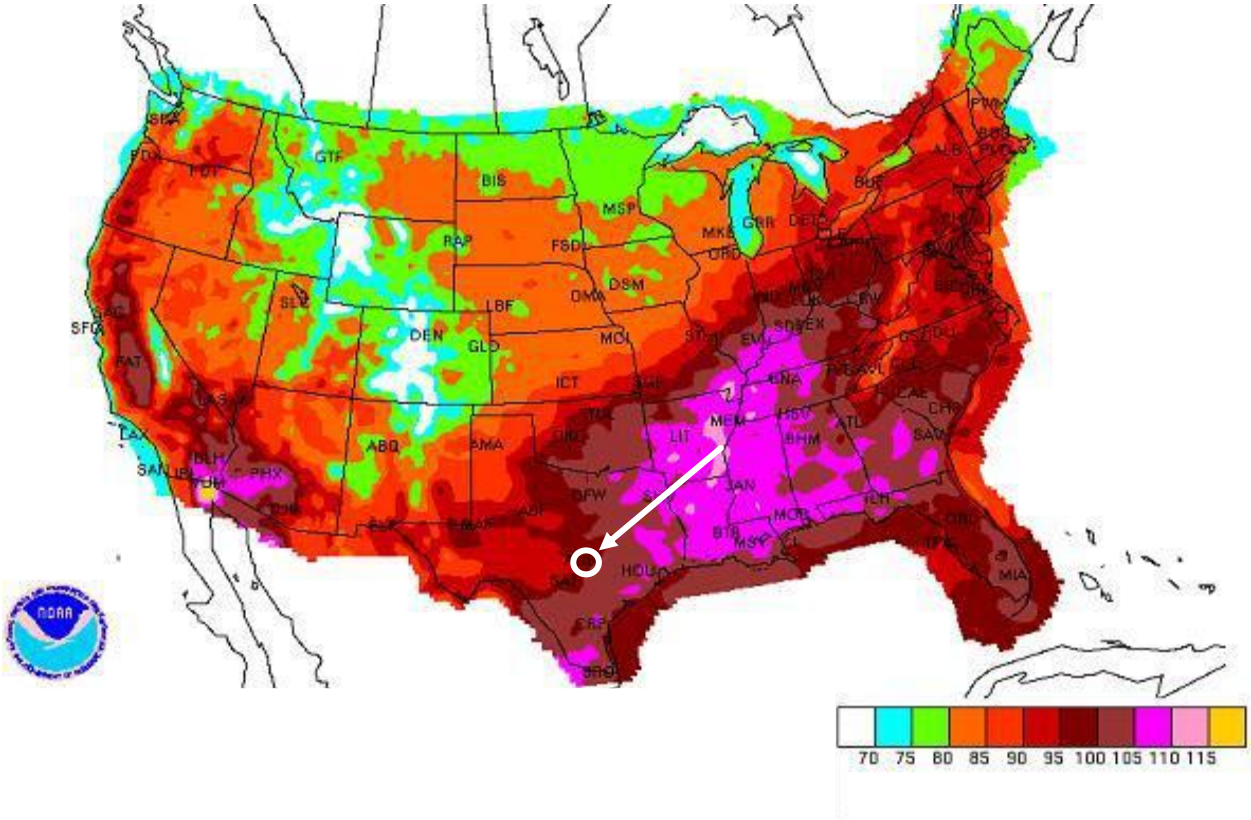
The Austin/Travis County Health and Human Services follows the National Weather Service heat advisory protocol. A heat advisory is issued within the county when the heat index reaches above 105°F for more than three hours per day and at least two consecutive days.

Travis County's geographic features are relatively diverse. The northern and western portions are characterized by the hilly and rugged topography of the Edwards Plateau and the Balcones Escarpment. The remainder of the county is characterized by the gently rolling hills and plains of the Blackland Prairies to the east and the Gulf Coast Plains to the south. Due to its geography and its warm, sunny, and humid subtropical climate, the Travis County planning area, including all participating jurisdictions and ESD #6, can expect an extreme heat event each summer. Citizens, especially children and the elderly, should exercise caution by staying out of the heat for prolonged periods when a heat advisory or excessive heat warning is issued. In addition, those working or remaining outdoors for extended periods of time are at greater risk.

Figure 8-2 displays the daily maximum heat index as derived from NOAA based on data compiled from 1838 to 2015. The white circle shows the Travis County planning area. The planning area is represented in brown in the eastern portion of the county and dark red in the central and western portions of the county. The brown and dark red colors indicate an average daily heat index of 90°F to 105°F. Therefore, Travis County and the participating jurisdictions and ESD #6 could experience dangerous heat from 90°F to 105°F, and should mitigate to the extent of "Danger," which can include sunstroke, muscle cramps, heat exhaustion and potential heat stroke. This is the highest temperature (extreme caution category) the planning area can anticipate based on historical events.

[2] World Health Organization, Heath and Health, site: https://www.who.int/news-room/fact-sheets/detail/climate-change-heat-and-health

Figure 8-2. Average Daily Maximum Heat Index Days[3]



HISTORICAL OCCURRENCES

Previous occurrences for extreme heat are derived from the NCEI database, which identifies extreme heat events at the county level for each event. According to heat-related incidents located solely within Travis County, there have been 27 extreme heat events on record for the planning area, which includes participating jurisdictions and ESD #6 (Table 8-2). Historical extreme heat information, as provided by the NCEI, shows extreme heat activity across a multi-county forecast area for each event, the appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event.

Historical extreme heat data for the Travis County planning area are provided on a county-wide basis per the NCEI database from 1996 through 2022, though no extreme heat events were reported in the database after 2020. Only extreme heat events that have been reported have been factored into this Risk Assessment. It is highly likely additional extreme heat occurrences have gone unreported before and during the recording period. Due to the limited number of reported events, average high temperatures have been analyzed in order to determine the probability of future events.

[3] NRDC and the white circle indicates the Travis County planning area.

Table 8-2. Historical Extreme Heat Events, 1996-2022[4]

JURISDICTION	DATE	DEATH	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	8/14/1999	1	0	$0	$0
Travis County	8/16/1999	1	0	$0	$0
Travis County	7/29/1999	1	0	$0	$0
Travis County	7/23/2000	1	0	$0	$0
Travis County	7/23/2000	1	0	$0	$0
Travis County	7/4/2000	1	0	$0	$0
Travis County	7/5/2000	1	0	$0	$0
Travis County	7/18/2000	1	0	$0	$0
Travis County	7/15/2009	0	0	$0	$0
Travis County	5/25/2011	0	0	$0	$0
Travis County	8/9/2011	1	0	$0	$0
Travis County	7/22/2015	0	0	$0	$0
Travis County	8/6/2015	0	0	$0	$0
Travis County	7/19/2018	0	0	$0	$0
Travis County	7/13/2020	0	0	$0	$0
TOTALS		**9**	**0**	**$0**	**$0**

Table 8-3. Historical Extreme Heat Events Summary, 1996-2022

JURISDICTION	NUMBER OF EVENTS	DEATH	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	15	9	0	$0	$0

Based on the list of historical extreme heat events for the Travis County planning area, two events were reported to the NCEI since the 2017 Plan.

SIGNIFICANT EVENTS

July 19-23, 2018

Strong high pressure settled over South Central Texas and temperatures soared to record levels. The heat wave started on the 19th in Travis County with high temperatures reaching 105°F and higher. The hot temperatures spread across the region reaching their greatest extent on the 23rd. During this time Austin Bergstrom International Airport had record highs each day from the 20th

[4] NOAA, NCEI Storm Events Database

through the 23rd, Austin Camp Mabry 21-23, and San Antonio 22-23. Both Austin sites set the all-time record high for the month on the 23rd, Bergstrom 109°F and Camp Mabry 110°F. The extreme heat broke on the 24th when highs dropped down closer to 100°F.

July 7, 2000
A 26-year-old man died of heat stroke Tuesday morning after working outdoors at a construction site on Monday afternoon. He had been working outside in a surveying crew and was taken to a hospital Monday evening with a 108°F temperature.

July 23, 2000
A 2-year-old boy died of heat stroke. He had a temperature of 108°F when he reached the hospital. He was left on the floor of a sunroom and his mother had fallen asleep. A 72-year-old woman also died of heat stroke. Although air conditioning was available in her home, she had not turned it on.

August 14-16,1999
A 76-year-old woman, apparently not wanting to increase her energy bill, did not use the air conditioner in her apartment. She was found dead on the 16th and was believed to have died on the 14th. Two days later a 77-year-old man was found dead in his home due to heat exhaustion. His health had been further weakened by a heart condition.

PROBABILITY OF FUTURE EVENTS

According to historical records the Travis County planning area has experienced 15 events in a 27-year reporting period. However, it can be assumed that events have gone unreported due to the average daily temperatures throughout the summer, providing a frequency of occurrence of approximately one event every year. This frequency supports a highly likely probability of future events. See additional information on the impacts of climate change at the end of this section.

VULNERABILITY AND IMPACT

There is no defined geographic boundary for extreme heat events. While the entirety of the Travis County planning area, including participating jurisdictions and ESD #6, is exposed to extreme temperatures, existing buildings, infrastructure, and critical facilities are not likely to sustain significant damage from extreme heat events. Therefore, any estimated property losses associated with the extreme heat hazard are anticipated to be minimal across the area.

Every summer, the hazard of heat-related illness becomes a significant public health issue throughout much of the United States. Mortality from all causes increases during heat waves, and excessive heat is an important contributing factor to deaths from other causes, particularly among the elderly. Extreme temperatures present a significant threat to life and safety for the population of the county as a whole. Heat casualties, for example, are typically caused by a lack of adequate air-conditioning or heat exhaustion. The most vulnerable population to heat casualties are the elderly or infirmed who frequently live on fixed incomes and cannot afford to run air-conditioning on a regular basis. This population is sometimes isolated, with no immediate family or friends to look out for their well-being. Children may also be more vulnerable if left unattended in vehicles. Populations living below the poverty level are often unable to run air-conditioning on a regular basis and are limited in their ability to seek medical treatment. Another segment of the population

at risk are those whose jobs consist of strenuous labor outdoors. According to the Planning Team, 80 percent of ESD #6 employees work outdoors for a portion of their workday (Table 8-5).

The population over 65 in the Travis County planning area is estimated at 10 percent of the total population and children under the age of 5 are estimated at 6 percent, or an estimated total of 202,434 potentially vulnerable residents in the planning area based on age. In addition, an estimated 10.7 percent of the planning area population live below the poverty level (Table 8-4). Underprivileged populations disproportionately impacted by extreme heat events as they are less likely to be able to afford air conditioning during the hot summer months as well as less likely to have access to medical care.

Table 8-4. Populations at Greater Risk by Participating Jurisdiction

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
Travis County	126,480	75,954	135,654
Village of Briarcliff	277	173	66
City of Jonestown	525	39	229
City of Lago Vista	2477	275	316
City of Lakeway	4154	686	554
City of Manor	345	1821	975
City of Mustang Ridge	105	123	85
City of Pflugerville	6009	4718	3392
Village of Point Venture	279	40	47
City of Rollingwood	238	42	0
City of Sunset Valley	169	28	26
Village of The Hills	857	109	62
City of West Lake Hills	799	68	209
City of Creedmoor	95	0	60
Village of San Leanna	132	28	9
ESD #6	N/A	N/A	N/A

Table 8-5. Outdoor Employees by Participating Special District

ESD	EMPLOYEES WORKING OUTDOORS
ESD #6	108

SECTION 8: EXTREME HEAT

Extremely high temperatures can have significant secondary impacts, leading to droughts, water shortages, increased fire danger, and prompt excessive demands for energy. The possibility of rolling blackouts increases with unseasonably high temperatures in what is a normally mild month with low power demands. Typically, more than 12 hours of warning time would be given before the onset of an extreme heat event.

In terms of vulnerability to structures, the impact from extreme heat would be negligible. It is possible that critical facilities and infrastructure could be shut down for 24 hours if cooling units are running constantly, leading to a temporary power outage. Less than 10 percent of residential and commercial property could be damaged if extreme heat events lead to structure fires. Based on historical records over a 27-year period, annualized property and crop losses for the Travis County planning area are negligible. However, the number of historical injuries and fatalities indicates a substantial impact for future events.

The Travis County Planning Team identified the following critical facilities (Table 8-6) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by extreme heat events. For a comprehensive list by participating jurisdiction see Appendix C.

Table 8-6. Critical Facilities Vulnerable to Extreme Heat Events

CRITICAL FACILITY TYPES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Emergency operations, services and response times may be significantly impacted due to power outages, and/or loss of communications. • Exposure to heat can cause heat illnesses in first responders, especially for those in heavy equipment. • Roads may become impassable due to excessive heat causing asphalt roads to soften and concrete roads to shift or buckle impacting response times by emergency services. • Extended power outages due to increased usage may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Power outages due to increased usage could disrupt critical care. • Backup power sources could be damaged. • Evacuations may be necessary due to extended power outages, breaks in water main lines or other associated damage to facilities. • Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Economic disruption due to power outages negatively impact airport services as well as area businesses reliant on airport operations.

CRITICAL FACILITY TYPES	POTENTIAL IMPACTS
Commercial Supplier (food, fuel, etc.)	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations, services and response times may be significantly impacted due to power outages, and/or loss of communications. • Roads may become impassable due to by excessive heat causing asphalt roads to soften and concrete roads to shift or buckle impacting response times by emergency services. • Breaks in water main lines or other associated damage to facilities.

ASSESSMENT OF IMPACTS

The greatest risk from extreme heat is to public health and safety. Extreme heat conditions can be frequently associated with a variety of impacts, including:

- Vulnerable populations, particularly the elderly (10 percent of total population) and children under 5 (6 percent of total population), can face serious or life-threatening health problems from exposure to extreme heat including hyperthermia, heat cramps, heat exhaustion, and heat stroke (or sunstroke).
- Response personnel, including utility workers, public works personnel, and any other professions where individuals are required to work outside, are more subject to extreme heat related illnesses since their exposure would typically be greater.
- High energy demand periods can outpace the supply of energy, potentially creating the need for rolling brownouts which would elevate the risk of illness to vulnerable residents.
- Highways and roads may be damaged by excessive heat causing asphalt roads to soften and concrete roads to shift or buckle.
- Vehicle engines and cooling systems typically run harder during extreme heat events resulting in increases in mechanical failures.
- Extreme heat events during times of drought can exacerbate the environmental impacts associated with drought, decreasing water and air quality and further degrading wildlife habitat.
- Extreme heat increases ground-level ozone (smog), increasing the risk of respiratory illnesses.
- Negatively impacted water suppliers may face increased costs resulting from the transport of water resources or development of supplemental water resources.
- Tourism and recreational activities at places such as the county's twenty-five parks may be negatively impacted during extreme heat events, reducing seasonal revenue derived from outdoor activities.
- Extreme heat can degrade wildlife habitat and stress wildlife impacting their ability to successfully breed.
- Outdoor activities may see an increase in school injury or illness during extreme heat events.

The economic and financial impacts of extreme heat on the community will depend on the duration of the event, demand for energy, drought associated with extreme heat, and many other factors. The level of preparedness and the amount of planning done by the jurisdiction, local businesses, and citizens will impact the overall economic and financial conditions before, during, and after an extreme heat event.

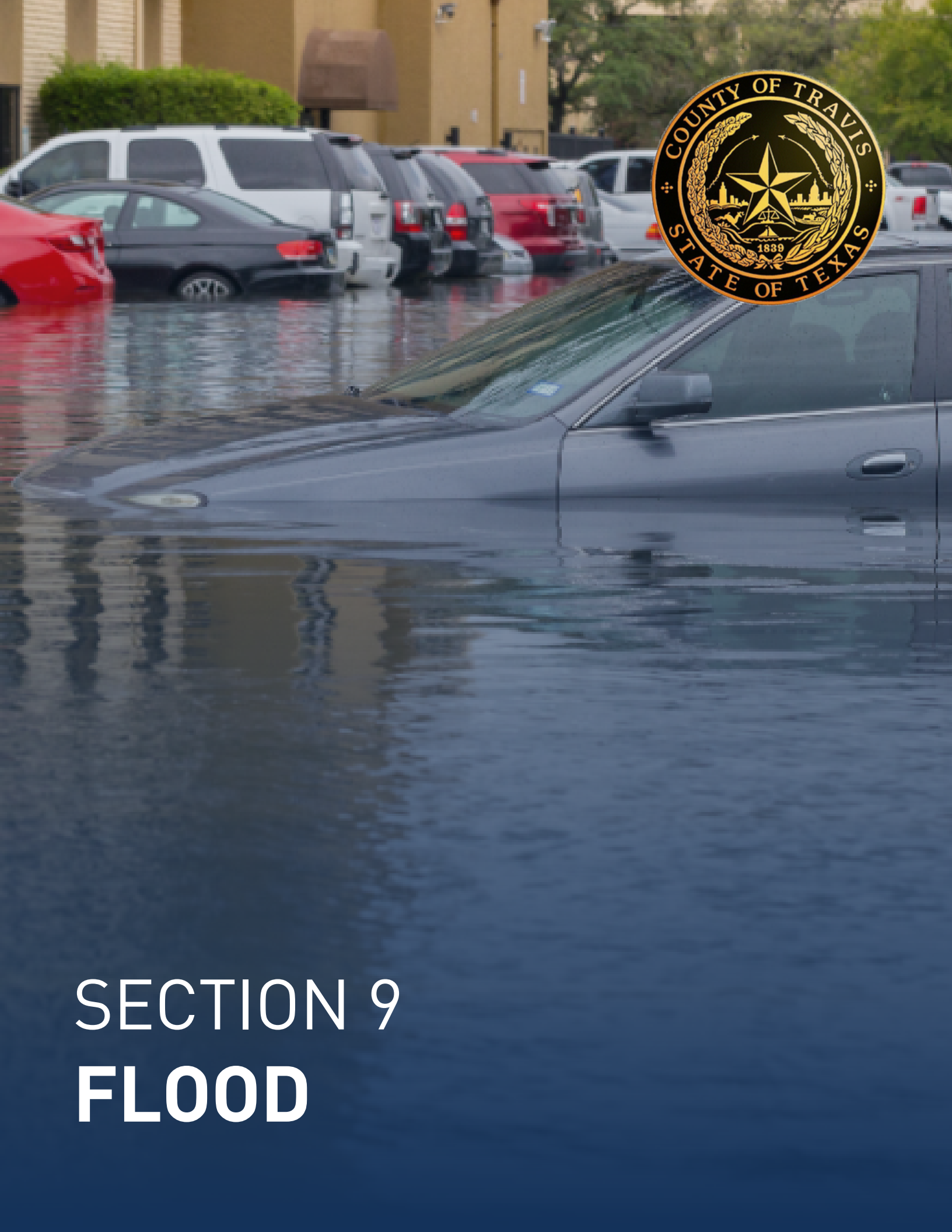
CLIMATE CHANGE CONSIDERATIONS

Climate change is expected to lead to an increase in average temperatures as well as an increase in frequency, duration, and intensity of extreme heat events. With no reductions in emissions worldwide, the state of Texas is projected to experience an additional 30 to 60 days per year above 100°F than what is experienced now.[5]

Key findings of the University of Texas at Austin technical report for the City of Austin indicate that overall temperatures are rising, with summer highs expected to exceed 110°F more frequently. The heat index is also projected to increase for the City of Austin by 2 to 10°F. Heatwaves are expected to become more frequent and last longer, potentially reaching 80 days per year by the end of the century.[6]

[5] Gammon-Nielsen, John, Holman, Sara, Buley, Austin and Jorgensen, Savannah. Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, 2021 Update. Texas A&M University Office of the Texas State Climatologist. October 7, 2021. https://climatexas.tamu.edu/files/ClimateReport-1900to2036-2021 Update.

[6] University of Texas at Austin, February 2023, Austin Future Climate, Climate Change Predictions for the City of Austin 2022, Technical Report.



SECTION 9
FLOOD

SECTION 9: FLOOD

HAZARD DESCRIPTION

Flooding occurs most commonly from excessive precipitation when natural watercourses lack the capacity to convey excess water. The severity of a flood event is determined by a combination of several major factors, including stream and river basin topography and physiography, precipitation and weather patterns, recent soil moisture conditions, and the degree of vegetative clearing and impervious surfaces. Various climatic and non-climatic processes can result in different types of floods primarily including riverine floods, flash floods, and coastal floods. Due to Travis County's inland location, coastal flooding is excluded from further discussion.

Inland or riverine flooding is a result of excessive precipitation levels and water runoff volumes within the watershed of a stream or river. Inland or riverine flooding is overbank flooding of rivers and streams, typically resulting from large-scale weather systems that generate prolonged rainfall over a wide geographic area. Therefore, it is a naturally occurring and inevitable event. Some river floods occur seasonally when winter or spring rainfalls fill river basins with too much water, too quickly. Torrential rains from decaying hurricanes or tropical systems can also produce riverine flooding.

1981 Memorial Day Flood

Flash flooding is a specific type of flooding that occurs in a short time frame after a precipitation event, generally less than six hours.[1] It often is caused by heavy or excessive rainfall and happens in areas near rivers or lakes, but it also can happen in places with no water bodies nearby. Flash floods happen in rural and urban areas. When more rainfall lands in an area than the ground can

[1] Scientific Americana, Janey Camp, August 2022, *What is a Flash Flood?*

absorb, or it falls in areas with a lot of impervious surfaces like concrete and asphalt that prevent the ground from absorbing the precipitation, the water has few places to go and can rise very quickly. If an area has had recent rainfall, the soil may be saturated to capacity and unable to absorb any more water. Flooding can also occur after a drought, when soil is too dry and hardened to absorb the precipitation. Since water runs downhill, rainfall will seek the lowest point in a potential pathway. In urban areas, that's often streets, parking lots and basements in low-lying zones. In rural areas with steep terrain, flash flooding can turn creeks and rivers into raging torrents. Flash flooding events can wash away cars and move buildings off of foundations. The Travis County planning area is located in the heart of Flash Flood Alley. About 75% of flood-related deaths in Texas occur in vehicles, typically due to flash flooding.[2]

Travis County and the planning area, including all participating jurisdictions and ESD #6, are subject to extreme rainfall events, often in short durations, leading to dangerous flash flooding events. Floods are a natural and recurrent event and take place every year, in all seasons.

LOCATION

The Flood Insurance Rate Maps (FIRMs) prepared by FEMA provide an overview of flood risk but can also be used to identify the areas of the county that are vulnerable to flooding. FIRMs are used to regulate new development and to control the substantial improvement and repair of substantially damaged buildings. Flood Insurance Studies (FIS) are often developed in conjunction with FIRMs. The FIS typically contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRMs. The FIS also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations (BFEs) for some areas.

The revised FIS for Travis County is dated January 22, 2020. This FIS is composed of eleven volumes and compiles all previous flood information including data collected on numerous waterways. The current FIS indicates that the principal flood problems are along the Colorado River below the City of Austin, along the Llano River and along the Pedernales River. Since the completion of the Lake Travis reservoir in 1940, there have been no flood events on the Colorado River comparable in magnitude to the floods of record that occurred in 1869 and 1935. In 1991, near record flooding on the Colorado River below the City of Austin preceded four days of rain upstream of Lake Travis, on the upper Colorado, Llano, and Pedernales Rivers. This event resulted in the highest recorded elevation to Lake Travis on Christmas Day in 1991. Additional record floods were recorded in November 2002, November 2004, October 2013, May 2015, and October 2015.[3]

[2] Source: https://www.austintexas.gov/department/flood-safety
[3] Flood Insurance Study (FIS) Travis County, Texas and Incorporated Areas, January 22, 2020, page 54.

SECTION 9: FLOOD

The Digital Flood Insurance Rate Map (DFIRM) data provided by FEMA for Travis County shows the following flood hazard areas:

- Zone A: Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance requirements and floodplain management standards apply.
- Zone AE: Areas subject to inundation by 1-percent-annual-chance shallow flooding. It is the base floodplain where BFEs are provided. AE zones are now used on new format FIRMs instead of A1-30 zones.
- Zone AO: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone.
- Zone X: Moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee. No BFEs or base flood depths are shown within these zones.

Locations of flood zones in Travis County based on the Digital Flood Insurance Rate Map (DFIRM) from FEMA are illustrated in Figures 9-1 to 9-16.

Figure 9-1. Estimated Flood Zones – Travis County

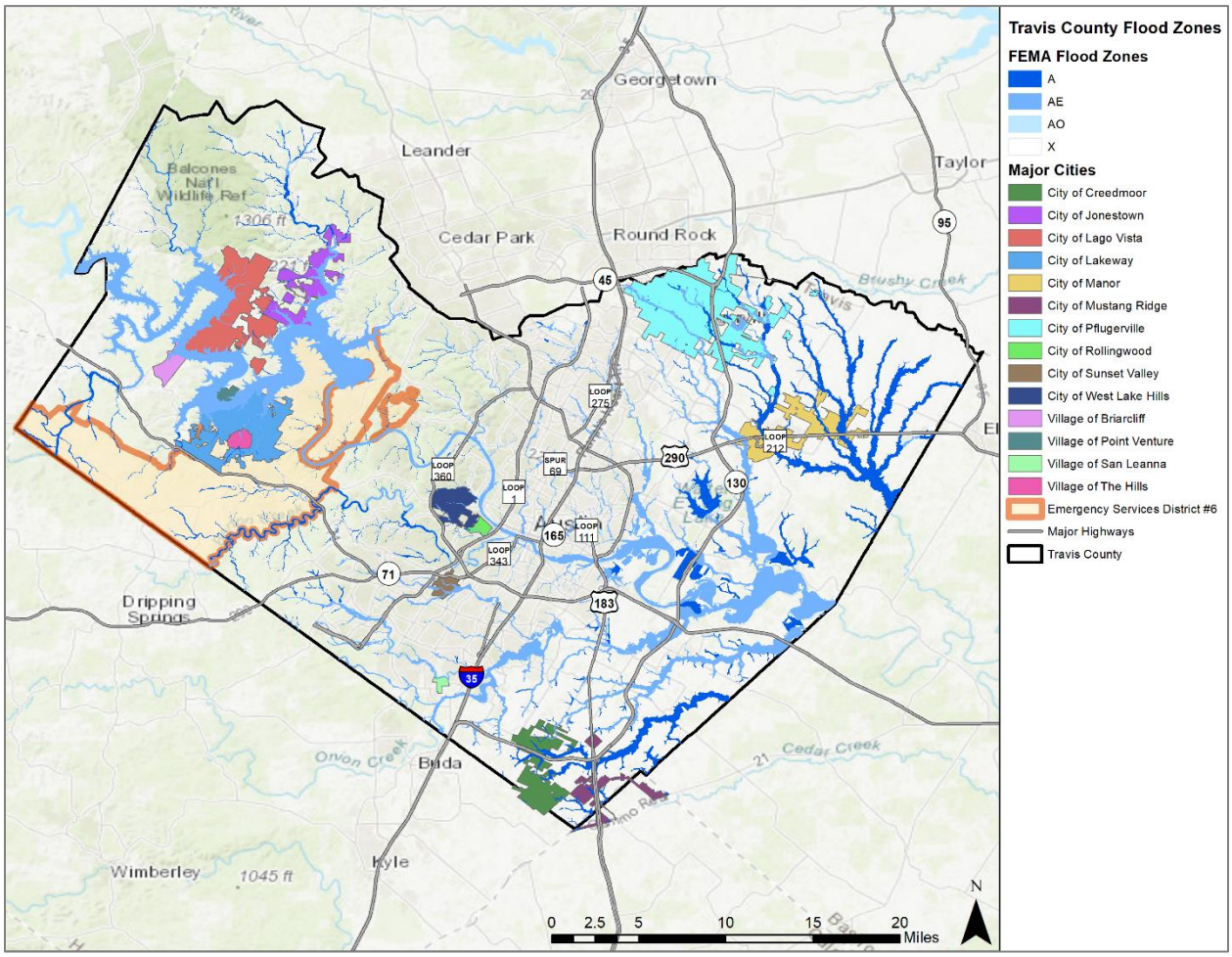


Figure 9-2. Estimated Flood Zones – Village of Briarcliff

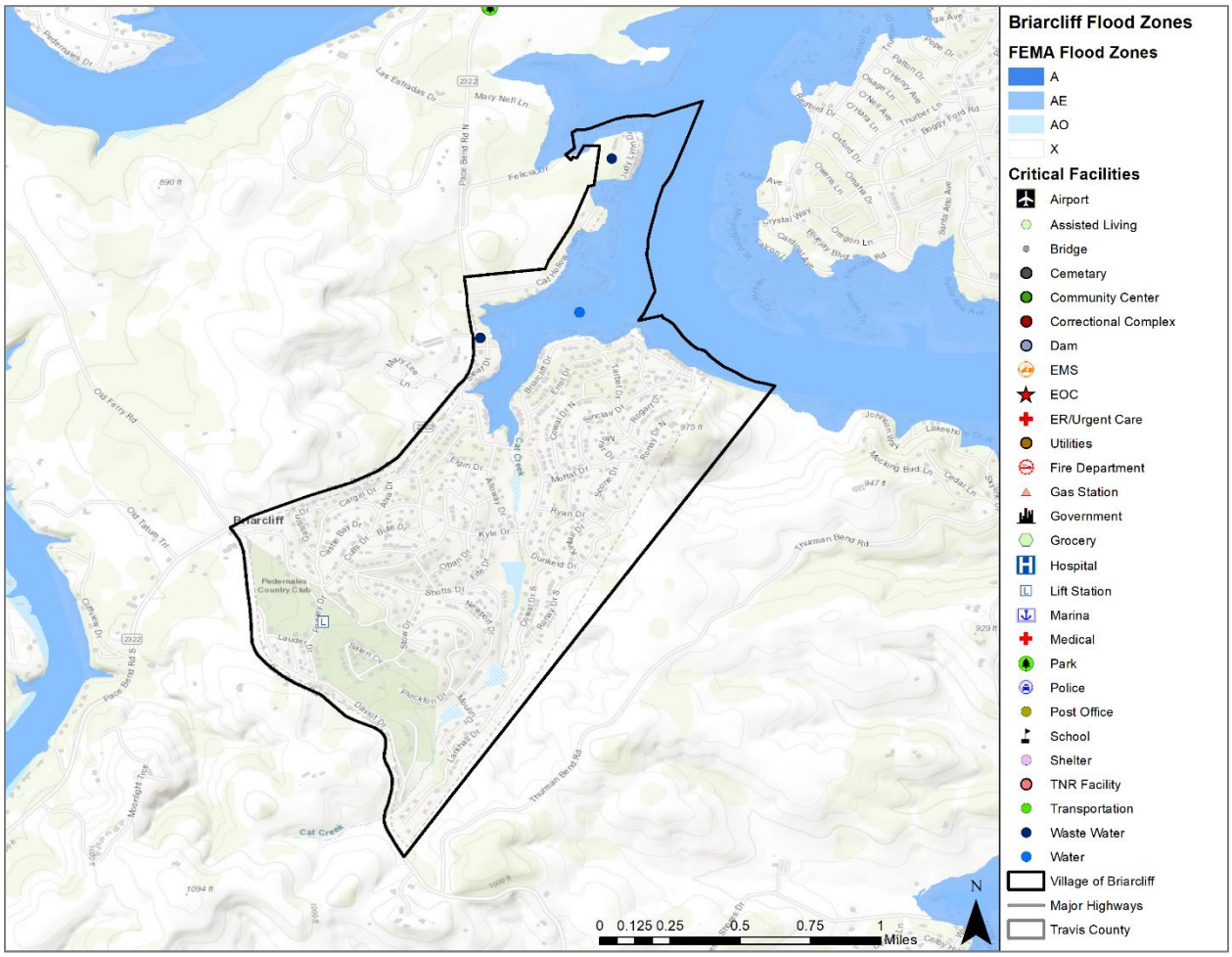


Figure 9-3. Estimated Flood Zones – City of Creedmoor

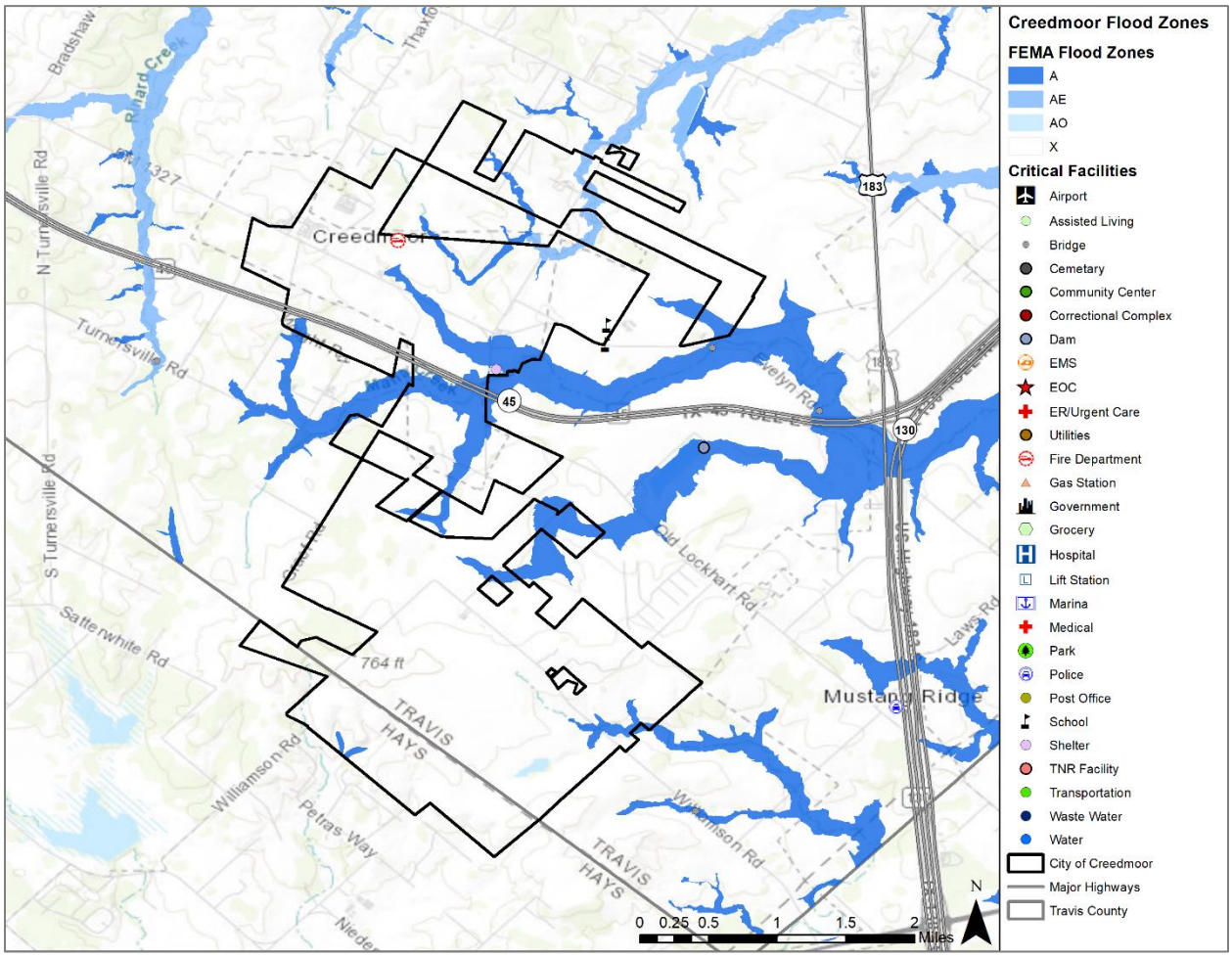


Figure 9-4. Estimated Flood Zones – City of Jonestown

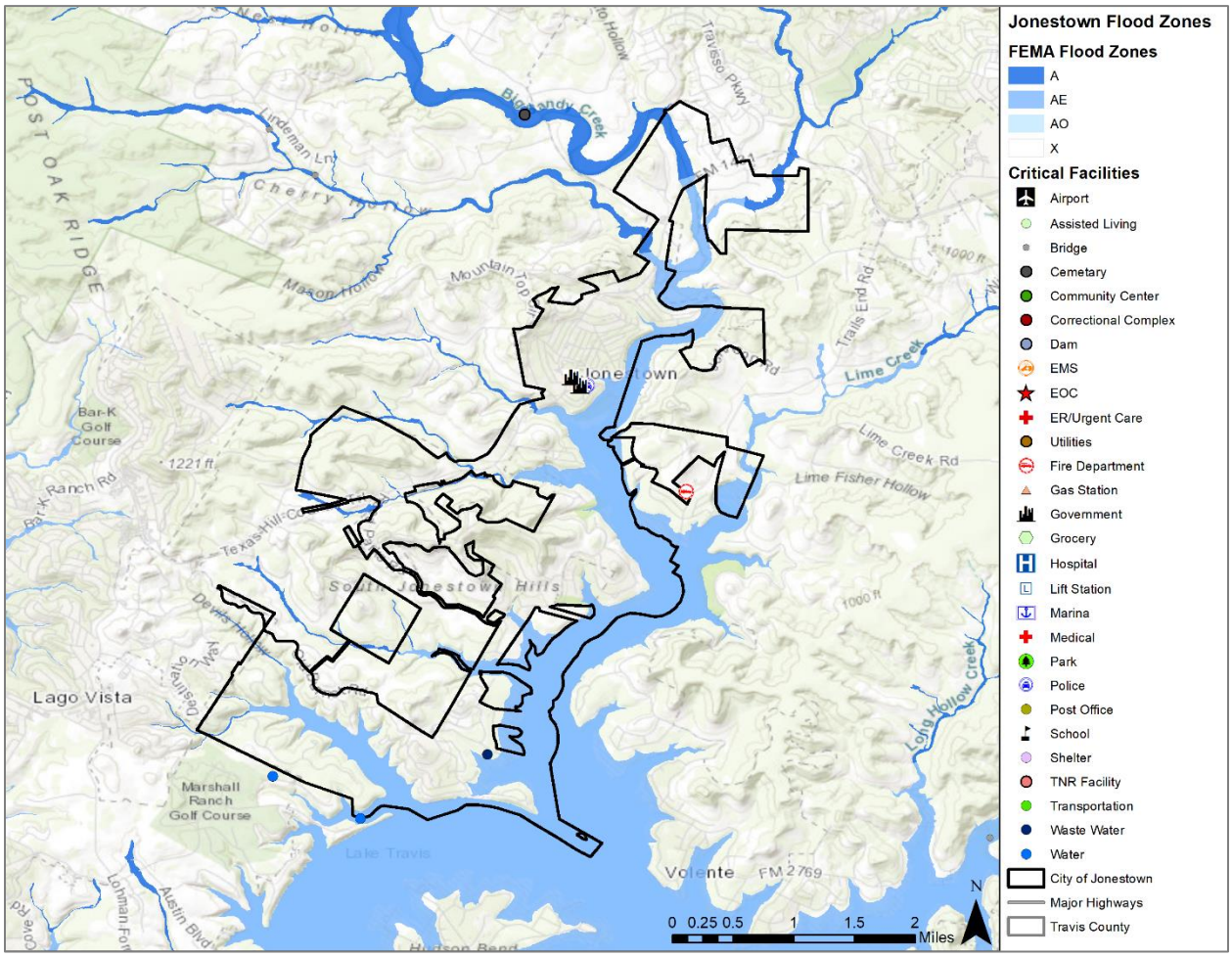


Figure 9-5. Estimated Flood Zones – City of Lago Vista

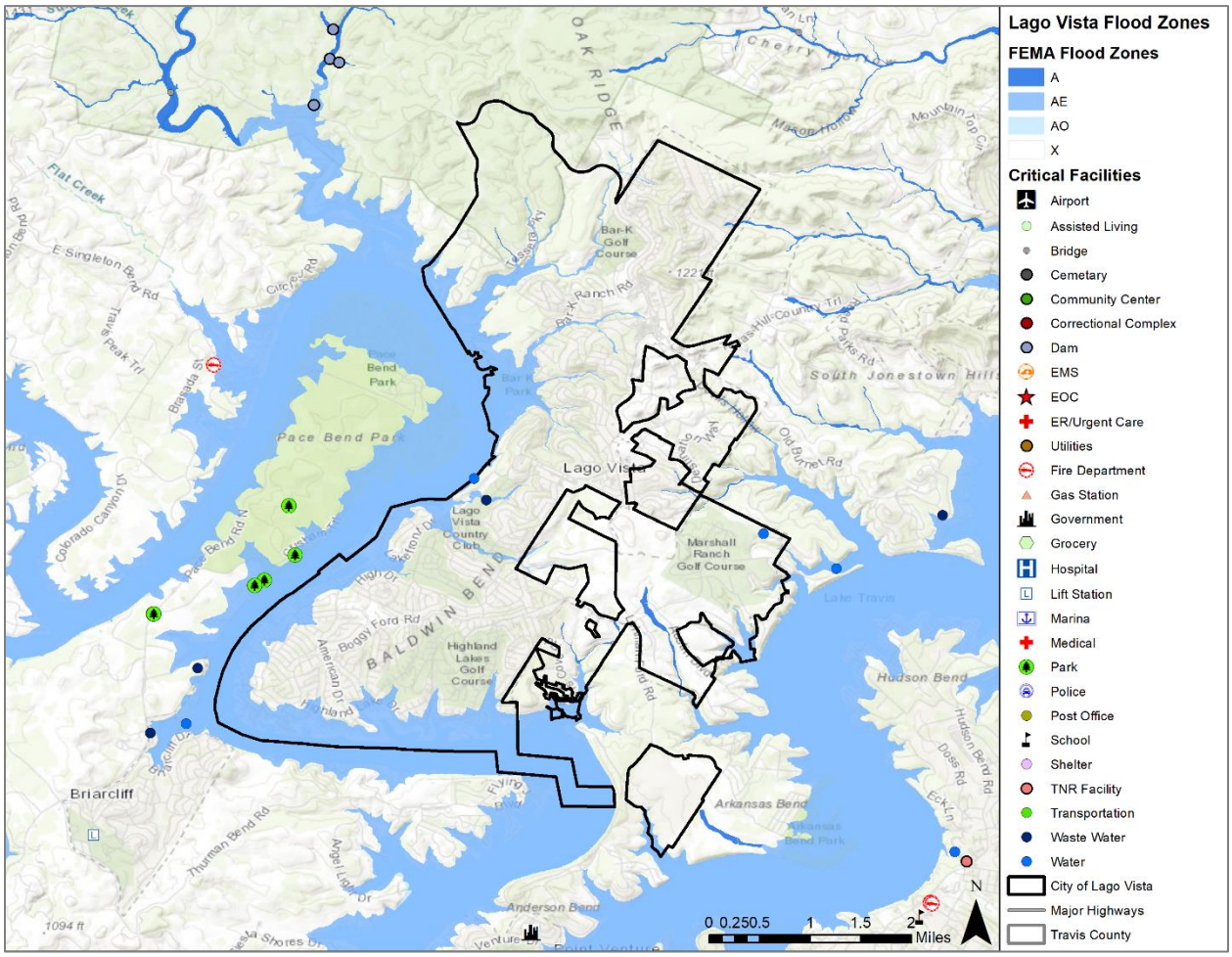


Figure 9-6. Estimated Flood Zones – City of Lakeway

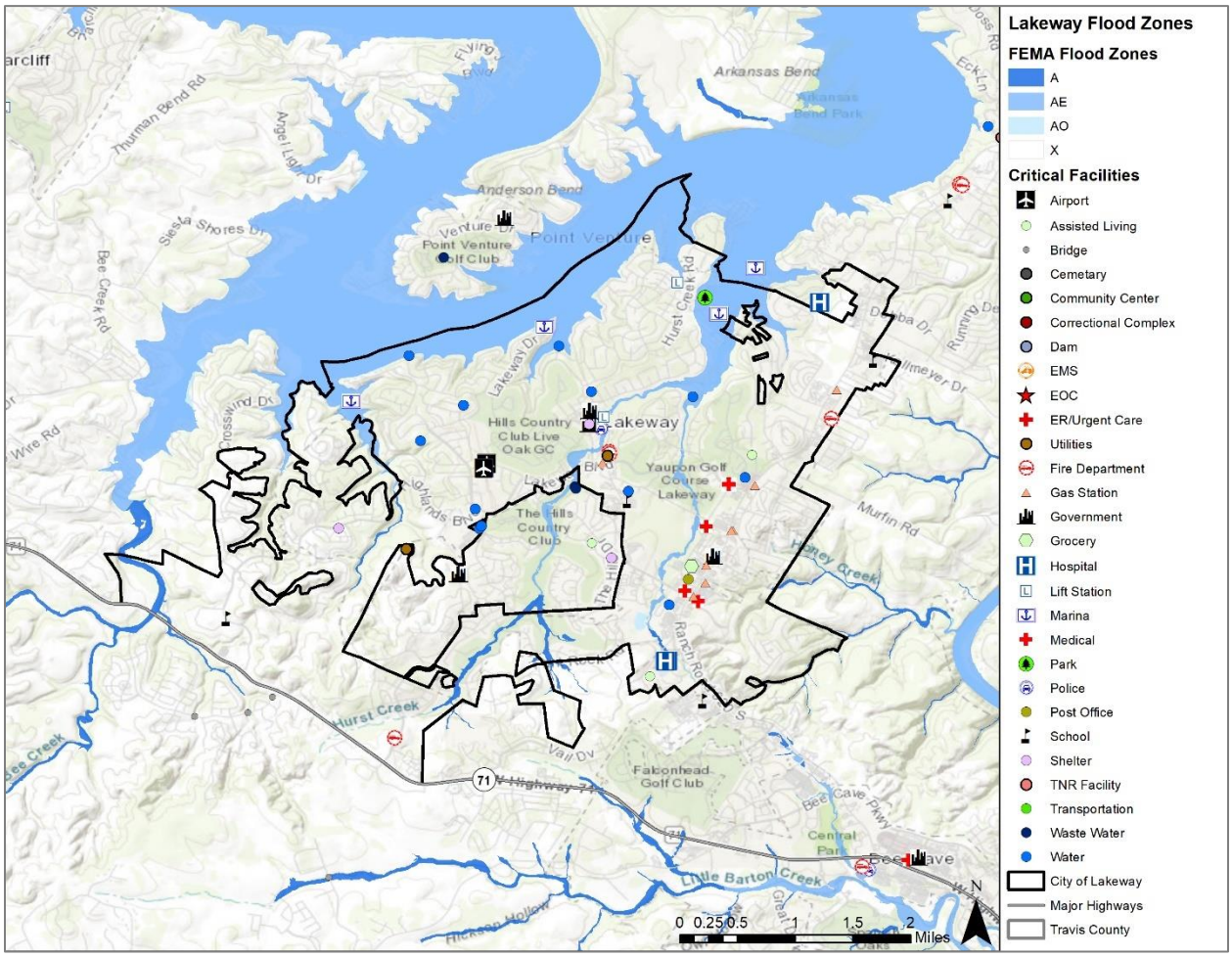


Figure 9-7. Estimated Flood Zones – City of Manor

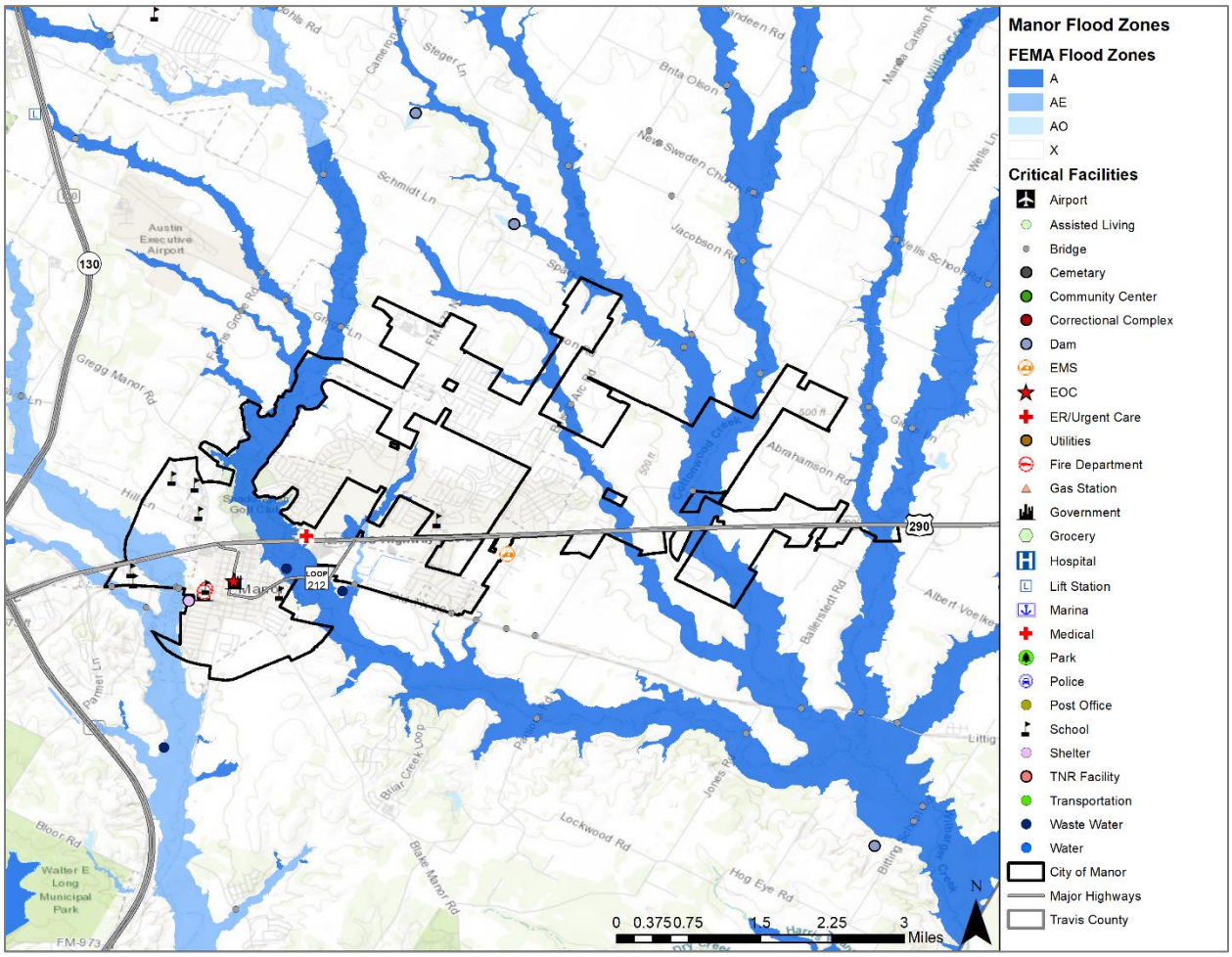


Figure 9-8. Estimated Flood Zones – City of Mustang Ridge

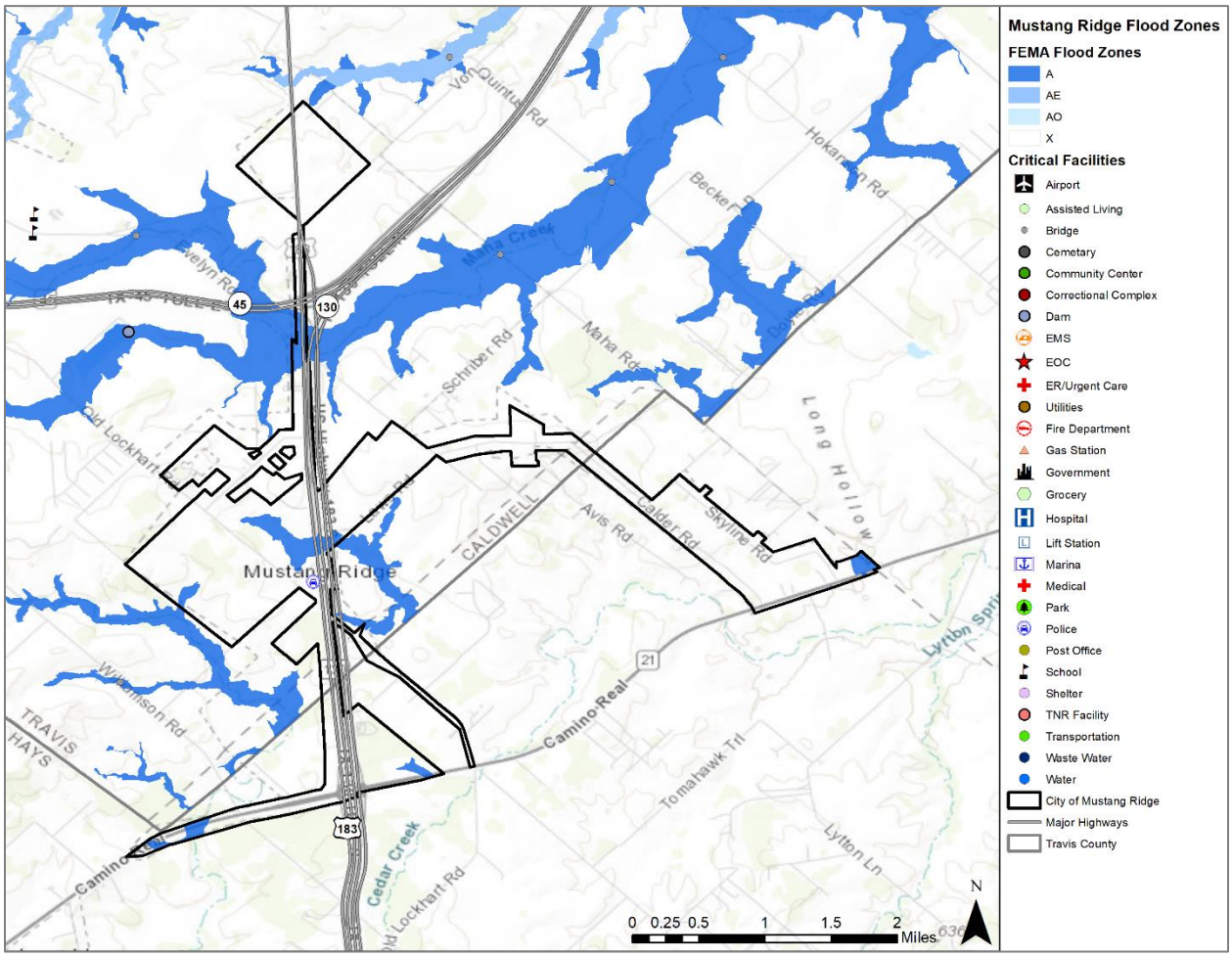


Figure 9-9. Estimated Flood Zones – City of Pflugerville

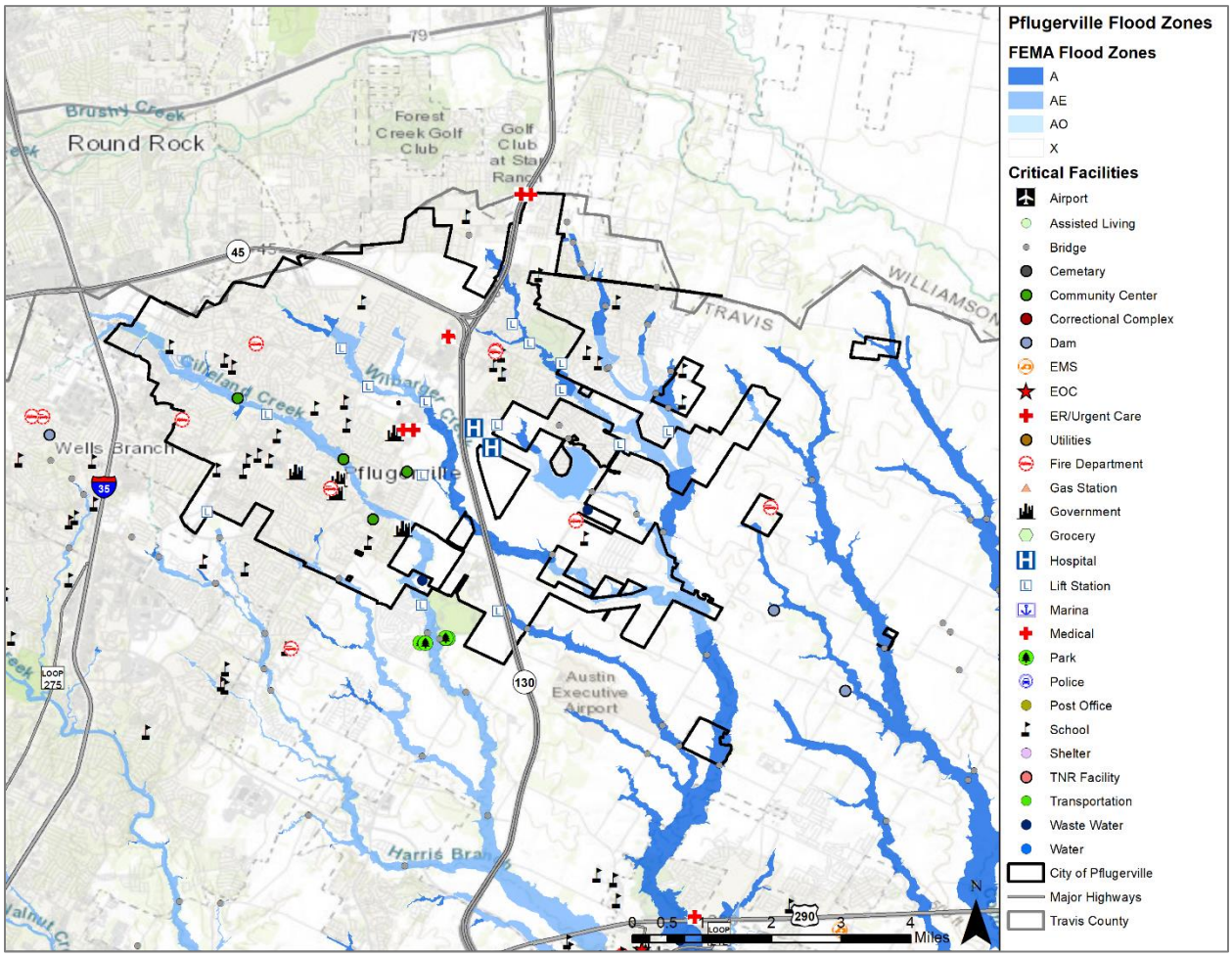


Figure 9-10. Estimated Flood Zones – Village of Point Venture

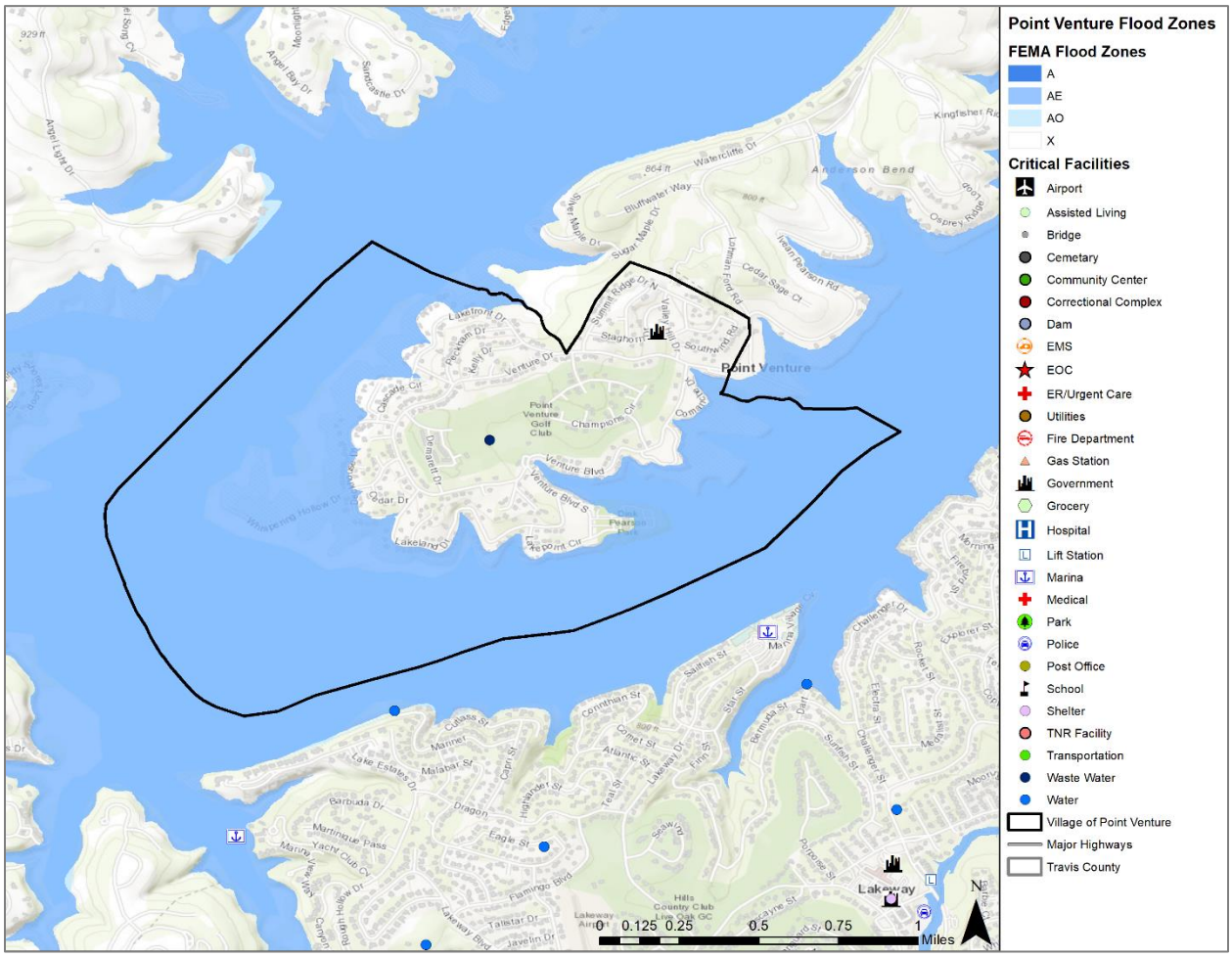


Figure 9-11. Estimated Flood Zones – City of Rollingwood

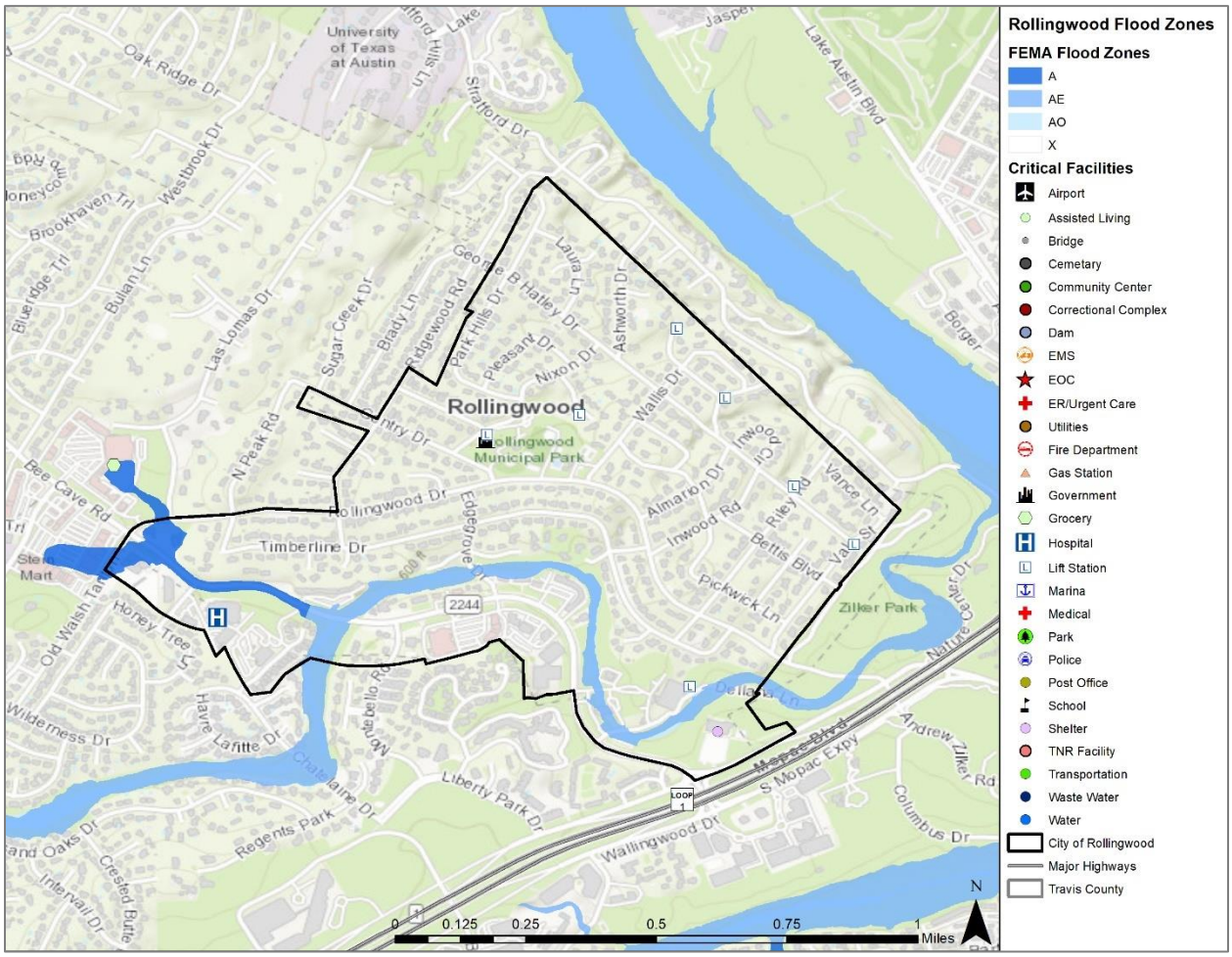


Figure 9-12. Estimated Flood Zones – Village of San Leanna

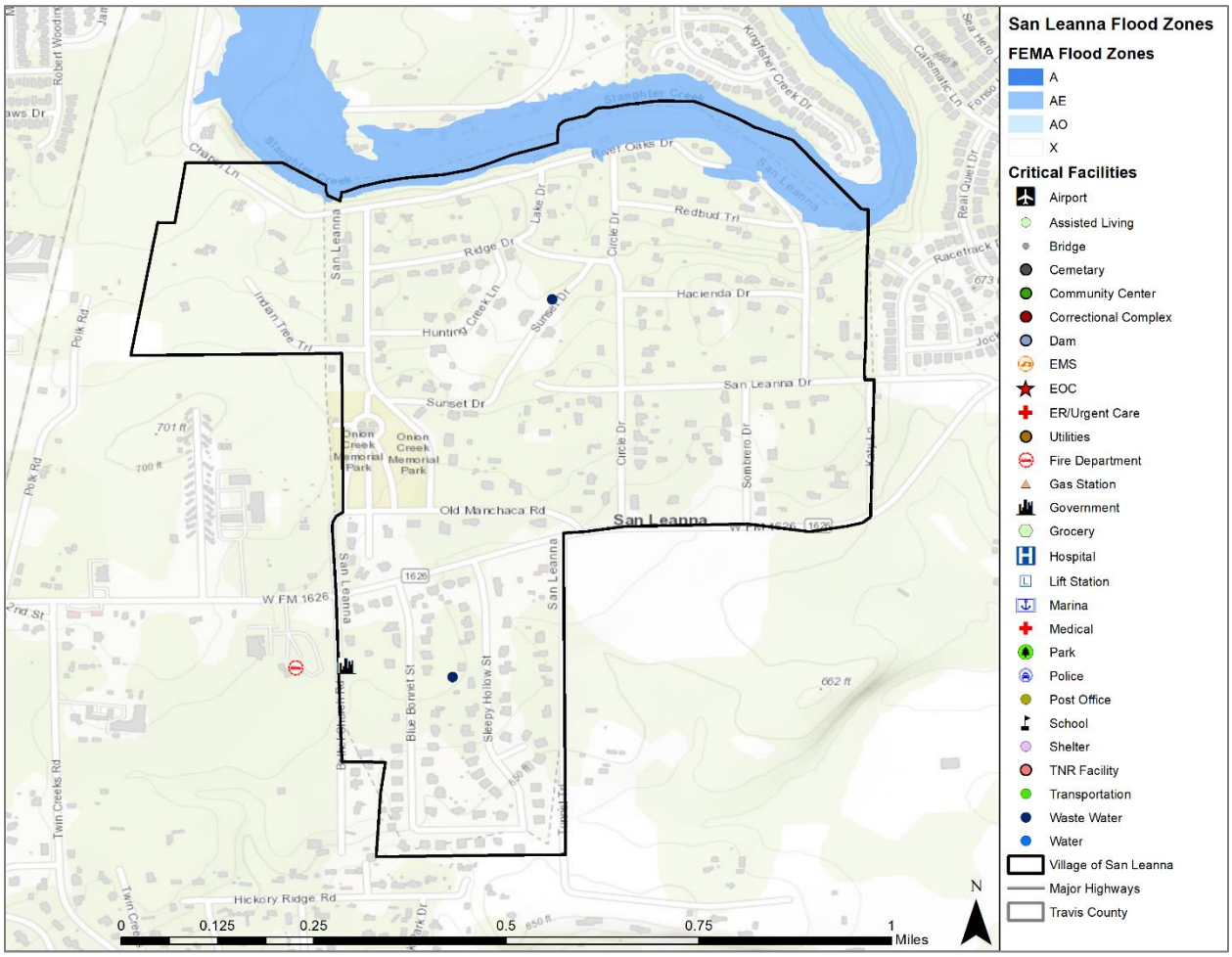


Figure 9-13. Estimated Flood Zones – City of Sunset Valley

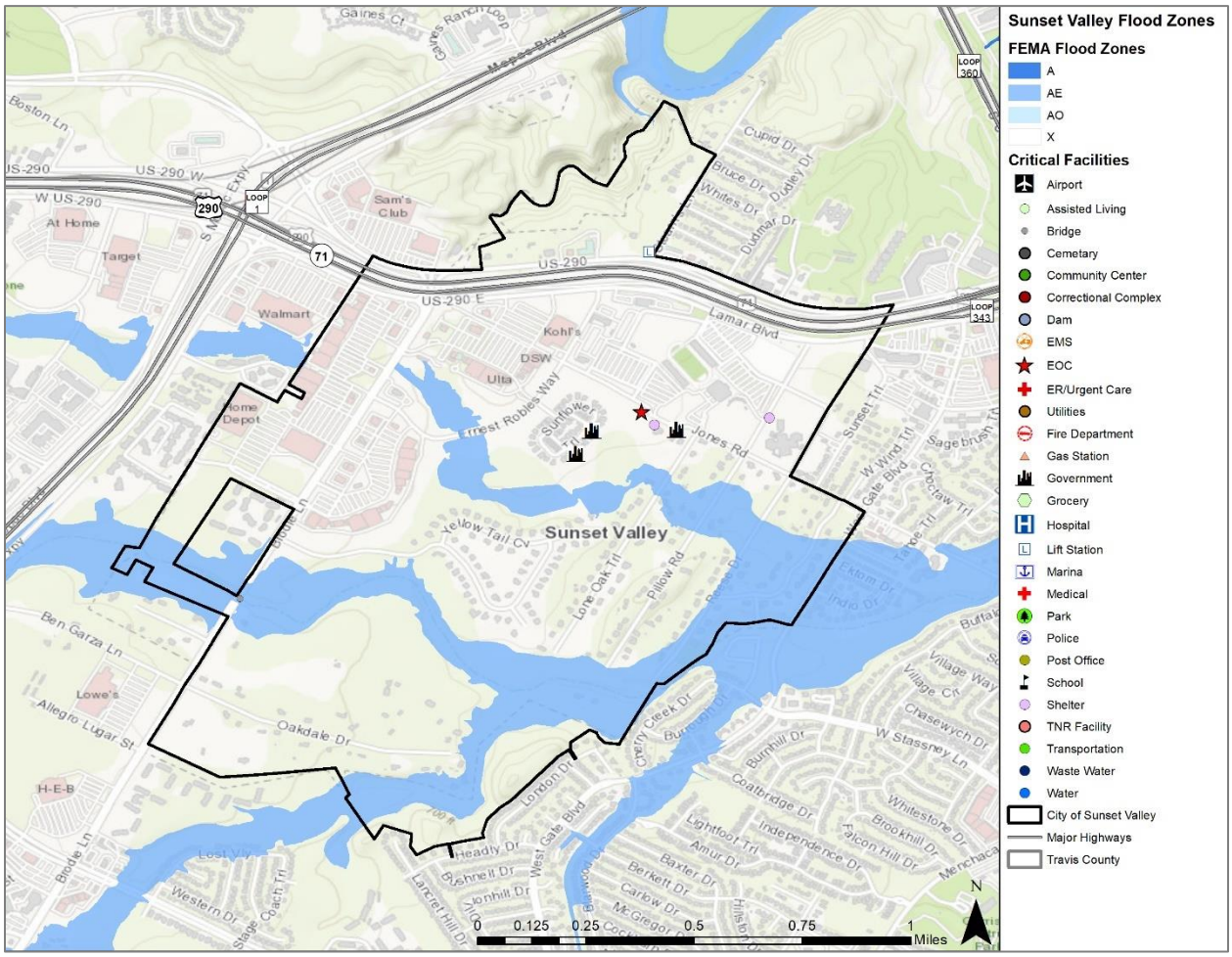


Figure 9-14. Estimated Flood Zones – Village of the Hills

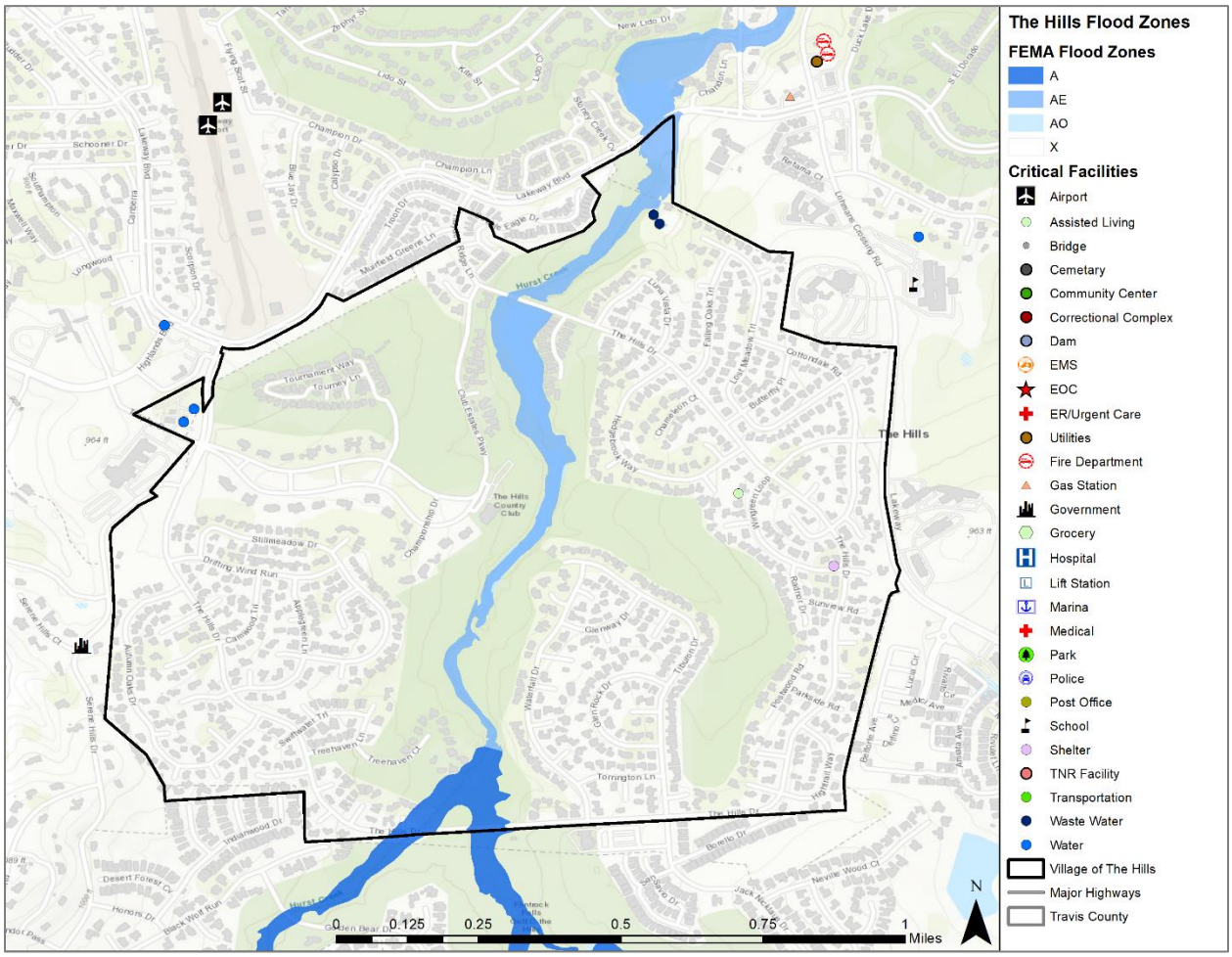


Figure 9-15. Estimated Flood Zones – City of West Lake Hills

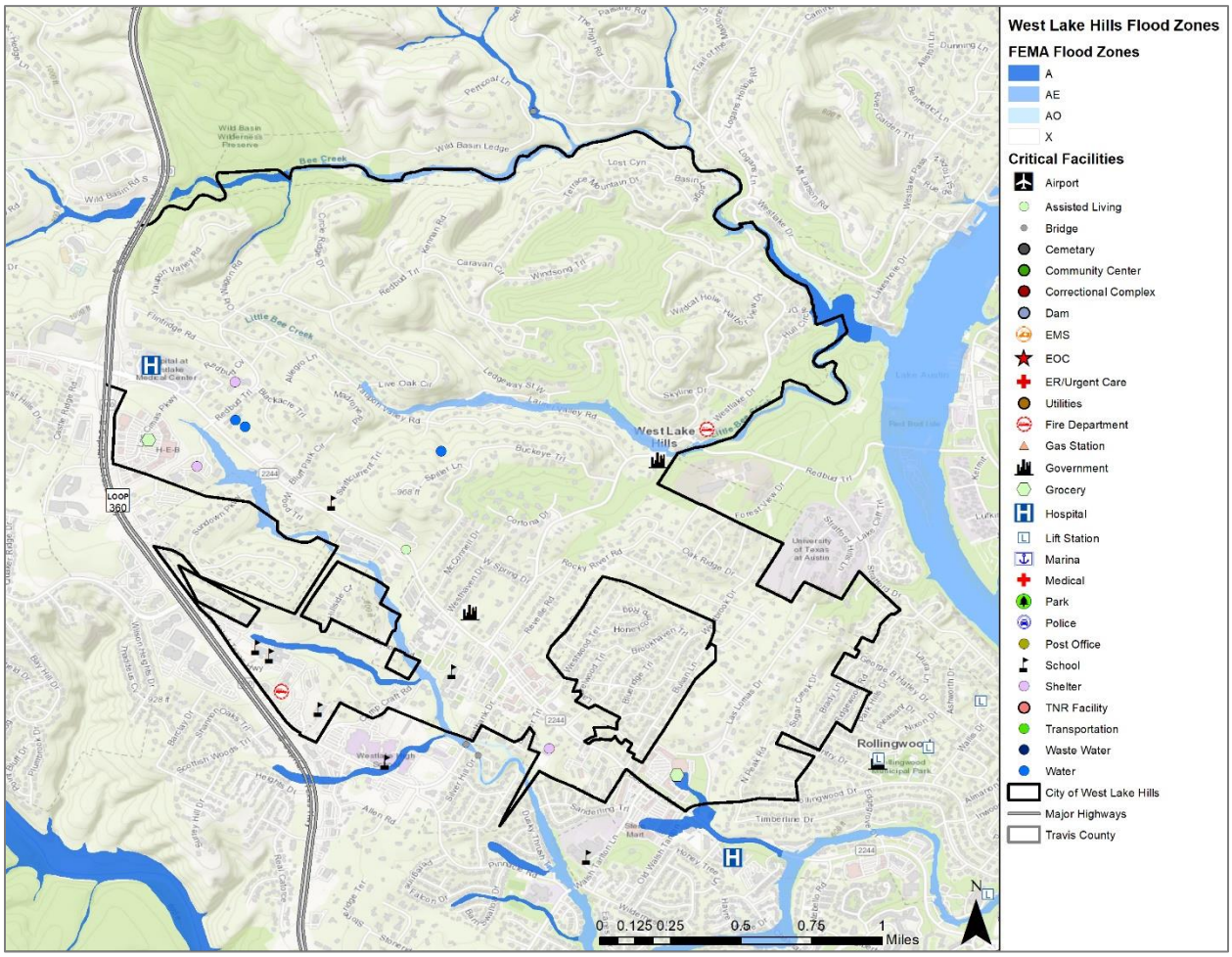
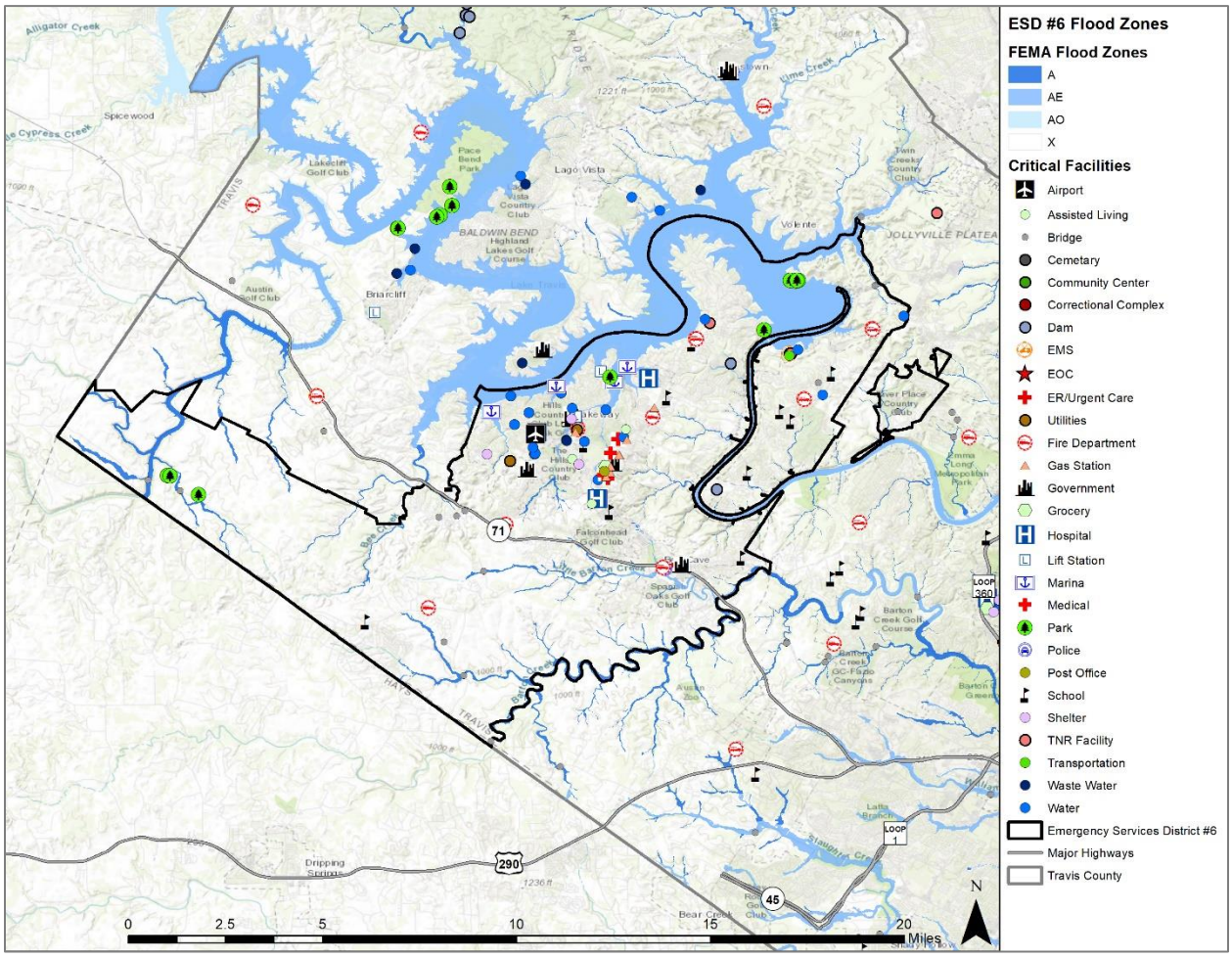


Figure 9-16. Estimated Flood Zones – Emergency Services District #6



Major flood protection for the planning area is provided by a system of dams and reservoirs developed along the Colorado River, stretching from Lake Buchanan in Llano and Burnet Counties to Lake Austin, the site of the Tom Miller Dam (formerly Lake Austin Dam). Six dams comprise the system, extending like massive steps down the length of the lower Colorado River. The six dams are maintained by the Lower Colorado River Authority. Below this chain lies the smaller channel lake, Lady Bird Lake, which is impounded by Longhorn Dam, built and maintained by the City of Austin. Travis County has adopted ordinances for subdivision design and drainage, and floodplain management regulations.[4]

EXTENT

The severity of a flood event is determined by a combination of several major factors, including: stream and river basin topography and physiography, precipitation and weather patterns, recent soil moisture conditions, and the degree of vegetative clearing and impervious surfaces. Typically, floods are long-term events that may last for several days.

[4] Flood Insurance Study (FIS) Travis County, Texas and Incorporated Areas, January 22, 2020.

SECTION 9: FLOOD

Determining the intensity and magnitude of a flood event is dependent upon the flood zone and location of the flood hazard area in addition to the depths of flood waters. The extent of flood damages can be expected to be more damaging in the areas that will convey a base flood. FEMA categorizes areas on the terrain according to how the area will convey flood water. Flood zones are the categories that are mapped on FIRMs. Table 9-1 provides a description of FEMA flood zones and the flood impact in terms of severity or potential harm. Flood Zones A, AE, AO and X are the hazard areas mapped in the region. Figures 9-1 through 9-16 (above) should be read in conjunction with the extent for flooding in Tables 9-1, 9-2, and 9-3 to determine the intensity of a potential flood event.

Table 9-1 Flood Zones

INTENSITY	ZONE	DESCRIPTION
HIGH	ZONE A	Areas with a 1-percent-annual-chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.
	ZONE A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a Base Flood Elevation (BFE) (old format).
	ZONE AE	The base floodplain where BFEs are provided. AE Zones are now used on the new format FIRMs instead of A1-A30 Zones.
	ZONE AO	River or stream flood hazard areas and areas with a 1-percent-annual-chance or greater of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26 percent chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
	ZONE AH	Areas with a 1-percent-annual-chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26 percent chance of flooding over the life of a 30-year mortgage. BFEs derived from detailed analyses are shown at selected intervals within these zones.
	ZONE A99	Areas with a 1-percent-annual-chance of flooding that will be protected by a federal flood control system where construction has reached specified legal requirements. No depths or BFEs are shown within these zones.

INTENSITY	ZONE	DESCRIPTION
	ZONE AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.
MODERATE to LOW	ZONE X 500	An area inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; or an area protected by levees from 100-year flooding.

Zone A is interchangeably referred to as the 100-year flood, the 1-percent-annual-chance flood, the Special Flood Hazard Area (SFHA), or more commonly, the base flood. This is the area that will convey the base flood and constitutes a threat to the planning area. The impact from a flood event can be more damaging in areas that will convey a base flood.

Structures built in the SFHA are subject to damage by rising waters and floating debris. Moving flood water exerts pressure on everything in its path and causes erosion of soil and solid objects. If not elevated above Base Flood Elevation, utility systems, such as heating, ventilation, air conditioning, fuel, electrical systems, and sewage maintenance systems and water systems, may also be damaged.

The intensity and magnitude of a flood event is also determined by the depth of flood waters. Table 9-2 describes the stream gauge data provided by the United States Geological Survey (USGS).

Table 9-2. Extent for Travis County[5]

JURISDICTION[6]	PEAK FLOOD EVENT
Travis County	Colorado River in Austin reached an overflow elevation of 46 feet in July 1869, 41.2 feet in June 1935, and 34.1 feet in May 2015. The average peak flow at this site is 14.9 feet.
Travis County	Slaughter Creek at FM 1826 reached an overflow elevation of 12.03 feet in May of 2019. The average peak flow at this site is 7.3 feet.
Travis County	Bull Creek at Loop 360 near Austin reached an overflow elevation of 14.97 feet in September of

[5] Severity estimated by averaging floods at certain stage level over the history of flood events. Severity and peak events are based on USGS data.
[6] Severity is provided where peak data was provided throughout for the County but unavailable for individual jurisdictions.

JURISDICTION[6]	PEAK FLOOD EVENT
	2010. The average peak flow at this site is 7.68 feet.
Travis County	Barton Creek at Loop 360 in Austin reached an overflow elevation of 19.38 feet in October of 2015. The average peak flow at this site is 8.98 feet.
Travis County	Shoal Creek at Silverway Drive in Austin reached an overflow elevation of 10.72 feet in May of 2015. The average peak flow at this site is 8.66 feet.
Travis County	Williamson Creek at Manchaca Road reached an overflow elevation of 20.63 feet in October of 2013. The average peak flow at this site is 9.82 feet.
Travis County	Walton Creek at Dessau Road reached an overflow elevation of 27.55 feet in May of 2015. The average peak flow at this site is 15.02 feet.
Travis County	Onion Creek at Twin Creeks Road near Manchaca reached an overflow elevation of 36.88 feet in October of 2013. The average peak flow at this site is 16.04 feet.

The range of flood intensity that the planning area can experience is high, or Zone A. Based on historical occurrences, the planning area could expect to experience from 8 to 12 inches of rain within a 24-hour period, resulting in flash flooding.

The data described in Tables 9-1 and 9-2, together with Figures 9-1 through 9-16, and historical occurrences for the area, provides an estimated potential magnitude and severity for the Travis County planning area, including participating jurisdictions and ESD #6.

HISTORICAL OCCURRENCES

Historical evidence indicates that areas within the planning area are susceptible to flooding, especially in the form of flash flooding. It is important to note that only flood events that have been reported have been factored into this risk assessment, therefore it is likely that additional flood occurrences have gone unreported before and during the recording period. Table 9-3 identifies historical flood events that resulted in damages, injuries, or fatalities within the Travis County planning area. Table 9-4 provides the historical flood event summary by jurisdiction. Historical Data is provided by the Storm Prediction Center (NOAA), National Centers for Environmental Information (NCEI) database for Travis County, and the participating jurisdictions and ESD #6.

There have been 250 recorded flood events in Travis County, including participating jurisdictions and ESD #6. Historical flood data for ESD #6 are provided within the county or city events of the district's boundaries, as the database does not have events reported separately for ESD #6. The Emergency Services District did not report any damages to district facilities due to flooding.

Table 9-3. Historical Flood Events, 1996-2022[7]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	8/24/1996	0	0	$18,868	$0
Travis County	8/24/1996	0	0	$56,605	$0
Travis County	9/18/1996	0	0	$5,643	$0
Travis County	10/28/1996	0	0	$93,745	$18,749
Travis County	4/4/1997	0	0	$27,790	$0
Travis County	4/25/1997	0	0	$9,263	$0
Travis County	4/26/1997	0	0	$9,263	$0
Travis County	5/23/1997	0	0	$92,691	$0
Travis County	5/27/1997	1	0	$9,269	$0
Travis County	6/6/1997	0	0	$27,773	$0
Travis County	6/8/1997	1	10	$185,151	$0
Travis County	6/17/1997	0	0	$18,515	$0
Travis County	6/22/1997	0	0	$1,851,510	$92,575
Travis County	7/30/1997	0	0	$92,460	$0
Travis County	12/20/1997	1	0	$92,002	$0
Travis County	2/21/1998	0	0	$18,332	$0
Travis County	10/17/1998	1	50	$2,714,607	$180,974
Travis County	10/17/1998	0	50	$1,809,738	$90,487
Travis County	6/21/1999	0	0	$17,858	$0
Travis County	7/10/1999	0	0	$8,902	$0
Travis County	6/9/2000	0	0	$51,647	$0
Travis County	11/2/2000	0	0	$34,095	$0
Travis County	11/3/2000	0	0	$34,095	$0
Travis County	11/23/2000	0	0	$25,571	$0
Travis County	5/6/2001	0	0	$16,702	$0

[7] Only recorded events with fatalities, injuries, and/or damages are listed; values are in 2023 dollars.

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	5/6/2001	0	0	$33,404	$0
Travis County	5/20/2001	0	5	$100,213	$0
Travis County	8/26/2001	0	0	$50,163	$0
Travis County	8/31/2001	0	0	$33,442	$0
Travis County	11/15/2001	2	50	$836,519	$0
Travis County	7/2/2002	1	0	$0	$0
Travis County	9/8/2002	0	2	$49,193	$0
Travis County	11/4/2002	0	0	$16,370	$0
Travis County	2/20/2003	0	0	$24,314	$0
Travis County	1/16/2004	0	0	$16,026	$0
Travis County	4/6/2004	0	4	$0	$0
Travis County	6/3/2007	0	0	$71,225	$0
City of Pflugerville	6/25/2007	0	0	$42,735	$0
City of Pflugerville	6/28/2007	0	0	$71,225	$0
Travis County	7/6/2007	1	0	$0	$0
Travis County	6/11/2009	0	0	$2,752,032	$0
Travis County	10/22/2009	0	0	$686,468	$0
Travis County	9/7/2010	1	0	$0	$0
City of Jonestown	9/13/2012	0	0	$128,258	$0
City of West Lake Hills	10/13/2013	1	0	$2,541,658	$0
Travis County	10/31/2013	4	0	$127,082,887	$0
Travis County	11/22/2013	1	0	$0	$0
Travis County	9/18/2014	1	0	$0	$0
Travis County	5/25/2015	1	0	$12,480,688	$0
Travis County	10/30/2015	0	0	$12,478,956	$0
Travis County	10/30/2015	2	0	$0	$0
Travis County	10/30/2015	1	0	$0	$0

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	5/27/2016	1	0	$0	$0
Travis County	6/3/2016	1	0	$0	$0
City of Lakeway	10/16/2018	0	0	$11,736,441	$0
Travis County	5/8/2019	1	0	$0	$0
Travis County	8/15/2021	0	0	$10,849	$0

Table 9-4. Summary of Historical Flood Events, 1996-2022[8]

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	221	22	171	$164,044,844	$382,785
Village of Briarcliff	0	-	-	-	-
City of Creedmoor	5	0	0	$0	$0
City of Jonestown	3	0	0	$128,258	$0
City of Lago Vista	1	0	0	$0	$0
City of Lakeway	2	0	0	$11,736,441	$0
City of Manor	1	0	0	$0	$0
City of Mustang Ridge	0	-	-	-	-
City of Pflugerville	7	0	0	$113,960	$0
Village of Point Venture	0	-	-	-	-
City of Rollingwood	0	-	-	-	-
Village of San Leanna	0	-	-	-	-
City of Sunset Valley	0	-	-	-	-
Village of The Hills	0	-	-	-	-
City of West Lake Hills	10	1	0	$2,541,658	$0
ESD #6	0	-	-	-	-
Total Losses	**250**	**23**	**171**	**$178,947,946**	

[8] Participating jurisdictions with no reported events show a "-" in table columns where damages, deaths or injuries would be otherwise reported.

Based on the list of historical flood events for the Travis County planning area and including all participating jurisdictions and ESD #6, 52 of the 250 events have occurred since the 2017 Plan.

SIGNIFICANT EVENTS

Flash Flood on October 16, 2018 – Travis County

After 5-10 inches of rain fell in the Llano River basin flood waters moved into the Colorado River basin along with heavy rain in the basin. Lake Travis rose into its flood pool (681 feet Mean Sea Level (MSL)) on the 16th and eventually rose to 704.3 feet MSL on the 19th. This flood water overwhelmed Austin's water treatment facilities and the city issued a boil water notice on the 22nd. The city and Travis and Williamson Counties distributed bottled water to residents. The Lower Colorado River Authority conducted flood operations opening as many as eight floodgates on Mansfield Dam to reduce the level of the lake. By the 28th the level was sufficiently low to allow the water treatment facilities to operate normally and the boil water notice was lifted. In and around the Lake Travis area there were reportedly nearly 100 homes that experienced Major damage, 76 with Minor damage, and over 200 homes that were affected.

Flash Flood on June 3, 2016 – Travis County

An upper-level trough moved across Texas and interacted with a moist boundary layer to generate thunderstorms across South Central Texas. Some of these storms produced heavy rain that led to flash flooding. The body of a man was discovered in Bull Creek just downstream from a low water crossing. A flooded pickup was found nearby. Time of the incident is estimated since there are no witnesses to the event. The cause of death was ruled as drowning by the medical examiner.

Flash Flood on May 27, 2016 – Travis County

An upper-level trough moved out of the southern Rockies and provided sufficient lift to form thunderstorms along a dry-line in west Texas. These storms moved into South Central Texas and were further enhanced by an outflow boundary that moved out of north Texas. Some of these storms produced large hail, damaging wind gusts, and heavy rain that led to flash flooding. A car was swept away near the intersection of Toll Road 130 and FM812 due to high water. The driver’s body was recovered several days later in a nearby retention pond.

Flash Flood on October 30, 2015 – Travis County

A warm front combined with an upper-level trough and deep moisture produced heavy rainfall and severe thunderstorms across much of South Central Texas on October 30 and 31. Damage surveys confirmed 4 tornadoes. Along with the severe weather, excessive rainfall resulted in widespread flash flooding along the Interstate 35 corridor Friday morning. Historic rainfall totals fell at the Austin Airport where over 1 foot of rain fell within a few hours. A record of 12.49 inches of rain for October 30 was recorded, the most ever in one day for the City of Austin area. Other daily rainfall totals exceeded 15 inches. Record flooding occurred in southern Travis County and portions of Hays County. Reports indicate more than 2,000 homes were flooded in or near this I-35 corridor, and many of them were destroyed or sustained Major damage. A man drowned when his vehicle was flooded, and he was swept downstream on Dry Creek just west of Highway 183 in southern Travis County. A woman was swept out of her house and drowned when Dry Creek flooded due to heavy rainfall. Her husband was also swept out of the house but survived. A man was stranded in his car near Toll 130 and FM 812; he was swept away, and his body was recovered the next day near McAngus Road.

Flash Flood on May 25, 2015 – Travis County
Thunderstorms produced heavy rain that caused flash flooding in the City of Austin. There were multiple water rescues around the city including 1 along Shoal Creek at House Park. Little Walnut Creek was out of its banks at Dottie Jordan Park, where the swimming pool overflowed and water knocked down fences. The Loyola Lane bridge over Walnut Creek was closed with water covering it. A 23-year-old man died when his vehicle was swept away on Jesse Bohls Drive near the City of Pflugerville. Twenty homes sustained major damage across Travis County for this event, while 14 businesses saw minor flood impacts.

Flash Flood on October 15, 2001 – Travis County
Flash flooding developed early in the day, causing power outages for several hours to almost 40,000 homes. Most low water crossings flooded and dozens of rescues were required. More than 80 people were evacuated from around the Onion Creek area south of City of Austin. Two firefighters had to be rescued when their rescue boat overturned. They clung to tree branches until fellow firefighters could get to them. A woman in a flood-prone area drove long nails into a tree and used the nails to climb to the top of the tree for shelter until the flood waters receded. Several area schools delayed sending students home on school buses due to high water. A 17-year-old male died after his car stalled in a low water crossing. He tried to walk through 3-to-4-foot-deep water but was washed off his feet and beneath his vehicle. In another death, a 51-year-old woman drowned after her car stalled in a low water crossing in the City of Mustang Ridge area. Apparently, she had left the vehicle and called to say that she was on her way home. Her body was found 1/4 mile downstream.

Flash Flood on October 17, 1998 – Travis County
Severe storm systems crossing the region dropped record rainfall. All rivers, creeks, and streams along and east of a San Antonio to Austin line remained at or above flood stage from Saturday, October 17 through Sunday, October 18, with a majority continuing to flood through Monday, October 19. This event broke rainfall records across South Central Texas, producing 18 floods of record in South Central Texas streams. October became the wettest month in climate records for the region since 1885. 1 death and 50 injuries were directly attributed to the flooding in the Travis County planning area.

Flash Flood on June 8, 1997 – Travis County
Rainfall of approximately 2 to 3 inches fell over 4 counties, with isolated totals nearing 5 inches. Widespread flash flooding was reported. Some 90 residents of a mobile home park in Travis County were evacuated as Walnut Creek flooded the area. Severe flooding took place along Onion Creek and Barton Creek as well. Water was reported over the I-35 Bridge in Georgetown. Numerous rescues were performed in Comal and Travis Counties. Two young ladies in City of Austin were trying to cross an old road across Slaughter Creek around noon when their vehicle was swept into the creek. One managed to scramble to safety and go for help. She called in an EMS team who tied ropes around themselves to reach the second young lady. Several families were evacuated from their homes in Del Valle in Travis County as waters rose rapidly. In the evening, a young woman was walking along Williamson Creek near 1st Street and William Cannon when she slipped on debris left from the flooding. She fell into the flood waters and drowned.

PROBABILITY OF FUTURE EVENTS

Based on 250 recorded historical occurrences within a 27-year reporting period within the Travis County planning area, including all participating jurisdictions and ESD #6, flooding is highly likely with 9 to 10 events per year anticipated.

VULNERABILITY AND IMPACT

A property's vulnerability to a flood depends on its location and proximity to the floodplain. Structures that lie along banks of a waterway are the most vulnerable and are often repetitive loss structures. Travis County encourages development outside of the floodplain, and the impact for flood for the entire planning area would be considered "Limited", with critical facilities and services shutdown for 24-hours or less and less than 10 percent of properties destroyed or with major damage. However, due to 23 reported fatalities and 171 past injuries reported, the impact of flood events for the planning area is considered "Substantial," with multiple deaths or injuries possible.

The Travis County Planning Team identified the following critical facilities (Table 9-5) as assets that are considered the most important to the planning area and are susceptible to a range of impacts from a variety of natural hazards, including those facilities located in the regulatory floodplain. For a comprehensive list by participating jurisdiction see Appendix C.

Table 9-5. Critical Facilities in the Floodplain by Participating Jurisdiction

CRITICAL FACILITY TYPES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers (1 EMS Facility located in flood hazard area)	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by rising flood waters. • Flood-related rescues may be necessary at swift and low water crossings or in flooded neighborhoods where roads have become impassable, placing first responders in harm's way. • Evacuations may be required for entire neighborhoods because of rising floodwaters, further taxing limited response capabilities and increasing sheltering needs for displaced residents. • Power outages could disrupt communications, delaying emergency response times. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities. • Washed out roads and bridges can impede emergency response vehicle access to areas. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel. • First responders are exposed to downed power lines, contaminated and unusual debris, hazardous materials, and generally unsafe conditions. • Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.

CRITICAL FACILITY TYPES	POTENTIAL IMPACTS
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities (1 Cemetery, 2 Community Centers, 18 Park Facilities, located in flood hazard area)	• Structures can be damaged by rising flood waters. • Power outages could disrupt critical care. • Backup power sources could be damaged, inundated or otherwise inoperable. • Critical staff may be impacted and unable to report for duty, limiting response capabilities. • Evacuations may be necessary due to extended power outages, gas line ruptures, or inundation of facilities. • Additional emergency responders and critical aid workers may not be able to reach the area for days. • Power outages and infrastructure damage may prevent larger airports from acting as temporary command centers for logistics, communications, and emergency operations. • Temporary break in operations may significantly inhibit post event evacuations. • Damaged or destroyed highway infrastructure may substantially increase the need for airport operations.
Commercial Supplier (food, fuel, etc.) (1 Grocery Store located in flood hazard area)	• Facilities or infrastructure may be damaged, destroyed or otherwise inaccessible. • Essential supplies like medicines, water, food, and equipment deliveries may be significantly delayed.
Utility Services and Infrastructure (electric, water, wastewater, communications) (155 Bridges, 3 Lift Stations, 3 Marinas, 1 TRN Facility, 3 Wastewater Facilities, and 9 Water Treatment Facilities located in flood hazard area)	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency service vehicles can be damaged by rising flood waters. • Flood-related rescues may be necessary at swift and low water crossings or in flooded neighborhoods where roads have become impassable, placing emergency service workers in harm's way. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel. • Service responders are exposed to downed power lines, contaminated and unusual debris, hazardous materials, and generally unsafe conditions. • Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.

Historic loss estimates due to flood are presented in Table 9-6 below. Considering 250 flood events over a 27-year period, frequency is approximately nine to ten events every year.

Table 9-6. Potential Annualized Losses by Jurisdiction, 1996-2022[9]

JURISDICTION	NUMBER OF EVENTS	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Travis County	221	$164,427,629	$6,089,912
Village of Briarcliff	0	-	-
City of Creedmoor	5	$0	$0
City of Jonestown	3	$128,258	$4,750
City of Lago Vista	1	$0	$0
City of Lakeway	2	$11,736,441	$434,683
City of Manor	1	$0	$0
City of Mustang Ridge	0	-	-
City of Pflugerville	7	$113,960	$4,221
Village of Point Venture	0	-	-
City of Rollingwood	0	-	-
Village of San Leanna	0	-	-
City of Sunset Valley	0	-	-
Village of The Hills	0	-	-
City of West Lake Hills	10	$2,541,658	$94,135
ESD #6	0	-	-
PLANNING AREA	**250**	**$178,947,946**	**$6,627,702**

While all citizens are at risk of the impacts of a flood, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 10.7 percent of the planning area population live below the poverty level (Table 9-7). While warning times for these type of hazard events should be substantial enough for individuals to seek shelter, individuals who work and recreate outside are also vulnerable to potential impacts of a flood event.

[9] Participating jurisdictions with no reported events show a "-" in table columns where damages would be otherwise reported.

Table 9-7. Populations at Greatest Risk by Jurisdiction[10]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Travis County	135,654
Village of Briarcliff	66
City of Creedmoor	60
City of Jonestown	229
City of Lago Vista	316
City of Lakeway	554
City of Manor	975
City of Mustang Ridge	85
City of Pflugerville	3,392
Village of Point Venture	47
City of Rollingwood	0
Village of San Leanna	9
City of Sunset Valley	26
Village of The Hills	62
City of West Lake Hills	209
ESD #6	N/A

The severity of a flooding event varies depending on the relative risk to citizens and structures located within each jurisdiction. Table 9-8 depicts the level of impact for Travis County planning area, including all participating jurisdictions and ESD #6.

Table 9-8. Impact by Jurisdiction

JURISDICTION	IMPACT	DESCRIPTION
Travis County	Substantial	While Travis County would typically have limited property damages resulting from flood events (critical facilities would be shut down for 24 hours or less, and less than 10 percent of property would be destroyed or damaged), the historical loss of life and number of injuries indicates a potential “substantial” impact, resulting in potentially multiple deaths and injuries.

[10] U.S. Census Bureau 2021 data for Travis County.

JURISDICTION	IMPACT	DESCRIPTION
Village of Briarcliff	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the village.
City of Creedmoor	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of Jonestown	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of Lago Vista	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of Lakeway	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of Manor	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of Mustang Ridge	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of Pflugerville	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
Village of Point Venture	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the village.
City of Rollingwood	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
Village of San Leanna	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24

JURISDICTION	IMPACT	DESCRIPTION
		hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the village.
City of Sunset Valley	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
Village of The Hills	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the village.
City of West Lake Hills	Substantial	While the City of West Lake Hills would typically have limited *property* damages resulting from flood events (critical facilities would be shut down for 24 hours or less, and less than 10 percent of property would be destroyed or damaged), the historical loss of life indicates a potential "substantial" impact, resulting in potentially multiple deaths and injuries.
ESD #6	Limited	Any injuries or illnesses would be treatable with first aid. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property or assets of ESD #6 would be destroyed or damaged.

ASSESSMENT OF IMPACTS

Flooding is the deadliest natural disaster that occurs in the U.S. each year, and it poses a constant and significant threat to the health and safety of the people in the Travis County planning area. Impacts to the planning area can include:

- Flood-related rescues may be necessary at swift water and low water crossings or in flooded neighborhoods where roads have become impassable, hazardous materials have contaminated water, live power lines may be down, and hazardous, unstable debris may be present, placing first responders in harm's way and significantly hindering emergency response time.
- Evacuations may be required for entire neighborhoods because of rising floodwaters, further taxing limited response capabilities and increasing sheltering needs for displaced residents.
- Health risks and threats to residents are elevated after the flood waters have receded due to contaminated flood waters (untreated sewage and hazardous chemicals) and mold growth typical in flooded buildings and homes.
- Significant flood events often result in widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety and increased structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- Emergency operations and services may be significantly impacted due to damaged facilities.

- Significant flooding can result in the inability of emergency response vehicles to access areas of the community.
- Critical staff may suffer personal losses or otherwise be impacted by a flood event and be unable to report for duty, limiting response capabilities.
- City, village or county departments may be flooded, delaying response and recovery efforts for the entire community.
- Private sector entities that the planning area and its residents rely on, such as utility providers, financial institutions, and medical care providers, may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Some businesses not directly damaged by the flood may be negatively impacted while utilities are being restored or water recedes, and displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures substantially damaged by a flood may not be rebuilt for years and uninsured or underinsured residential structures may never be rebuilt, reducing the tax base for the community.
- Large floods may result in a dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.
- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Recreation activities may be unavailable, and tourism can be unappealing for years following a large flood event, devastating directly related local businesses and negatively impacting economic recovery.
- Flooding may cause significant disruptions of clean water and sewer services, elevating health risks and delaying recovery efforts.
- The psychosocial effects on flood victims and their families can traumatize them for long periods of time, creating long term increases in medical treatment and services.
- Extensive or repetitive flooding can lead to decreases in property value for the affected community.
- Flood poses a potential catastrophic risk to annual and perennial crop production and overall crop quality, leading to higher food costs.
- Flood related declines in production may lead to an increase in unemployment.
- Large floods may result in loss of livestock, potential increased livestock mortality due to stress and water borne disease, and increased cost for feed.

The overall extent of damages caused by floods is dependent on the extent, depth, and duration of flooding, in addition to the velocities of flows in the flooded areas. The level of preparedness and pre-event planning done by government, businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a flood event.

CLIMATE CHANGE CONSIDERATIONS

River flooding in Texas is projected to have no substantial change through 2036. This is in large part due to the construction of dams and reservoirs for flood management in the 20th century.

There is a mixture of historical trends categorized by season, with no single clear trend to project. In addition, meteorological drivers of river flooding (increased rainfall intensity, decreased soil moisture) are projected to have competing influences. On balance, if an increasing trend is present in river flooding, it will be at the most extreme flood events or in the wettest parts of the state where there is so much rainfall that a decrease in soil moisture would have little mitigating impact.[11]

The University of Texas at Austin recently completed a technical report on future climate changes that indicated that annual precipitation for the Travis County planning area is projected to increase while the number of extreme precipitation (>2") will remain relatively consistent.[12]

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) PARTICIPATION

Flood insurance offered through the National Flood Insurance Program (NFIP) is the best way for home and business owners to protect themselves financially against the flood hazard. All of the participating jurisdictions in the planning area participate in the NFIP and are in good standing.

As an additional indicator of floodplain management responsibility, communities may choose to participate in FEMA's Community Rating System (CRS). This is an incentive-based program that allows communities to undertake flood mitigation activities that go beyond NFIP requirements. Currently, 2 of the participating communities in the planning area participate in CRS, including the City of Pflugerville (CR 7) and the City of Sunset Valley (CR 7).

Travis County and participating jurisdictions in the NFIP currently have in place, at minimum, the NFIP standards for new construction and substantial improvements of structures. The Travis County Commissioners Court initially approved Floodplain Management Regulations for Travis County on December 15, 1975. The regulations adopted by the Court were stricter and continue to be more stringent than those required to participate in the NFIP. The current Travis County floodplain management regulations:

- Restrict or prohibit land uses that are dangerous to health, safety, or property in times of flood, or cause excessive increases in erosion, flood heights, or velocities;
- Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- Control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel flood waters;
- Control filling, grading, dredging, and other development which may increase flood damage; and
- Regulate, including prohibiting, the construction of flood barriers.

The Cities of Pflugerville and Sunset Valley have also adopted additional floodplain standards above the minimum requirement in their respective flood damage prevention ordinances, further reducing risk to structures and reducing flood insurance costs to residents. The City of Manor has

[11] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.

[12] University of Texas at Austin, Technical Repot, February 2023, *Austin Future Climate, Climate Change Predictions for the City of Austin 2022*

a very small SFHA. The city does not issue permits for development for any property located in a SFHA. All jurisdictions are considering adopting additional higher regulatory NFIP standards to limit floodplain development.

The flood hazard areas throughout Travis County are subject to periodic inundation, which may adversely affect public safety, resulting in loss of life and property, health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief. Travis County has aggressively worked towards mitigating floods throughout the county since joining the NFIP. After the October 1998 flood, the Travis County Commissioners Court began to buy-out flood prone properties mostly along Onion Creek in Southeastern Travis County. In 2001, the Court partnered with the City of Austin, LCRA, the City of Sunset Valley, and the United States Army Corps of Engineers (USACE) to find cost effective solutions to flood events along Onion and Walnut Creeks and the Colorado River, including Lake Travis. As a result of the studies, the Court has cost shared a flood evacuation and park project in the Timber Creek neighborhood along Onion Creek.

Flood losses are created by the cumulative effect of obstructions in floodplains which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, flood-proofed, or otherwise protected from flood damage. Mitigation actions are included to address flood maintenance issues as well, including routinely clearing debris from roadside ditches and bridges, and expanding drainage culverts and storm water structures to more adequately convey flood waters.

It is the purpose of Travis County and NFIP jurisdictions participating in the Hazard Mitigation plan to continue to promote the public health, safety, and general welfare by minimizing public and private losses due to flood conditions in specific areas with flood mitigation projects similar to the Onion Creek acquisition and park project.

Each of the NFIP participating jurisdictions in the Plan are guided by their local Flood Damage Prevention Ordinance. These communities will continue to comply with NFIP requirements through their local permitting, inspection, and record-keeping requirements for new and substantially developed construction. As active members of the Texas Floodplain Management Association (TFMA), the Travis County Environmental Health office has positioned itself to effectively manage the county NFIP Program and maintain their Certified Floodplain Manager (CFM) status through continuing education. Furthermore, the NFIP program for each of the participating jurisdictions promotes sound development in floodplain areas and includes provisions designed to:

- Protect human life and health;
- Minimize expenditure of public money for costly flood control projects;
- Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- Minimize prolonged business interruptions;
- Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in floodplains;
- Help maintain a stable tax base by providing for the sound use and development of flood-prone areas in such a manner as to minimize future flood blight areas; and

- Ensure that potential buyers are notified that property is in a flood area.

In order to accomplish these tasks, Travis County and participating NFIP jurisdictions seek to observe the following guidelines in order to achieve flood mitigation:

- Restrict or prohibit uses that are dangerous to health, safety, or property in times of flood, such as filling or dumping, that may cause excessive increases in flood heights or velocities;
- Require that uses vulnerable to floods, including facilities, which serve such uses, be protected against flood damage at the time of initial construction, as a method of reducing flood losses;
- Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of floodwaters;
- Control filling, grading, dredging, and other development, which may increase flood damage; and
- Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

NFIP COMPLIANCE AND MAINTENANCE

As mentioned, Travis County has participated in multiple mitigation activities to reduce flood losses and protect citizens and property. The county continues to partner with local communities to identify and implement sound mitigation actions. After the devastating October 31, 2015 flood, Travis County began a post-flood analysis and mitigation study for Dry Creek East and Onion, Bear, and Little Bear Creeks in southeastern Travis County. The study will attempt to find root causes of the flood and seek to find cost effective mitigation alternatives for the Arroyo Doble/Twin Creeks Subdivisions, Thoroughbred Farms Subdivision, and the Bluff Springs Road Areas. Similarly in 2017, Travis County conducted a study of Maha Creek in southeastern Travis County. This study identified mitigation alternatives in the Swiss Alpine Village and Plover Place neighborhoods, and developed a regulatory flood model of Maha Creek which was an unstudied "A" zone of the FIRM. Travis County continues buy-out properties on Onion, Bear, Dry, and Maha Creeks.

Travis County and participating jurisdictions have developed additional mitigation actions that relate to either NFIP maintenance or compliance. Compliance and maintenance actions can be found in Section 18.

Flooding was identified by the majority of the communities as a moderate to high-risk hazard during hazard ranking activities at the Risk Assessment Workshop. Many of the mitigation actions were developed with flood mitigation in mind. A majority of these flood actions address compliance with the NFIP and implementing flood awareness programs. County-wide, communities recognize the need and are working towards adopting higher NFIP regulatory standards to further minimize flood risk in their community. Smaller no-growth communities that typically do not have personnel or funds to implement more stringent NFIP compliance measures are focusing on NFIP public awareness activities. This includes promoting the availability of flood insurance by placing NFIP brochures and flyers in public libraries or public meeting places.

Each jurisdiction participating in this planning process is a NFIP participant and has a designated floodplain administrator. All floodplain administrators in the planning area will continue to maintain compliance with the NFIP, including continued floodplain administration, zoning ordinances, and development regulation. The floodplain ordinance adopted by each participating jurisdiction outlines the minimum requirements for development in Special Flood Hazard Areas.

All participating jurisdictions have a permitting process in place and each local floodplain administrator is responsible for coordinating inspections of damaged homes located in the floodplain. Following a flood event, local officials inspect damaged homes to make a substantial damage determination. Substantially damaged homes must be brought into compliance. Similarly, proposed improvements to homes located in the floodplain are reviewed by local building officials to determine if a substantial improvement is proposed. The floodplain administrator oversees permitted repairs and improvements to ensure compliance during the rebuilding or improvement process.

REPETITIVE LOSS

The Flood Mitigation Assistance (FMA) Grant Program under FEMA provides federal funding to assist states and communities in implementing mitigation measures to reduce or eliminate the long-term risk of flood damage to buildings that are insured under the National Flood Insurance Program. The Texas Water Development Board (TWDB) administers the FMA grant program for the State of Texas. One of the goals of the FMA program is to reduce the burden of repetitive loss and severe repetitive loss properties on the NFIP through mitigation activities that significantly reduce or eliminate the threat of future flood damages.

Repetitive Loss properties are defined as structures that are:

- Any insurable building for which 2 or more claims of more than $1,000 each, paid by the National Flood Insurance Program (NFIP) within any 10-year period, since 1978;
- May or may not be currently insured under the NFIP.

Severe Repetitive Loss properties are defined as structures that are:

- Covered under the NFIP and have at least 4 flood related damage claim payments (building and contents) over $5,000.00 each, and the cumulative amount of such claims payments exceed $20,000; or
- At least 2 separate claim payments (building payments only) have been made, with the cumulative amount of the building portion of such claims exceeding the market value of the building.

In either scenario, at least 2 of the referenced claims must have occurred within any 10-year period and must be greater than 10 days apart.[13] Table 9-9 shows repetitive loss and severe repetitive loss properties for Travis County, including all participating jurisdictions. It should be noted that ESD #6 is not eligible to participate in the NFIP. There are no repetitive/severe repetitive loss properties reported for the following jurisdictions: City of Creedmoor, City of

[13] Source: Texas Water Development Board.

Lakeway, City of Manor, City of Mustang Ridge, Village of Point Venture, Village of San Leanna, and the Village of The Hills.

Table 9-9. Repetitive Loss and Severe Repetitive Loss Properties[14]

JURISDICTION	BUILDING TYPE	NUMBER OF STRUCTYURES	NUMBER OF LOSSES
Travis County	2-4 Family	7	24
	Assumed Condo	9	26
	Non-Residential	23	77
	Other Residential	4	9
	Single Family*	487	1,414
Village of Briarcliff	Single Family	1	2
City of Jonestown	Single Family*	5	14
City of Lago Vista	Single Family*	5	18
City of Pflugerville	Single Family*	3	10
City of Rollingwood	Single Family*	2	4
City of Sunset Valley	Single Family	1	10
City of West Lake Hills	Single Family	3	14

[14] The City of Austin is not participating in the Travis County Hazard Mitigation Plan Update but has been included under Travis County on the *Repetitive Loss and Severe Repetitive Loss Properties* table. *Some repetitive loss properties were assumed to be single family residential. Source: Texas Water Development Board Repetitive Loss portal, https://twdb-wsc.maps.arcgis.com/apps/webappviewer/index.html?id=eb2ecdeed6d349999382efa6fda70aa6

SECTION 10
THUNDERSTORM WIND

SECTION 10: THUNDERSTORM WIND

HAZARD DESCRIPTION

Thunderstorms create extreme wind events which includes straight line winds. Wind is the horizontal motion of the air past a given point, beginning with differences in air pressures. Pressure that is higher at one place than another sets up a force pushing from high toward low pressure; the greater the difference in pressures, the stronger the force. The distance between the area of high pressure and the area of low pressure also determines how fast the moving air accelerates.

Thunderstorms are created when heat and moisture near the Earth's surface are transported to the upper levels of the atmosphere. By-products of this process are the clouds, precipitation, and wind that become the thunderstorm.

According to the National Weather Service (NWS), a thunderstorm occurs when thunder accompanies rainfall. Radar observers use the intensity of radar echoes to distinguish between rain showers and thunderstorms.

Straight line winds are responsible for most thunderstorm wind damages. One type of straight-line wind, the downburst, is a small area of rapidly descending air beneath a thunderstorm. A downburst can cause damage equivalent to a strong tornado and make air travel extremely hazardous.

LOCATION

Thunderstorm wind events can develop in any geographic location and are considered a common occurrence in Texas. Therefore, a thunderstorm wind event could occur at any location within the Travis County planning area, including participating jurisdictions and ESD #6. These storms develop randomly and are not confined to any geographic area within the County. It is assumed that the entire Travis County planning area is uniformly exposed to the threat of thunderstorm winds.

EXTENT

The extent or magnitude of a thunderstorm wind event is measured by the Beaufort Wind Scale. Table 10-1 describes the different intensities of wind in terms of speed and effects, from calm to violent and destructive.

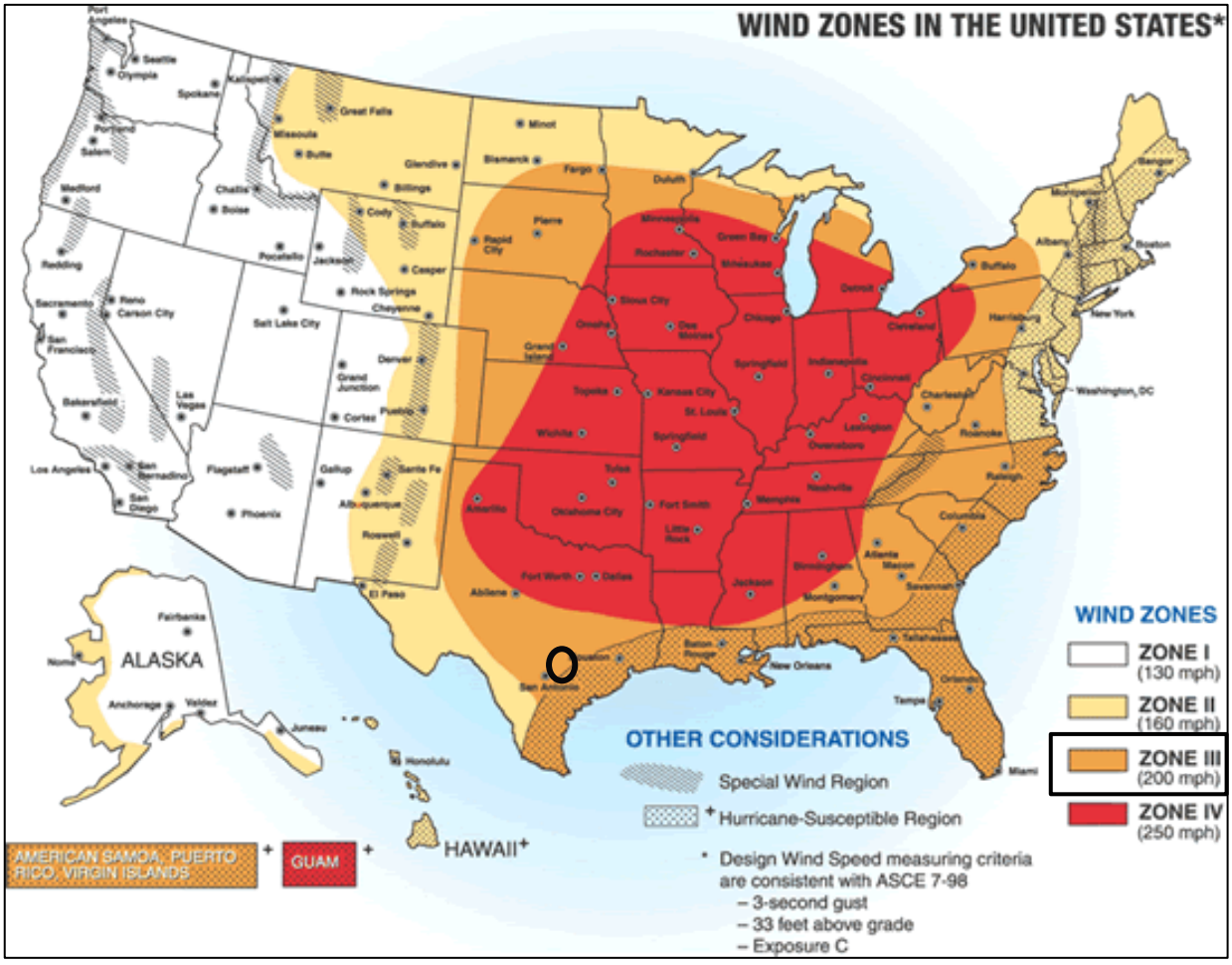
Table 10-1. Beaufort Wind Scale[1]

FORCE	WIND (MHP)	WIND (Knots)	WMO CLASSIFICATION	APPEARANCE OF WIND EFFECTS
0	Less than 1	Less than 1	Calm	Calm, smoke rises vertically
1	1-3	1-3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4-7	4-6	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	7-10	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	13-18	11-16	Moderate Breeze	Dust, leaves and loose paper lifted, small tree branches move
5	19-24	17-21	Fresh Breeze	Small trees in leaf begin to sway
6	25-31	22-27	Strong Breeze	Larger tree branches moving, whistling in wires
7	32-38	28-33	Near Gale	Whole trees moving, resistance felt walking against wind
8	39-46	34-40	Gale	Whole trees in motion, resistance felt walking against wind
9	47-54	41-47	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	55-63	48-55	Storm	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	64-72	56-63	Violent Storm	If experienced on land, widespread damage
12	72-83	64-71	Hurricane	Violence and destruction

Figure 10-1 displays the wind zones as derived from NOAA.

[1] Source: World Meteorological Organization

Figure 10-1. Wind Zones in the United States[2]



On average, the planning area experiences 4 to 5 thunderstorm wind events every year. The Travis County planning area, including participating jurisdiction and ESD #6, is located within Wind Zone III, meaning it can experience winds up to 200 mph. The Travis County planning area has experienced a significant wind event, or an event with winds in the range of "Force 12" on the Beaufort Wind Scale with winds above 72 mph. This is the worst to be anticipated for the entire planning area based on historic events.

Based on a search of past events between 1956 through 2022, the greatest magnitude wind event that Travis County planning area experienced was 75 knots, or 86 mph, during an event occurring on May 5, 1978. No impacts were reported as a result of this event.

HISTORICAL OCCURRENCES

The National Centers for Environmental Information (NCEI) Storm Events database is a national data source organized under the National Oceanic and Atmospheric Administration. The NCEI is the largest archive available for historic storm events data; however, it is important to note that only incidents recorded in the NCEI have been factored into this risk assessment unless otherwise

[2] Travis County planning area is indicated by the black circle.

noted. It is likely that a high number of occurrences have gone unreported over the past 67 years. Tables 10-2 and 10-3 depict historical occurrences of thunderstorm wind events for the Travis County planning area according to the NCEI database.

Since 1956, 296 thunderstorm wind events are known to have occurred in the Travis County planning area. Based upon NCEI records 86 events caused damages. Table 10-3 presents information on known historical events impacting the Travis County planning area, including participating jurisdictions and ESD #6, resulting in damages, injuries, or fatalities. The strongest event reported in the planning area occurred in Travis County in May of 1978 with reported wind speeds of 75 knots, or 86 mph. The most damaging event in the planning area was reported in Travis County in 2008 and caused more than $68,502,576 in damages (2022 dollars).

It is important to note that high wind events associated with other hazards, such as tornadoes, are not accounted for in this section. Property damage estimates are not always available. Where an estimate has been provided in a table for losses, the dollar amounts have been modified for inflation to indicate the damage in 2022 dollars.

Historical thunderstorm wind data for the ESD #6 is provided within the jurisdiction in which the special district resides as they do not have events reported separate and apart from jurisdiction events. There have been no reported losses as a result of thunderstorm wind for the special district.

Table 10-2. Historical Thunderstorm Wind Speeds, 1956-2022

MAXIMUM WIND SPEED RECORDED (KNOTS)	NUMBER OF REPORTED EVENTS
0-30	55
31-40	6
41-50	31
51-60	122
61-70	62
71-80	4
81-90	0
91-100+	0
Unknown	16

Table 10-3. Historical Thunderstorm Wind Events, 1956-2022[3]

JURISDICTION	DATE	TIME	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Lakeway	10/19/1993	10:45 PM	0	0	0	$0	$101,852

[3] Only recorded events with fatalities, injuries or damages are listed. Magnitude is listed when available. Damage values are in 2022 dollars.

SECTION 10: THUNDERSTORM WIND

JURISDICTION	DATE	TIME	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	10/19/1993	11:25 PM	0	0	0	$10,185	$10,185
Travis County	5/30/1993	6:59 PM	51	0	0	$0	$10,291
Travis County	5/29/1994	10:52 PM	53	0	0	$100,609	$10,061
Travis County	5/30/1994	12:15 AM	0	0	0	$100,609	$10,061
Travis County	11/4/1994	11:55 PM	57	0	0	$9,913	$0
Travis County	3/8/1995	1:39 AM	74	0	0	$98,018	$0
City of West Lake Hills	5/31/1995	11:02 PM	68	0	0	$195,005	$0
Travis County	6/11/1995	1:26 AM	65	0	0	$19,462	$19,462
Travis County	9/7/1995	8:00 PM	0	0	7	$5,811,952	$0
Travis County	8/31/1996	8:50 PM	Unknown	0	0	$9,434	$0
Travis County	9/20/1996	8:55 PM	Unknown	0	0	$37,617	$0
Travis County	4/4/1997	6:30 PM	Unknown	0	0	$370,533	$0
Travis County	3/7/1998	5:50 PM	Unknown	0	0	$274,473	$0
City of Creedmoor	4/8/1998	4:10 AM	Unknown	0	0	$45,661	$0
Travis County	4/26/1998	7:50 PM	Unknown	0	0	$146,115	$0
Travis County	8/29/1998	5:40 PM	Unknown	0	0	$18,164	$0
Travis County	5/24/1999	8:30 PM	Unknown	0	0	$89,289	$0
Travis County	5/26/1999	5:25 PM	Unknown	0	0	$125,005	$0
Travis County	4/11/2000	11:42 PM	51	0	0	$34,652	$0
City of Pflugerville	9/2/2000	5:20 PM	Unknown	0	0	$136,694	$0
Travis County	3/12/2001	1:30 AM	Unknown	0	5	$252,665	$0
City of Pflugerville	5/20/2001	9:10 PM	Unknown	0	10	$3,340,428	$167,021
Travis County	9/3/2001	8:05 PM	Unknown	0	0	$83,230	$0
Travis County	6/16/2002	2:00 AM	Unknown	0	0	$82,489	$0
Travis County	6/26/2002	7:20 PM	Unknown	0	0	$164,979	$0
Travis County	6/26/2002	7:00 PM	69	0	0	$494,937	$0
Travis County	12/23/2002	6:25 AM	Unknown	0	0	$16,407	$0

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JURISDICTION	DATE	TIME	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	6/13/2003	3:45 PM	56	0	0	$161,566	$0
Travis County	8/8/2003	3:23 PM	57	0	0	$160,778	$0
Travis County	8/11/2003	7:05 PM	60	0	0	$964,671	$0
Travis County	6/28/2004	4:40 PM	60	0	0	$31,291	$0
Travis County	5/4/2006	9:30 PM	64	0	0	$146,566	$0
Travis County	10/10/2006	6:17 AM	55	0	0	$147,075	$0
Travis County	4/13/2007	8:30 PM	55	0	0	$71,799	$0
Travis County	5/14/2008	11:30 PM	70	0	0	$68,502,576	$0
Travis County	6/21/2008	1:00 PM	50	0	0	$6,782	$0
Travis County	3/25/2009	4:45 PM	39	0	0	$69,766	$0
Travis County	4/2/2009	10:29 AM	45	0	0	$13,918	$0
Travis County	4/2/2009	1:07 PM	45	0	0	$13,918	$0
Travis County	4/2/2009	1:37 PM	40	0	0	$13,918	$0
Travis County	4/2/2009	1:55 PM	39	0	0	$13,918	$0
Travis County	4/2/2009	2:17 PM	40	0	0	$13,918	$0
Travis County	4/2/2009	2:40 PM	45	0	0	$139,184	$0
Travis County	8/12/2009	2:55 PM	50	0	0	$2,750	$0
Travis County	8/26/2009	7:32 PM	52	0	0	$2,750	$0
Travis County	8/27/2009	4:40 PM	50	0	0	$13,751	$0
City of Manor	4/11/2011	4:05 AM	50	0	0	$660	$0
Travis County	5/20/2011	7:10 PM	40	0	0	$1,313	$0
Travis County	7/15/2012	4:25 PM	50	0	0	$19,432	$0
Travis County	4/7/2014	6:35 PM	48	0	0	$2,504	$0
Travis County	5/26/2014	11:00 AM	35	0	0	$1,248	$0
City of Lakeway	6/12/2014	8:45 PM	70	0	0	$6,226	$0
City of Lakeway	6/12/2014	9:05 PM	74	0	0	$249,050	$0
Travis County	4/18/2015	8:25 PM	50	0	0	$1,254	$0
Travis County	4/18/2015	8:30 PM	50	0	0	$12,544	$0

SECTION 10: THUNDERSTORM WIND

JURISDICTION	DATE	TIME	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	4/18/2015	8:30 PM	50	0	0	$12,544	$0
Travis County	10/30/2015	8:50 AM	50	0	0	$623,948	$0
Travis County	4/2/2017	8:40 AM	52	0	0	$18,207	$0
City of Lakeway	4/2/2017	8:20 AM	70	0	0	$1,213,775	$0
City of Lakeway	4/2/2017	8:19 AM	70	0	0	$1,213,775	$0
Travis County	5/28/2017	5:45 PM	61	0	0	$1,213	$0
Travis County	5/28/2017	5:55 PM	52	0	0	$1,213	$0
Travis County	5/28/2017	5:58 PM	52	0	0	$1,213	$0
Travis County	4/13/2018	9:00 PM	56	0	0	$59,230	$0
Travis County	5/15/2018	6:09 PM	61	0	0	$58,985	$0
Travis County	6/3/2018	11:41 PM	56	0	0	$2,356	$0
Travis County	6/3/2018	11:42 PM	56	0	0	$1,178	$0
City of Pflugerville	6/3/2018	11:15 PM	56	0	0	$1,178	$0
Travis County	6/4/2018	12:00 AM	65	0	2	$29,445	$0
Travis County	6/9/2019	6:37 PM	61	0	0	$5,794	$0
Travis County	6/9/2019	6:42 PM	61	0	0	$5,794	$0
City of Creedmoor	6/9/2019	6:30 PM	52	0	0	$5,794	$0
City of Jonestown	6/9/2019	6:53 PM	56	0	0	$2,317	$0
City of Manor	6/9/2019	6:15 PM	52	0	0	$11,587	$0
Travis County	4/29/2020	4:03 AM	52	0	0	$1,158	$0
Travis County	7/31/2020	3:25 PM	56	0	0	$2,291	$0
Travis County	8/22/2020	5:05 AM	61	0	0	$1,141,887	$0
Travis County	9/9/2020	12:10 PM	65	0	0	$11,403	$0
Travis County	10/27/2021	3:55 AM	52	0	0	$5,365	$0
Travis County	1/15/2022	11:00 AM	48	0	0	$2,111	$0
Travis County	5/24/2022	10:18 PM	52	0	0	$1,015	$0
Travis County	5/24/2022	10:20 PM	52	0	0	$1,015	$0
City of Pflugerville	5/24/2022	10:34 PM	52	0	0	$1,015	$0

SECTION 10: THUNDERSTORM WIND

JURISDICTION	DATE	TIME	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Pflugerville	5/24/2022	10:27 PM	52	0	0	$1,015	$0
City of Creedmoor	7/10/2022	4:32 PM	65	0	0	$100,176	$0
Travis County	10/24/2022	8:03 PM	52	0	0	$1,992	$0
Travis County	10/24/2022	8:25 PM	52	0	0	$4,980	$0
TOTALS			**(MAX EXTENT)**	**5**	**26**	**$87,398,620**	**$328,933**

Table 10-4. Summary of Historical Events by Jurisdiction, 1956-2022[4]

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	265	75	5	16	$80,874,264	$60,060
Village of Briarcliff	0	-	-	-	-	-
City of Creedmoor	3	65	0	0	$151,631	$0
City of Jonestown	1	56	0	0	$2,317	$0
City of Lago Vista	0	-	-	-	-	-
City of Lakeway	8	74	0	0	$2,682,826	$101,852
City of Manor	8	70	0	0	$12,247	$0
City of Mustang Ridge	0	-	-	-	-	-
City of Pflugerville	10	63	0	10	$3,480,330	$167,021
Village of Point Venture	0	-	-	-	-	-
City of Rollingwood	0	-	-	-	-	-
Village of San Leanna	0	-	-	-	-	-
City of Sunset Valley	0	-	-	-	-	-
Village of The Hills	0	-	-	-	-	-
City of West Lake Hills	1	68	0	0	$195,005	$0
ESD #6	0	-	-	-	-	-
TOTALS	**296**	**(MAX EXTENT)**	**5**	**26**	**$87,727,553**	

[4] Participating jurisdictions with no reported events show a "-" in table columns where damages, deaths or injuries would be otherwise reported.

SECTION 10: THUNDERSTORM WIND

Based on the list of historical thunderstorm wind events for the Travis County planning area, including participating jurisdictions and ESD #6, 42 of the events have occurred since the 2017 Plan that have caused impacts to the planning area.

SIGNIFICANT EVENTS

August 22, 2020 – Travis County

An upper-level low over the Lower Mississippi River valley and a stationary boundary combined to generate thunderstorms within South Central Texas producing damaging wind gusts. Wind gusts were estimated to be around 60 and 70 knots (69 to 80 mph). Reports indicated damage sustained to boats, docks, and roofs at the Lake Travis Marina. Total damages estimates were estimated at $1,141,887 (2022 dollars).

April 2, 2017 – Travis County / City of Lakeway

An upper-level low moved out of Mexico and pushed a cold front through Texas, generating severe thunderstorms. Several houses sustained damages around the City of Lakeway area, in addition to several lake shore marinas and a floating restaurant sustaining damages due to estimated winds at around 70 knots (80 mph). Estimates of damage were reported to be incomplete but estimated to be around $1,193,925 (2022 dollars).

March 25, 2014 – Travis County

An upper-level low and surface cold front moved through South Central Texas producing thunderstorms. These storms produced a few tornadoes and damaging wind gusts across many areas of South Central Texas. Within Travis County, neat Austin-Lakeway Airport, a thunderstorm produced wind gusts estimated around 74 knots (85 mph) cause residential structure damages to roofs and deck in addition to down trees impacting residences. Total damages were reported to be $247,242 (2022 dollars).

May 20, 2001 – City of Pflugerville

A thunderstorm complex headed eastward resulting in winds measuring between 50 and 60 knots (56 mph and 69 mph), with estimated high of 80 knots (92 mph). These winds were accompanied by very large hail which resulted in residential structural damage to roof and down power lines between City of Round Rock and City of Pflugerville. Nearly 300 mobile homes were damaged by the winds. The storm event left nearly 20,000 residents without power for several hours. Total damage estimates were approximate total losses $3,507,449 (2022 dollars), with approximately 10 injuries sustained from the event.

PROBABILITY OF FUTURE EVENTS

Most thunderstorm winds occur during the spring and fall seasons and during the months of March, April, May, and September. Based on available records of historic events, there have been a total of 296 events in a 67-year reporting period, which provides a probability of five to six events every year. Even though the intensity of thunderstorm wind events is not always damaging for the Travis County planning area, including participating jurisdictions and ESD #6, the frequency of occurrence for a thunderstorm wind event is highly likely. This means that an event is probable within the next year for the Travis County planning area. See additional information on climate change at the end of this section.

VULNERABILITY AND IMPACT

Vulnerability is difficult to evaluate since thunderstorm wind events can occur at different strength levels, in random locations, and can create relatively narrow paths of destruction. Due to the randomness of these events, all existing and future structures and facilities within the Travis County planning area, including participating jurisdictions and ESD #6, could potentially be impacted and remain vulnerable to possible injury and property loss from strong winds.

Trees, power lines and poles, signage, manufactured housing, radio towers, concrete block walls, storage barns, windows, garbage recepticles, brick facades, and vehicles, unless reinforced, are vulnerable to thunderstorm wind events. More severe damage involves windborne debris; in some instances, patio furniture and other lawn items have been reported to have been blown around by wind and, very commonly, debris from damaged structures in turn have caused damage to other buildings not directly impacted by the event. In numerous instances roofs have been reported as having been torn off of buildings. The portable buildings typically used at schools and construction sites would be more vulnerable to thunderstorm wind events than typical site-built structures and could potentially pose a greater risk for wind-blown debris.

According to the American Community Survey (ACS) five-year estimates for 2021, a total of 18,252 manufactured homes are located in the Travis County planning area (3.3 percent of total housing stock). In addition, 27 percent (approximately 149,603 structures) of the housing units were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damage during significant wind events. Based on 2021 ACS five-year estimates, the City of Lakeway and the City of Pflugerville have the highest reported number of single-family residences built before 1980, indicating greater vulnerability in terms of at-risk structures.

Table 10-5. Structures at Greater Risk by Participating Jurisdiction

JURISDICTION	SFR STRUCTURES BUILT BEFORE 1980	MANUFACTURED HOMES
Travis County[5]	149,603	18,252
Village of Briarcliff	79	0
City of Creedmoor	42	21
City of Jonestown	269	74
City of Lago Vista	706	239
City of Lakeway	1,040	0
City of Manor	312	289
City of Mustang Ridge	82	140
City of Pflugerville	779	408

[5] County totals includes all jurisdictions and unincorporated areas within the county.

JURISDICTION	SFR STRUCTURES BUILT BEFORE 1980	MANUFACTURED HOMES
Village of Point Venture	226	0
City of Rollingwood	223	0
Village of San Leanna	92	0
City of Sunset Valley	87	0
Village of The Hills	30	0
City of West Lake Hills	546	9
ESD #6	0	0

While all citizens are vulnerable to the impacts of thunderstorm wind, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 10.7 percent of the planning area population live below the poverty level (Table 10-6). While warning times for these type of hazard events should be substantial enough for these individuals to seek shelter, individuals who work and recreate outside (Table 10-7) are also vulnerable to potential impacts of a thunderstorm wind event.

Table 10-6 Populations at Greatest Risk by Jurisdiction[6]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Travis County	135,654
Village of Briarcliff	66
City of Creedmoor	60
City of Jonestown	229
City of Lago Vista	316
City of Lakeway	554
City of Manor	975
City of Mustang Ridge	85
City of Pflugerville	3392
Village of Point Venture	47
City of Rollingwood	0

[6] US Census Bureau 2022 data for Travis County.

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Village of San Leanna	9
City of Sunset Valley	26
Village of The Hills	62
City of West Lake Hills	209
ESD #6	N/A

Table 10-7. Outdoor Employees by Participating Special District

ESD	EMPLOYEES WORKING OUTDOORS
ESD #6	108

The Travis County Planning Team identified the following critical facilities (Table 10-8) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by thunderstorm wind events. The critical infrastructure with the greatest vulnerability to thunderstorms are power and communications facilities. Failures of these facilities can result in a loss of service and cascading impacts such as posing enormous risk to individuals dependent on electricity as a medical necessity. For a comprehensive list by participating jurisdiction see Appendix C.

Table 10-8. Critical Facilities Vulnerable to Thunderstorm Wind Event

CRITICAL FACILITY TYPE	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by falling trees or flying debris. • Power outages could disrupt communications, delaying emergency response times. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities. • Debris/downed trees can impede emergency response vehicle access to areas. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel. • First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters,	• Structures can be damaged by falling trees or flying debris. • Power outages could disrupt critical care. • Backup power sources could be damaged.

CRITICAL FACILITY TYPE	POTENTIAL IMPACTS
Governmental Facilities, Residential/ Assisted Living Facilities	• Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities. • Evacuations may be necessary due to extended power outages, gas line ruptures, or structural damage to facilities. • Power outages and infrastructure damage may prevent larger airports from acting as temporary command centers for logistics, communications, and emergency operations. • Temporary break in operations may significantly inhibit post event evacuations. • Damaged or destroyed highway infrastructure may substantially increase the need for airport operations.
Commercial Supplier (food, fuel, etc.)	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed. • Economic disruption due to power outages and fires negatively impact airport services as well as area businesses reliant on airport operations.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by falling trees or flying debris. • Power outages could disrupt communications, delaying emergency response times. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities. • Debris/downed trees can impede emergency response vehicle access to areas. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel.

A thunderstorm wind event can also result in traffic disruptions, injuries and in rare cases, fatalities. Impact of thunderstorms winds experienced in the Travis County planning area has resulted in twenty-six injuries and five fatalities. Impact of thunderstorm wind events experienced in Travis County planning area, including participating jurisdictions and ESD #6, would be considered “Limited,” with less than 10 percent of property expected to be destroyed and critical facilities shut down for less than 24-hours. However, with twenty-six injuries and five fatalities, the impact is considered “Substantial” with multiple injuries possible depending on the severity of the event. Overall, in the past 67 years there has been a total of $87,727,553 damages (in 2022 dollars) in the Travis County planning area due to thunderstorm wind events. The estimated average annual loss from a thunderstorm wind event is $1,309,367.

Table 10-9. Estimated Annualized Losses by Participating Jurisdiction

JURISDICTION	TOTAL PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Travis County	$80,934,324	$1,207,975
Village of Briarcliff	-	-
City of Creedmoor	$151,631	$2,263
City of Jonestown	$2,317	$35
City of Lago Vista	-	-
City of Lakeway	$2,784,678	$41,562
City of Manor	$12,247	$183
City of Mustang Ridge	-	-
City of Pflugerville	$3,647,351	$54,438
Village of Point Venture	-	-
City of Rollingwood	-	-
Village of San Leanna	-	-
City of Sunset Valley	-	-
Village of The Hills	-	-
City of West Lake Hills	$195,005	$2,911
ESD #6	-	-
TOTALS	**$87,727,553**	**$1,309,367**

ASSESSMENT OF IMPACTS

Thunderstorm wind events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. Thunderstorm wind conditions can be frequently associated with a variety of impacts, including:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.

- Thunderstorm wind events often result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning, as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- Critical staff may be unable to report for duty, limiting response capabilities.
- Private sector entities that residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Some businesses not directly damaged by thunderstorm wind events may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Older structures, specifically those built before 1980 (27 percent of the planning area), were built to less stringent building codes may suffer greater damage as they are typically more vulnerable to thunderstorm winds.
- Recreational areas such as community parks and green spaces may be damaged or inaccessible due to downed trees or debris, causing temporary impacts to associated businesses in the area.
- Historical sites and properties are placed at a higher risk of impact due to materials used and the inability to change properties due to their historic status. One site in the Travis County planning area, the City of Pflugerville East Main Street Historic District, is listed on the National Register of Historic Places.

The economic and financial impacts of thunderstorm winds on the area will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses, and citizens will also contribute to the overall economic and financial conditions in the aftermath of any thunderstorm wind event.

CLIMATE CHANGE CONSIDERATIONS

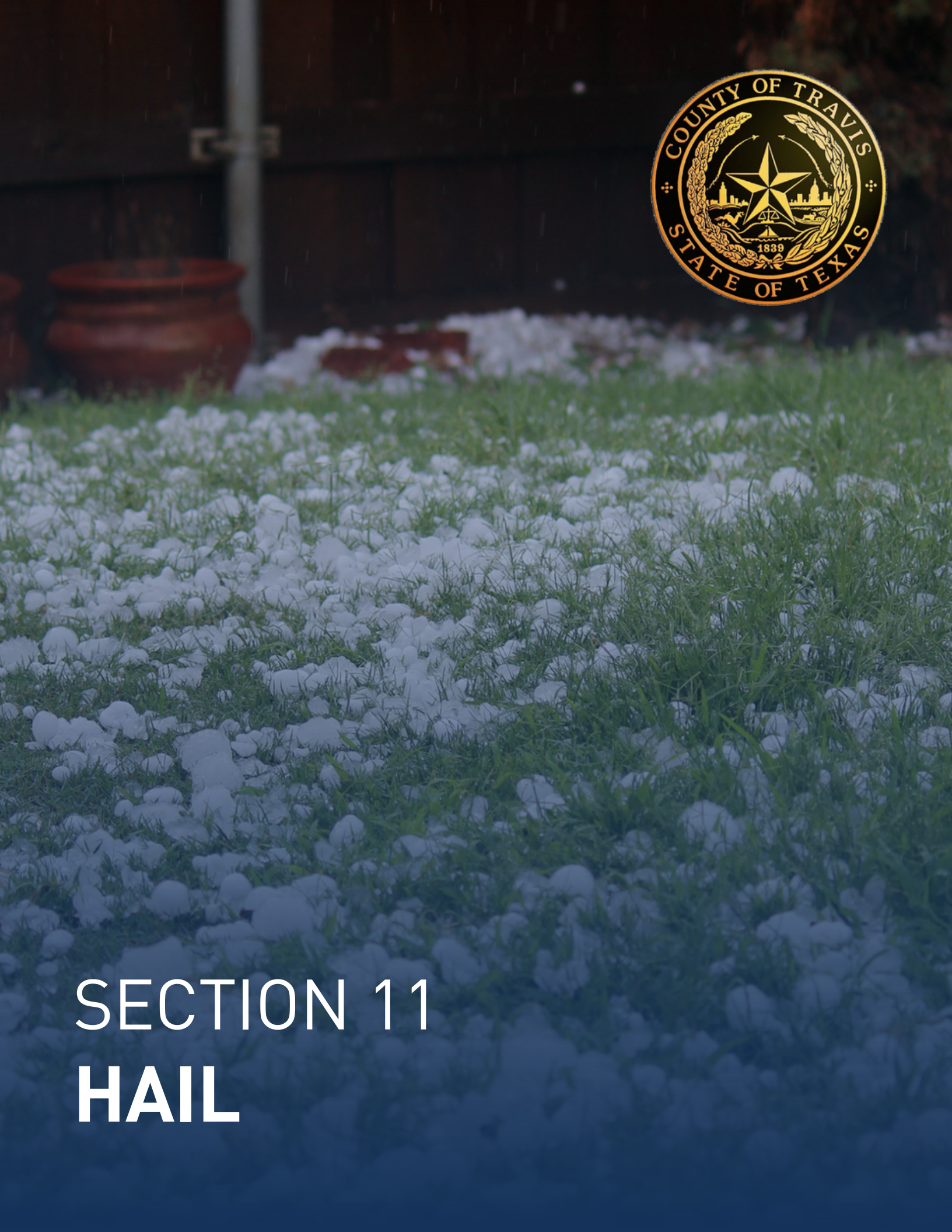
The impacts on the frequency and severity of severe thunderstorm wind events due to climate change are unclear. According to the Texas A&M 2021 Climate Report Update, changes in severe thunderstorm reports over time have been more closely linked to changes in population than changes in the hazard event. At this time there is low confidence of an ongoing trend in the overall frequency and severity of thunderstorm events, due to the lack of climate data records for severe thunderstorms. Based on climate models that are available, the environmental conditions needed for severe thunderstorms are estimated to become more likely, resulting in an overall increase in the number of days capable of producing a severe thunderstorm event.[7]

[7] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 Update.

SECTION 10: THUNDERSTORM WIND

According to the University of Texas at Austin technical report for the City of Austin, the expected number of windy days are projected to increase for the planning area while the number of calm days, or days where wind speed is less than 2 meters per seconds, are expected to decrease.[8]

[8] University of Texas at Austin, February 2023, Austin Future Climate, Climate Change Predictions for the City of Austin 2022, Technical Report.



SECTION 11
HAIL

SECTION 11: HAIL

HAZARD DESCRIPTION

Hailstorm events are a potentially damaging outgrowth of severe thunderstorms. During the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere, and the subsequent cooling of the air mass. Frozen droplets gradually accumulate into ice crystals until they fall as precipitation that is round or irregularly shaped masses of ice typically greater than 0.75 inches in diameter. The size of hailstones is a direct result of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a by-product of heating on the Earth's surface. Higher temperature gradients above Earth's surface result in increased suspension time and hailstone size.

According to the National Insurance Crime Bureau (NICB), between 2018 and 2020 the State of Texas had the greatest number of hail loss claims in the U.S. with 605,866 loss claims (23 percent of total hail claims in the U.S.) due to hail events. In this two-year period Texas experienced a total of 584 severe hail days. Five of the top ten cities for hail loss claims between 2017 and 2019 were in Texas, three of which were in the Dallas-Fort Worth metropolitan area.[1]

In 2021, 6.8 million properties in the U.S. experienced one or more damaging hail events, resulting in a total of $16.5 billion in insured losses. Texas had the highest number of properties affected by hail with over 1.5 million properties or 17 percent of total properties in the state affected; an increase of 80,000 properties affected between 2020 and 2021. Texas hailstorms accounted for almost a quarter of total U.S. properties affected by hail in 2021.

LOCATION

Hailstorms are an extension of severe thunderstorms that could potentially cause severe damage. As a result, they are not confined to any specific geographic location and can vary greatly in size, location, intensity, and duration. Therefore, the entire Travis County planning area, including

[1] Manasek, Thomas, "2018-2020 United States Hail Loss Claims and Questionable Claims" (National Insurance Crime Bureau, March 15, 2021). http://www.rmiia.org/downloads/PUBLIC%202018%20-%202020%20Hail%20foreCAST-%20TJM.pdf

participating jurisdictions and ESD #6, is equally at risk to the hazard of hail. Refer to Figure 11-1 for the location of past hail events in the planning area.

EXTENT

The National Weather Service (NWS) classifies a storm as "severe" if there is hail three-quarters of an inch in diameter (approximately the size of a penny) or greater, based on radar intensity or as seen by observers. The intensity category of a hailstorm depends on hail size and the potential damage it could cause, as depicted in the National Centers for Environmental Information (NCEI) Intensity Scale in Table 11-1.

Table 11-1. Hail Intensity and Magnitude[2]

SIZE CODE	INTENSITY CATEGORY	SIZE (Diameter Inches)	DESCRIPTIVE TERM	TYPICAL DAMAGE
H0	Hard Hail	Up to 0.33	Pea	No damage
H1	Potentially Damaging	0.33 – 0.60	Marble	Slight damage to plants and crops
H2	Potentially Damaging	0.60 – 0.80	Dime	Significant damage to plants and crops
H3	Severe	0.80 – 1.20	Nickel	Severe damage to plants and crops
H4	Severe	1.2 – 1.6	Quarter	Widespread glass and auto damage
H5	Destructive	1.6 – 2.0	Half Dollar	Widespread destruction of glass, roofs, and risk of injuries
H6	Destructive	2.0 – 2.4	Ping Pong Ball	Aircraft bodywork dented and brick walls pitted
H7	Very Destructive	2.4 – 3.0	Golf Ball	Severe roof damage and risk of serious injuries
H8	Very Destructive	3.0 – 3.5	Hen Egg	Severe damage to all structures
H9	Super Hailstorms	3.5 – 4.0	Tennis Ball	Extensive structural damage, could cause fatal injuries
H10	Super Hailstorms	4.0 +	Baseball	Extensive structural damage, could cause fatal injuries

The intensity scale in Table 11-1 ranges from H0 to H10, with increments of intensity or damage potential in relation to hail size (distribution and maximum), texture, fall speed, speed of storm translation, and strength of the accompanying wind. Based on the best available data regarding the previous occurrences for the area, the Travis County planning area, including participating

[2] NCEI Intensity Scale, based on the TORRO Hailstorm Intensity Scale.

jurisdictions and ESD #6, may experience hailstorms ranging from an H0 (pea size) to an H10 (baseball size). The largest hail event in the Travis County planning area took place on May 14, 2008, and resulted in hail measuring 4 inches in diameter, or a H10, which is considered a very destructive hailstorm that can cause severe damage to structures. Refer to the Historical Occurrences section below for more details on this event. This is likely the greatest extent the planning area can anticipate in the future.

HISTORICAL OCCURRENCES

Historical evidence shown in Figure 11-1 demonstrates that the planning area is vulnerable to hail events overall. Historical events with reported damages, injuries, or fatalities are shown in Table 11-2. A total of 426 reported historical hail events impacted the Travis County planning area, including participating jurisdictions and ESD #6, between 1955 through 2022; these events were reported to NCEI and NOAA databases and may not represent all hail events to have occurred during the past 68 years. Only those events for the Travis County planning area with latitude and longitude available were plotted (Figure 11-1).

Historical hail data for the ESD #6 are provided within the county or city events per the NCEI database as they do not have events reported separate and apart from those jurisdictions. According to the Planning Team, there have been no reported losses as a result of hail events for the district.

Figure 11-1. Spatial Historical Hail Events, 1955-2022

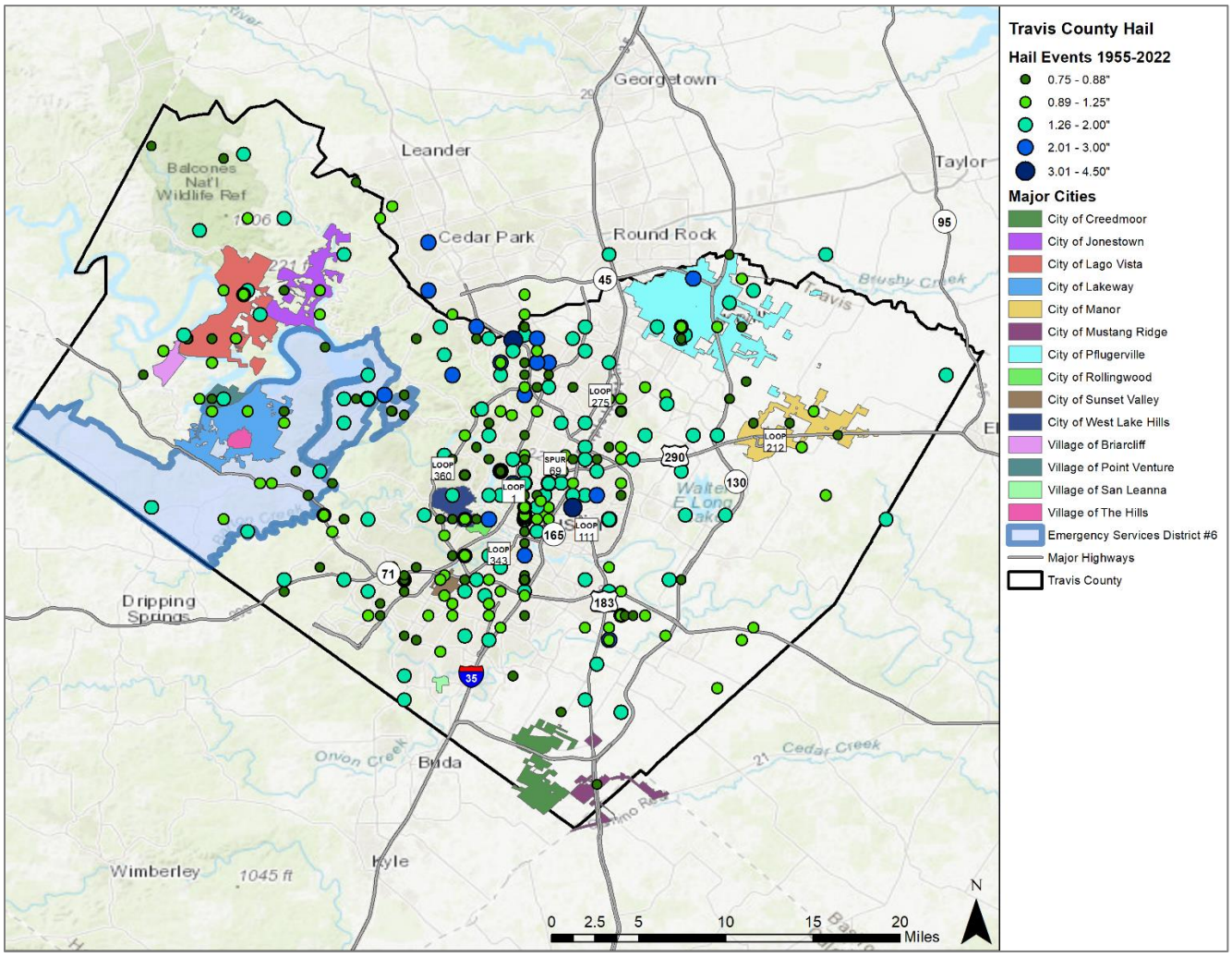


Table 11-2. Historical Hail Events, 1955-2022[3]

JURISDICTION	DATE	MAGNITUDE (Inches)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Austin	3/25/1993	1.75	0	0	$103,342	$0
Travis County	3/25/1993	1.5	0	0	$103,342	$0
City of Austin	3/25/1993	1.75	0	0	$1,033,416	$0
Travis County	3/25/1993	2	0	0	$103,341,574	$0
City of Austin	3/25/1993	2	0	0	$155,012,361	$10,334

[3] Only recorded events with damages are listed. No reports of injuries or fatalities were recorded in the NCEI database. Events reported for the City of Austin have been included under Travis County events within the Historic Hail Events Summary Table 11-3. The City of Austin is not a participant in this plan.

JURISDICTION	DATE	MAGNITUDE (Inches)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	3/25/1993	1.75	0	0	$103,342	$0
City of Pflugerville	5/30/1993	1.25	0	0	$102,912	$0
City of Austin	4/5/1994	0.75	0	0	$1,006,774	$100,677
Travis County	9/20/1996	2	0	0	$18,808	$0
Northwest Austin	10/17/1996	1.5	0	0	$37,498	$0
City of Austin	10/17/1996	Unknown	0	0	$18,749	$0
City of Austin	10/20/2002	1.75	0	0	$818,525	$0
City of Austin	8/11/2003	1.75	0	0	$160,778	$0
City Lago Vista	4/6/2004	1.75	0	0	$315,741	$0
City Lago Vista	4/13/2004	1	0	0	$789,354	$0
City Lago Vista	3/25/2005	2	0	0	$153,542,162	$0
(Aus)Mueller Muni Airport	5/14/2008	2.75	0	0	$137,005	$0
(Aus)Mueller Muni Airport	5/14/2008	4	0	0	$1,370	$0
City of Austin	5/14/2008	1.75	0	0	$1,370	$0
Austin Mabry	5/14/2008	2	0	0	$137,005	$0
(Aus)Mueller Muni Airport	5/14/2008	2.75	0	0	$137,005	$0
Travis County	3/25/2009	2	0	0	$13,953	$0
City of Jonestown	3/25/2009	3	0	0	$223,251,108	$0
Travis County	4/27/2014	1.25	0	0	$1,252	$0
City Pflugerville	4/15/2021	2	0	0	$1,111	$0
TOTALS		**(Max Extent)**	**0**	**0**	**$640,189,857**	**$142,013**

Table 11-3. Historical Hail Events Summary, 1955-2022[4]

JURISDICTION	NUMBER of EVENTS	MAX MAGNITUDE (Inches)	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Travis County	383	4	0	0	$262,187,469	$142,013

[4] Participating jurisdictions with no reported events show a "-" in table columns where damages, deaths or injuries would be otherwise reported.

JURISDICTION	NUMBER of EVENTS	MAX MAGNITUDE (Inches)	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Village of Briarcliff	0	-	-	-	-	-
City of Creedmoor	1	0.88	0	0	$0	$0
City of Jonestown	4	3	0	0	$223,251,108	$0
City of Lago Vista	9	2	0	0	$154,647,257	$0
City of Lakeway	7	1.75	0	0	$0	$0
City of Manor	4	1	0	0	$0	$0
City of Mustang Ridge	0	-	-	-	-	-
City of Pflugerville	13	2	0	0	$104,023	$0
Village of Point Venture	0	-	-	-	-	-
City of Rollingwood	0	-	-	-	-	-
Village of San Leanna	0	-	-	-	-	-
City of Sunset Valley	0	-	-	-	-	-
Village of The Hills	0	-	-	-	-	-
City of West Lake Hills	5	1.75	0	0	$0	$0
ESD #6	0	-	-	-	-	-
TOTAL LOSSES	**426**	**(Max Extent)**	**0**	**0**	**$640,189,857**	**$142,013**

Based on the list of historical hail events for the Travis County planning area (listed above), including participating jurisdictions and ESD #6, 75 of the events have occurred since 2017 Plan according to reports in the NCEI database. Unincorporated Travis County has had the greatest number of events (383) over the reporting period followed by City of Pflugerville (13) and City of Lago Vista (9). The most significant event in relation to damages occurred on March 25, 2009, in the City of Jonestown, with just over $223 million in damages (2022 dollars) with hail reported as large as 3 inches in diameter.

SIGNIFICANT EVENTS

March 25, 2021 – Travis County

An upper-level low moved into west Texas and provided lift to generate convection. There was a warm, moist airmass over South Central Texas and a warm front just north of the area. The front acted as a focus for convection and some of the storms produced large hail. Hail 1 inch to 2 inches were reported northeast of the City of Austin.

March 25, 2009 – Travis County
A cold front stalled across South Central Texas on the morning of March 25th. Thunderstorms reached the Edwards Plateau by early afternoon and continued moving toward the east into the evening. Total estimated loss from this storm is around $223 million (2022 dollars), the most ever for a Travis County hailstorm. The storm produced hail ranging from quarter to teacup size. The Emergency Operations Center (EOC) received 14 reports of severe size hail, 9 of which were 2 inches or larger. The teacup size hail was reported by the media and fell near the Austin Arboretum.

May 14, 2008 – Travis County
A severe thunderstorm to the southwest of the City of Austin moved northeast across the downtown area causing extensive damage from winds and large hail. Numerous windows were broken from large hail near the 26th and Rio Grande intersection on the UT campus. Reports of nickel to golf ball size hail were reported.

March 25, 2005 – Travis County
On the evening of March 25, the most destructive hailstorm in 10 years struck Travis County. The total damage to homes, vehicles, businesses, and property has been estimated at over $100 million. The event began as two supercells located near Marble Falls and Round Mountain merged into a line of thunderstorms as they moved eastward into Travis County. This new line stretched from near City of Lago Vista on the north edge, across Lake Travis and City of Lakeway, to near Bee Cave. The storm began producing hail up to golf-ball-size at Lake Travis and City of Lakeway. At the same time, near the mid part of the line, a combination of large hail and damaging winds struck near FM 620 and Anderson Mill Road. The storm knocked out power to 5,000 homes from northwest Cit of Austin to the Oak Hills area. As the hailstorm crossed the central and south portions of the county, it shattered windows in hundreds of homes and thousands of cars, as well as denting thousands of cars. The storm continued on toward City of Manor, producing 1 inch hail in 3-to-6-inch drifts in the City of Manor area, just prior to producing an F1 tornado.

PROBABILITY OF FUTURE EVENTS

Based on available records of historic events, 426 events in a 68-year reporting period for Travis County provides an average annual occurrence of six events per year. This frequency supports a highly likely probability of future events for the Travis County planning area, including participating jurisdictions and ESD #6. See additional information on climate change at the end of this section.

VULNERABILITY AND IMPACT

Much of the damage inflicted by hail is to crops. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are most commonly damaged by hail.

Utility systems on roofs at school districts and of county-wide buildings and critical facilities would be vulnerable and could be damaged. Hail could cause a significant threat to people, as they could be struck by hail and falling trees and branches. Outdoor activities and events may elevate the risk to residents and visitors when a hailstorm strikes with little warning. Portable buildings typically utilized by schools and commercial sites such as construction areas would be more vulnerable to hail events than the typical site-built structures.

The Travis County planning area features mobile or manufactured home parks throughout the planning area. These parks are typically more vulnerable to hail events than typical site-built structures. In addition, manufactured homes are located sporadically throughout the planning area including all participating jurisdictions which would also be more vulnerable. The U.S. Census data indicates a total of 18,252 (3.3 percent of total housing stock) manufactured homes located in the Travis County planning area. In addition, 27 percent (approximately 149,603 structures) of the housing structures in the Travis County planning area were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damages during significant wind events.

Table 11-4. Structures at Greater Risk by Participating Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Travis County	18,252	149,603
Village of Briarcliff	0	79
City of Creedmoor	21	42
City of Jonestown	74	269
City of Lago Vista	239	706
City of Lakeway	0	1,040
City of Manor	289	312
City of Mustang Ridge	140	82
City of Pflugerville	408	779
Village of Point Venture	0	226
City of Rollingwood	0	223
Village of San Leanna	0	92
City of Sunset Valley	0	87
Village of The Hills	0	30
City of West Lake Hills	9	546
ESD #6	0	0

While all citizens are at risk of the impacts of a hail, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 10.7 percent of the planning area population live below the poverty level (Table 11-5). While warning times for this type of hazard events should be substantial enough for these individuals to seek shelter,

individuals who work and recreate outside (Table 11-6) are also vulnerable to potential impacts of a hail event.

Table 11-5. Populations at Greatest Risk by Jurisdiction[5]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Travis County	135,654
Village of Briarcliff	66
City of Creedmoor	60
City of Jonestown	229
City of Lago Vista	316
City of Lakeway	554
City of Manor	975
City of Mustang Ridge	85
City of Pflugerville	3392
Village of Point Venture	47
City of Rollingwood	0
Village of San Leanna	9
City of Sunset Valley	26
Village of The Hills	62
City of West Lake Hills	209
ESD #6	N/A

Table 11-6. Outdoor Employees by Participating Special District

ESD	EMPLOYEES WORKING OUTDOORS
ESD #6	108

The Travis County Planning Team identified the following critical facilities (Table 11-7) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by hail events. For a comprehensive list by participating jurisdiction see Appendix C.

[5] US Census Bureau 2021 data for Travis County

Table 11-7. Critical Facilities Vulnerable to Hail

CRITICAL FACILITY TYPE	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by hailstones. • Power outages could disrupt communications, delaying emergency response times. • Accumulated hail on the streets may impede emergency response vehicle access to areas. • Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Structures can be damaged by hailstones. • Power outages could disrupt critical care. • Backup power sources could be damaged. • Evacuations may be necessary due to extended power outages, gas line ruptures, or structural damage to facilities. • Power outages and infrastructure damage may prevent larger airports from acting as temporary command centers for logistics, communications, and emergency operations. • Temporary break in operations may significantly inhibit post event evacuations. • Damaged or destroyed highway infrastructure may substantially increase the need for airport operations.
Commercial Supplier (food, fuel, etc.)	• Facilities or infrastructure may be damaged, destroyed or otherwise inaccessible. • Essential supplies like medicines, water, food, and equipment deliveries may be significantly delayed.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Power outages could disrupt communications, delaying emergency response times. • Accumulated hail on the streets may impede service response vehicle access to areas. • Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.

Hail has been known to cause injury to humans and occasionally has been fatal. Overall, the average loss estimate of property and crops in the planning area is considered $56,189,978 with an average annualized loss of $826,324. Based on historic loss and damages, the impact of hail damages on the Travis County planning area can be considered “Limited” severity of impact, meaning minor quality of life lost, critical facilities and services shut down for 24 hours or less, and less than 10 percent of property destroyed or with major damage.

Table 11-8. Estimated Annualized Losses by Jurisdiction

JURISDICTION	TOTAL PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATE
Travis County	$262,329,482	$3,857,787
Village of Briarcliff	$0	$0
City of Creedmoor	$0	$0
City of Jonestown	$223,251,108	$3,283,105
City of Lago Vista	$154,647,257	$2,274,224
City of Lakeway	$0	$0
City of Manor	$0	$0
City of Mustang Ridge	$0	$0
City of Pflugerville	$104,023	$1,530
Village of Point Venture	$0	$0
City of Rollingwood	$0	$0
Village of San Leanna	$0	$0
City of Sunset Valley	$0	$0
Village of The Hills	$0	$0
City of West Lake Hills	$0	$0
ESD #6	$0	$0
Planning Area Totals	**$640,331,870**	**$9,416,645**

ASSESSMENT OF IMPACTS

Hail events have the potential to pose a significant risk to people and can create dangerous situations Hail conditions can be frequently associated with a variety of impacts, including:

- Hail may create hazardous road conditions during and immediately following an event, potentially delaying critical staff from reporting for duty as well as delaying first responders from providing for or preserving public health and safety and.
- Individuals and first responders who are exposed to the storm may be struck by hail, falling branches, or downed trees resulting in injuries or possible fatalities.
- Large hail events will likely cause extensive roof damage to residential structures along with siding damage and broken windows, creating a spike in insurance claims and a rise in premiums, and potentially result in physical harm to occupants.
- Automobile damage may be extensive depending on the size of the hail and length of the storm.

- Hail events can result in power outages over widespread areas increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- First responders are exposed to downed power lines, damaged structures, hazardous spills, and debris that often accompany hail events, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Some businesses not directly damaged by the hail event may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damage without a backup power source.
- Depending on the severity and scale of damage caused by large hail events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- A significant hail event could significantly damage agricultural crops, resulting in extensive economic losses for the community and surrounding area.
- Hail events may injure or kill livestock and wildlife or destroy wildlife habitat at locations such as the Balcones Canyonland Preserve and the National Wildlife Refuge.
- A large hail event could impact the accessibility of recreational areas and parks due to extended power outages or debris clogged access roads.
- Historical sites and properties are placed at a higher risk of impact due to materials used and the inability to change properties due to their historic status. One site in the Travis County planning area, the City of Pflugerville East Main Street Historic District, is listed on the National Register of Historic Places.

The economic and financial impacts of hail will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning conducted by the community, local businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of any hail event.

CLIMATE CHANGE CONSIDERATIONS

While the impact of climate change on the frequency and severity hailstorm events is unclear, the increase of warmer temperatures will likely lead to less hail events during the summer months but is expected to increase the risk of large hailstones during the spring season.[6]

[6] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.

SECTION 12
WINTER STORM

SECTION 12: WINTER STORM

HAZARD DESCRIPTION

A severe winter storm event is identified as a storm with snow, ice, or freezing rain. This type of storm can cause significant problems for area residents. Winter storms are associated with freezing or frozen precipitation such as freezing rain, sleet, snow, and the combined effects of winter precipitation and strong winds. Wind chill is a function of temperature and wind. Low wind chill is a product of high winds and freezing temperatures.

Winter storms that threaten the Travis County planning area, including participating jurisdictions and ESD #6, usually begin as powerful cold fronts that push south from central Canada. Although the county is at risk of ice hazards, extremely cold temperatures, and snow, the effects and frequencies of winter storm events are generally mild and short-lived.

As indicated in Figure 12-1, the Travis County planning area, including participating jurisdictions and ESD #6, is located in USDA Hardiness Zone 8a and 8b, with annual minimum temperatures between 10°F and 20°F. During times of ice and snow accumulation, response times will increase until public works road crews are able to make major roads passable. Table 12-1 describes the types of winter weather possible to occur in the Travis County planning area, including participating jurisdictions and ESD #6.

Figure 12-1. Annual Minimum Temperature[1]

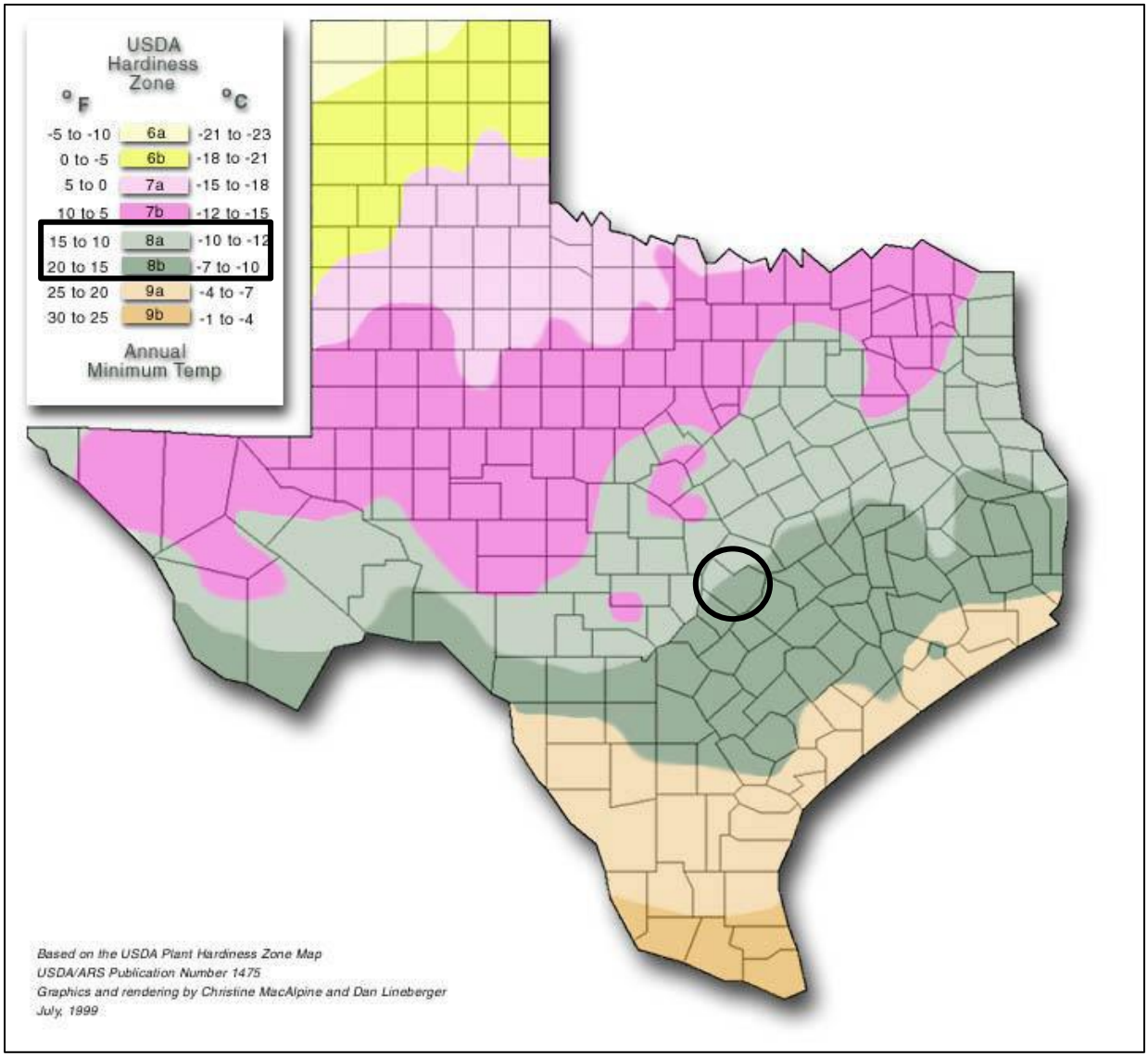


Table 12-1. Types of Winter Weather

TYPE OF WINTER WEATHER	DESCRIPTION
Freezing Rain or Freezing Drizzle	Rain or drizzle is likely to freeze upon impact, resulting in a coating of ice glaze on roads and all other exposed objects.
Sleet	Small particles of ice usually mixed with rain. If enough sleet accumulates on the ground, it makes travel hazardous.
Blizzard	Sustained wind speeds of at least 35 mph are accompanied by considerable falling or blowing snow. This alert is the most perilous winter storm with visibility dangerously restricted.

[1] USDA

TYPE OF WINTER WEATHER	DESCRIPTION
Frost/Freeze	Below freezing temperatures are expected and may cause significant damage to plants, crops, and fruit trees.
Wind Chill	A strong wind combined with a temperature slightly below freezing can have the same chilling effect as a temperature nearly 50 degrees lower in a calm atmosphere. The combined cooling power of the wind and temperature on exposed flesh is called the wind-chill factor.

LOCATION

Winter storm events are not confined to specific geographic boundaries. Therefore, all existing and future buildings, facilities, and populations in the Travis County planning area, including all participating jurisdictions and ESD #6, are considered to be exposed to a winter storm hazard and could potentially be impacted.

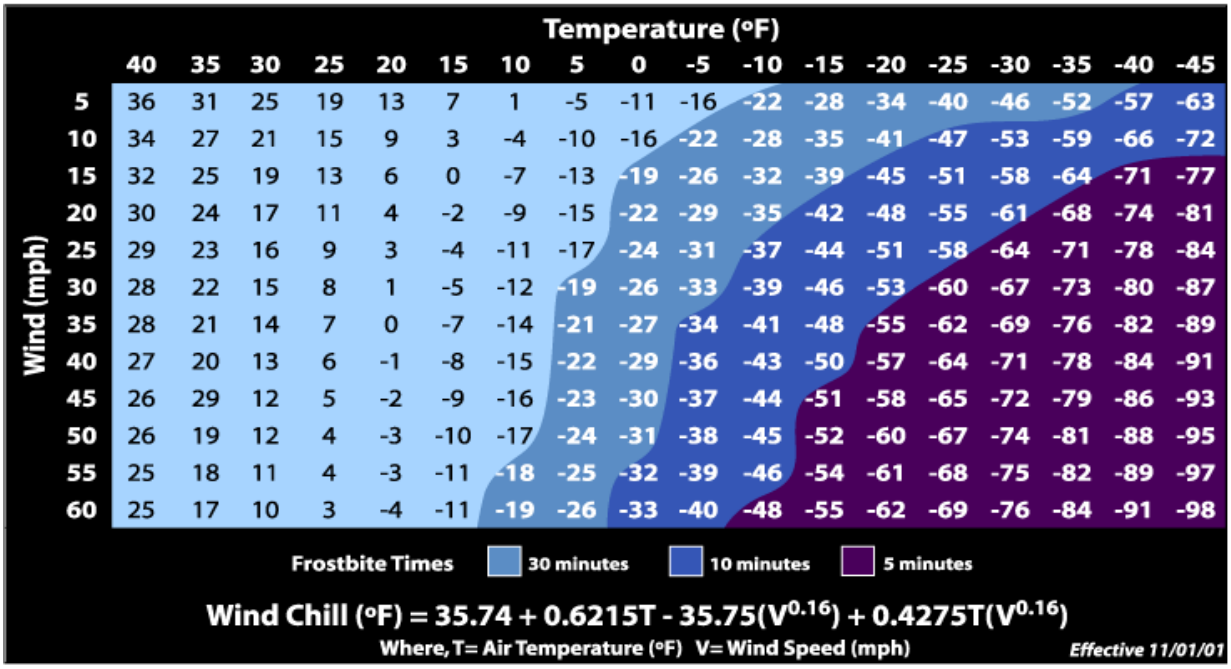
EXTENT

The extent or magnitude of a severe winter storm is measured in intensity based on the temperature and level of accumulations as shown in Table 12-2. Table 12-2 should be read in conjunction with the wind-chill factor described in Figure 12-2 to determine the intensity of a winter storm. The chart is not applicable when temperatures are over 50°F or winds are calm. This is an index developed by the National Weather Service.

Table 12-2. Magnitude of Severe Winter Storms

INTENSITY	TEMPERATURE RANGE (Fahrenheit)	EXTENT DESCRIPTION
Mild	40° – 50°	Winds less than 10 mph and freezing rain or light snow falling for short durations with little or no accumulations
Moderate	30° – 40°	Winds 10 – 15 mph and sleet and/or snow up to 4 inches
Significant	25° – 30°	Intense snow showers accompanied with strong gusty winds between 15 and 20 mph with significant accumulation
Extreme	20° – 25°	Wind driven snow that reduces visibility, heavy winds (between 20 to 30 mph), and sleet or ice up to 5 millimeters in diameter
Severe	Below 20°	Winds of 35 mph or more and snow and sleet greater than 4 inches

Figure 12-2. Wind Chill Chart



Wind (mph)	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	29	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Wind chill temperature is a measure of how cold the wind makes real air temperature feel to the human body. Since wind can dramatically accelerate heat loss from the body, a blustery 30°F day would feel just as cold as a calm day with 0°F temperatures. The Travis County planning area has 37 previous occurrences recorded from 1996 through January 2023. The planning area has never experienced a blizzard but it has been subject to ice storms, sleet, and winter storms.

The average number of cold days is similar for the entire planning area. Therefore, the intensity or extent of a winter storm event to be mitigated for the area ranges from mild to moderate according to the definitions at Table 12-2. The Travis County planning area, including all participating jurisdictions and ESD #6, can expect anywhere between 0.1 to 4.0 inches of ice and snow during a winter storm event, and temperatures between 10°F and below 20°F with winds ranging from 0 to over 35 mph.

The National Weather Service Austin/San Antonio Weather Forecast Office issues a winter storm watch, advisory or warning in advance of an event in order to give people enough time to prepare for an event. Travis County could be under any of these warning types in advance of a winter storm event. Table 12-3 describes when each warning type would be issued.

Table 12-3. Winter Storm Watch, Advisory, Warning Descriptions

TYPE OF WINTER WEATHER	DESCRIPTION
Winter Weather Advisory	This alert may be issued for a variety of severe conditions. Weather advisories may be announced for snow, blowing or drifting snow, freezing drizzle, freezing rain, or a combination of weather events.

TYPE OF WINTER WEATHER	DESCRIPTION
Winter Storm Watch	Severe winter weather conditions may affect your area (freezing rain, sleet, or heavy snow may occur separately or in combination).
Winter Storm Warning	Severe winter weather conditions are imminent.
Freezing Rain or Freezing Drizzle	Rain or drizzle is likely to freeze upon impact, resulting in a coating of ice glaze on roads and all other exposed objects.
Sleet	Small particles of ice usually mixed with rain. If enough sleet accumulates on the ground, it makes travel hazardous.
Blizzard	Sustained wind speeds of at least 35 mph are accompanied by considerable falling or blowing snow. This alert is the most perilous winter storm with visibility dangerously restricted.
Frost/Freeze	Below freezing temperatures are expected and may cause significant damage to plants, crops, and fruit trees.
Wind Chill	A strong wind combined with a temperature slightly below freezing can have the same chilling effect as a temperature nearly 50 degrees lower in a calm atmosphere. The combined cooling power of the wind and temperature on exposed flesh is called the wind-chill factor.

HISTORICAL OCCURRENCES

According to historical records and the best available data there have been 37 recorded winter storm events in Travis County planning area. Historical winter storm information, as provided by the NCEI, identifies winter storm activity across a multi-county forecast area for each event. The appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event, when appropriate. Historical winter storm data for the planning area is provided on a County-wide basis per the NCEI database. Table 12-4 shows historical incident information for the planning area.

Table 12-4. Historical Winter Storm Events, 1996-2023[2]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	2/1/1996	0	0	$0	$0
Travis County	1/7/1997	0	0	$0	$0
Travis County	1/11/1997	0	0	$0	$0
Travis County	12/23/1998	0	0	$0	$0
Travis County	12/12/2000	0	0	$0	$0
Travis County	11/28/2001	0	0	$0	$0

[2] Values are in 2022 dollars. The reporting period for this hazard was extended one month (through January 2023) to include Winter Storm Mara (DR-4705), which was a declared April 21, 2023 and included the Travis County planning area.

SECTION 12: WINTER STORM

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	2/24/2003	0	0	$0	$0
Travis County	12/7/2005	0	0	$0	$0
Travis County	1/15/2007	0	0	$2,346,036	$0
Travis County	1/27/2009	0	0	$0	$0
Travis County	2/3/2011	0	0	$0	$0
Travis County	2/9/2011	0	0	$0	$0
Travis County	12/5/2013	0	0	$0	$0
Travis County	12/7/2013	0	0	$0	$0
Travis County	1/23/2014	0	0	$0	$0
Travis County	1/27/2014	0	0	$0	$0
Travis County	3/4/2014	0	0	$0	$0
Travis County	1/9/2015	0	0	$0	$0
Travis County	1/23/2015	0	0	$0	$0
Travis County	2/16/2015	0	0	$0	$0
Travis County	2/23/2015	0	0	$0	$0
Travis County	2/27/2015	0	0	$0	$0
Travis County	3/4/2015	0	0	$0	$0
Travis County	12/7/2017	0	0	$0	$0
Travis County	1/16/2018	0	0	$0	$0
Travis County	11/11/2019	0	0	$0	$0
Travis County	2/5/2020	0	0	$0	$0
Travis County	1/10/2021	0	0	$0	$0
Travis County	2/11/2021	0	0	$1,128,446	$0
Travis County	2/13/2021	0	0	$0	$0
Travis County	2/16/2021	0	0	$0	$0
Travis County	1/11/2022	0	0	$0	$0
Travis County	1/20/2022	0	0	$0	$0
Travis County	2/3/2022	0	0	$0	$0
Travis County	2/12/2022	0	0	$0	$0
Travis County	2/23/2022	0	0	$0	$0
Travis County	1/30/2023	1	0	$0	$0
TOTALS		**1**	**0**	**$3,474,482**	

Table 12-5. Historical Winter Storm Events Summary, 1996-2022

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGES	CROP DAMAGES
Travis County	37	1	0	$3,474,482	$0

Based on the list of historical winter storm events for the Travis County planning area, 13 of the events have occurred since the 2017 Plan.

SIGNIFICANT EVENTS

January 30, 2023 – Winter Storm Mara - Travis County (DR-4705)
A cold front moved into the area producing light freezing rain and freezing drizzle for several days. Freezing rain began on January 30th and continued through February 2nd. Within the City of Pflugerville, police closed ramps between Hwy 130 and Hwy 45 due to ice on the roadway. Other portions of Travis County reported thousands of power outages when trees took out power lines. By the end of the storm, it was recorded that 0.69 inches of ice was experienced within the area. In addition, there were multiple car accidents as a result of the storm, one of which resulted in a fatality. There have been no reported damages available as a result of this event.

February 13, 2021 – Winter Storm Uri – Travis County (DR-4586)
Winter Storm Uri was one of the most impactful winter events in the state's history. The winter storm event lasted a week and brought snow, sleet, and freezing rain to the Southeast region. The presence of the storm began on February 10, 2021, when a cold front brought a surge of cold air to the Area. On February 13th, the winter storm hit the region and areas north and west of Harris County, including Travis County, were placed under a Winter Storm Warning.

Fatalities across the state were attributed to hypothermia, vehicle accidents, carbon monoxide poisoning, and chronic medical conditions complicated by a lack of electricity over several days. Statewide, more than 69 percent of households lost power at some point during the event, with average disruptions lasting 42 hours, 21 of which were consecutive. Water service was also disrupted, with 49 percent of households losing running water with an average disruption of 52 hours.[3]

Broadcast media in the Travis County area reported power flashes in and around the City of Austin. Significant ice accumulation led to reports of power lines down and carports collapsing due to the weight of ice and snow. Ice buildup was a continuing problem with ice accretion on tree branches and exposed surfaces increasing to more than 0.75 inches as the storm continued. The ice event was followed by snow on the 18th. Snowfall totals in the county ranged from 1.2 inches in Lost Creek to 3.8 inches in Jollyville.

PROBABILITY OF FUTURE EVENTS

According to historical records, the Travis County planning area is expected to experience approximately one to two winter storm events each year. The probability of a future winter storm event affecting the Travis County planning area, including participating jurisdictions and ESD #6, is considered "Highly Likely", with a winter storm likely to occur within the next year. The end of

[3] Donald, Jess. "Winter Storm Uri. The Economic Impact of the Storm". October 2021. Fiscal Notes. Texas Comptroller of Public Accounts. https://comptroller.texas.gov/economy/fiscal-notes/2021/oct/winter-storm-impact.php

this section addresses climate change and its impacts on future winter storms in the planning area.

VULNERABILITY AND IMPACT

During periods of extreme cold and freezing temperatures, water pipes can freeze and crack, and ice can build up on power lines, causing them to break under the weight or causing tree limbs to fall on the lines. These events can disrupt electric service for long periods.

An economic impact may occur due to increased consumption of heating fuel, which can lead to energy shortages and higher prices. House fires and resulting deaths tend to occur more frequently from increased and improper use of alternate heating sources. Fires during winter storms also present a greater danger because water supplies may freeze and impede firefighting efforts.

The Travis County Planning Team identified the following critical facilities (Table 12-6) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by winter storm events. For a comprehensive list by participating jurisdiction see Appendix C.

Table 12-6. Critical Facilities Vulnerable to Winter Storm Events

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Emergency operations, services and response times may be significantly impacted due to power outages, and/or loss of communications. • Exposure to extreme cold can cause illnesses in first responders if exposed for a period of time. • Roads may become impassable due to snow and/or ice impacting response times by emergency services. • Extended power outages due to increased usage may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Power outages due to increased usage could disrupt critical care. • Backup power sources could be damaged. • Increased number of patients due to exposure to cold temperatures could lead to a strain on staff. • Water pipes can freeze and burst leading to flooding within facilities. • Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed. • Economic disruption due to power outages negatively impact airport services as well as area businesses reliant on airport operations. • Exposure risks to outdoor workers.

CRITICAL FACILITIES	POTENTIAL IMPACTS
Commercial Supplier (food, fuel, etc.)	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations, services and response times may be significantly impacted due to power outages, and/or loss of communications. • Roads may become impassable due to snow and/or ice impacting response times by emergency services. • Power outages due to increased usage could disrupt critical care. • Backup power sources could be damaged. • Water pipes can freeze and burst leading to flooding within facilities.

People and animals are subject to health risks from extended exposure to cold air (Table 12-7). Elderly people are at greater risk of death from hypothermia during these events, especially in the neighborhoods with older housing stock. According to the U.S. Center for Disease Control, every year hypothermia kills about 600 Americans, half of whom are 65 years of age or older. Another segment of the population at risk are those whose jobs consist of strenuous labor outdoors (Table 12-8). In addition, populations living below the poverty level may not be able to afford to run heat on a regular basis or extend period of time.

Population over 65 and under the age of 5 in the Travis County planning area is estimated at 16 percent of the total population or an estimated total of 202,434[4] potentially vulnerable residents in the planning area based on age. An estimated 10.7 percent of the planning area population live below the poverty level.

Older homes tend to be more vulnerable to the impacts of winter storm events. Approximately 149,603 housing units (27 percent) in the planning area were built before 1980 (Table 12-9).

Table 12-7. Populations at Greater Risk of Winter Storm Events

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
Travis County	126,480	75,954	135,654
Village of Briarcliff	277	173	66
City of Creedmoor	95	0	60
City of Jonestown	525	39	229
City of Lago Vista	2,477	275	316
City of Lakeway	4,154	686	554
City of Manor	345	1,821	975

[4] US Census Bureau, American Community Survey Five-Year Estimates 2017-2021

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
City of Mustang Ridge	105	123	85
City of Pflugerville	6,009	4,718	3,392
Village of Point Venture	279	40	47
City of Rollingwood	238	42	0
Village of San Leanna	132	28	9
City of Sunset Valley	169	28	26
Village of The Hills	857	109	62
City of West Lake Hills	799	68	209
ESD #6	N/A	N/A	N/A

Table 12-8. Outdoor Employees by Participating Special District

ESD	EMPLOYEES WORKING OUTDOORS
ESD #6	108

Table 12-9. Structures at Greater Risk of Winter Storm Events[5]

JURISDICTION	SFR STRUCTURES BUILT BEFORE 1980
Travis County	149,603
Village of Briarcliff	79
City of Creedmoor	42
City of Jonestown	269
City of Lago Vista	706
City of Lakeway	1,040
City of Manor	312
City of Mustang Ridge	82
City of Pflugerville	779
Village of Point Venture	226

[5] Manufactured structures and/or portable building numbers are reported by the participating special district.

JURISDICTION	SFR STRUCTURES BUILT BEFORE 1980
City of Rollingwood	223
Village of San Leanna	92
City of Sunset Valley	87
Village of The Hills	30
City of West Lake Hills	546
ESD #6	0

Winter Storms have been known to cause injury to humans and occasionally have been fatal. Overall, the average loss estimate of property and crops in the planning area is considered $3,474,482 with an average annualized loss of $128,685. Based on historic loss and damages, the impact of hail damages on the Travis County planning area, including participating jurisdictions and ESD #6, can be considered “Limited” severity of impact, meaning minor quality of life lost, critical facilities and services shut down for 24 hours or less, and less than 10 percent of property destroyed or with major damage. However, due to the loss of life, the impact of winter storm events for the planning area is considered “Substantial,” with multiple deaths or injuries possible.

Table 12-10. Winter Storm Event Damage Totals, 1996-2022

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Travis County	$3,474,482	$128,685

ASSESSMENT OF IMPACTS

The greatest risk from a winter storm hazard is to public health and safety. The impact of climate change could produce longer, more intense winter storm events, exacerbating the current winter storm impacts. Worsening winter storm conditions can be frequently associated with a variety of impacts, including:

- Vulnerable populations, particularly the elderly (10 percent of total population) and children under 5 (6 percent of total population), can face serious or life-threatening health problems from exposure to extreme cold including hypothermia and frostbite.
- Power outages are possible throughout the planning area due to downed trees and power lines and/or rolling blackouts, resulting in increased fire risk (alternate heat sources) and injuries or illness (gas, carbon monoxide, generator use).
- Response personnel, including utility workers, public works personnel, debris removal staff, tow truck operators, and other first responders, are subject to injury or illness resulting from exposure, and dangerous road or work conditions.
- Critical facilities without emergency backup power may not be operational during power outages.

- Emergency response and service operations may be impacted by limitations on access and mobility if roadways are closed, unsafe, or obstructed.
- Hazardous road conditions will likely lead to increases in automobile accidents, further straining emergency response capabilities.
- Depending on the severity and scale of damage caused by ice and snow events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- Winter storms reduced the efficacy of shaded fuel breaks for wildfire mitigation as treated areas were more likely to have downed trees and limbs than untreated areas. Winter storms resulted in damage to endangered species habitat and increased fuel loads within forested habitats.
- Older structures built to less stringent building codes may suffer greater damage as they are typically more vulnerable to impacts of winter storm events. 27 percent of homes in the County were built before 1980. Similarly, historic buildings and sites are placed at a higher risk of impact due to materials used and the inability to change properties due to their historic status. One site in the Travis County planning area, the City of Pflugerville East Main Street Historic District, is listed on the National Register of Historic Places.
- Schools may be forced to shut early due to treacherous driving conditions or power outages, increasing traffic hazards at and near impacted schools.
- Exposed water pipes may be damaged by severe or late season winter storms at both residential and commercial structures, causing significant damages.

The economic and financial impacts of winter weather on the community will depend on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by businesses and citizens will also contribute to the overall economic and financial conditions in the aftermath of a winter storm event.

CLIMATE CHANGE CONSIDERATIONS

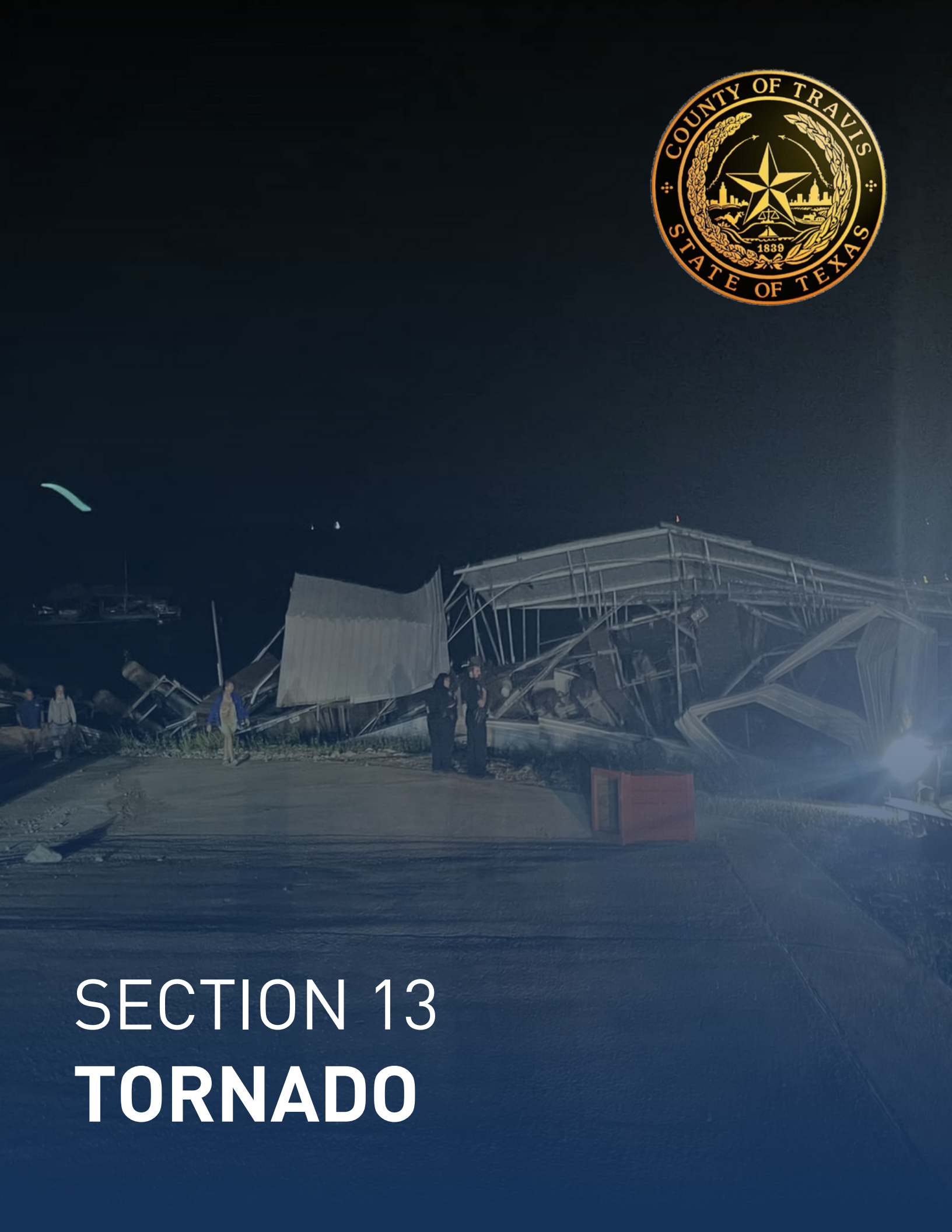
Climate change is expected to reduce the number of extreme cold events statewide but increase in the variability of events.[6] Extreme cold events will continue to be possible but overall winters are becoming milder, and the frequency of extreme winter weather events are decreasing due to the warming of the Arctic and less extreme cold air coming from that region.[7] A trend that is expected to continue with winter extremes estimated to be milder by 2036 compared to extremes in the historic record.[8] According to the University of Texas at Austin technical report for the City of Austin, the planning area is projected to experience fewer cold spells are projected to occur per year but the length of cold spells will be longer when they do occur.[9]

[6] Fourth National Climate Assessment. Chapter 23 Southern Great Plans. U.S. Global Change Program. 2018.

[7] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.

[8] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.

[9] University of Texas at Austin, February 2023, Austin Future Climate, Climate Change Predictions for the City of Austin 2022, Technical Report.



SECTION 13
TORNADO

SECTION 13: TORNADO

HAZARD DESCRIPTION

Tornadoes are among the most violent storms on the planet. A tornado is a rapidly rotating column of air extending between, and in contact with, a cloud and the surface of the earth. The most violent tornadoes are capable of tremendous destruction and have wind speeds of 250 miles per hour (mph) or more. In extreme cases, winds may approach 300 mph. Damage paths can be in excess of one mile wide and 50 miles long.

The most powerful tornadoes are produced by "Supercell Thunderstorms." These thunderstorms are created when horizontal wind shears (winds moving in different directions at different altitudes) begin to rotate the storm. This horizontal rotation can be tilted vertically by violent updrafts, and the rotation radius can shrink, forming a vertical column of very quickly swirling air. This rotating air can eventually reach the ground, forming a tornado**.**

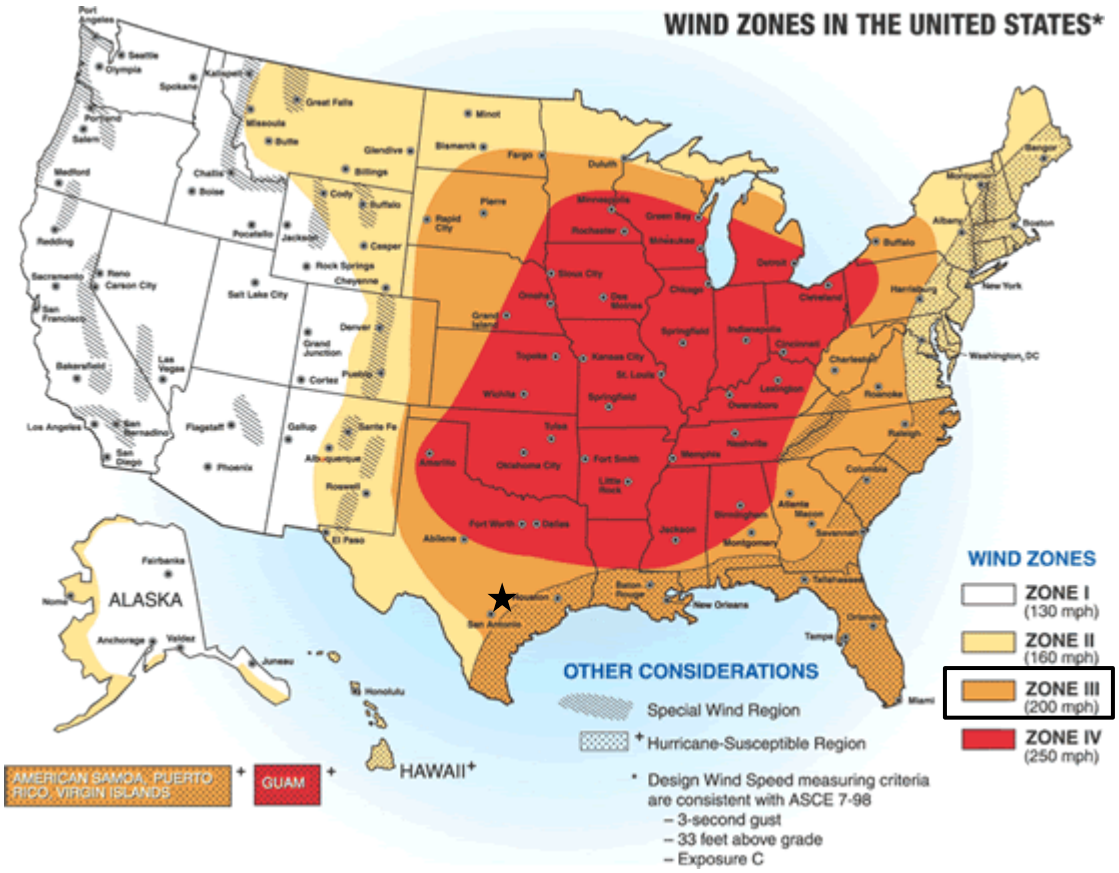
Table 5-1. Variations among Tornadoes

WEAK TORNADOES	STRONG TORNADOES	VIOLENT TORNADOES
• 69% of all tornadoes • Less than 5% of tornado deaths • Lifetime 1-10+ minutes • Winds less than 110 mph	• 29% of all tornadoes • Nearly 30% of all tornado deaths • May last 20 minutes or longer • Winds 110 – 205 mph	• 2% of all tornadoes • 70% of all tornado deaths • Lifetime can exceed one hour • Winds greater than 205 mph

LOCATION

Tornadoes do not have any specific geographic boundary and can occur throughout the county uniformly. It is assumed that the entire Travis County planning area, including participating jurisdictions and ESD #6, are uniformly exposed to tornado activity. The entire Travis County planning area is located in Wind Zone III (Figure 13-1), where tornado winds can be as high as 200 mph.

Figure 13-1. FEMA Wind Zones in the United States



EXTENT

The destruction caused by tornadoes ranges from light to inconceivable, depending on the intensity, size, and duration of the storm. Typically, tornadoes cause the greatest damage to structures of light construction, such as residential homes (particularly mobile homes).

Tornado magnitudes prior to 2007 were determined using the traditional version of the Fujita Scale, which estimated tornado wind speeds based on the damage caused by an event. Since February 2007, the Enhanced Fujita Scale has been utilized to classify tornadoes, which included improvements to the original scale. The original Fujita scale had limitations, such as a lack of damage indicators, no account for construction quality and variability, and no definitive correlation between damage and wind speed. These limitations led to some tornadoes being rated in an inconsistent manner and, in some cases, an overestimate of tornado wind speeds. The Enhanced Fujita scale retains the same basic design and six strength categories as the previous scale. The newer scale reflects more refined assessments of tornado damage surveys, standardization, and damage consideration to a wider range of structures. Table 13-2 includes both scales for reference when analyzing historical tornados since tornado events prior to 2007 will follow the original Fujita Scale.

Table 13-2. Fujita and Enhanced FujitaTornado Scale[1]

Enhanced Fujita Scale			Fujita Scale			
Category	Wind Speed	Damage	Category	Wind Speed	Intensity	Damage
EF0	65 - 85 MPH	The environment sustained minor damage: tree branches are broken, some shallow-rooted trees are uprooted, and some chimneys are damaged.	F0	45 - 78 MPH	Gale	Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
EF1	86 - 110 MPH	The environment sustained moderate damage: mobile homes are tipped over, windows are broken, roof tiles may be blown off, and some tree trunks have snapped.	F1	79 - 117 MPH	Moderate	Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads
EF2	111 - 135 MPH	The environment sustained considerable damage: mobile homes are destroyed, roofs are damaged, debris flies in the air, and large trees are snapped or uprooted.	F2	118 - 161 MPH	Significant	Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136 - 165 MPH	The environment sustained severe damage: roofs and walls are ripped off buildings, small buildings are destroyed, and most trees are uprooted.	F3	162 - 209 MPH	Severe	Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
EF4	166 - 200 MPH	The environment sustained devastating damage: well-built homes are destroyed, buildings are lifted off their foundations, cars are blown away, and large debris flies in the air.	F4	210 - 261 MPH	Devastating	Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
EF5	200+ MPH	The environment sustained incredible damage: well-built homes are lifted from their foundations, reinforced concrete buildings are damaged, the bark is stripped from trees, and car-sized debris flies through the air.	F5	261 - 317 MPH	Incredible	Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

[1] Source: https://www.tornadofujitascale.com/

The greatest magnitude reported within the planning area is F4 (an EF5 when converted to the on the Enhanced Fujita Scale), a “Devastating Tornado.” Based on the planning area’s location in Wind Zone III, all participating jurisdictions and ESD #6, have the potential to experience anywhere from an EF0 to an EF5 depending on the wind speed. Previous tornado events in the Travis County planning area (converted from the Fujita Scale) have been between EF0 and EF5 (Figure 13-2).

HISTORICAL OCCURRENCES

The National Centers for Environmental Information (NCEI) Storm Events database is a national data source organized under the National Oceanic and Atmospheric Administration (NOAA). The NCEI is the largest archive available for historic storm events data; however, it is important to note that only incidents recorded in the NCEI have been factored into this risk assessment unless otherwise noted. It is likely that a high number of occurrences have gone unreported over the past 71 years.

Historical tornado data for ESD #6 does not have events reported separate and apart from the reported county and city events. At this time, ESD #6 did not report losses as a result of a tornado.

Figure 13-2 identifies the locations of previous occurrences in the Travis County planning area from 1953 through 2022. A total of 75 events have been recorded by NOAA’s Storm Prediction Center and National Centers for Environmental Information (NCEI) databases for the Travis County planning area. The strongest event reported in the planning area was an F4 tornado which touched down in the City of Lakeway. In terms of injuries and fatalities, the most significant event occurred in Travis County on May 9, 1974, and included 10 injuries, however the most recent event with injuries and fatalities occurred on May 27, 1997, that accounted for five injuries and one fatality. Estimated damages for this event were $27,807,339 (2022 dollars).

Figure 13-2. Spatial Historical Tornado Events, 1953-2022[2]

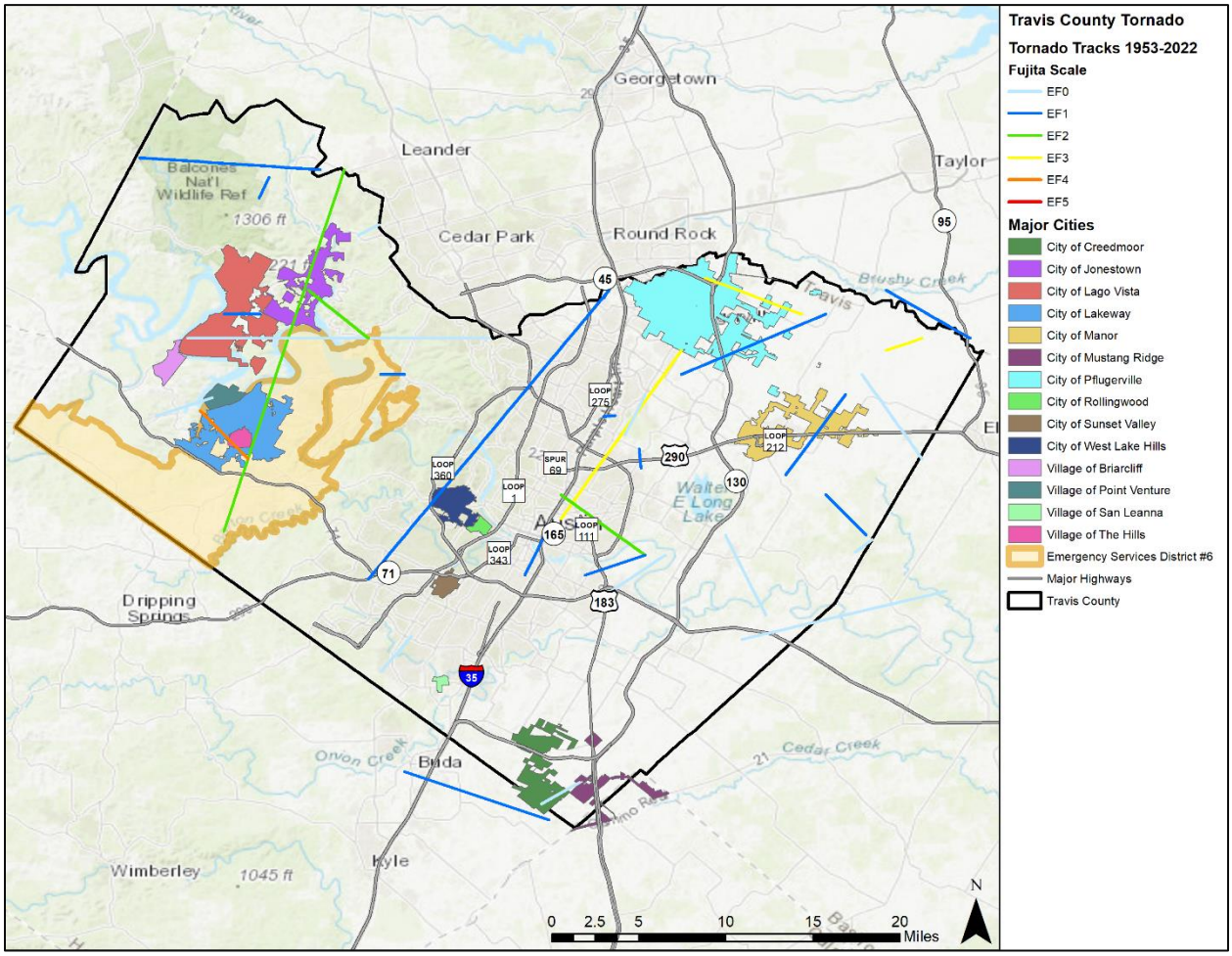


Table 13-3. Historical Tornado Events, 1953-2022[3]

JURISDICTION	DATE	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	10/23/1953	F1	0	0	$274,812	$0
Travis County	3/31/1957	F2	0	0	$2,669,038	$0
Travis County	3/31/1957	F2	0	0	$266,904	$0
Travis County	3/31/1957	F1	0	0	$2,669	$0
Travis County	4/22/1957	Unavailable	0	0	$2,659	$0
Travis County	4/24/1957	F0	0	0	$319	$0

[2] Source: NOAA Storm Prediction Center
[3] Only recorded events with fatalities, injuries or damages are listed. Magnitude is listed when available. Damage values are in 2022 dollars.

JURISDICTION	DATE	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	5/10/1959	F3	0	0	$2,558,595	$0
Travis County	7/20/1960	F1	0	0	$25,067	$0
Travis County	5/17/1965	F1	0	0	$2,363	$0
Travis County	9/20/1967	F0	0	0	$22,083	$0
Travis County	9/20/1967	F0	0	0	$22,083	$0
Travis County	9/20/1967	F0	0	0	$22,083	$0
Travis County	9/20/1967	F1	0	1	$22,083	$0
Travis County	9/20/1967	F1	0	0	$22,083	$0
Travis County	9/21/1967	Unavailable	0	0	$22,083	$0
Travis County	7/4/1970	F2	1	4	$0	$0
Travis County	8/3/1972	F0	0	0	$176,665	$0
Travis County	1/20/1973	F2	0	0	$174,177	$0
Travis County	3/10/1973	F1	0	2	$1,713,609	$0
Travis County	5/9/1974	F1	0	10	$1,526,734	$0
Travis County	5/7/1975	F2	0	0	$1,394,723	$0
Travis County	3/5/1976	F0	0	0	$132,736	$0
Travis County	3/30/1976	F0	0	8	$1,327,357	$0
Travis County	4/14/1977	F2	0	0	$1,236,654	$0
Travis County	5/2/1977	Unavailable	0	0	$12,305	$0
Travis County	4/7/1980	F3	0	3	$916,040	$0
Travis County	8/10/1980	F2	0	4	$890,747,299	$0
Travis County	8/10/1980	F0	0	0	$890,747	$0
Travis County	8/10/1980	F1	0	0	$890,747	$0
Travis County	6/13/1981	F1	0	0	$81,898	$0
Travis County	6/22/1982	F0	0	0	$92	$0
Travis County	5/18/1983	F1	0	0	$7,480	$0
City of Lago Vista	9/20/1996	F1	0	0	$9,404	$0
Travis County	5/27/1997	F2	0	0	$92,691	$18,538

JURISDICTION	DATE	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	5/27/1997	F1	0	0	$9,269	$0
City of Lakeway	5/27/1997	F4	1	5	$27,807,339	$0
Travis County	8/29/1998	F1	0	0	$54,491	$0
Travis County	11/15/2001	F0	0	0	$50,191	$0
Travis County	11/15/2001	F1	0	0	$167,304	$0
Travis County	11/15/2001	F1	0	0	$133,843	$0
Travis County	11/15/2001	F0	0	0	$25,096	$0
City of Manor	12/23/2002	F1	0	1	$328,134	$0
Travis County	6/8/2004	F0	0	0	$234,684	$0
City of Manor	3/25/2005	F1	0	0	$153,542	$0
City of Lakeway	4/2/2017	EF0	0	0	$121,377	$0
TOTALS		**(MAX EXTENT)**	**2**	**38**	**$936,351,552**	**$18,538**

Table 13-4. Summary of Historical Tornado Events, 1953-2022[4]

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Travis County	63	EF3	1	32	$907,931,756	$18,538
Village of Briarcliff	0	-	-	-	-	-
City of Creedmoor	1	EF0	0	0	$0	$0
City of Jonestown	2	EF1	0	0	$0	$0
City of Lago Vista	2	EF1	0	0	$9,404	$0
City of Lakeway	2	EF4	1	5	$27,928,716	$0
City of Manor	2	EF1	0	1	$481,676	$0
City of Mustang Ridge	0	-	-	-	-	-
City of Pflugerville	3	EF0	0	0	$0	$0
Village of Point Venture	0	-	-	-	-	-

[4] Participating jurisdictions with no reported events show a "-" in table columns where damages, deaths or injuries would be otherwise reported.

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Rollingwood	0	-	-	-	-	-
Village of San Leanna	0	-	-	-	-	-
City of Sunset Valley	0	-	-	-	-	-
Village of The Hills	0	-	-	-	-	-
City of West Lake Hills	0	-	-	-	-	-
ESD #6	0	-	-	-	-	-
TOTALS	**75**	**(MAX EXTENT)**	**2**	**38**	**$936,370,090**	

In summary, Travis County (including unincorporated jurisdictions) experienced the greatest number of tornado events within 63 reported events based on the NCEI, with the City of Pflugerville reporting the second greatest number of events (3), following the remaining participating cities: Jonestown (2), Lago Vista (2), Lakeway (2), Manor (2), and Creedmoor (1). The remaining participating jurisdictions and ESD #6 did not report tornado events based through the NCEI database or during the planning update process. Based on the list of historical tornado events for the Travis County planning area including all participating jurisdictions and ESD #6, there have been two recorded events since the 2017 Plan.

SIGNIFICANT EVENTS

April 2, 2017 – Travis County

An upper-level low from Mexico pushed a cold front through Texas generating severe thunderstorms. A small tornado developed over the Lake Travis area. Reports indicated numerous downed trees causing damage throughout the area. Several marinas were damaged as the small tornado crossed the lake. It is believed the tornado came ashore near the park area of Village of Point Venture. Reports indicate that concrete evidence of a tornado is unavailable with suspicions that the path of the EF0 tornado ended on the far west side of Village of Point Venture. Winds were estimated to be approximately 80 mph with a maximum width of 100 yards. The path length is estimated to be about 3 miles. Total damage estimates were approximately $121,377 (2022 dollars).

December 23, 2002 – City of Manor

The National Weather Service reported an F1 tornado touching down 1 mile southeast of City of Manor and moving 5 miles northeastward before dissipating. The event damaged nearly a dozen homes, four mobile homes, in addition to two businesses. The tornado caused vehicle damage as well. As a result of the event, approximately $328,134 (2022 dollars) in damages were reported and one injury sustained due to the tornado overturning her mobile home.

May 27, 1997 – Travis County

The Pedernales Valley tornado began on the shore of Lake Travis destroying trees and a floating marina where nearly all of the watercrafts were destroyed. Approximately 2.2 miles from the lake,

the tornado path took a southwest turn and crossed a major power distribution line. One steel tower was destroyed bringing all lines to the ground. The tornado continued to move through the area described as the Hazy Hills subdivision where numerous houses and several mobile homes were significantly destroyed, some of which were deemed uninhabitable. There was only one fatality reported, a man whose mobile home was demolished. It was unclear if he was inside his mobile home or had left it to drive away, as his vehicle was tossed several hundred feet away. The tornado continued west-southwest moving across State Road (SR) 71, approaching another subdivision with widely separated houses in the Lick Creek valley, a steep walled creek that feeds into the Pedernales River. One stone-walled house located just north of Pedernales Drive and west of SR 71 was completely deroofed, while other structures sustained roof damage in the F2 range. Total damages as a result were $27,807,339 (2022 dollars), with reports of five injuries and one fatality.

PROBABILITY OF FUTURE EVENTS

Tornadoes can occur at any time of year and at any time of day, but they are typically more common in the spring months during the late afternoon and evening hours. A smaller, high frequency period can emerge in the fall during the brief transition between the warm and cold seasons. With 75 historical events over a 70- year reporting period, Travis County, including participating jurisdictions and ESD #6, can anticipate a tornado touchdown approximately once every year. This frequency supports a “Highly Likely” probability of future events for the Travis County planning area.

VULNERABILITY AND IMPACT

Because tornadoes often cross jurisdictional boundaries, all existing and future buildings, facilities, and populations in the entire Travis County planning area, including participating jurisdictions and ESD #6, are considered to be exposed to this hazard and could potentially be impacted. The damage caused by a tornado is typically a result of high wind velocity, wind-blown debris, lightning, and large hail.

The average tornado moves from southwest to northeast, but tornadoes have been known to move in any direction. Consequently, vulnerability of humans and property is difficult to evaluate since tornadoes form at different strengths, in random locations, and create relatively narrow paths of destruction. Although tornadoes strike at random, making all buildings vulnerable, three types of structures are more likely to suffer damage:

- Manufactured Homes;
- Homes built of peer and beam construction (more susceptible to lift); and
- Buildings with large spans, such as shopping malls, gymnasiums, and factories.

Tornadoes can cause a significant threat to people as they could be struck by flying debris, falling trees/branches, utility lines, and poles. Blocked roads could prevent first responders from responding to calls. Tornadoes commonly cause power outages which could cause health and safety risks to residents and visitors, as well as to patients in hospitals.

The Travis County planning area features mobile or manufactured home parks throughout the planning area. These parks are typically more vulnerable to tornado events than typical site built structures. In addition, manufactured homes are located sporadically throughout the planning

area, which would also be more vulnerable. The U.S. Census data indicates a total of 18,252 (3.3 percent of total housing stock) manufactured homes located in the Travis County planning area. In addition, 27 percent (approximately 149,603 structures) of the single family residential (SFR) structures in the entire planning area were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damage during significant wind events (Table 13-5). Based on 2021 American Community Survey (ACS) five-year estimates the City of Lakeway and the City of Pflugerville have the highest reported number of single-family residences built before 1980, causing these jurisdictions to potentially sustain more structural damage due to a tornado event. For additional information on building inventory growth rates please refer to Section 3 of this plan.

Table 13-5. Structures at Greater Risk by Participating Jurisdiction

JURISDICTION	SFR STRUCTURES BUILT BEFORE 1980	MANUFACTURED HOMES
Travis County[5]	149,603	18,252
Village of Briarcliff	79	0
City of Creedmoor	42	21
City of Jonestown	269	74
City of Lago Vista	706	239
City of Lakeway	1,040	0
City of Manor	312	289
City of Mustang Ridge	82	140
City of Pflugerville	779	408
Village of Point Venture	226	0
City of Rollingwood	223	0
Village of San Leanna	92	0
City of Sunset Valley	87	0
Village of The Hills	30	0
City of West Lake Hills	546	9
ESD #6	0	0

[5] County totals includes all jurisdictions and unincorporated areas within the county.

SECTION 13: TORNADO

While all citizens are at risk to the impacts of a tornado, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 10.7 percent of the planning area population live below the poverty level (Table 13-6), with the City of Pflugerville having the highest percentage of residents living below poverty level.

Table 13-6. Populations at Greatest Risk by Jurisdiction[6]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Travis County	135,654
Village of Briarcliff	66
City of Creedmoor	60
City of Jonestown	229
City of Lago Vista	316
City of Lakeway	554
City of Manor	975
City of Mustang Ridge	85
City of Pflugerville	3392
Village of Point Venture	47
City of Rollingwood	0
Village of San Leanna	9
City of Sunset Valley	26
Village of The Hills	62
City of West Lake Hills	209
ESD #6	N/A

The Travis County Planning Team identified the following critical facilities as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by tornado events (Table 13-7). The critical infrastructure with the greatest vulnerability to tornadoes are power and communications facilities. Failures of these facilities can result in a loss of service and cascading impacts such as posing enormous risk to individuals dependent on electricity as a medical necessity. For a comprehensive list by participating jurisdiction see Appendix C.

[6] U.S. Census Bureau 2021 data for Travis County

Table 13-7. Critical Facilities Vulnerable to Tornado Event

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by falling trees or flying debris. • Power outages could disrupt communications, delaying emergency response times. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities. • Debris/downed trees can impede emergency response vehicle access to areas. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel. • First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions. • Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Structures can be damaged by falling trees damaged by lightning. • Power outages could disrupt critical care. • Backup power sources could be damaged. • Evacuations may be necessary due to extended power outages, fires, or other associated damage to facilities. • Power outages and infrastructure damage may prevent larger airports from acting as temporary command centers for logistics, communications, and emergency operations. • Temporary break in operations may significantly inhibit post event evacuations. • Damaged or destroyed highway infrastructure may substantially increase the need for airport operations.
Commercial Supplier (food, fuel, etc.)	• Facilities or infrastructure may be damaged, destroyed or otherwise inaccessible. • Essential supplies like medicines, water, food, and equipment deliveries may be significantly delayed. • Additional emergency responders and critical aid workers may not be able to reach the area for days.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by falling trees or flying debris. • Power outages could disrupt communications, delaying emergency response times. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities.

CRITICAL FACILITIES	POTENTIAL IMPACTS
	• Debris/downed trees can impede emergency response vehicle access to areas. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel. • First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions. • Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.

The average annual loss estimate due to tornado events is $936,370,090 (in 2022 dollars), having an approximate annual loss estimate of $13,376,716. Based on historic damages and best available data the impact of a tornado event on the Travis County planning area, including participating jurisdictions and ESD #6, would be considered “Limited”, with critical facilities and services shutdown for 24-hours or less and less than 10 percent of properties destroyed or with major damage. However, due to the loss of life and number of past injuries, the impact of tornado events for the planning area is considered “Substantial,” with multiple deaths or injuries possible.

Table 13-8. Estimated Average Annual Losses by Jurisdiction[7]

JURISDICTION	TOTAL PROPERTY & CROP LOSS	AVERAGE ANNUAL LOSS ESTIMATES
Travis County	$907,950,294	$12,970,719
Village of Briarcliff	-	-
City of Creedmoor	$0	$0
City of Jonestown	$0	$0
City of Lago Vista	$9,404	$134
City of Lakeway	$27,928,716	$398,982
City of Manor	$481,676	$6,881
City of Mustang Ridge	-	-
City of Pflugerville	$0	$0
Village of Point Venture	-	-
City of Rollingwood	-	-
Village of San Leanna	-	-

[7] Participating jurisdictions with no reported events show a “-“ in table columns where damages, deaths or injuries would be otherwise reported.

JURISDICTION	TOTAL PROPERTY & CROP LOSS	AVERAGE ANNUAL LOSS ESTIMATES
City of Sunset Valley	-	-
Village of The Hills	-	-
City of West Lake Hills	-	-
ESD #6	-	-
Planning Area	**$936,370,090**	**$13,376,716**

ASSESSMENT OF IMPACTS

Tornadoes have the potential to pose a significant risk to the population and can create dangerous situations. Often, providing and preserving public health and safety is difficult. The impact of climate change could produce larger, more severe tornado events, exacerbating the current tornado impacts. More destructive tornado conditions can be frequently associated with a variety of impacts, including:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Manufactured homes may suffer substantial damage as they would be more vulnerable than typical site-built structures, especially within the Cities of Manor and Pflugerville.
- Portable classrooms may also suffer substantial damage as they would be more vulnerable than other classroom structures.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- Tornadoes often result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outages can result in an increase in structure fires and/or carbon monoxide poisoning as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- Tornadoes can destroy or make residential structures uninhabitable, requiring shelter or relocation of residents in the aftermath of the event.
- First responders must enter the damage area shortly after the tornado passes to begin rescue operations and to organize cleanup and assessments efforts, therefore they are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Emergency operations and services may be significantly impacted due to damaged facilities, loss of communications, and damaged emergency vehicles and equipment.
- Private sector entities such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.

- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue, especially if damage is sustained to major employers within the planning area including state government, as the State of Texas is the largest employer in the Travis County planning area with more than 63,900 employees.
- Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy.
- When the community is affected by significant property damage it is anticipated that funding would be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, and normal day-to-day operating expenses.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures destroyed by a tornado may not be rebuilt for years, reducing the tax base for the community.
- Large or intense tornadoes may result in a dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.
- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Recreation activities at locations such as parks or green spaces throughout the planning area, may be unavailable and tourism can be unappealing for years following a large tornado, devastating directly related local businesses.
- Tornadoes may destroy or degrade endangered species habitat in places such as on the Balcones Canyonlands Preserve and National Wildlife Refuge.
- Historical sites and properties are placed at a higher risk of impact due to materials used and the inability to change properties due to their historic status. One site in the Travis County planning area, the City of Pflugerville East Main Street Historic District, is listed on the National Register of Historic Places.

The economic and financial impacts of a tornado event on the community will depend on the scale of the event, what is damaged, costs of repair or replacement, lost business days in impacted areas, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by government, businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a tornado event. Warning sirens/alert systems have been integrated into some participating communities to promote early warning and communication, (including Travis County, Lago Vista, Lakeway, Pflugerville, Rollingwood, San Leanna, Sunset Valley, The Hills, West Lake Hills, and ESD #6) reducing the potential economic and financial impacts of tornado events.

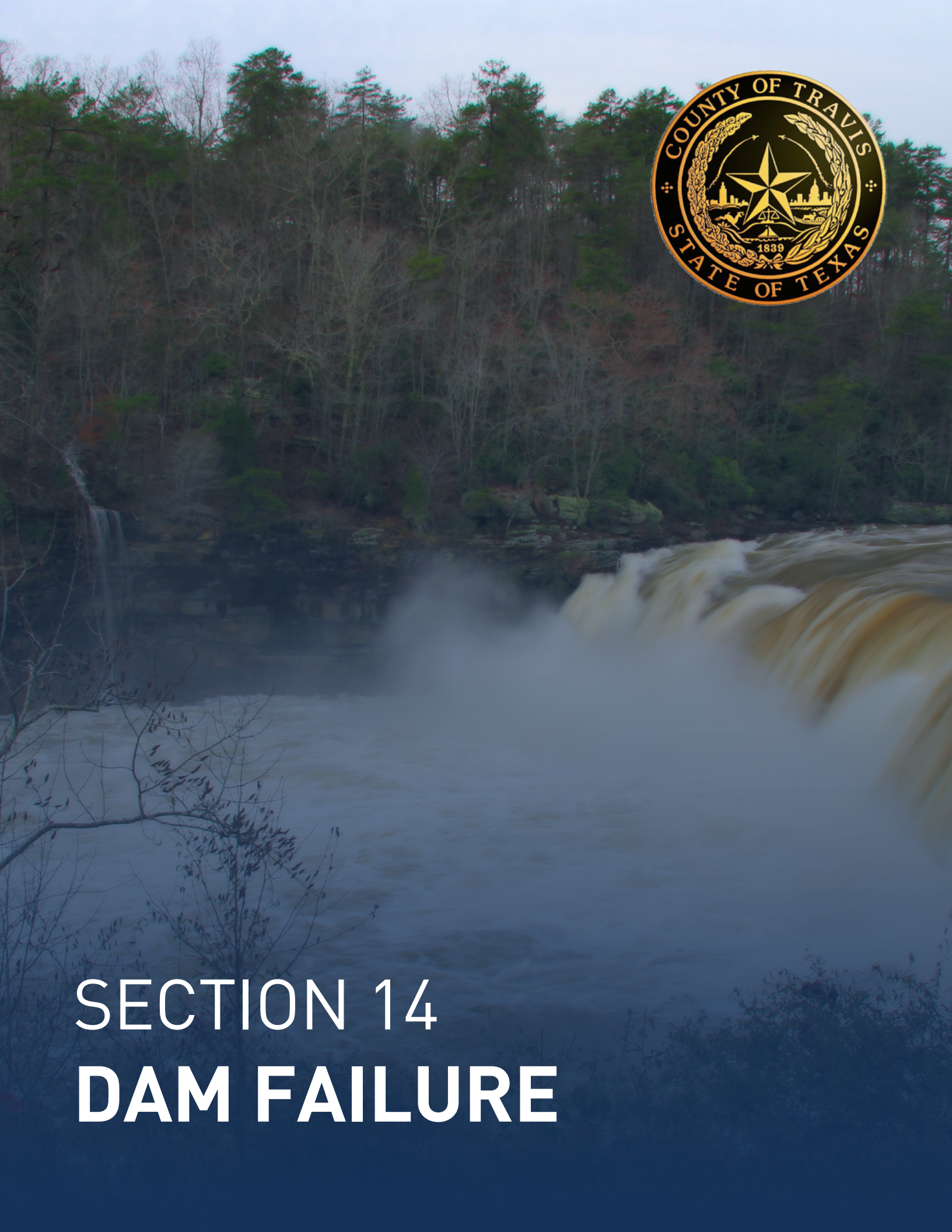
CLIMATE CHANGE CONSIDERATIONS

The impacts on the frequency and severity of tornado events due to climate change are unclear. According to the Texas A&M 2021 Climate Report Update, the most robust trend in tornado activity in Texas is a likelihood for a greater number of tornadoes in large outbreaks, although the factors contributing to this trend are not expected to continue. Tornadoes spawn from less than 10 percent of thunderstorms, usually supercell thunderstorms that are in a wind shear

environment that promotes rotation.[8] Based on climate models that are available, the environmental conditions needed for severe thunderstorm events are estimated to become more likely, resulting in an overall increase in the number of days capable of producing a severe thunderstorm event and potential tornadoes to develop from these storms.[9]

[8] Treisman, Rachel. *The exact link between tornadoes and climate change is hard to draw. Here's why*. NPR. December 13, 2021. https://www.npr.org/2021/12/13/1063676832/the-exact-link-between-tornadoes-and-climate-change-is-hard-to-draw-heres-why

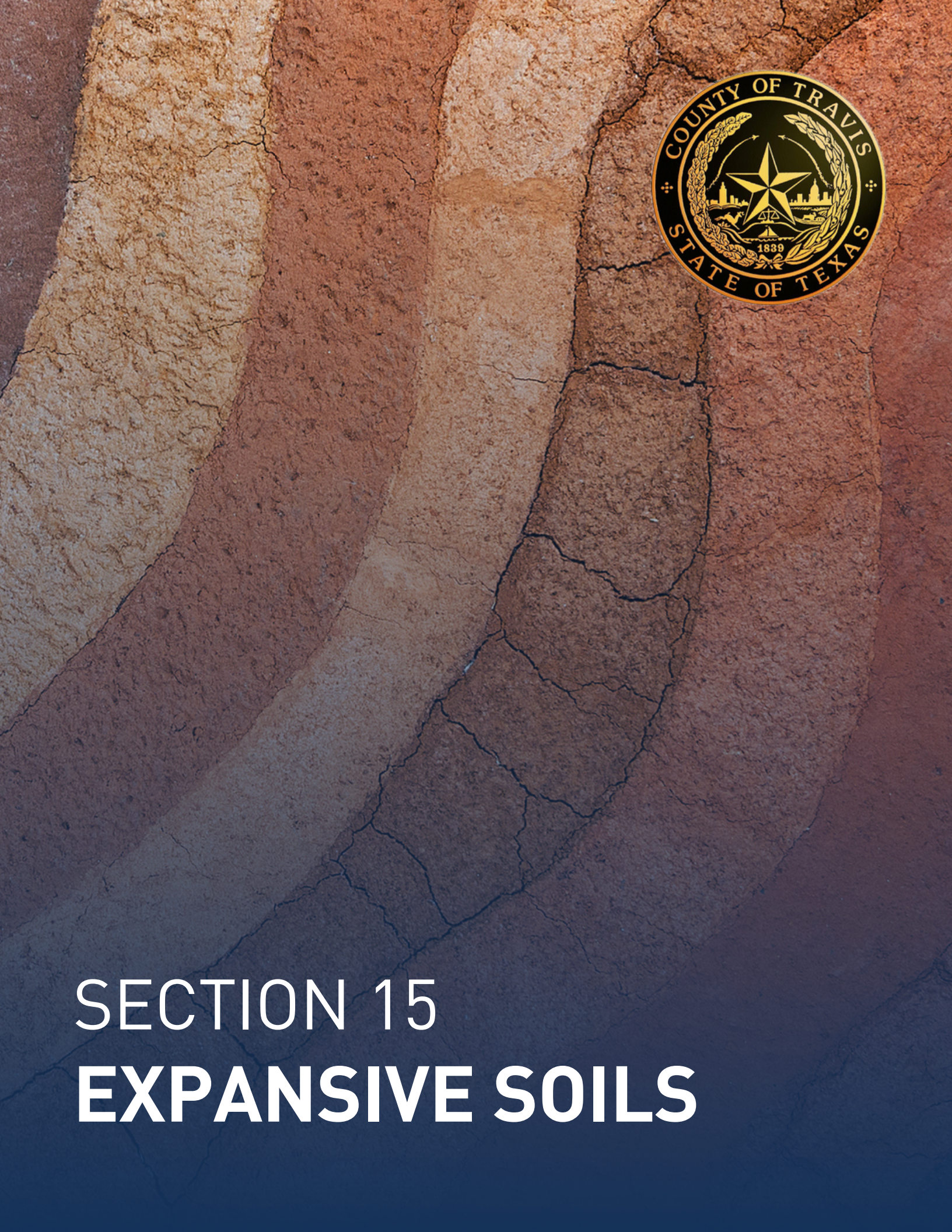
[9] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.



SECTION 14
DAM FAILURE

SECTION 14: DAM FAILURE

Portions of the Travis County Hazard Mitigation Plan are considered confidential and not for release to the public. The information in this section is covered under Privacy Act of 1974 (5 U.S.C. Section 552a).



SECTION 15
EXPANSIVE SOILS

SECTION 15: EXPANSIVE SOILS

HAZARD DESCRIPTION

Expansive soils are soils and soft rocks with a relatively high percentage of clay minerals that are subject to changes in volume as they swell and shrink with changing moisture conditions. Expansive soils contain minerals such as smectite clays that are capable of absorbing water. When these clays absorb water, they increase in volume and expand. The change in soil volume and resulting expansion can exert enough force on a building or other structure to cause damage.

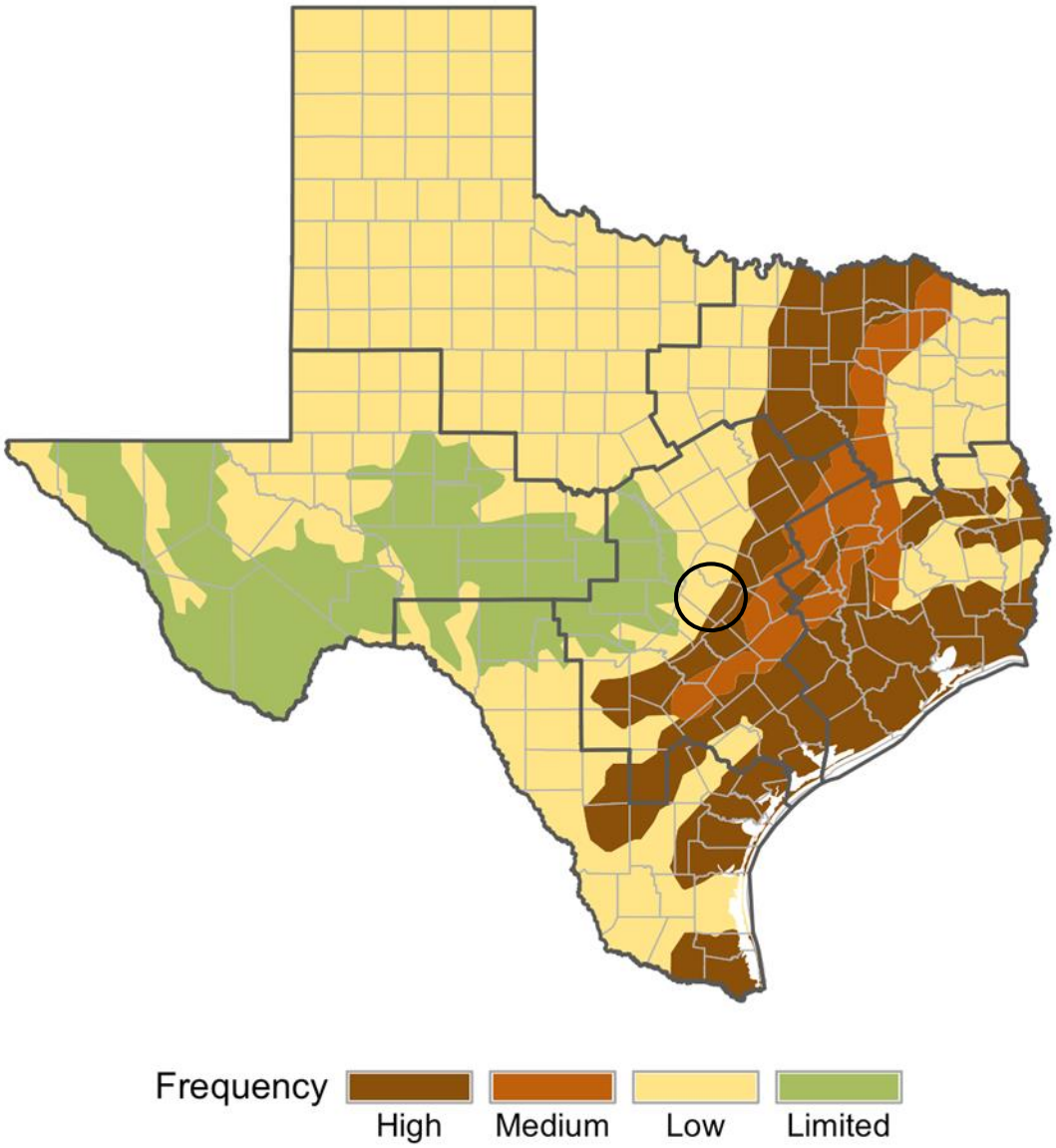
Expansive soils will also lose volume and shrink when they dry. Drought conditions can cause soils to contract in response to a loss of soil moisture. A reduction in soil volume can affect the support to buildings or other structures and result in damage. Fissures in the soil can also develop and facilitate the deep penetration of water when moist conditions or runoff occurs. This produces a cycle of shrinkage and swelling that place repetitive stress on structures. The effect of expansive soil is most prevalent in regions prone to prolonged periods of drought followed by periods of moderate to high precipitation.

LOCATION

In Texas the most expansive soils are in a band 200 miles west from the coastline, stretching approximately from Beaumont down to Brownsville. These areas receive the most moisture and are also vulnerable to droughts, which can cause the soil to contract. In the Travis County planning area, the problems associated with expansive soil typically occur during drought periods. Expansive soils (bentonite, smectite, or other reactive clays) expand when the soil particles attract water and can shrink when the clay dries.

Figure 15-1 shows areas of expansive soil in Texas. Most of Travis County falls within the low risk area, indicated in yellow, while the eastern portion falls within the medium risk area, indicated in light brown. Figure 15-2 depicts the types of land resources in the State of Texas due to their soil types.

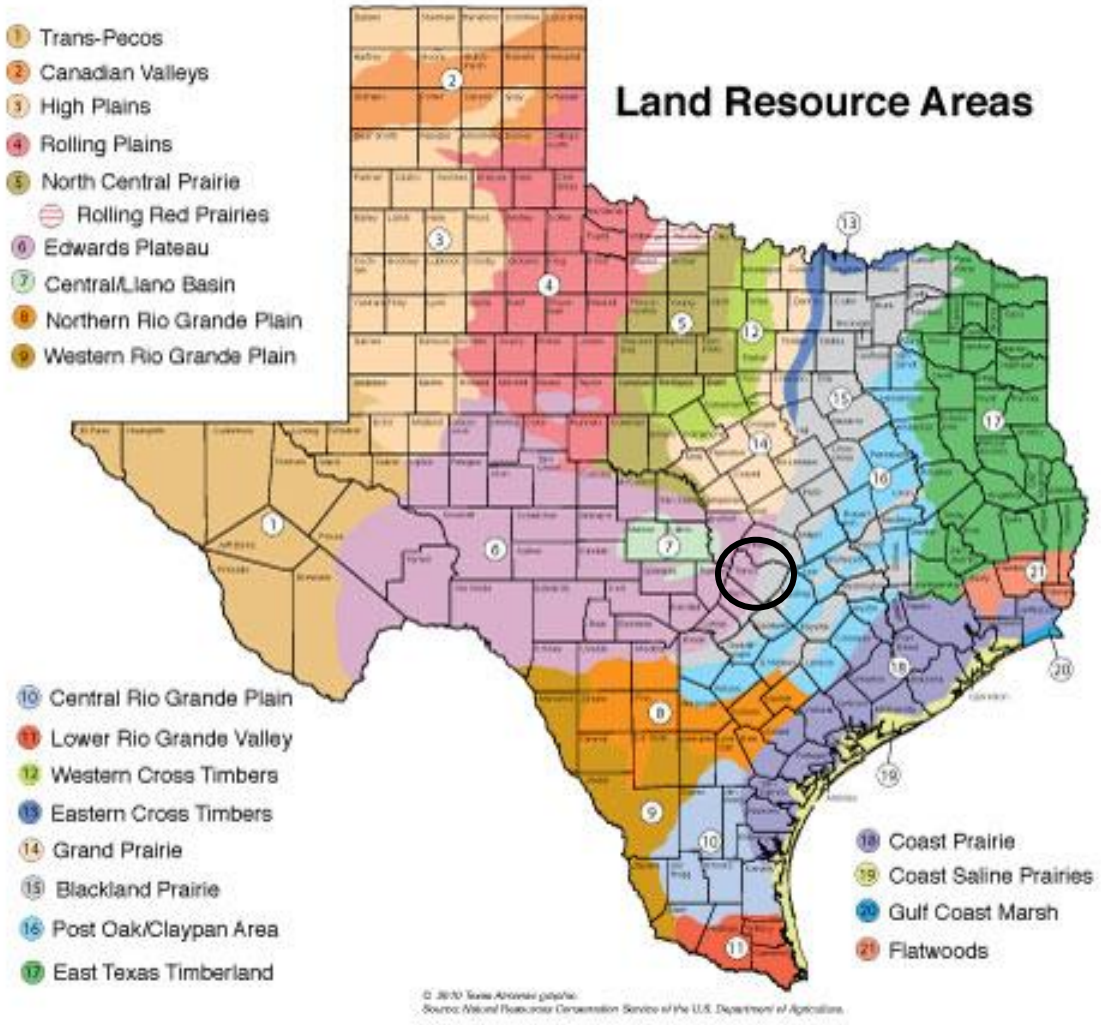
Figure 15-1. Location of Expansive Soils in Texas[1]



Source: Tavakoli, E. (2016). Laboratory Evaluation of TX-PROCHEM as an Ionic Liquid Soil Stabilizer. [Master's Thesis].

[1] Tavakoli, E. (2016). Laboratory Evaluation of TX-PROCHEM as an Ionic Liquid Soil Stabilizer. [Master's Thesis].

Figure 15-2. Texas Geological Survey[2]



The Travis County planning area, including all participating jurisdictions and ESD #6, is located within the Edwards Plateau and Blackland Prairie, as identified within the black circle in Figure 15-2. The entire planning area is located in an area affected by expansive soils.

Edwards Plateau: The 22.7 million acres of the Edwards Plateau are in South Central Texas, east of the Trans-Pecos and west of the Blackland Prairie. Uplands are nearly level to undulating, except near large stream valleys, where the landscape is hilly with deep canyons and steep slopes. There are many cedar brakes in this area and surface drainage is rapid.

Upland soils are mostly shallow, stony, or gravelly, and consisting of dark alkaline clays and clay loams underlain by limestone. Lighter-colored soils are on steep side slopes and deep, less-stony

[2] Source: USDA, http://www.nrcs.usda.gov

soils are in the valleys. Bottomland soils are mostly deep, dark-gray or brown, with alkaline loams and clays.

Raising beef cattle is the main enterprise in this region, but it is also the center of Texas' and the nation's mohair and wool production. The area provides a major deer habitat and hunting leases produce income. Cropland is mostly in the valleys on the deeper soils and is used mainly for growing forage crops and hay. The major soil-management concerns are brush control, large stones, low fertility, excess lime, and limited soil moisture.

Blackland Prairie: The Blackland Prairies consist of about 12.6 million acres of east-central Texas, extending southwesterly from the Red River to Bexar County. There are smaller areas to the southeast. The landscape is undulating with few scattered wooded areas that are mostly in the bottomlands. Surface drainage is moderate to rapid.

Both upland and bottomland soils are deep, dark-gray to black, and consist of alkaline clays. Some soils in the western part are shallow to moderately deep over chalk. Soils on the eastern edge are typically neutral to slightly acidic, grayish clays and loams over mottled clay subsoils (sometimes called graylands). Blackland soils are known as "cracking clays" because of their high shrink-swell property and the large, deep cracks that form in dry weather. This high shrink-swell property can cause serious damage to foundations, highways, and other structures, and is a safety hazard in pits and trenches.

Land use is almost equally cropland and grassland. Cotton, grain sorghums, corn, wheat, oats, and hay are grown in this area. Grassland is mostly improved pastures, with native range on the shallower and steeper soils. Water erosion, cotton root rot, soil tilth, and brush control are the major management problems.

EXTENT

The extent to which soil expansion is present in an area can be determined using the predominant soil composition and associated permeability. The Soil Survey was developed by the USDA Soils Conservation Service and contains information that can be applied in determining the suitability of soils in the planning area when selecting sites for roads, structures, and infrastructure.[3]

The expansion index (EI) provides an indication of swelling potential for a compacted soil. The EI measures volumetric swelling and is calculated by bringing a soil sample to 50 percent saturation and then multiplying the percentage of soil swelling by the fraction of soil to pass through a No. 4 sieve, and then by 100. Soils are measured in terms of swelling potential or volumetric swell to determine an estimate of the potential severity. The American Society for Testing and Materials (ASTM) soil expansion index is considered to have a greater range and better sensitivity of expansion than other indexes. Table 15-1 provides the extent categories for expansive soils per the ASTM:

[3] Source: USDA, http://www.nrcs.usda.gov

Table 15-1. Expansive Soils Index[4]

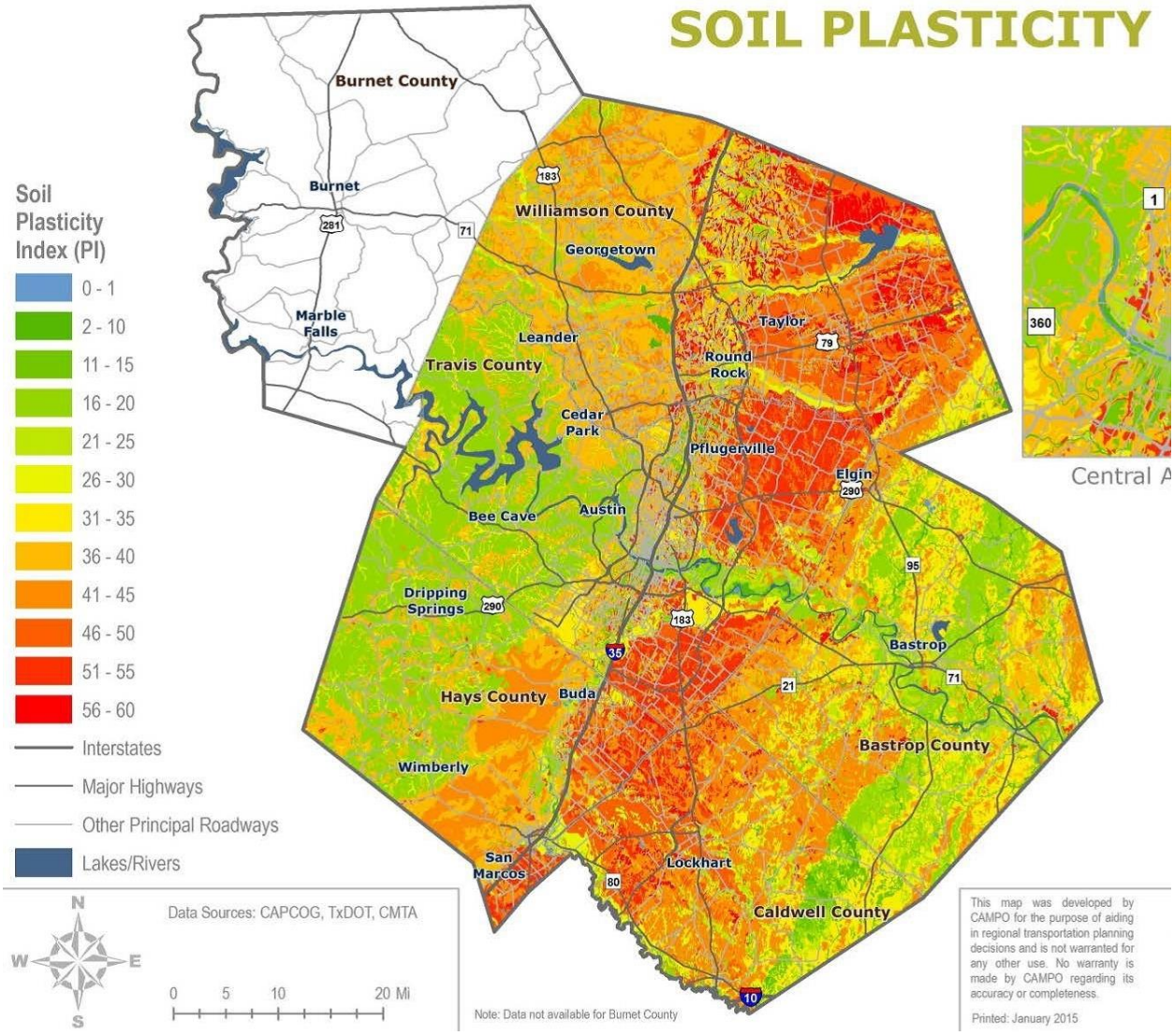
POTENTIAL EXPANSION	EXPANSION INDEX
Low	0 – 15
Medium	10-35
High	20-55
Very High	35+

The amount and depth of potential swelling that can occur in a clay material are, to some extent, functions of the cyclical moisture content in the soil. In drier climates where the moisture content in the soil near the ground surface is low because of evaporation, there is a greater potential for extensive swelling than in the same soil in wetter climates where the variations of moisture content are not as severe. Volume changes in highly expansive soils range between 7 and 10 percent, however under abnormal conditions, they can reach as high as 25 percent.

The Web Soil Survey is used to measure the extent of expansive soils by measuring the type of soils and their moisture content. Figure 15-3 depicts the plasticity index of the soils in the Travis County planning area.

[4] Panjaitan, Surta Ria Nurliana. “The Effects of Lime Content on the Bearing Capacity and Swelling Potential of Expansive Soil”. Journal of Civil Engineering Research. 2014.

Figure 15-3. Plasticity Index of Travis County Planning Area Soils[5]



The red and orange areas shown in Figure 15-3 indicate locations with relatively higher plasticity soils, which can exhibit greater sensitivity to drought conditions. High plasticity soils are prone to shrink and swell as soil moisture changes, which can degrade pavement, causing longitudinal cracking and edge drop-off. This effect can damage foundations of buildings and homes.

Table 15-2. Swelling Potential of Soils and Plasticity Index by Jurisdiction

Jurisdiction	Soil Plasticity Index	Potential Expansion
Travis County	2-60	Low, Medium, High, Very High

[5] Source: United States Department of Agriculture (USDA)

Jurisdiction	Soil Plasticity Index	Potential Expansion
Village of Briarcliff	16-30	Medium, High
City of Creedmoor	46-60	High, Very High
City of Jonestown	16-40	Medium, High, Very High
City of Lago Vista	16-40	Medium, High, Very High
City of Lakeway	11-30	Low, Medium
City of Manor	36-60	High, Very High
City of Mustang Ridge	36-60	High, Very High
City of Pflugerville	36-60	High, Very High
Village of Point Venture	16-40	Medium, High, Very High
City of Rollingwood	16-40	Medium, High, Very High
Village of San Leanna	11-30	Low, Medium
City of Sunset Valley	21-40	Medium, High
Village of The Hills	11-30	Low, Medium
City of West Lake Hills	16-40	Medium, High, Very High
ESD #6	11-45	Low, Medium, High, Very High

HISTORICAL OCCURRENCES

Expansive soil is a condition that is native to Texas soil characteristics and cannot be documented as a time-specific event, except when it leads to structural and infrastructure damage. Extreme conditions can damage roads, structures, and infrastructure, including projects still under construction. Damages from expansive soils are typically associated with droughts, previous occurrences for expansive soils can be correlated with previous occurrences of drought, which are typically negligible.

Damages to roads in the planning area caused by expansive soils were recorded and photographed in 2008 and 2009, according to the Capital Area Metropolitan Planning Organization (CAMPO) Risk Assessment. The photos (below) were included as an example of the types of longitudinal cracking damage to roadways in the planning area that can occur. There are no other recorded impacts caused by expansive soils, but the planning team indicated that incidents of damages are known to occur on occasion to infrastructure in the planning area.

Left: Photo of pavement cracks in a new City of Austin subdivision in 2009. Right: Longitudinal cracking on Golden Falls Drive in Travis County in 2008. Photo credit: City of Austin.

PROBABILITY OF FUTURE EVENTS

The Texas Department of Licensing and Regulation requires structures built after 2005 to include soil tests to be conducted for the likelihood of soil expansion, compression or shifting. In such cases, top or subsoils are required to be removed and remaining soils stabilized. Builders must ensure that water drains away from the structure on all sides and building owners notified of the potential for damage if changes in drainage flow occur. These measures significantly reduce the probability of expansive soil impacts on newer and future development.

It is considered “Likely” that the high-risk areas in the Travis County planning area will experience some expansive soil impacts such as problems with foundations, roadways, sidewalks and other structures and infrastructure in the future, especially during seasonal changes. Older structures will be impacted with greater frequency due to the soil testing and stabilization requirements for newer structures (Refer to Table 15-3 below). See additional information on impacts of climate change on the frequency and magnitude of expansive soil hazards.

VULNERABILITY AND IMPACT

The effects of expansive soils are most prevalent when periods of moderate to high precipitation are followed by drought and then again by periods of rainfall. Other cases of damage result from increases in moisture volume from such sources as broken or leaking water and sewer lines. Dry clays are capable of absorbing water and will increase in volume in an amount proportional to the amount of water absorbed. Soils capable of changes in volume present a hazard to structures built over them and to the pipelines buried in them. Houses and one-story commercial buildings are more apt to be damaged by the expansion of swelling clays than are multi-story buildings, which are usually heavy enough to counter swelling pressures. However, if constructed on wet clay,

multi-story buildings may also be damaged by clay shrinkage when moisture levels are substantially reduced.

Cracked foundations and floors, jammed windows and doors, and ruptured pipelines are typical types of damage resulting from swelling soils. Damage to the upper floors of larger buildings can occur when motion in the structure is significant. While all infrastructure within the planning area is minimally vulnerable, slab on grade structures are more likely to suffer damages from expansive soils. In addition, older structures built to less stringent building codes may also be more susceptible to damage than new construction.

While the number of slabs on grade structures is not available, the U.S. Census data indicates approximately 149,603 of the housing units (27 percent of all housing units) in the planning area were built before 1980 and may be more susceptible to damages.

Table 15-3. Residential Structures at Greatest Risk[6]

JURISDICTION	SFR STRUCTURES BUILT BEFORE 1980
Travis County	149,603
Village of Briarcliff	64
City of Creedmoor	60
City of Jonestown	204
City of Lago Vista	577
City of Lakeway	919
City of Manor	283
City of Mustang Ridge	93
City of Pflugerville	786
Village of Point Venture	199
City of Rollingwood	219
Village of San Leanna	78
City of Sunset Valley	67
Village of The Hills	26
City of West Lake Hills	604
ESD #6	0

[6] Manufactured structures and/or portable building numbers are reported by the participating special district.

SECTION 15: EXPANSIVE SOILS

The Travis County Planning Team identified the following critical facilities (Table 15-4) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by expansive soils. For a comprehensive list by participating jurisdiction see Appendix C.

Table 15-4. Critical Facilities Vulnerable to Expansive Soils

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Uneven settling and shifting cause cracks in building foundations impacting the integrity of critical facility structures and lead to doors being unable to open or close properly. • Damages and cracks in streets and highway infrastructure may lead to emergency vehicles being unable to access areas increasing the need for emergency operations. • Ruptured water pipes can lead to loss of function or water pressure impacting drinking water availability and firefighting capabilities.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Uneven settling and shifting cause cracks in building foundations impacting the integrity of critical facility structures and lead to doors being unable to open or close properly. • Damages and cracks in streets and highway infrastructure may lead to emergency vehicles being unable to access areas increasing the need for emergency operations.
Commercial Supplier (food, fuel, etc.)	• Essential supplies like medicines, water, food, and equipment deliveries may be delayed.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Wastewater and drinking water facilities and infrastructure may be damaged or destroyed resulting in services disruption or outage for multiple days or weeks. • Disruptions and outrages impact public welfare as safe drinking water is critical. • A break in essential and effective wastewater collection and treatment is a health concern, potentially spreading disease. • Exposure to untreated wastewater is harmful to people and the environment.

ASSESSMENT OF IMPACTS

Expansive soils are generally influenced by how wet or dry reactive clay types of soils become, so the climate of an area, and more specifically the seasonal precipitation-drought cycle associated with arid or semi-arid regions influences the occurrence and severity of these hazards. Problems associated with expansive soils in the Travis County planning area, including participating jurisdictions and ESD #6, typically occur during extended periods of drought.

Lightweight buildings and other infrastructure are vulnerable to expansive soil hazards. Uneven settling and shifting in such structures may occur, causing cracks in foundations, walls, streets, driveways, and sidewalks; ruptured pipes; and windows and doors that do not open and close

properly. Special provisions are necessary in the construction of footings and slabs resting on expansive soils to minimize damages due to the expansiveness. Homeowners and public agencies that assume they cannot afford preventative measures such as more costly foundations and floor systems, often incur the largest percentage of damage and costly repairs from expanding soil. No figures are available for the total damage to homes in the planning area from expansive clays. The greatest damage occurs when structures are constructed when clays are dry (such as during a drought) and then subsequent soaking rains swell the clay.

Infrastructure such as pipelines can be damaged, causing increased maintenance and repairs, replacement, or damage to the point of failure. Sewer and water lines are can also affected by shrinking and swelling soils. The movement of the soil can snap water and sewer and water lines, producing a minimum of temporary discomfort, and a maximum of a serious health and welfare risk. Field monitoring and testing should be conducted on a regular basis, especially during extended drought periods, to avoid loss of function or water pressure, which could impact drinking water and firefighting capabilities. In addition, highways and roads (I-35, U.S. Hwy 183, 290 and State Hwy 1, 45, 71) can be affected by expansive soils and could hinder evacuations if deemed not usable during disasters.

Unlike many other environmental hazards, the effects of expansive soil are deceptive in that they are not revealed suddenly or caused by a single event, but rather become increasingly evident and destructive over time. As such, the vast majority of expansive soil impacts are relatively benign in terms of emergency management and emergency response.

Expansive soil can directly impact infrastructure and as a result indirectly create impacts on residents. The following are a summary of impacts frequently associated with expansive soils:

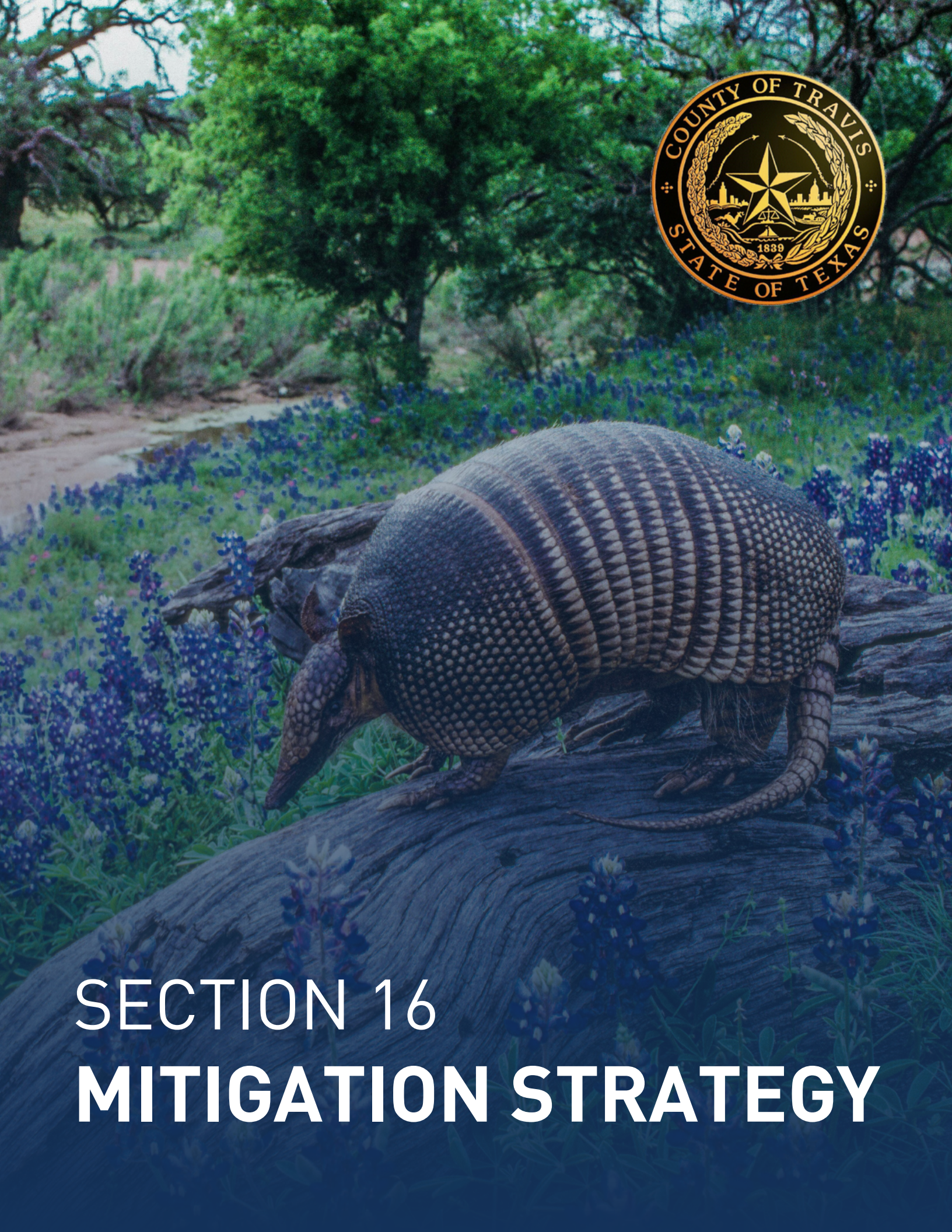
- Expansive soils are influenced by the seasonal precipitation-drought cycle.
- Impacts to lightweight buildings and other infrastructure are most likely to occur. Impacts include: uneven settling and shifting in structures, cracks in foundations, walls, streets, driveways, and sidewalks; ruptured pipes; and windows and doors that do not open and close properly.
- 27 percent of homes in the Travis County planning area were built before 1980 leading them to more susceptible to damages from expansive soils. Similarly, historic buildings, many of which pre-date modern building codes, are vulnerable to impacts of expansive soil. One site in the Travis County planning area, the City of Pflugerville East Main Street Historic District, is listed on the National Register of Historic Places.
- Highways (I-35, U.S. Hwy 183, 290 and State Hwy 1, 45, 71) and roadways can be affected by expansive soils.
- Economic impacts are limited to uninsured damages.
- Impacts on people are indirect, with impacts related to disruption in city services such as water and sewer.
- As population grows and development increases in the County the potential risk to expansive soils will also increase.
- Limited impact anticipated to the natural environment other than changes in soil characteristics.

The impact of expansive soils experienced in the Travis County planning area, including participating jurisdictions and ESD #6, has resulted in no injuries and fatalities, supporting a “Limited” severity of impact meaning injuries and/or illnesses are treatable with first aid, shutdown

of facilities and services for 24 hours or less, and less than 10 percent of property is destroyed or with major damage.

CLIMATE CHANGE CONSIDERATIONS

Expansive soils are directly connected to drought and flood conditions as they literally swell and shrink with changing moisture conditions. Impacts of climate change on drought and flood events indicate similar changes to expansive soil frequency and impacts. Refer to Probability of Future Events section in and Section 7 (Drought) and Section 9 (Flood) for more information on those hazards.



SECTION 16
MITIGATION STRATEGY

SECTION 16: MITIGATION STRATEGY

MITIGATION GOALS

Based on the results of the risk and capability assessments, the Planning Team developed and prioritized the mitigation strategy. This involved utilizing the results of both assessments and reviewing the goals and objectives that were included in the previous 2017 Plan. At the Mitigation Workshop in April 2023, Planning Team members reviewed the mitigation strategy from the previous 2017 Plan. The consensus among all members present was that the strategy developed for the 2017 Plan did not require changes, as it identified overall improvements to be sought in the Plan Update. However, the order and priority of the goals and objectives were reorganized.

GOAL 1

Protect public health and safety.

OBJECTIVE 1.1

Advise the public about health and safety precautions to guard against injury and loss of life from hazards.

OBJECTIVE 1.2

Maximize utilization of the latest technology to provide adequate warning, communication, and mitigation of hazard events.

OBJECTIVE 1.3

Reduce the danger to, and enhance protection of, high risk areas during hazard events.

OBJECTIVE 1.4

Protect critical facilities and services.

GOAL 2

Build and support local capacity and commitment to continuously become less vulnerable to hazards.

OBJECTIVE 2.1

Build and support local partnerships to continuously become less vulnerable to hazards.

OBJECTIVE 2.2

Build a cadre of committed volunteers to safeguard the community before, during, and after a disaster.

OBJECTIVE 2.3
Build hazard mitigation concerns into county, city, village and special district planning and budgeting processes.

GOAL 3
Increase public understanding, support, and demand for hazard mitigation.

OBJECTIVE 3.1
Heighten public awareness regarding the full range of natural and man-made hazards the public may face.

OBJECTIVE 3.2
Educate the public on actions they can take to prevent or reduce the loss of life or property from all hazards and increase individual efforts to respond to potential hazards.

OBJECTIVE 3.3
Publicize and encourage the adoption of appropriate hazard mitigation measures.

GOAL 4
Protect new and existing properties.

OBJECTIVE 4.1
Reduce repetitive losses to the National Flood Insurance Program (NFIP).

OBJECTIVE 4.2
Use the most cost-effective approach to protect existing buildings and public infrastructure from hazards.

OBJECTIVE 4.3
Enact and enforce regulatory measures to ensure that future development will not put people in harm's way or increase threats to existing properties.

GOAL 5
Maximize the resources for investment in hazard mitigation.

OBJECTIVE 5.1
Maximize the use of outside sources of funding.

OBJECTIVE 5.2
Maximize participation of property owners in protecting their properties.

OBJECTIVE 5.3
Maximize insurance coverage to provide financial protection against hazard events.

OBJECTIVE 5.4
Prioritize mitigation projects, based on cost-effectiveness and sites facing the greatest threat to life, health, and property.

GOAL 6
Promote growth in a sustainable manner.

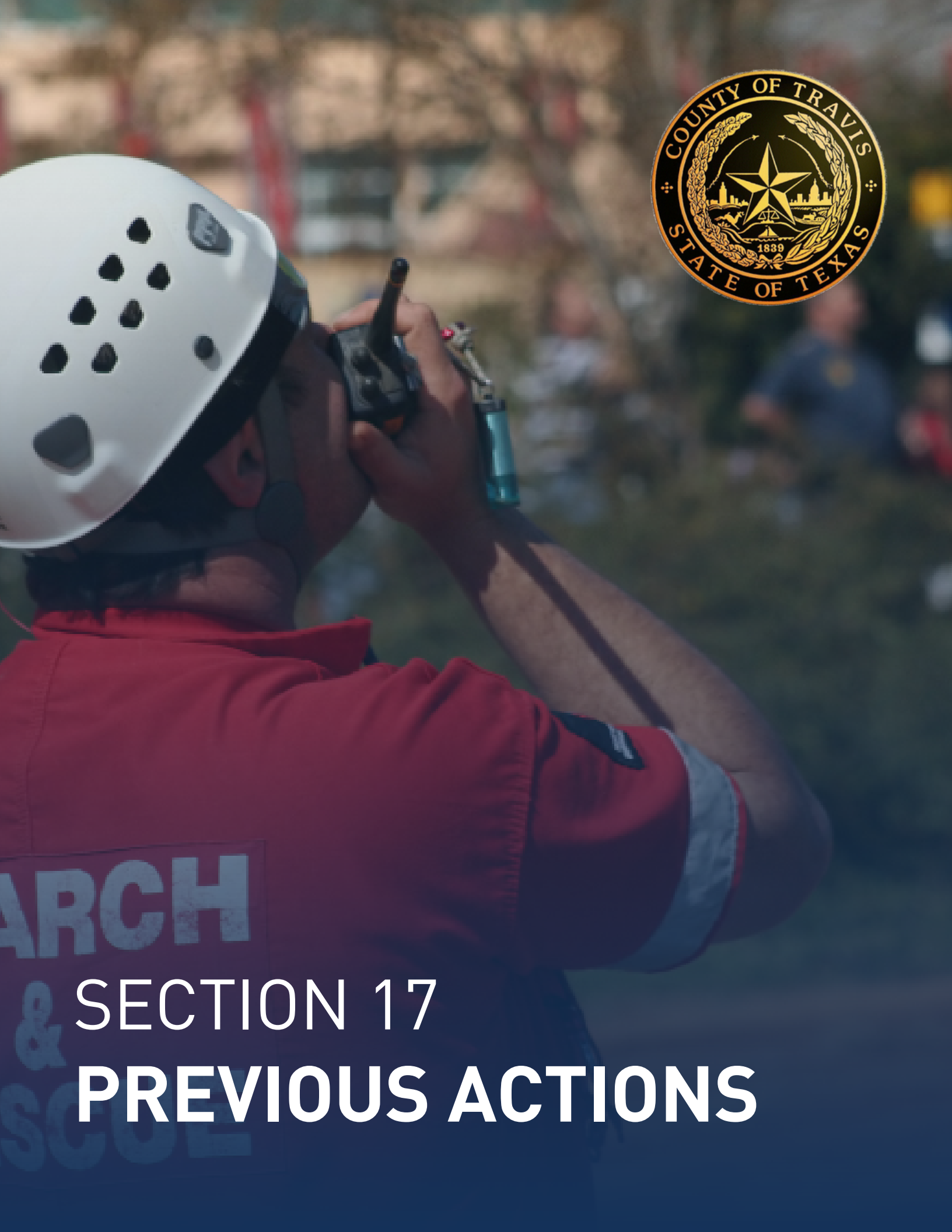
OBJECTIVE 6.1
Incorporate hazard mitigation activities into long-range planning and development activities.

OBJECTIVE 6.2

Promote beneficial uses of hazardous areas while expanding open space and recreational opportunities.

OBJECTIVE 6.3

Utilize regulatory approaches to prevent creation of future hazards to life and property.



SECTION 17
PREVIOUS ACTIONS

SECTION 17: PREVIOUS ACTIONS

SUMMARY

This section includes analysis from the 2017 Travis County Hazard Mitigation Plan and the 2017 Travis County Communities Hazard Mitigation Plan. Planning Team members were given copies of the previous mitigation actions submitted in the 2017 Travis County Plan and the 2017 Communities Plan at the mitigation workshop. Each participating entity reviewed the previous actions and provided an analysis as to whether the action had been completed, should be deferred as an ongoing activity, or be deleted from the Plan Update. The actions from the 2017 Plans are included in this section as they were written in 2017, with the exception of the “2023 Analysis” section. The following participating jurisdictions did not previously participate in a plan, therefore they have no previous actions: City of Creedmoor, City of Rollingwood, and ESD #6.

2017 TRAVIS COUNTY HMP

TRAVIS COUNTY-WIDE

		Travis County (County-Wide) – Action #1
	Proposed Action:	Purchase and install generators and hardwire quick generator connections at critical facilities throughout the planning area.
	BACKGROUND INFORMATION	
	Site and Location:	Critical facilities throughout the planning area.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provide power for critical facilities during power outages and ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Tornado, Thunderstorm Wind, Extreme Heat, Hail, Lightning, Winter Storm, Dam Failure
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 per site.
Potential Funding Sources:	Operating budgets, local funding, PDM, HMGP grants
Lead Agency/Department Responsible:	Local and County Administration / Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Emergency Management Plan

2023 ANALYSIS:	
County: Defer to Plan Update.	City of Pflugerville: Defer to Plan Update. The city has applied for the FEMA HMGP grant for a pump station generator that is under review. All wastewater lift stations that aren't equipped with generators have connections.
City of Lakeway: Defer to Plan Update.	City of Sunset Valley: Defer to Plan Update.
City of Manor: Defer to Plan Update.	Village of The Hills: Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

	Travis County (County-Wide) – Action #2
Proposed Action:	Adopt and implement land use restrictions and/or building code requirements in high-risk areas to mitigate the risk of land subsidence, dam failure, and flood.
BACKGROUND INFORMATION	
Site and Location:	County-wide (all participating jurisdictions).
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to future structures through improved construction techniques and land use restrictions.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam Failure, Expansive Soils
Effect on new/existing buildings:	Reduce risk to new structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,500
Potential Funding Sources:	Operating budgets, local funding
Lead Agency/Department Responsible:	Local and County Administration
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Local Ordinances

2023 ANALYSIS:	
County: Completed. Travis County adopted Atlas 14 May 2019 as the design storm event for all development projects in the unincorporated areas and all ETJ,	City of Pflugerville: Completed.
City of Lakeway: Defer to Plan Update.	City of Sunset Valley: Defer to Plan Update.
City of Manor: Defer to Plan Update.	Village of The Hills: Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Travis County (County-Wide) – Action #3
	Proposed Action:	Install covered parking facilities for critical City/County vehicles
	BACKGROUND INFORMATION	
	Site and Location:	County-wide (all participating jurisdictions)
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to critical emergency vehicles and equipment and ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Extreme Heat, Winter Storm
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Operating budgets, local funding, HMGP Grants
Lead Agency/Department Responsible:	Local and County Administration / Public Works
Implementation Schedule:	Within 36-48 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	N/A

2023 ANALYSIS:	
County: Delete Action. County no longer deems a priority	City of Pflugerville: Defer to Plan Update.
City of Lakeway: Defer to Plan Update.	City of Sunset Valley: Defer to Plan Update.
City of Manor: Defer to Plan Update.	Village of The Hills: Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Travis County (County-Wide) – Action #4
	Proposed Action:	Require drought tolerant landscaping at all new public buildings.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide (all participating jurisdictions)
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce need for water at public buildings during times of drought.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	Reduce risk to new structures.
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	Operating budgets, local funding
Lead Agency/Department Responsible:	Local and County Administration
Implementation Schedule:	Within 36-48 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Local Ordinances

2023 ANALYSIS:	
County: Defer to Plan Update.	City of Pflugerville: Defer to Plan Update.
City of Lakeway: Defer to Plan Update.	City of Sunset Valley: Defer to Plan Update.
City of Manor: Defer to Plan Update.	Village of The Hills: Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

	Travis County (County-Wide) – Action #5
Proposed Action:	Increase public awareness of all hazards and hazardous areas. Distribute public awareness information regarding natural hazards, including SFHAs, along with potential mitigation measures that can reduce the risk of damages and injuries. Utilize resources such as the local newspapers, utility bill inserts, and websites.
BACKGROUND INFORMATION	
Site and Location:	County-wide (all participating jurisdictions)
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk through education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm.
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,000
Potential Funding Sources:	Operating budgets, local funding
Lead Agency/Department Responsible:	Local and County Administration
Implementation Schedule:	Within 36-48 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	N/A

2023 ANALYSIS:	
County: Complete and Defer to Plan Update. Ongoing.	City of Pflugerville: Completed.
City of Lakeway: Defer to Plan Update.	City of Sunset Valley: Defer to Plan Update.
City of Manor: Defer to Plan Update.	Village of The Hills: Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

TRAVIS COUNTY

		Travis County – Action #1
	Proposed Action:	Update Austin Travis County Community Wildfire Protection Plan.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Identifies risks and prioritizes actions Travis County can take to reduce risk, improve resilience, and adapt landscapes to wildfire.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Decreases risk of damage or structure loss.
Priority (High, Moderate, Low):	High
Estimated Cost:	$30,000
Potential Funding Sources:	Travis County, FEMA Grants, other grants
Lead Agency/Department Responsible:	TNR
Implementation Schedule:	Within 12-24 months of plan adoption.
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2023 ANALYSIS:
Defer to Plan Update. The city of Austin and Travis County are currently coordinating to update the Community Wildfire Protection Plan. Estimated cost is $200,000.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #2
	Proposed Action:	Evaluate evacuation routes and shelter-in-place locations for public use during wildfire events.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and loss of life during wildfire events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Travis County, Grants
Lead Agency/Department Responsible:	Emergency Services, Austin Travis County Wildfire Coalition, TNR
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

	Travis County – Action #3
Proposed Action:	Plan and implement fuel reduction projects at county parks, preserves, open space, and facilities.
BACKGROUND INFORMATION	
Site and Location:	Travis County
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risks of harmful wildfire impacts to natural resources, life, and property.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Decreases risk to existing structures.
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Travis County, Grants.
Lead Agency/Department Responsible:	TNR, Austin Travis County Wildfire Coalition
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. Ongoing. Fuel reduction projects are on-going on county parks, preserves, open space, and facilities and continue to be a high priority. This also addresses increased fuel loads as a result of downed limbs from ice storms or tree die-off from droughts in addition to wildfire mitigation.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #4
	Proposed Action:	Utilize Geographic Information System (GIS) to create maps that identify and analyze high risk areas for floods, wildfires, and dam failure. Adopt land use restrictions in high-risk areas identified in the analysis.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provides data necessary for planning mitigation actions.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Dam Failure
Effect on new/existing buildings:	Decreases risk of loss of existing and future structures.
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000
Potential Funding Sources:	Travis County, Grants
Lead Agency/Department Responsible:	TNR
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Land, Water and Transportation Plan

2023 ANALYSIS:
Completed.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #5
	Proposed Action:	Develop a database of flood-related data, including GIS layer identifying building permits, land use, and parcel data.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Will increase general awareness during disasters.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	This would allow the County to examine the potential threat of floods to existing structures in the unincorporated areas of the County.
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000
Potential Funding Sources:	Travis County, Grants
Lead Agency/Department Responsible:	TNR, Emergency Services, City of Austin
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Land, Water and Transportation Plan

2023 ANALYSIS:
Completed.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #6
	Proposed Action:	Implement a GIS System to create a map of Emergency and Evacuation Routes to be used by emergency vehicles in flooding conditions.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Enhancement of Public Safety Response
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Tornado, Wildfire
Effect on new/existing buildings:	Decreases risk of loss of structures.
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Travis County, Grants
Lead Agency/Department Responsible:	TNR, Emergency Services.
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Land, Water and Transportation Plan, the (future) County Transportation Plan

2023 ANALYSIS:
Delete Action. County no longer deems project a priority.

SECTION 17: PREVIOUS ACTIONS

	Travis County – Action #7
Proposed Action:	Update GIS data for the Austin Travis County wildfire risk model.
BACKGROUND INFORMATION	
Site and Location:	Travis County
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provides data necessary for planning wildfire mitigation actions.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk of loss of structures.
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	General Fund, Grants
Lead Agency/Department Responsible:	TNR, Emergency Services, City of Austin, Austin Travis County Wildfire Coalition
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #8
	Proposed Action:	Identify and prioritize structures for elevation as flood mitigation. Elevate flood prone structures throughout unincorporated Travis County.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of repetitive losses through elevation mitigation of flood prone structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam Failure
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	Travis County, HMG Grants
Lead Agency/Department Responsible:	TNR
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Floodplain Management Plan

2023 ANALYSIS:
Defer to Plan Update. Update action description to address development of Atlas 14.

SECTION 17: PREVIOUS ACTIONS

	Travis County – Action #9
Proposed Action:	Identify best practices to reduce the impacts of drought on water supply, water quality, and natural resources. Adopt and implement water restrictions as indicated in the analysis.
BACKGROUND INFORMATION	
Site and Location:	Travis County
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of habitat and decreased water levels.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	Reduce impact on existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,500
Potential Funding Sources:	Travis County, FEMA Grants
Lead Agency/Department Responsible:	TNR
Implementation Schedule:	Within 24-36 months of plan adoption.
Incorporation into Existing Plans:	Local Ordinances

2023 ANALYSIS:
Defer to Plan Update. Ongoing. TNR continues to identify best practices to mitigate the effects of drought on natural resources. We propose updating action to include implementation of best practices to the revised HMP. Estimated cost is $200,000.

SECTION 17: PREVIOUS ACTIONS

	Travis County – Action #10
Proposed Action:	Assess potential impacts of extended drought on County water supplies and natural resources. Incorporate drought tolerant landscaping at all public facilities.
BACKGROUND INFORMATION	
Site and Location:	Travis County
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce water consumption at public buildings.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Resources Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	Reduce impact on existing facilities.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 per site.
Potential Funding Sources:	Travis County, FEMA Grants, other grants
Lead Agency/Department Responsible:	TNR
Implementation Schedule:	Within 24-35 months of plan adoption.
Incorporation into Existing Plans:	Local Ordinance

2023 ANALYSIS:
Defer to Plan Update. Update proposed action to reflect incorporating drought tolerant landscaping.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #11
	Proposed Action:	Utilize local radio stations to provide public service announcements to educate residents on natural hazard risks and mitigation measures in order to protect property and lives.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and their property by promoting a general awareness of weather hazards, emergency staffing resources, and mitigation measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Drought, Tornado, Thunderstorm Wind, Extreme Heat, Expansive Soils, Hail, Lightning, Winter Storm, Dam Failure
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	Travis County / TNR
Implementation Schedule:	Within 24-36 months of plan adoption, pending funding.
Incorporation into Existing Plans:	N/A

2023 ANALYSIS:
Defer to Plan Update. Update action to include paid advertisement on social media. Update cost $100,000.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #12
	Proposed Action:	Assist local communities, neighborhoods, and municipalities with the development of local Community Wildfire Protection Plans.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Educate and engage public in implementing the most effect actions for risk reduction in Central Texas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Decreases risk of existing structure loss.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Travis County, Grants
Lead Agency/Department Responsible:	Emergency Services, Emergency Service Districts, TNR.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

	Travis County – Action #13
Proposed Action:	Distribute flyers to addresses in or near the floodplain to educate citizens on risk, flood insurance, and mitigation measures to reduce risk of flood.
BACKGROUND INFORMATION	
Site and Location:	Travis County – targeting specific flood-prone areas
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and their property by encouraging the purchase of flood insurance, encouraging development to code, and promoting a general awareness of weather hazards/emergency planning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	Travis County, TNR
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	N/A

2023 ANALYSIS:
Completed.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #14
	Proposed Action:	Presentations to neighborhood organizations. Targeted to specific risk areas, such as flood-prone neighborhoods or near low water crossings. Educate residents on natural hazard risks and mitigation measures to reduce risk.
	BACKGROUND INFORMATION	
	Site and Location:	Neighborhood or public meeting spaces. Coordination with scheduled annual meetings or events to ensure attendance.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and their property by encouraging the purchase of flood insurance, encouraging development to code, and promoting a general awareness of weather hazards/ emergency planning resources.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Drought, Tornado, Thunderstorm Wind, Extreme Heat, Expansive Soils, Hail, Lightning, Winter Storm, Dam Failure
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	General Funds
Lead Agency/Department Responsible:	Travis County, TNR
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	N/A

2023 ANALYSIS:
Completed.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #15
	Proposed Action:	Post flyers in neighborhoods, public space, churches, gathering places, online neighborhood portals, etc., to educate residents on natural hazards and mitigation measures to reduce risk.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County – targeting areas of highest risk
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and their property by encouraging the purchase of flood insurance, encouraging development to code, and promoting a general awareness of weather hazards/ emergency planning resources.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	Travis County, TNR
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Floodplain Management Plan

2023 ANALYSIS:
Delete Action. County has identified other actions included in the mitigation action section that address education and awareness projects.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #16
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Felder Lane, 0.10 miles east of FM 973
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,295,200
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project is being considered by CBAC for 2023 bond inclusion or future CO issuances.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #17
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Westlake Drive, 0.13 miles east of Woodcutters Way
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$382,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #18
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Ledgestone Terrace, 0.39 miles south of US 290
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,010,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project expected to begin construction Q4 2023.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #19
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Wild Basin Ledge, 0.05 miles southeast of Petticoat Lane.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$418,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	Public Works.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water and Transportation Plan.

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

		Travis County – Action #20
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Caldwell Lane at intersection with River Timber Drive.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$188,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	Public Works.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water and Transportation Plan.

2023 ANALYSIS:
Completed. Project was completed in Q2 2021.

SECTION 17: PREVIOUS ACTIONS

	Travis County – Action #21
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Nameless Road, 0.5 miles north of Honeycomb Lane.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,300,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	Public Works.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water and Transportation Plan.

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #22
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Wier Loop, 0.22 miles east of Thomas Springs Road.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$15,000 (2017 material costs).
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	Public Works.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water and Transportation Plan.

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

		Travis County – Action #23
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Springdale Road, 0.11 miles northeast of Ferguson Lane.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$8,095,700
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	Public Works.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

	Travis County – Action #24
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Juniper Trail, 0.06 miles north of Yaupon Trail.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,016,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	Public Works.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #25
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Two locations on Wyldwood Road, 0.27 miles and 0.46 miles west of Brodie Lane. Located on Slaughter Creek and adjacent tributary.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$4,092,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	Public Works.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project expected to begin construction Q4 2023.

SECTION 17: PREVIOUS ACTIONS

	Travis County – Action #26
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Great Divide Road, 0.24 miles south of SH 71.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,150,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	Public Works.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Delete Action. Project area was annexed by the City of Bee Cave in 2019.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #27
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Fall Creek Road, 0.14 miles south of SH 71.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,168,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #28
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Two adjacent locations on Pedernales Canyon Trail between Canyon Ranch Train and Little Creek Trail.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,324,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project converted to installation of Flood Warning System. Project expected to begin construction Q1 2023.

	Travis County – Action #29
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Slaughter Creek Drive, 0.18 miles south of Meadowsouth Lane.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,914,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #30
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Tumbleweed Train, 0.07 miles east of Cuernavaca Drive.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$436,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Completed. Project was completed in Q3 2021.

SECTION 17: PREVIOUS ACTIONS

	Travis County – Action #31
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Crystal Bend Drive, just east of Crooked Creek Drive.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,516,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project under construction Q4 2022.

		Travis County – Action #32
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Cottonwood Drive, 0.07 miles west of Long Hollow Trail.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,516,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

	Travis County – Action #33
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Springdale Road, 0.06 miles south of Vara Drive.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$726,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Delete Action. County no longer deems project a priority.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #34
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Gregg Lane, 0.79 miles west of FM 973.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,410,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Completed. Project was completed in Q4 2022.

		Travis County – Action #35
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Jesse Bohls Road, 0.63 miles east of Weiss Lane.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,539,300
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

	Travis County – Action #36
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Lime Creek Road, 0.08 miles south of Fisher Hollow Trail.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,394,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

	Travis County – Action #37
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Nameless Road, 0.83 miles north of Shady Mountain Road.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,016,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

	Travis County – Action #38
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	D Morgan Road, 0.54 miles west of Rawhide Trail.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,544,500
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Delete Action. County no longer deems project a priority.

SECTION 17: PREVIOUS ACTIONS

	Travis County – Action #39
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Bitting School Road, 1.22 miles north of Hog Eye Road.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,221,800
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Completed. Project was completed in Q3 2021.

		Travis County – Action #40
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Weir Loop Circle, 0.06 miles south of Rimstone Trail at the westernmost crossing of Devil's Pen Creek.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$592,100
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project is being considered for future CO issuances after completion of the 2023 Bond.

	Travis County – Action #41
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Tom Sassman Road, 0.07 miles north of Evelyn Road.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$4,356,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Project expected to begin construction Q1 2023.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #42
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Bee Creek Road, 0.11 miles south of Ridgepole Lane.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,374,307
Potential Funding Sources:	General Fund, State funds, FEMA Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Delete Action. Project has been suspended.

SECTION 17: PREVIOUS ACTIONS

	Travis County – Action #43
Proposed Action:	Provide additional means of ingress and egress into single-entry neighborhoods and gated communities for use during emergencies and wildfire events.
BACKGROUND INFORMATION	
Site and Location:	Travis County, TX
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of life and property.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000 per neighborhood.
Potential Funding Sources:	Travis County, Grants.
Lead Agency/Department Responsible:	TNR
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Community Wildfire Protection Plan.

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

	Travis County – Action #44
Proposed Action:	Implement drainage improvements at Arroyo Doble Subdivision and Twin Creeks Park Subdivision to reduce flood damages to structures and infrastructure.
BACKGROUND INFORMATION	
Site and Location:	Area generally located south of FM 1626, west of Onion Creek and east of the Union Pacific Railroad.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and provide safer access during flood events. Reduce damages to structures and infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to structures and infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,100,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	Engineering
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, and Transportation Plan

2023 ANALYSIS:
Defer to Plan Update. Phases 1 and 2 in design. Project expected to begin construction Q4 2023.

	Travis County – Action #45
Proposed Action:	Due to the data deficiency identified as part of the Dam Failure Risk Assessment, work with LCRA, TCEQ, and private Dam owners (where possible) to encourage the development of inundation maps for all high hazard Dams within the planning area. When and if available, this data will be used for the next plan update to complete a more thorough risk assessment, to include extent and impact of potential dam failures.
BACKGROUND INFORMATION	
Site and Location:	Travis County, TX
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk through improved risk assessment and informed decision making.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure
Effect on new/existing buildings:	Reduce risk to existing and future structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000
Potential Funding Sources:	Staff time only, as the development of inundation maps is the responsibility of the LCRA, TCEQ, and/or private Dam owners.
Lead Agency/Department Responsible:	Floodplain Administrator.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	EAPs

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #46
	Proposed Action:	Development of a Wildland Fire Task Force.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County, TX and neighboring counties.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and property.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	Staff Time.
Potential Funding Sources:	Staff Time.
Lead Agency/Department Responsible:	TNR
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Community Wildfire Protection Plan.

2023 ANALYSIS:
Delete Action. County no longer deems project a priority.

		Travis County – Action #47
	Proposed Action:	Complete fuel reduction projects in the Balcones Canyon preserve. This will include cleaning lower limbs, dead wood, ladder fuels, and preserving tight canopy to reduce grass growth. Also included will be outreach to property owners in the interface to highlight the importance of and recommendations for defensible space initiatives.
	BACKGROUND INFORMATION	
	Site and Location:	Balcones Canyon Preserve.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of wildfire through fuels reduction.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	TNR
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Community Wildfire Protection Plan.

2023 ANALYSIS:
Delete Action. County requested as action is redundant to Action Item 3.

	Travis County – Action #48
Proposed Action:	Complete fuel reduction projects in other vulnerable, high-risk areas of the County. This will include clearing lower limbs, dead wood, ladder fuels, and preserving tight canopy to reduce grass growth. Also included will be outreach to property owners in the interface to highlight the importance of and recommendations for defensible space initiatives.
BACKGROUND INFORMATION	
Site and Location:	Travis County, TX – WUI.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of wildfire through fuels reduction.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	General Fund, State funds, FEMA Grants.
Lead Agency/Department Responsible:	TNR
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Community Wildfire Protection Plan.

2023 ANALYSIS:
Delete Action. County requested as action is redundant to Action Item 3.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #49
	Proposed Action:	Conduct public education program on best practices for creating defensible space and fire-adapted landscapes.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County, TX
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of wildfire, create resilient landscapes, and reduce loss of life and property.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce wildfire risk to structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	General Funds, Grants.
Lead Agency/Department Responsible:	Emergency Services, TNR, Austin Travis County Wildfire Coalition.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Community Wildfire Protection Plan.

2023 ANALYSIS:
Completed.

SECTION 17: PREVIOUS ACTIONS

		Travis County – Action #50
	Proposed Action:	Conduct public education program to advise public about evacuation routes, shelter-in-place locations for use during wildfire events, wildfire risks, and best wildland fire mitigation techniques for Central Texas.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County, TX
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of life and property.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000
Potential Funding Sources:	General Fund, Grants.
Lead Agency/Department Responsible:	Emergency Services, Austin Travis County Wildfire Coalition, TNR.
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Community Wildfire Protection Plan.

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

CITY OF LAKEWAY

		City of Lakeway – Action #1
	Proposed Action:	Review the Lakeway Emergency Operations Plan and continue to establish an Emergency Operations Center.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide; Region-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	The Lakeway Office of Emergency Management has been working with each individual having responsibility in its Emergency Operations plan in order to update the plan to current standards. This is time-consuming due to the number of disciplines involved and details required but will provide the city with an emergency plan acceptable to the DEM and FEMA. The new plan format is easier to use and provides greater clarification of assigned responsibilities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness).

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Drought, Tornado, Thunderstorm Wind, Extreme Heat, Expansive Soils, Hail, Lightning, Winter Storm, Dam Failure.
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500
Potential Funding Sources:	General Revenue.
Lead Agency/Department Responsible:	City of Lakeway / Police Department
Implementation Schedule:	Within 12 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Emergency Management Plan

2023 ANALYSIS:
Completed and Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		City of Lakeway – Action #2
	Proposed Action:	Acquisition and relocation of Police Department. Retrofit/harden new location with wind and fire-resistant materials, sprinkler system, surge protectors, and drought tolerant landscaping. Acquire and install generator with permanent hard wire quick connections to ensure continuity of emergency services.
	BACKGROUND INFORMATION	
	Site and Location:	City of Lakeway
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	The current Police Department is located adjacent to a stream that had been subject to high water on numerous occasions. The Department has been subjected to water infiltration due to inadequate drainage of storm water.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Drought, Tornado, Thunderstorm Wind, Extreme Heat, Expansive Soils, Hail, Lightning, Winter Storm, Dam Failure.
Effect on new/existing buildings:	Reduce risk to new structure.
Priority (High, Moderate, Low):	High
Estimated Cost:	$23,000,000
Potential Funding Sources:	Bond Election
Lead Agency/Department Responsible:	City of Lakeway.
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	City Master Plan

2023 ANALYSIS:
Completed. Police Department has been relocated and established at 1941 Lohman's Crossing Rd, Lakeway TX 78734.

SECTION 17: PREVIOUS ACTIONS

		City of Lakeway #3
	Proposed Action:	Conduct joint Skywarn training with emergency services (police, fire, EMS) / City staff / LTISD / bus drivers. Skywarn training is conducted as part of our citizens Police Academy and is open to the public. City will expand training to include additional citizens and incorporate mitigation measures to reduce risk of damages and injuries.
	BACKGROUND INFORMATION	
	Site and Location:	Host training within community (open to the public)
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	In order to protect citizens, the city continues to update its emergency plans, including training with Skywarn for emergency services to protect against both natural and manmade hazards.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Tornado, Hail, Winter Storm, Thunderstorm Wind, Dam Failure, Extreme Heat, Lightning.
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200
Potential Funding Sources:	General Revenue.
Lead Agency/Department Responsible:	Police/EMA.
Implementation Schedule:	Annual
Incorporation into Existing Plans:	Emergency Management Plan

2023 ANALYSIS:
Completed. Training on Skywarn was provided to Lakeway PD staff and EMA. Trainer who assisted was Paul Yura, Warning Coordination Meteorologist, National Weather Service Austin-San Antonio TX.

SECTION 17: PREVIOUS ACTIONS

	City of Lakeway – Action #4
Proposed Action:	Develop a mass debris removal plan.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	The City has never had a devastating storm causing damage to city-wide private property, resulting in very large quantities of materials (couches, carpets, appliances, rotting food, building materials such as sheetrock, etc.) ending up curbside. As a result, the City has no plans for managing debris removal in the event of a disaster.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind, Flood, Wildfire, Hail, Dam Failure.
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	General Revenue
Lead Agency/Department Responsible:	Lakeway PD&CE and Public Works
Implementation Schedule:	Within 24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	City Policy/SOPs for respective City Departments, Emergency Management Plan

2023 ANALYSIS:
Defer to Plan Update. In-progress.

SECTION 17: PREVIOUS ACTIONS

City of Lakeway – Action #5	
Proposed Action:	Implement fuels reduction / brush management program to reduce wildfire risk and assist with wildfire control.
BACKGROUND INFORMATION	
Site and Location:	City of Lakeway
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Brush fires are common in Texas especially during the hot and dry summer months. Under-brush and dead vegetation represent a significant fuel source for fires.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	General Revenue, Grants
Lead Agency/Department Responsible:	City of Lakeway/Public Works/Parks Department
Implementation Schedule:	Within 24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	City of Lakeway Development Plan

2023 ANALYSIS:
Completed. Hamilton Green Belt – Wildfire Mitigation.

SECTION 17: PREVIOUS ACTIONS

		City of Lakway – Action #6
	Proposed Action:	Utilize social media to provide educational materials to residents on all natural hazard risks and mitigation measures to protect property and lives.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	An effective advance education program has been proven to aid in the preservation of life and property during emergency events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Drought, Tornado, Thunderstorm Wind, Extreme Heat, Expansive Soils, Hail, Lightning, Winter Storm, Dam Failure
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000
Potential Funding Sources:	General Revenue
Lead Agency/Department Responsible:	City of Lakeway/Police
Implementation Schedule:	Within 24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Policies and SOPs

2023 ANALYSIS:
Completed.

SECTION 17: PREVIOUS ACTIONS

CITY OF MANOR

		City of Manor– Action #1
	Proposed Action:	Acquire and install All Hazards warning sirens.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect public safety during all hazards by providing an early warning system.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm.
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$40,000 - $60,000
Potential Funding Sources:	General Fund, Grants, USDA
Lead Agency/Department Responsible:	City Manager / Public Works
Implementation Schedule:	Within 24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	City Policy

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		City of Manor – Action #2
	Proposed Action:	Purchase, distribute, and promote the use of NOAA's all hazard radios. Incorporate with Citizens Police Academy training give away.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provides information pre- and post-disaster to prevent the loss of life or property damage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm.
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 - $10,000
Potential Funding Sources:	General Fund, HMA Grants, Donations
Lead Agency/Department Responsible:	Police Department.
Implementation Schedule:	Within 24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	City Emergency Plan

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

	City of Manor – Action #3
Proposed Action:	Implement plan to clean up and improve the alley ways located in the downtown Manor area. Implement drainage improvements in the downtown area to improve drainage and reduce damages.
BACKGROUND INFORMATION	
Site and Location:	Old town Manor area
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Removal of debris and drainage improvements in the downtown alley ways will allow for greater drainage to prevent flooding and allow greater access for emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	General Fund, HMA Grants, USDA
Lead Agency/Department Responsible:	City Manager/Public Works
Implementation Schedule:	Within 24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	City Development, Drainage Plan

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		City of Manor – Action #4
	Proposed Action:	Adopt and implement plan to clean up and remove debris from ditches, drains, and culverts to maintain capacity.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces the potential for flooding, and property damage from back water flooding.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce impact to existing structures and infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	General Fund, Grants, USDA
Lead Agency/Department Responsible:	City Manager/Public Works
Implementation Schedule:	Within 24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	City Ordinance

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

	City of Manor– Action #5
Proposed Action:	Develop/Update drought contingency plan. Adopt and implement water restrictions identified in the plan.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Maintain safe water levels and prevent waste.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	General Fund.
Lead Agency/Department Responsible:	City Manager/Planning/Public Works
Implementation Schedule:	Within 24 months of plan adoption.
Incorporation into Existing Plans:	City Ordinances

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

	City of Manor – Action #6
Proposed Action:	Public Awareness and education campaign to educate the public on expansive soil and methods and actions that can be taken to protect existing structures.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect existing structures from expansive soil damage.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	City Manager
Implementation Schedule:	Within 24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	City Emergency Plan

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		City of Manor – Action #7
	Proposed Action:	Develop and implement code requirements for foundations to protect against damage caused by expansive soils.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect or minimize the damage done to new construction from expansive soils.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils
Effect on new/existing buildings:	Reduce risk to future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	City Manager
Implementation Schedule:	Within 24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	City Ordinances

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

	City of Manor – Action #8
Proposed Action:	Develop and initiate extreme summer heat public awareness campaign and fan drive/giveaway. Implement fan drive to collect donations and distribute fans to vulnerable population.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Prevent loss of life through education and awareness, and distribution of fans to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 - $10,000
Potential Funding Sources:	General Fund, Grants, Donations
Lead Agency/Department Responsible:	City Manager/Police Department
Implementation Schedule:	Within 24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	City Emergency Plan

2023 ANALYSIS:
Defer to Plan Update.

CITY OF PFLUGERVILLE

	City of Pflugerville – Action #1	
	Proposed Action:	Construct shelters and safe refuge locations for public evacuation triggered by disasters such as wildfire, dam failure, winter storms, and extreme heat.
	BACKGROUND INFORMATION	
	Site and Location:	Location in City to be determined
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Minimize disruption to vulnerable populations reducing unnecessary need for medical attention or death.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm, Extreme Heat, Wildfires, Dam Failure, Tornado, Flood
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	General Fund, Grants
Lead Agency/Department Responsible:	Emergency Management Coordinator
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Emergency Response Plan

2023 ANALYSIS:
Defer to Plan Update. The city has incorporated warming and cooling centers but no overnight shelters. Recommend revising action to incorporate need for overnight shelters during extreme weather events.

SECTION 17: PREVIOUS ACTIONS

		City of Pflugerville – Action #2
	Proposed Action:	Study, adopt, and implement a drainage utility plan to fund/implement regular maintenance and operations for drainage improvements.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures and infrastructure.
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	City Engineer
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Master Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. On-going.

SECTION 17: PREVIOUS ACTIONS

		City of Pflugerville – Action #3
	Proposed Action:	Identify locations and construct tornado safe room community shelters. Install tornado safe rooms in new public facilities or designated shelters.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Mitigates specific risks to structures, people, and operations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	City Manager's Office
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Include in Facility Master Plan Scope of Work

2023 ANALYSIS:
Defer to Plan Update.

		City of Pflugerville – Action #4
	Proposed Action:	Incorporate specific actions from the Hazard Mitigation Plan that are designed to reduce flooding into the City's Comprehensive Plan. Actions should be related to protecting existing and future development from increased flooding potential and erosion and incorporate into the City of Pflugerville Unified Development Code.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Prevents future losses and reduces risk.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	General Fund.
Lead Agency/Department Responsible:	Development Services Departments
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Comprehensive Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. On-going. Actions to protect existing and future development from flooding and erosion have been incorporated into the City's Comprehensive Plan updates. This includes avoiding development in existing floodplains.

	City of Pflugerville – Action #5
Proposed Action:	Implement an education and awareness program to further promote the purchase of flood insurance. Advertise the availability of costs, and coverage of flood insurance through the National Flood Insurance Program (NFIP).
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce uninsured property losses.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	CRS/Floodplain Administrator
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding (then annually).
Incorporation into Existing Plans:	Community Rating System documents; City Communication Plan

2023 ANALYSIS:
Completed.

		City of Pflugerville – Action #6
	Proposed Action:	Increase public awareness of hazards and hazardous areas. Distribute public awareness information regarding natural hazards, including SFHAs, along with potential mitigation measures that can reduce risk. Utilize resources such as the local newspaper, utility bill inserts, inserts in the phone book, a city hazard awareness website, and an education program for school age children; provide "how to" classes in retrofitting by local merchants, integrate "Disaster Resistance Education" into the public school curriculum, and/or provide public education on the importance of maintaining ditches.
	BACKGROUND INFORMATION	
	Site and Location:	City wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Raise awareness, incite proactive actions by our residents to reduce losses.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$15,000
Potential Funding Sources:	General Fund, Grants
Lead Agency/Department Responsible:	Public Information Office
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding (then annually).
Incorporation into Existing Plans:	Communication Plan

2023 ANALYSIS:
Completed.

SECTION 17: PREVIOUS ACTIONS

	City of Pflugerville – Action #7
Proposed Action:	NFIP Community Rating System (CRS): Evaluate and implement activities to improve rating with the CRS, such as adopting higher floodplain standards.
BACKGROUND INFORMATION	
Site and Location:	City-wide, but generally in proximity to flood prone areas.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of future losses related to flooding.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce the number of existing and future buildings that are susceptible to flooding.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	Building Department
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding (then annually).
Incorporation into Existing Plans:	Comprehensive Plan, CRS Materials

2023 ANALYSIS:
Completed and Defer to Plan Update. On-going.

	City of Pflugerville – Action #8
Proposed Action:	Sponsor a "Multi-Hazard Awareness Week" to educate the public on hazards including hurricanes, tornadoes (sheltering in place, evacuation, emergency preparedness, and structural retrofitting), flooding (evacuation, emergency preparedness, retrofitting, and flood insurance), thunderstorms and lightning, (emergency preparedness) and hailstorms.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property in the community.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	City Budget, Grants
Lead Agency/Department Responsible:	Public Information Office
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding (then annually).
Incorporation into Existing Plans:	Communications Plan

2023 ANALYSIS:
Completed. The city engages the public with additional emergency preparedness messaging and activities during Emergency Preparedness Month every September.

SECTION 17: PREVIOUS ACTIONS

		City of Pflugerville – Action #9
	Proposed Action:	Ensure adequate plans, procedures, and capabilities to prevent and respond to dam failure.
	BACKGROUND INFORMATION	
	Site and Location:	Lake Pflugerville
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Properly maintaining the dam minimizes the potential for losses of life and property should Lake Pflugerville dam fail.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam Failure
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	City Utility Fund
Lead Agency/Department Responsible:	City Engineer
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Dam Safety Master Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. On-going. Update to incorporate into existing plans to also reflect Public Works Emergency Action Plan.

SECTION 17: PREVIOUS ACTIONS

		City of Pflugerville – Action #10
	Proposed Action:	Planning for and maintaining adequate road and debris clearing capabilities.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce vehicular accidents, as well as resulting injuries or deaths.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	%5,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	City of Pflugerville
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding (then annually).
Incorporation into Existing Plans:	Maintenance and Operations Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. On-going. Update to incorporate into existing plans to also reflect Public Works Emergency Action Plan.

SECTION 17: PREVIOUS ACTIONS

	City of Pflugerville – Action #11
Proposed Action:	Adopt ordinance to restrict water and energy consumption at public facilities.
BACKGROUND INFORMATION	
Site and Location:	City-wide public facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Improved resiliency of publicly owned buildings.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat
Effect on new/existing buildings:	Increased efficiency to existing and future buildings.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	City Manager's Office
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Facilities Master Plan

2023 ANALYSIS:
Defer to Plan Update. No ordinance could be located that restricts consumption at public facilities. Update action to incorporated into Emergency Action or COOP plans.

SECTION 17: PREVIOUS ACTIONS

		City of Pflugerville – Action #12
	Proposed Action:	Develop and implement a plan for installing network of lightning detection equipment systems and lightning rods at existing and future city park facilities.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide Park facilities
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure Project.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	Parks and Recreation
Implementation Schedule:	Withing 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Incorporate into Parks Master Plan Update

2023 ANALYSIS:
Defer to Plan Update. Only one park was installed. Update action to incorporate into the Parks Master Plan Update.

		City of Pflugerville – Action #13
	Proposed Action:	Study, adopt, and implement a Drainage Master Plan and FIRM study of Wilbarger Creek watershed.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide – Wilbarger Creek watershed
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	Reduce risk to existing and future structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	General Fund.
Lead Agency/Department Responsible:	City Engineer
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Comprehensive Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. A Flood Protection Plan Study was published in April 2021. Still collecting data on implementation of any drainage plans.

	City of Pflugerville – Action #14
Proposed Action:	Evaluate, adopt, and implement National Fire Protection Association (NFPA) codes and standards as well as Austin / Travis County Community Wildfire Protection Plan to minimize and manage the wildfire threat as appropriate.
BACKGROUND INFORMATION	
Site and Location:	City-wide – Pflugerville ETJ
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and property.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	Travis County ESD No. 2
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Comprehensive Plan

2023 ANALYSIS:
Completed. We have implemented NFPA 1300 (standard on Community Risk Reduction) in 2018 and are completing an update to that assessment and corresponding plan this year. The district, and the City of Pflugerville, adopted the 2021 version of the International Fire Code. The district, including the City of Pflugerville, was designated as an ISO Class 1 Public Protection Classification (largely based on meeting NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments).

	City of Pflugerville – Action #15
Proposed Action:	Acquire, implement, and maintain equipment, apparatus and personnel trained in support of Stillwater and swift water capabilities. This would address life and property.
BACKGROUND INFORMATION	
Site and Location:	City-wide – Pflugerville ETJ
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of lives during water rescue incidents.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations - Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Floods
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$43,090 annually
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	Travis County ESD No. 2
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

2023 ANALYSIS:
Completed. All District firefighters are trained and equipped to the operations level in both swift water and surface water (stillwater), with many poses technician level training. District staff complete refresher training annually.

SECTION 17: PREVIOUS ACTIONS

	City of Pflugerville – Action #16
Proposed Action:	Acquire, implement, and maintain equipment, apparatus and personnel trained in support of wildland firefighting capabilities. This would address life and property.
BACKGROUND INFORMATION	
Site and Location:	City-wide – Pflugerville ETJ
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the severity and amount of property loss due to wild land fires.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations - Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfires
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$53,200 annually
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	Travis County ESD No. 2
Implementation Schedule:	Within 24-36 months of plan adoption.
Incorporation into Existing Plans:	Comprehensive Plan

2023 ANALYSIS:
Completed. The district has maintained minimum wildland training requirements and capabilities since the late 90s. We have recently added two more brush trucks to the fleet, one being a type 5 and the other being a type 7 (a total of 5). All District firefighters are trained to a minimum of the National Wildfire Coordinating Group (NWCG) Wildland Type 1 Firefighter, and then additional training and qualifications are required and held for higher ranks. District firefighters must also complete the NWCG arduous pack test annually. Lastly, District staff regularly provide manpower and equipment for prescribed burning throughout Travis County through an ILA with Travis County Parks.

SECTION 17: PREVIOUS ACTIONS

	City of Pflugerville – Action #17
Proposed Action:	Complete a detailed structural/engineering survey of City facilities to ensure their soundness with respect to resisting the effects of Thunderstorm wind, Tornado, and Hail. With information from the survey, implement mitigation activities to harden facilities, reduce damages, and ensure continuity of services. Mitigation actions can include items such as hail resistant construction materials, storm shutters, shatter proof glass, and/or roof straps.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Mitigates specific risks to structures, people, and operations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm, Wind, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$150,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	City Manager's Office
Implementation Schedule:	Within 36-48 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Include in Facility Master Plan Scope of Work

2023 ANALYSIS:
Defer to Plan Update. Update action to incorporate implementing inspections on a regular cycle.

	City of Pflugerville – Action #18
Proposed Action:	Utilize news outlets and social media for distributing updated information about winter storms, including mitigation measures to reduce damages and health and safety tips.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to life and property.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	General Fund.
Lead Agency/Department Responsible:	Public Information Office
Implementation Schedule:	Within 36-48 months of plan adoption, pending available funding (then annually).
Incorporation into Existing Plans:	Communications Plan

2023 ANALYSIS:
Completed. The city's communications office regularly uses social media and news to distribute updated information in accordance with the Emergency Communications Plan.

	City of Pflugerville – Action #19
Proposed Action:	Coordinate with the State to monitor and conserve existing water supplies in the County. Adopt and implement mandatory water conservation measures during extreme droughts.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce water waste and maintain sufficient water pressure and flow.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Utility Funds.
Lead Agency/Department Responsible:	Public Works, Utilities Department
Implementation Schedule:	Within 36-48 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Comprehensive Plan, Drought Conservation Plan

2023 ANALYSIS:
Completed. The city coordinates with the County and State to conserve water supplies through our conservation programs.

SECTION 17: PREVIOUS ACTIONS

CITY OF SUNSET VALLEY

	City of Sunset Valley – Action #1
Proposed Action:	Pursue funding and implement land and easement acquisition for the purpose of reducing flood risk.
BACKGROUND INFORMATION	
Site and Location:	Designated Special Flood Hazard Area (100-year Floodplain)
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Loss of property in flood prone area
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce Risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	City General Fund
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	With 12 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Comprehensive Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. Ongoing. The City has purchased property in the floodplain as they become available.

	City of Sunset Valley – Action #2
Proposed Action:	Implement a natural waterway maintenance program. This program includes debris removal from the waterways, non-native plant removal, and the removal of fallen trees that are in excess of a 45-degree angle within the creek. Under the direction of the City Environmental Manager some trimming and or removal of native vegetation may also be performed.
BACKGROUND INFORMATION	
Site and Location:	Williamson Creek Cougar Creek (Sunset Valley Tributary) Kicheon Branch
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	improved natural creek function and flow to reduce flood risk
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project, Natural System Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures.
Priority (High, Moderate, Low):	High
Estimated Cost:	$30,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Flood Management Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. Ongoing. This is an ongoing operation and continues to be done annually.

		City of Sunset Valley – Action #3
	Proposed Action:	Lot to lot drainage. City will provide technical support to identify solutions to drainage problems affecting two or more properties, and perform minor grading work in easements, as needed to reduce flood risk.
	BACKGROUND INFORMATION	
	Site and Location:	As identified – City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of property to existing structures and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure.
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000
Potential Funding Sources:	Local Budgets, HMA Grants
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Plan

2023 ANALYSIS:
Delete Action. This program is no longer in effect.

		City of Sunset Valley – Action #4
	Proposed Action:	Implement education program to promote the purchase of flood insurance. Advertise the availability of costs, and coverage of flood insurance through the National Flood Insurance Program (NFIP). Encourage the 70 households located within the low water crossing inundation area identified to purchase flood insurance.
	BACKGROUND INFORMATION	
	Site and Location:	Households within the identified inundation area
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Public education of knowing risks of flood and understanding of flood loss coverage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets, Staff Time
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 12 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	N/A

2023 ANALYSIS:
Completed and Defer to Plan Update. Annually. This is done annually at the Public Works Open House event in March. The information is also displayed in the lobby of the Public Works Building.

SECTION 17: PREVIOUS ACTIONS

	City of Sunset Valley – Action #5
Proposed Action:	Implement education program to increase public awareness of hazards and hazardous areas. Distribute public awareness information regarding natural hazards, including SFHAs, and potential mitigation measures to reduce risk. Distribute information through local newspaper, utility bill inserts, inserts in the phone book, a City hazard awareness website, and an education program for school age children.
BACKGROUND INFORMATION	
Site and Location:	City-wide, including Sunset Valley Elementary
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of life, property or limb having public understanding their risk and information to prepare for disasters.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Budgets, Staff Time
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	With 12 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Emergency Management Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. Annually. This is done annually at the Public Works Open House event in March. The information is also displayed in the lobby of the Public Works Building.

SECTION 17: PREVIOUS ACTIONS

		City of Sunset Valley – Action #6
	Proposed Action:	Adopt and implement program to insulate outdoor pipes at public buildings annually and prior to winter storm events.
	BACKGROUND INFORMATION	
	Site and Location:	City Facilities
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of critical facilities infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000 (Staff Time).
Potential Funding Sources:	Local Budgets, Staff Time
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 12-24 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	SOP

2023 ANALYSIS:
Completed and Defer to Plan Update. Ongoing. This is done each year as winter approaches. The pipes are insulated and wrapped, and hot boxes have been installed over all the larger above ground backflow devices.

SECTION 17: PREVIOUS ACTIONS

	City of Sunset Valley – Action #7
Proposed Action:	Identify properties for possible participation in voluntary acquisition and demolition. Pursue funding and implement acquisition and demolition of flood prone structures.
BACKGROUND INFORMATION	
Site and Location:	Designated SFHA and/or repetitive loss properties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Loss of property in flood prone area
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Land Use Management Plan

2023 ANALYSIS:
Completed and Defer to Plan Update.

	City of Sunset Valley – Action #8
Proposed Action:	Implement routine maintenance of ditch lines, storm water inlets, storm water lift stations, as well as make standard preparations for storms and subsequent clean up.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Preparedness
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	Local Budgets, Grants
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. Ditches are cleaned bi-annually.

SECTION 17: PREVIOUS ACTIONS

	City of Sunset Valley – Action #9
Proposed Action:	Upgrade culvert on Westgate Bridge at Sunset Valley tributary to increase capacity and reduce damages. Project requires joint participation with the City of Austin.
BACKGROUND INFORMATION	
Site and Location:	Westgate Bridge at Sunset Valley Tributary
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of property due to backflow of storm waters at this point.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Budgets, Grants
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Plan

2023 ANALYSIS:
Delete Action. This project is no longer under consideration.

	City of Sunset Valley – Action #10
Proposed Action:	Implement channel realignment between Lone Oak Trail and Reese Road. Realign the tributary beginning east of Lone Oak Trail and reconnect to the existing channel west of Reese Road. The channel would be approximately 820 feet long. The proposed culvert crossing at Pillow Road would consist of three 10-foot by 3-foot box culverts.
BACKGROUND INFORMATION	
Site and Location:	Sunset Valley Tributary
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of property/structural damages on flood prone properties.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood risk on existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$686,750
Potential Funding Sources:	Local Budgets, Grants
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Plan

2023 ANALYSIS:
Delete Action. This project is no longer under consideration.

	City of Sunset Valley – Action #11
Proposed Action:	Implement culvert improvements, storm sewer system, and roadside ditch improvements along Sunset Trail, Lone Oak Drive, Yellow Tail Cove, and Pillow Road.
BACKGROUND INFORMATION	
Site and Location:	Along Sunset Trail, Lone Oak Drive, Yellow Tail Cove, and Pillow Road
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to existing structures and infrastructure through flood reduction and increased capacity.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$750,000
Potential Funding Sources:	Local Budgets, HMA Grants
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drainage Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. Annually. The stormwater system will be evaluated annually for possible improvements.

SECTION 17: PREVIOUS ACTIONS

	City of Sunset Valley – Action #12
Proposed Action:	Pursue grant funding from FEMA's Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) program to implement acquisition and elevation program for flood prone properties within the City.
BACKGROUND INFORMATION	
Site and Location:	Designated SFHA
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of property and risk from flooding in flood prone area. Continuity of home ownership in City.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP, FMA
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Comprehensive Plan

2023 ANALYSIS:
Defer to Plan Update.

		City of Sunset Valley – Action #13
	Proposed Action:	Develop and implement a Flood Event Warning System to monitor rainfall in key areas upstream of the City and alert citizens to potential flooding.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of life and property
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	HMGP, FMA, Local budgets
Lead Agency/Department Responsible:	Department of Public Works, Police Department
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Emergency Management Plan

2023 ANALYSIS:
Defer to Plan Update. The city will install flood warning signs near several low water crossings, but no system has been developed.

SECTION 17: PREVIOUS ACTIONS

		City of Sunset Valley – Action #14
	Proposed Action:	Continue to monitor drought conditions through contact with State agencies.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk through enhanced risk assessment.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Budgets, Staff Time
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drought and Water Conservation Plan

2023 ANALYSIS:
Completed and Defer to Plan Update. The city continues to monitor drought conditions.

	City of Sunset Valley – Action #15
Proposed Action:	Implement public information/education campaigns on water conservation during times of drought. Adopt water use restrictions to ensure sufficient water pressure for firefighting and provision of drinking water during droughts.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce impact of drought through water restrictions and education.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Budgets, Staff Time
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Drought and Conservation Plan

2023 ANALYSIS:
Completed. Water conservation education is part of Public Works Open House and is provided in newsletter articles.

SECTION 17: PREVIOUS ACTIONS

		City of Sunset Valley – Action #16
	Proposed Action:	Implement activities to improve Community Rating System (CRS) rating such as adopting higher floodplain standards.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of property through higher development standards for new and significant loss construction.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Low
Priority (High, Moderate, Low):	Reduce risk to existing structures.
Estimated Cost:	$2,500
Potential Funding Sources:	Local Budgets, Staff Time
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 48 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	CRS Program

2023 ANALYSIS:
Completed. The city has made improvements and updated their CRS rating.

	City of Sunset Valley – Action #17
Proposed Action:	Complete a detailed structural/engineering survey of City facilities to ensure through soundness with respect to resisting the effects of high winds and hail. Initiate/ implement upgrades to at-risk City structures and/or infrastructure (harden facilities). Mitigate specific risks to structures, people, and operations to reduce risk of damages and ensure continuity of services.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to facilities and citizens through building protection and ensuring continuity of services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind, Hail, Lightning
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Budgets, HMGP, FEMA
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 48 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Emergency Management Plan

2023 ANALYSIS:
Defer to Plan Update. This has not been completed at this time.

SECTION 17: PREVIOUS ACTIONS

	City of Sunset Valley – Action #18
Proposed Action:	Develop and implement a public information campaign to inform citizens about the potential for wildland-urban interface fires and mitigation measures to reduce risk.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of life and property during wildfire event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	Local Budgets, Grants
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 48 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2023 ANALYSIS:
Completed. Wildfire awareness is part of the annual Public Works Open House Event in March.

SECTION 17: PREVIOUS ACTIONS

		City of Sunset Valley – Action #19
	Proposed Action:	Provide tree pruning education classes to reduce damages and power outages caused by falling limbs and debris.
	BACKGROUND INFORMATION	
	Site and Location:	Course to be offered in the City – Available to all residents.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss to property and potential power outages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Wildfire, Winter Storm, Tornado, Hail, Lightning, Flood, Dam Failure.
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	General Fund
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 48 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Emergency Management Plan

2023 ANALYSIS:
Completed. Classes are offered every other year to teach residents proper pruning techniques.

SECTION 17: PREVIOUS ACTIONS

VILLAGE OF THE HILLS

		Village of the Hills – Action #1
	Proposed Action:	Expand and implement drainage maintenance program to include regular mowing/brush clearing within drainage easements and removal of debris and sediment from roadside culverts and roadside ditches.
	BACKGROUND INFORMATION	
	Site and Location:	Village easements, common area and park land
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flooding by maintaining drainage capacity.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures and infrastructure.
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000
Potential Funding Sources:	Annual Budget
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Standard Operating Procedures

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

	Village of the Hills – Action #2
Proposed Action:	Identify residential and non-residential structures at risk from wildfire. Expand wildfire vegetation maintenance program to trim back and remove vegetation near high-risk structures.
BACKGROUND INFORMATION	
Site and Location:	Village-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce wildfire risk to existing structures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural System Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure.
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	Local Budgets, Staff Time, FEMA Grants
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 12 month of plan adoption
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Village of the Hills – Action #3
	Proposed Action:	Coordinate with the State to monitor and conserve existing water supplies in the County. Adopt and implement mandatory water conservation measures to ensure sufficient water pressure for firefighting and provision of drinking water during droughts
	BACKGROUND INFORMATION	
	Site and Location:	Village-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce impacts of drought through conservation regulations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500
Potential Funding Sources:	Local Budget, Staff Time
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 12-24 months of plan adoption.
Incorporation into Existing Plans:	Local Ordinances

2023 ANALYSIS:
Defer to Plan Update.

	Village of the Hills – Action #4
Proposed Action:	Pursue funding and implement acquisition and elevation program for flood prone properties within the Village. Prioritize repetitive loss properties. Pursue grant funding from FEMA's Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) program to receive assistance for mitigating (acquisition, elevation, etc.) flood prone properties within the City.
BACKGROUND INFORMATION	
Site and Location:	Village-wide flood prone properties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate repetitive flood damages to high-risk properties.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP, FMA
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 24-36 months of plan adoption, pending funding.
Incorporation into Existing Plans:	Land Use Plan

2023 ANALYSIS:
Defer to Plan Update.

		Village of the Hills – Action #5
	Proposed Action:	Sponsor a "Multi-Hazard Awareness Week" to educate the public on all natural hazards (sheltering in place, evacuation, emergency preparedness, health and safety tips and structural retrofitting, flood insurance, etc.). This activity may be carried out in collaboration with the County or other surrounding jurisdictions.
	BACKGROUND INFORMATION	
	Site and Location:	Village-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and damages through education and awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000
Potential Funding Sources:	General Funds, HMA Grants
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Annual Budget

2023 ANALYSIS:
Defer to Plan Update.

	Village of the Hills – Action #6
Proposed Action:	Increase public awareness of hazards and hazardous areas. Distribute public awareness information regarding natural hazards, including SFHAs, along with potential mitigation measures that can reduce risk. Educate residents on tools associated with Smart Meters, encourage monitoring of water use through technology, and notify residents of suspected water leaks. Utilize resources such as the local newspaper, utility bill inserts, and a Village hazard awareness website.
BACKGROUND INFORMATION	
Site and Location:	Village-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and damages through education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	General Funds, HMA Grants
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 24-36 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Annual Budget

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Village of the Hills – Action #7
	Proposed Action:	Develop alternative evacuation routes/plans and designate emergency thoroughfares, particularly in areas with limited capacity. Educate citizens on evacuation routes and procedures.
	BACKGROUND INFORMATION	
	Site and Location:	Village-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens through improved evacuation and education.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Preparedness)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Flood, Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,500
Potential Funding Sources:	Local Budgets, Staff Time
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Evacuation Plan

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Village of the Hills – Action #8
	Proposed Action:	Work with local news outlets to disseminate information about natural hazards, including health and safety tips and mitigation measures to reduce risk.
	BACKGROUND INFORMATION	
	Site and Location:	Village-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and damages through education and awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets, Staff Time
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Annual Budget

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Village of the Hills – Action #9
	Proposed Action:	Develop and implement a public information campaign to inform citizens about the potential for wildland-urban interface fires and mitigation measures that reduce risk.
	BACKGROUND INFORMATION	
	Site and Location:	Village-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens and property through education and awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Budgets, Grants
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 24 months of plan adoption.
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Village of the Hills – Action #10
	Proposed Action:	Implement education and awareness program to promote the purchase of flood insurance. Advertise the coverage, availability, and costs of flood insurance through the National Flood Insurance Program (NFIP) on the village website.
	BACKGROUND INFORMATION	
	Site and Location:	Village-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk through increased insurance coverage and risk awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	Staff Time
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 36-48 months of plan adoption, pending funding.
Incorporation into Existing Plans:	N/A

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Village of the Hills – Action #11
	Proposed Action:	Increase tree planting around buildings to shade parking lots and along public rights-of-way.
	BACKGROUND INFORMATION	
	Site and Location:	Village facilities
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce effect of extreme heat on citizens and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	Reduce effect on structures and infrastructure.
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Budget
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 36-48 months of plan adoption.
Incorporation into Existing Plans:	Local Ordinance

2023 ANALYSIS:
Defer to Plan Update.

		Village of the Hills – Action #12
	Proposed Action:	Implement irrigation policies for public facilities; maintain a watering schedule to minimize the effects of expansive soils.
	BACKGROUND INFORMATION	
	Site and Location:	Village public facilities
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce effects of expansive soils on public facilities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils
Effect on new/existing buildings:	Reduce risk to existing and future structures.
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	Annual Budget
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 36-48 months of plan adoption.
Incorporation into Existing Plans:	Local Ordinances

2023 ANALYSIS:
Defer to Plan Update.

		Village of the Hills – Action #13
	Proposed Action:	Establish standard requirements for all utilities regarding tree pruning around lines.
	BACKGROUND INFORMATION	
	Site and Location:	Village-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to power lines and damages caused by power outages by reducing risk of downed power lines.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Winter Storm, Hail, Lightning
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure.
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,500
Potential Funding Sources:	Local Budget
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 36-48 months of plan adoption.
Incorporation into Existing Plans:	Local Ordinances

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Village of the Hills – Action #14
	Proposed Action:	Install and maintain surge protection on critical electronic equipment.
	BACKGROUND INFORMATION	
	Site and Location:	Village Facilities
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to critical equipment and ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budget
Lead Agency/Department Responsible:	Village of the Hills Administration
Implementation Schedule:	Within 36-48 months of plan adoption
Incorporation into Existing Plans:	Annual Budget

2023 ANALYSIS:
Defer to Plan Update.

2017 TRAVIS COUNTY COMMUNITIES PLAN

VILLAGE OF BRIARCLIFF

		Village of Briarcliff – Action #1
	Proposed Action:	Achieve Firewise Certification: Work with homeowners to create defensible space around homes and prevent fires from advancing and endangering homes and lives. Acquire Firewise status by reducing wildfire risk around the village. Wildfires interface with the village and the risk is higher during drought periods.

MITIGATION ACTION DETAILS	
Type of Action:	LPR, NSP
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	FEMA Hazard Mitigation Grant
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	36 months

2023 ANALYSIS:
Completed.

		Village of Briarcliff– Action #2
	Proposed Action:	Incorporate xeriscape practices into landscape ordinances: Incorporate xeriscape practices into landscape ordinances to reduce water usage during drought and extreme heat periods and reduce the effects of expansive soils

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Drought, Expansive Soils, Extreme Heat
Priority (High, Moderate, Low):	Low
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Water Department
Implementation Schedule:	36 months

2023 ANALYSIS:
Defer to Plan Update.

		Village of Briarcliff – Action #3
	Proposed Action:	Purchase a stand- by generator for the wastewater treatment plant: Secure funding for the purchase and installation of a back-up generator at wastewater treatment plant to provide back-up power from hazard events of dam/levee failure, earthquakes, extreme heat, flood, hail, hurricane/tropical storms, lightning, tornado, wildfire, wind, and winter weather.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lighting, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	FEMA Hazard Mitigation Grant
Lead Agency/Department Responsible:	Utilities Department
Implementation Schedule:	34 months

2023 ANALYSIS:
Defer to Plan Update. Project on hold for lack of funding.

		Village of Briarcliff – Action #4
	Proposed Action:	Reduce fuels for wildfire: Reduction of fuel cedar trees, dry grass, and dead trees for wildfires will reduce the potential for widespread fires.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	FEMA Hazard Mitigation Grant
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	24 months
Incorporation into Existing Plans:	Not identified in HMP

2023 ANALYSIS:
Defer to plan update. Project is ongoing.

		Village of Briarcliff – Action #5
	Proposed Action:	Public information and education: Educate and update all citizens of the hazards we face, how to protect yourself and mitigate damages to your property and increase over-all situation of all potential impacts and self-help measures. Provide information on the city website about hazard events and its impact on homeowners.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Dam Failure, Drought Earthquake, Expansive Soils, Extreme Heat, Flood, Hail, Hurricane/ Tropical Storm, Lighting, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	>$100,000
Potential Funding Sources:	FEMA Hazard Mitigation Grant
Lead Agency/Department Responsible:	Utilities Department
Implementation Schedule:	60 months

2023 ANALYSIS:
Defer to Plan Update.

		Village of Briarcliff – Action #6
	Proposed Action:	Promote water conservation: Provide conservation information such as installing low-flow showerheads and toilets, adjusting sprinklers on lawns, checking for leaks in plumping, and encouraging water reuse on the city website and mail outs.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Drought
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	Village Funds
Lead Agency/Department Responsible:	Utilities Department
Implementation Schedule:	24 months

2023 ANALYSIS:
Defer to Plan Update.

		Village of Briarcliff – Action #7
	Proposed Action:	Remove brush and tree growth: Remove brush and trees growing in the earthen dam.

MITIGATION ACTION DETAILS	
Type of Action:	NSP
Hazard(s) Addressed:	Dam Failure
Priority (High, Moderate, Low):	Medium
Estimated Cost:	>$100,000
Potential Funding Sources:	Village Funds
Lead Agency/Department Responsible:	Grounds Department
Implementation Schedule:	36 months

2023 ANALYSIS:
Defer to Plan Update. Project is ongoing.

		Village of Briarcliff – Action #8
	Proposed Action:	Hail-resistant roof coverings: Provide material selections for roofing materials that will have a minimal impact from hail events.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Hail
Priority (High, Moderate, Low):	Medium
Estimated Cost:	>$100,000
Potential Funding Sources:	FEMA Hazard Mitigation Grant
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	48 months

2023 ANALYSIS:
Defer to Plan Update.

		Village of Briarcliff – Action #9
	Proposed Action:	Urban green space: Public education to provide positive enhancements to environment, such as the creation and development of urban green spaces.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Extreme Heat
Priority (High, Moderate, Low):	Medium
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	FEMA Hazard Mitigation Grant
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	60 months

2023 ANALYSIS:
Defer to Plan Update.

		Village of Briarcliff – Action #10
	Proposed Action:	Earthquake Emergency Response Service: Establish emergency services protocols that adequately address response scenarios in the event of an earthquake.

MITIGATION ACTION DETAILS	
Type of Action:	EAP, LPR
Hazard(s) Addressed:	Earthquake
Priority (High, Moderate, Low):	Medium
Estimated Cost:	$10,000
Potential Funding Sources:	FEMA Hazard Mitigation Grant
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	60 months

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

CITY OF JONESTOWN

		City of Jonestown– Action #1
	Proposed Action:	Water utility inter- connect with Leander: Secure an agreement for wholesale purchase of water with Leander, select route for pipeline to connect to current water supply lines, obtain easements for the route, construct, and connect the systems.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Drought
Priority (High, Moderate, Low):	High
Estimated Cost:	>$100,000
Potential Funding Sources:	Grant, Developers, City Funds, CIP Zone
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	60 Months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #2
	Proposed Action:	Water utility inter- connect with Lago Vista: Secure an agreement for wholesale purchase of water with Lago Vista, select route for pipeline to connect to current water lines, obtain easements for the route, construct, and connect the systems.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Drought
Priority (High, Moderate, Low):	High
Estimated Cost:	>$100,000
Potential Funding Sources:	Grants, Developers, City Funds, CIP Zone
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	60 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #3
	Proposed Action:	Potable water supply contingency plan with Jonestown Water Supply Corporation: Work with water supply corporation in establishing emergency partnership to supply potable water before the next drought.

MITIGATION ACTION DETAILS	
Type of Action:	LPR
Hazard(s) Addressed:	Drought, Wind
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	Grants, Developers, City Funds, CIP Zone
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	60 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #4
	Proposed Action:	Emergency power supply for Jonestown Police Department Offices. Police officers were wired for emergency power during construction. Underground construction is needed to connect generator to the facility to protect the Police Dept. from hazard events of dam/levee failure, earthquakes, extreme heat, flood, hall hurricane/tropical storms, lightning, tornado, wildfire, wind, and winter weather.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Grants, Developers, City Funds, CIP Zone
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #5
	Proposed Action:	Completion of road construction at Alvarado Pass: To have an alternative means of egress for the South Jonestown Hills residents.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Dam Failure, Wildfire, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	>$100,000
Potential Funding Sources:	Grants, CapMetro Funds
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	24 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #6
	Proposed Action:	Community Evacuation Plan: Complete assessment of all subdivisions, arteries and streets that connect to collector streets to identify and map potential routes for evacuation, provide mapping of routes, identify deficiencies, recommend projects to correct deficiencies, and identify and map homes of persons with special needs.

MITIGATION ACTION DETAILS	
Type of Action:	LPR
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Hurricane/Tropical Storm, Wildfire
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	Grants, CapMetro Funds
Lead Agency/Department Responsible:	Planning and Development
Implementation Schedule:	24 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #7
	Proposed Action:	Community Safe Room: Identify property as site for structure. Purchase land if not owned. Design and build to FEMA standards.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Hurricane/Tropical Storm, Tornado, Wind
Priority (High, Moderate, Low):	High
Estimated Cost:	>$100,000
Potential Funding Sources:	Grants, In-kind, Donations, Budget
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	60 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #8
	Proposed Action:	Acquisition of property located in the floodway on Sandy Creek, Pecan Park area: Property owners are 35 to 75 percent within the floodway. One property has a SFR. Creek has been in flood status more than 5 times in the last 0 years with swift and rapid water with little to no warning to those who live in the area.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Flood, Hurricane/Tropical Storm
Priority (High, Moderate, Low):	Medium
Estimated Cost:	>$100,000
Potential Funding Sources:	HMA Grants
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	36 months

2023 ANALYSIS:
Defer to Plan Update.

		City of Jonestown– Action #9
	Proposed Action:	Engineer study of stormwater run-off for the City: Prevent future loss and damage to existing properties as the city develops incorporated limits.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Flood, Hurricane/Tropical Storm
Priority (High, Moderate, Low):	Medium
Estimated Cost:	>$100,000
Potential Funding Sources:	HMA Grants
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	36 months

2023 ANALYSIS:
Defer to Plan Update.

		City of Jonestown– Action #10
	Proposed Action:	Install automatic warning signs/gates at low-water crossings:

MITIGATION ACTION DETAILS	
Type of Action:	SIP/EAP
Hazard(s) Addressed:	Flood, Hurricane/Tropical Storm
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	48 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #11
	Proposed Action:	Acquisition of property located in the floodplain of Lake Travis and Cross Street area: Area is located 2 to 35 feet below the BFE of Lake Travis and has flooded numerous times. Current regulations prohibit the property owners from building or developing the properties.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	>$100,000
Potential Funding Sources:	HMA Grants
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	48 months

2023 ANALYSIS:
Defer to Plan Update.

		City of Jonestown– Action #12
	Proposed Action:	Educate the public on extreme heat/drought safety and health issues: It has been shown that major loss of life can be caused by individuals exposed to extreme heat and the associated problems caused to the human body.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Dam Failure, Extreme Heat
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	48 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #13
	Proposed Action:	Implement a floodplain early warning system and local response plan: Property affected by the LCRA floodplain within the City of Jonestown.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Flood, Hurricane/Tropical Storm
Priority (High, Moderate, Low):	Medium
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Grants
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	36 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #14
	Proposed Action:	Implement and promote a multi-hazard public awareness program: Educate and update all citizens and business owners of the hazards we face, how to protect yourself and mitigate damages to your property and increase over-all situation awareness of all potential impacts and self-help measures.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City funds
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	60 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #15
	Proposed Action:	Enhance code enforcement and inspection services: The city has an effective code enforcement program but is limited by the amount of time one person can devote to inspections. Hire an additional person.

MITIGATION ACTION DETAILS	
Type of Action:	LPR
Hazard(s) Addressed:	Flood, Lightning, Tornado, Wildfire, Wind
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	City Council
Implementation Schedule:	48 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #16
	Proposed Action:	Advertise and promote the availability of flood insurance: Many homeowners assume they cannot obtain, nor do they need, flood insurance, unless their property is located in the floodplain. They can be affected by water damage, even if they are not located in the floodplain area.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Floodplain Management
Implementation Schedule:	24 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #17
	Proposed Action:	Identify and buyout repetitive loss properties: There are many properties that will always be affected by flood waters from Lake Travis. They have been repeatedly flooded and represent potential loss of life and property destruction.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	>$100,000
Potential Funding Sources:	HMA Grants
Lead Agency/Department Responsible:	Building Development
Implementation Schedule:	24 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #18
	Proposed Action:	Develop a land use study for acquiring, reusing, and preserving open spaces within floodplain/floodway areas: This should be an on-going strategy to acquire floodplain properties and adjacent property to minimize the potential for loss of life or continued property damage by floods.

MITIGATION ACTION DETAILS	
Type of Action:	LPR, NSP
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	>$100,000
Potential Funding Sources:	Grants
Lead Agency/Department Responsible:	Building Department
Implementation Schedule:	36 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #19
	Proposed Action:	Purchase NOAA All Hazard Radios: Purchase radios and distribute to residents.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	60 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		City of Jonestown– Action #20
	Proposed Action:	Educate residents on and implement measures: Educate residents and builders of potential hazards and high-risk areas by providing GIS maps of high hazard areas and implement soil stabilizers or moisture control/irrigation in identified areas.

MITIGATION ACTION DETAILS	
Type of Action:	LPR, EAP
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soil, Extreme Heat, Flood, Hail, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	48 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

CITY OF LAGO VISTA

		City of Lago Visa – Action #1
	Proposed Action:	Conduct public outreach to educate citizens on the full range of hazards: educational information will be presented through newsletters, and on the city website, to increase awareness of ways the public may protect themselves and mitigate homes and businesses from hazard events.

MITIGATION ACTION DETAILS	
Type of Action:	NSP, EAP
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	48 months

2023 ANALYSIS:
Defer to Plan Update. In progress.

		City of Lago Visa – Action #2
	Proposed Action:	Install back-up generators at critical facilities: Install emergency generators at critical facilities to provide back-up power from hazard events of dam/levee failure, earthquakes, extreme heat, flood, hail, hurricane/tropical storms, lightning, tornado, wildfire, wind, and winter weather.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Capital Improvement Program, HMP
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	24 months

2023 ANALYSIS:
Defer to Plan Update. A generator was recently installed Water Plant #3. Generators still needed at the following site locations: City Hall, WP #1 and WP#3 intakes, Public Works Facility which includes Water Plant #1, and at 3 booster stations. Update cost to $3.5-4 million. Update agency to Public Works.

		City of Lago Visa – Action #3
	Proposed Action:	Conduct a drainage study and disseminate study results: The city is not completely built out. As new homes and businesses locate in Lago Vista, it is apparent that drainage will be an increasing problem. Area topography does not lend itself to an easy solution and the layout of lots and streets exacerbates the problem.

MITIGATION ACTION DETAILS	
Type of Action:	LPR
Hazard(s) Addressed:	Flood, Hurricane/Tropical Storm
Priority (High, Moderate, Low):	Medium
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Bonds
Lead Agency/Department Responsible:	Building Services
Implementation Schedule:	36 months

2023 ANALYSIS:
Defer to Plan Update. Update lead agency to reflect Public Works and Development Services.

		City of Lago Visa – Action #4
	Proposed Action:	Develop a mass debris removal plan: Provide staging areas in less populated areas of the city.

MITIGATION ACTION DETAILS	
Type of Action:	LRP
Hazard(s) Addressed:	Dam Failure, Earthquake, Flood, Hail, Hurricane/ Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	FEMA Reserves
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months

2023 ANALYSIS:
Defer to Plan Update. In-progress.

		City of Lago Visa – Action #5
	Proposed Action:	Build safe rooms to FEMA Standards: The city has no storm shelters.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Hurricane/Tropical Storm, Tornado, Wind
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	HMP Grants
Lead Agency/Department Responsible:	Building Services
Implementation Schedule:	48 months

2023 ANALYSIS:
Defer to Plan Update.

		City of Lago Visa – Action #6
	Proposed Action:	Purchase NOAA All Hazard Radios: Purchase radios and distribute to residents.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	60 months

2023 ANALYSIS:
Defer to Plan Update.

		City of Lago Visa – Action #7
	Proposed Action:	Amend regulations to allow trees in the ROW and landscape requirements for more trees on commercial property: Develop a landscape ordinance that encourages xeriscape. The city experiences mild to severe drought during the summer months.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Drought, Extreme Heat
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	36 months

2023 ANALYSIS:
Completed and Defer to Plan Update. Action is a constant maintenance item. Proposing addition action in plan Update that encourages xeriscape is ideal as it will help conserve water.

		City of Lago Visa – Action #8
	Proposed Action:	Replace fire hydrants: Some older hydrants are harder to open during fires. Faster more efficient water delivery during fire to mitigate against damage.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Capital Improvement Program
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	48 months

2023 ANALYSIS:
Completed and Defer to Plan Update. Ongoing. Public Works has initiated a Fire Hydrant Maintenance and Replacement program.

SECTION 17: PREVIOUS ACTIONS

		City of Lago Visa – Action #9
	Proposed Action:	Allow for Building Official to become a CFM: Recent floods require the expertise of a CFM to assist citizens**.**

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	24 months

2023 ANALYSIS:
Completed.

		City of Lago Visa – Action #10
	Proposed Action:	Update subdivision requirements for higher level of ingress and egress: Floodwaters at low-water crossings prevent ingress and egress throughout the city during flood and thunderstorm events.

MITIGATION ACTION DETAILS	
Type of Action:	LPR
Hazard(s) Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Wildfire
Priority (High, Moderate, Low):	Low
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	36 months

2023 ANALYSIS:
Completed.

		City of Lago Visa – Action #11
	Proposed Action:	Community Evacuation Plan: Identify and map potential routes for evacuation, provide mapping of routes, identify deficiencies, recommend projects to correct deficiencies, and identify and map homes of persons with functional and access needs.

MITIGATION ACTION DETAILS	
Type of Action:	LPR
Hazard(s) Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Wildfire
Priority (High, Moderate, Low):	Medium
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	48 months

2023 ANALYSIS:
Defer to Plan Update.

		City of Lago Visa – Action #12
	Proposed Action:	Educate residents and builders of potential hazards and high-risk areas by providing GIS maps of high hazard areas and implement soil stabilizers or moisture control/irrigation in identified areas.

MITIGATION ACTION DETAILS	
Type of Action:	LPR, EAP
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soil, Extreme Heat, Flood, Hail, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	48 months

2023 ANALYSIS:
Defer to Plan Update. Update action to include working with GIS Analyst on publishing easily accessible maps of hazardous areas.

CITY OF MUSTANG RIDGE

SECTION 17: PREVIOUS ACTIONS

		City of Mustang Ridge – Action #1
	Proposed Action:	Educate residents of natural hazards: Post information on bulletin boards for homeowners on how to mitigate damages to their homes.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Drought, Earthquake Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	48 months

2023 ANALYSIS:
Completed and Defer to Plan Update. On-going.

		City of Mustang Ridge – Action #2
	Proposed Action:	Review Floodplain Management Ordinance: Review floodplain management ordinance and obtain a rating under the TCRFC s Ordinance Floodplain Management Assessment Program.

MITIGATION ACTION DETAILS	
Type of Action:	EAP, LPR
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Development
Implementation Schedule:	12 months

2023 ANALYSIS:
Completed and Defer to Plan Update.

		City of Mustang Ridge – Action #3
	Proposed Action:	Partner with Travis County to develop an interlocal agreement to institute a tree trimming program: Work with Travis County to address problem areas by creating an interlocal agreement on services.

MITIGATION ACTION DETAILS	
Type of Action:	EAP, LPR
Hazard(s) Addressed:	Flood, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Development
Implementation Schedule:	12 months

2023 ANALYSIS:
Defer to Plan Update.

		City of Mustang Ridge – Action #4
	Proposed Action:	Xeriscape planting: Encourage xeriscape planting for drought/extreme heat-resistant landscaping and to reduce the effects of expansive soils.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Drought, Expansive Soil, Extreme Heat
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Development
Implementation Schedule:	24 Months

2023 ANALYSIS:
Defer to Plan Update.

		City of Mustang Ridge – Action #5
	Proposed Action:	Hail-resistant roof coverings: Public education regarding material selections for roofing materials that will have a minimal impact on the environment.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Hail
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Development
Implementation Schedule:	48 months

2023 ANALYSIS:
Completed and Defer to Plan Update. On-going.

		City of Mustang Ridge – Action #6
	Proposed Action:	Purchase NOAA All Hazard Radios: Purchase radios for residents so they are aware of weather events.

MITIGATION ACTION DETAILS	
Type of Action:	NSP
Hazard(s) Addressed:	Drought, Earthquake Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	48 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

VILLAGE OF POINT VENTURE

		Village of Point Venture – Action #1
	Proposed Action:	Educate community about the Firewise Program: Flyers, on doors, sending letters, sending emails to residence about the benefits of the Firewise Program and how wildfires can be worse during drought and extreme heat events. Informing them of the Lot Maintenance Program.

MITIGATION ACTION DETAILS	
Type of Action:	LPR, EAP
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	Village Funds
Lead Agency/Department Responsible:	Code Enforcement
Implementation Schedule:	24 Months

2023 ANALYSIS:
Completed and Defer to Plan Update. Annually. Approximately 138 noncompliant lots have been notified. Continue notification annually at firewise education event.

		Village of Point Venture – Action #2
	Proposed Action:	Flood prevention: Review Flood Ordinance at council meetings with land development and building construction contractors present.

MITIGATION ACTION DETAILS	
Type of Action:	LPR
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	Village Funds
Lead Agency/Department Responsible:	Flood Administrator
Implementation Schedule:	24 months

2023 ANALYSIS:
Completed and Defer to Plan Update. On-going.

		Village of Point Venture – Action #3
	Proposed Action:	Implement Re-Group as an Emergency Broadcast System: This can be implemented to keep residents aware of implement hazard events of: tornado, winter storm, extreme heat, flooding, wildfire, hail, high winds, lightning, and dam failure.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Dam Failure, Earthquake Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	Village Funds
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	36 months

2023 ANALYSIS:
Completed.

		Village of Point Venture – Action #4
	Proposed Action:	Debris removal and Contract Chipper: Have a trash dumpster available, contract with a local chipper and/or purchase a chipper in advance of next weather event. Have committed volunteers to help clear roads and property.

MITIGATION ACTION DETAILS	
Type of Action:	LPR, SIP
Hazard(s) Addressed:	Dam Failure, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	Village Funds
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	24 months

2023 ANALYSIS:
Completed and Defer to Plan Update. On-going. The village does provide 40 yd brush/limb recycle dumpster for residents.

		Village of Point Venture – Action #5
	Proposed Action:	Purchase NOAA All Hazard Radios: Purchase radios for residents so they are aware of weather events.

MITIGATION ACTION DETAILS	
Type of Action:	NSP
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	Village Funds
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	60 months

2023 ANALYSIS:
Delete Action. The city no longer deems action a priority.

		Village of Point Venture – Action #6
	Proposed Action:	Educate homeowners on hazards: Educate homeowners of how-to mitigate their homes from these hazards at public forums and newsletters.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	Village Funds
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	60 months

2023 ANALYSIS:
Completed and Defer to Plan Update. On-going. Annual firewire/neighborhood watch information is distributed, website has informational articles.

SECTION 17: PREVIOUS ACTIONS

		Village of Point Venture – Action #7
	Proposed Action:	Create Emergency Evacuation Plan: Create Emergency Evacuation Plan that addresses people, pets, and traffic flow to get residents out of harm s way of impending hazard events.

MITIGATION ACTION DETAILS	
Type of Action:	EAP, LPR
Hazard(s) Addressed:	Dam Failure, Flood, Hurricane/Tropical Storm, Wind
Priority (High, Moderate, Low):	High
Estimated Cost:	<410,000
Potential Funding Sources:	Village Funds, Red Cross
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	60 months

2023 ANALYSIS:
Completed. Point Venture is partnered with county ESD and local communities for emergency evacuation plan.

		Village of Point Venture – Action #8
	Proposed Action:	Educate residents on and implement measures: Educate residents and builders of potential hazards and high-risk areas by providing GIS maps of high hazard areas and implement soil stabilizers or moisture control/irrigation in identified areas.

MITIGATION ACTION DETAILS	
Type of Action:	EAP, LPR
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soil, Extreme Heat, Flood, Hail, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	Village Funds
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	48 months

2023 ANALYSIS:
Completed and Defer to Plan Update. On-going.

VILLAGE OF SAN LEANNA

		Village of San Leanna – Action #1
	Proposed Action:	Implement Reverse 9 in the community: educational information will be presented at National Night Out, through newsletters, and on the city website, to inform the public how to sign up for the new Reverse 9 Emergency Notification System.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Hurricane/ Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Budget
Lead Agency/Department Responsible:	Public Safety
Implementation Schedule:	24 months

2023 ANALYSIS:
Defer to Plan Update. In-progress.

		Village of San Leanna – Action #2
	Proposed Action:	Purchase NOAA All Hazard Radios: Purchase radios for residents so they are aware of weather events.

MITIGATION ACTION DETAILS	
Type of Action:	NSP
Hazard(s) Addressed:	Drought, Earthquake, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Budget
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	60 months

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Village of San Leanna – Action #3
	Proposed Action:	Conduct public outreach to educate citizens on the full range of hazards: educational information will be presented at National Night Out, through newsletters, and on the city website, to increase awareness of ways the public may protect themselves, and mitigate homes and businesses from hazard events

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Drought, Earthquake Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	City Budget
Lead Agency/Department Responsible:	Public Safety
Implementation Schedule:	36 months

2023 ANALYSIS:
Completed and Defer to Plan Update. Ongoing. The village plans to continue and increase efforts, particularly regarding wildfires and drought.

		Village of San Leanna – Action #4
	Proposed Action:	Review San Leanna's Not identified in HMP. Floodplain Management Ordinance: TCRFC's Floodplain Management Assessment Program undertakes a periodic review to assess the effectiveness of floodplain management in the region. Each coalition member-community receives a rating of excellent, superior, or outstanding, depending on the community's implementation of floodplain management criteria that exceed NFIP minimum standards.

MITIGATION ACTION DETAILS	
Type of Action:	LPR
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Budget
Lead Agency/Department Responsible:	Floodplain Management
Implementation Schedule:	12 months

2023 ANALYSIS:
Defer to Plan Update.

		Village of San Leanna – Action #5
	Proposed Action:	Educate residents regarding xeriscape planning. Educational information will be presented at National Night Out through newsletters, and on the city website, to increase awareness of ways the public may reduce water usage by xeriscaping on their property.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Drought, Expansive Soils, Extreme Heat
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Budget
Lead Agency/Department Responsible:	Environmental
Implementation Schedule:	24 months

2023 ANALYSIS:
Defer to Plan Update

		Village of San Leanna – Action #6
	Proposed Action:	Complete engineering studies and determine project designs for stormwater flood prevention: Complete engineering studies and determine project designs for stormwater.

MITIGATION ACTION DETAILS	
Type of Action:	LPR, SIP, NSP
Hazard(s) Addressed:	Flood, Hurricane/Tropical Storm
Priority (High, Moderate, Low):	High
Estimated Cost:	>$100,000
Potential Funding Sources:	City Budget, Grant
Lead Agency/Department Responsible:	Environmental
Implementation Schedule:	36 months

2023 ANALYSIS:
Defer to Plan Update.

		Village of San Leanna – Action #7
	Proposed Action:	Complete stormwater management projects: This project can include installing larger culverts and creating detention basins for stormwater. This action will prevent damage to existing homes during flood events, and also help establish areas to develop new structures at the least risk for damage from flooding.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Flood, Hurricane/Tropical Storms
Priority (High, Moderate, Low):	High
Estimated Cost:	>$100,000
Potential Funding Sources:	City Revenue, Grants
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	36 months

2023 ANALYSIS:
Completed and Defer to Plan Update. Some projects have been completed through use of city budget/revenue. The Village intends to continue with new and identified projects.

		Village of San Leanna – Action #8
	Proposed Action:	Conduct wildfire fuel removal program: Conduct wildfire fuel removal program on city properties.

MITIGATION ACTION DETAILS	
Type of Action:	LPR, NSP
Hazard(s) Addressed:	Wildfire
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Budget
Lead Agency/Department Responsible:	Environmental
Implementation Schedule:	48 months

2023 ANALYSIS:
Defer to Plan Update.

		Village of San Leanna – Action #9
	Proposed Action:	Provide alternative water source: Provide alternative water source for severe water use restrictions. Work with the city of Austin to purchase water wholesale.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Drought
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	City Budget
Lead Agency/Department Responsible:	Water
Implementation Schedule:	48 months

2023 ANALYSIS:
Completed. Interconnection with City of Austin is complete and provides back up water supply. The Village of San Leanna purchases wholesale water monthly from the City of Austin.

		Village of San Leanna – Action #10
	Proposed Action:	Update building codes: Village has been designated as being in an extreme wildfire risk area thus Firewise is needed to help educate citizens and mitigate wildfire encroachment. Wildfires are extremely dangerous during drought and extreme heat periods.

MITIGATION ACTION DETAILS	
Type of Action:	LPR, EAP
Hazard(s) Addressed:	Drought, Earthquake Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Budget
Lead Agency/Department Responsible:	Environmental
Implementation Schedule:	12 months

2023 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

CITY OF WEST LAKE HILLS

		City of West Lake Hills – Action #1
	Proposed Action:	Educate residents on and implement measures: Educate residents and builders of potential hazards and high-risk areas by providing GIS maps of high hazard areas and implement soil stabilizers or moisture control/irrigation in identified areas.

MITIGATION ACTION DETAILS	
Type of Action:	LPR, EAP
Hazard(s) Addressed:	Dam Failure, Expansive Soil, Flood, Wildfire
Priority (High, Moderate, Low):	High
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	48 months

2023 ANALYSIS:
Completed. Residents have been educated through site visits and maps on the city's website. Builders are educated at pre-development meetings and pre-construction meetings. The City has contracted to have gabions installed to protect drainage and makes sure they are maintained regularly.

		City of West Lake Hills – Action #2
	Proposed Action:	FireWatch System: Promote the warning system tied in with City of Austin and Travis County to alert residents of a wildfire.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Wildifre
Priority (High, Moderate, Low):	Medium
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	48 months

2023 ANALYSIS:
Completed. This has been completed in coordination with Travis County ESD #9. This has been discussed with the city council and available on city website.

		City of West Lake Hills – Action #3
	Proposed Action:	Homeowner education of hazards: Educate homeowners of how-to mitigation their homes from these hazards on city website and public forums.

MITIGATION ACTION DETAILS	
Type of Action:	EAP
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	60 months

2023 ANALYSIS:
Completed. In coordination with Travis County ESD#9, homeowners are educated about hazards during all site visits, and are referred to the city and ESD#9's websites.

		City of West Lake Hills – Action #4
	Proposed Action:	Conduct a review of the city s Floodplain Management Ordinance: Update ordinances to require builders/residents to protect their homes.

MITIGATION ACTION DETAILS	
Type of Action:	EAP, LPR
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	12 months

2023 ANALYSIS:
Completed. Ordinance was amended and approved by City Council September 11, 2019.

		City of West Lake Hills – Action #5
	Proposed Action:	Purchase NOAA All Hazard Radios: Purchase radios for residents so they are aware of weather events

MITIGATION ACTION DETAILS	
Type of Action:	NSP
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake Expansive Soil, Extreme Heat, Flood, Hail, Hurricane/Tropical Storm, Lightning, Tornado, Wildfire, Wind, Winter Weather
Priority (High, Moderate, Low):	Medium
Estimated Cost:	<$10,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	60 months

2023 ANALYSIS:
Defer to Plan Update.

		City of West Lake Hills – Action #6
	Proposed Action:	Install automatic warning system and procedures for VL Rich Water Treatment Plant: West Lake Emergency Service District #9, West Lake Hills Dispatch, and the City of Austin are working on a warning system to protect this water treatment plant from hazards.

MITIGATION ACTION DETAILS	
Type of Action:	LPR
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	12 months

2023 ANALYSIS:
Delete Action. City no longer wishes to pursue project.

SECTION 17: PREVIOUS ACTIONS

		City of West Lake Hills – Action #7
	Proposed Action:	Complete Eanes Creek Drainage Improvement Project: Engineering design, construction plans, bid, and construction.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	>$100,000
Potential Funding Sources:	City Funds, State/Federal Grants
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	36 months

2023 ANALYSIS:
Defer to Plan Update. Project designed and scheduled for Bid in 2023. Update funding source to include November 2021 Bond Election.

		City of West Lake Hills – Action #8
	Proposed Action:	Complete Little Bee Creek Drainage Improvement Project: Engineering design, construction plans, bid, and construction.

MITIGATION ACTION DETAILS	
Type of Action:	SIP
Hazard(s) Addressed:	Flood
Priority (High, Moderate, Low):	Medium
Estimated Cost:	>$100,000
Potential Funding Sources:	City Funds, State/Federal Grans
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	36 months

2023 ANALYSIS:
Defer to Plan Update. Project designed and scheduled for Bid in 2023. Update funding source to include November 2021 Bond Election.

SECTION 18
MITIGATION ACTIONS

SECTION 18: MITIGATION ACTIONS

SUMMARY

As discussed in Section 2, at the mitigation workshop the planning team and stakeholders met to develop mitigation actions for each of the natural hazards included in the Plan Update. Each of the actions in this section were prioritized based on FEMA's Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLEE) criteria necessary for the implementation of each action.

As part of the economic evaluation of the STAPLEE analysis, jurisdictions analyzed each action in terms of the overall costs, measuring whether the potential benefit to be gained from the action outweighed costs associated with it. As a result of this exercise, priority was assigned to each mitigation action by marking them as High (H), Moderate (M), or Low (L). An action that is ranked as "High" indicates that the action will be implemented as soon as funding is received. A "Moderate" action is one that may not be implemented right away depending on the cost and number of citizens served by the action. Actions ranked as "Low" indicate that they will not be implemented without first seeking grant funding and after "High" and "Moderate" actions have been completed.

Within each mitigation action worksheet, the Planning Team considered all potential funding sources that could be utilized to implement the proposed project. To ensure all potential funding resources are considered and are not limited to those sources identified within the action worksheet, please see appendix G for a list of all available State and Federal grant programs as

of 2023. The Planning Team will continue to seek out other available funding sources during the 5-year cycle as notices of funding opportunity (NOFO) are released.

All mitigation actions created by Planning Team members are presented in this section in the form of Mitigation Action Worksheets. More than one hazard is sometimes listed for an action, if appropriate. Actions presented in this section represent a comprehensive range of mitigation actions per current State and FEMA Guidelines, including two actions, per hazard, and of two different types for each participating jurisdiction. The term county-wide action refers to Travis County and Village of Briarcliff, City of Creedmoor, City of Jonestown, City of Lago Vista, City of Lakeway, City of Manor, City of Mustang Ridge, City of Pflugerville, Village of Point Venture, Cit of Rollingwood, Village of San Leanna, City of Sunset Valley, Village of The Hills, and City of West Lake Hills. County-wide does not include special districts.

SECTION 18: MITIGATION ACTIONS

Table 18-1. Travis County Mitigation Action Matrix

TYPE OF ACTION	
Action #1 – Plans/Regulations (Blue)	Action #4 – Structural (Orange)
Action #2 – Education/Awareness (Red)	Action #5 – Preparedness/Response (Black)
Action #3 – Natural Systems Protections (Green)	

Jurisdiction	Dam Failure	Drought	Expansive Soils	Extreme Heat	Flood	Hail	Lightning	Thunderstorm Wind	Tornado	Wildfire	Winter Storm
Travis County	●●●	●●●●	●●●	●●●●●	●●●●●	●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
Village of Briarcliff	N/A	●●	●●	●●	●●●	●●	●●	●●	●●	●●●	●●
City of Creedmoor	N/A	●●	●●	●●	●●	●●	●●	●●	●●	●●●	●●
City of Jonestown	N/A	●●●	●●●	●●	●●●●	●●	●●	●●	●●	●●●	●●
City of Lago Vista	N/A	●●●	●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
City of Lakeway	N/A	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
City of Manor	N/A	●●●	●●●	●●	●●●	●●	●●	●●	●●●	●●●	●●
City of Mustang Ridge	N/A	●●●	●●	●●●	●●●	●●	●●●	●●●	●●●	●●●	●●●
City of Pflugerville	●●●	●●●	●●●	●●●	●●●	●●	●●●	●●●	●●●	●●●	●●●
City of Point Venture	N/A	●●	●●	●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
City of Rollingwood	N/A	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
Village of San Leanna	N/A	●●	●●	●●	●●●	●●	●●	●●	●●	●●●●	●●
City of Sunset Valley	N/A	●●●	●●	●●	●●●	●●	●●	●●	●●	●●	●●●
Village of The Hills	N/A	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●●	●●●
City of West Lake Hills	N/A	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
Emergency Service District (ESD) #6	N/A	●●	●●	●●	●●	●●	●●	●●	●●	●●●	●●

TRAVIS COUNTY-WIDE ACTIONS

		Travis County-wide – Action #1
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide including all participating jurisdictions
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure (where applicable), Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	County and Local Emergency Managers / Administration
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Travis County-wide – Action #2
Proposed Action:	Upgrade critical facilities to include drought mitigation measures and expansive soils protection such as greywater reuse systems, drought tolerant landscaping, installation of a sprinkler system with regular watering schedule and installation of French drains where high plasticity soils are indicated.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities including all participating jurisdictions
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on ground water. Reduce rainfall runoff volume and risk of flooding. Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 per structure
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	County TNR Department/City Engineer/City Administrator
Implementation Schedule:	On-going
Incorporation into Existing Plans:	Local Plans and Ordinances; Land, Water, & Transportation Plan (LWTP)

COMMENTS:

		Travis County-wide – Action #3
	Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide and community-wide critical facilities
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure (where applicable), Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy (Power/Fuel)
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	County TNR Department/City Engineer/City Administrator
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Travis County-wide – Action #4
	Proposed Action:	Harden/retrofit critical facilities to hazard-resistant levels.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide and community-wide critical facilities
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure (where applicable), Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	County TNR Department/City Engineer/City Administrator
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Travis County-wide – Action #5
	Proposed Action:	Develop a Community Wildfire Protection Plan (CWPP).
	BACKGROUND INFORMATION	
	Site and Location:	Participating jurisdictions that do not have an active CWPP: Briarcliff, Creedmoor, Jonestown, Lago Vista, Manor, Mustang Ridge, Pflugerville, and San Leanna
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires. Reduce risk of damages, and injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	County and Local Emergency Managers / Administration, County/Local Fire Department/VFD
Implementation Schedule:	Within 12 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:

TRAVIS COUNTY

		Travis County – Action #1
	Proposed Action:	Implement mitigation alternatives determined through the Atlas 14 mapping project for western Travis County included but not limited to flood mitigation projects, elevation, buyout, and reconstruction.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide structures that are in high-risk flood prone areas with priority areas in the Onion Creek, Plum Creek, and Maha Creek watersheds
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages or injuries in high-risk areas; Reduce the need for emergency response; Reduce repetitive flood losses/claims.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam Failure
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Floodplain Management Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Travis County – Action #2
Proposed Action:	Completed necessary assessments to implement and upgrade to purple pipe installation throughout the county as recommended to recycle water for irrigation and commercial use.
BACKGROUND INFORMATION	
Site and Location:	County-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of flood water contamination; Reduce risk of surface water infiltration and sewage backup; Ensure availability of potable water during extreme weather conditions. Ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Food/Water/Shelter
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000,000 per mile
Potential Funding Sources:	Local Department Budget, Staff time
Lead Agency/Department Responsible:	TNR Department - Public Works Division (Road & Bridge Section)
Implementation Schedule:	Within 36 - 60 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Road & Bridge Maintenance yearly Work Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:

		Travis County – Action #3
	Proposed Action:	Resilience Hubs: Work with individual communities to retrofit and/or construct facilities to serve as resilience hubs during extreme weather events and/or emergencies.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide facilities
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damage at critical facilities; reduce damage at central community service facilities, reduce burden on emergency services during and after an event, ensure continuity of critical services during and after event; provide power for critical facilities during power outages, reduce risk of injury to residents and vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Education and Awareness Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy (Power/Fuel), Communication, Food, Health/Medical
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue, Federal: FEMA HMA, State and Federal Grants, CDBG
Lead Agency/Department Responsible:	Travis County OEM and TNR Department
Implementation Schedule:	Within 12 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Response Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
CRS REQUIREMENT & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety. Protects infrastructure, reduces cost of reparation, and prevents injuries and fatalities.

		Travis County – Action #4
	Proposed Action:	Assess and implement necessary improvements on county-wide structures and infrastructure to ensure critical services such as water, electricity, wastewater, etc. can continue services during extreme weather events.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide structures and infrastructures
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduces risk to the traveling public and liability for the Travis County. Reduce damage caused by flooding by maintaining or restoring drainage capacity.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Department Budget, Staff time
Lead Agency/Department Responsible:	TNR Department - Public Works Division (Road & Bridge Section)
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Capital Improvement Plan; Emergency Management Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protect infrastructure, prevents injury to public, and reduces liability.

	Travis County – Action #5
Proposed Action:	Wildland Fire Home Hardening Program: The program would be responsible for the design and implementation of a program to provide rebates to qualified residents for home hardening to improve structural. The primary upgrades would be for roofs, siding, vents, decks, fences, and outbuildings.
BACKGROUND INFORMATION	
Site and Location:	County-wide high-risk areas The program would target 15% of the homes in the county each year
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of wildfires and the spread of wildfire through improved construction practices. Reduce risk of injury, fatalities, or damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$37,800,000/per year for a minimum of 5 years $200,000 capital
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	TCFMO
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP

COMMENTS:
Research shows that the wildland urban interface problem is largely a structural ignitability problem. Additional mitigation improvements are often expensive and/or require skilled trades people to implement, which greatly reduces the likelihood of them being implemented.

	Travis County – Action #6
Proposed Action:	Wildland Fire Mitigation Coordination Center: Would allow for the co-location of multiple Travis County and Interagency Wildland Partners to improve coordination and production. The staff would provide oversight and coordination for interagency wildland fire programs and would manage the training and qualifications programs for wildland fire mitigation staff.
BACKGROUND INFORMATION	
Site and Location:	County-wide– site location to be determined
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$800,000/per year for a minimum of 5 years $20,000,000 for property and facility $500,000 capital
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	TCFMO
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP; Emergency Response Plan

COMMENTS:
Wildfire mitigation programs are not formally recognized, operate out of sub-standard facilities, are generally collateral duty, and have no administrative support for coordination, training, and qualifications tracking. The administrative responsibilities are unique to wildland fire and are currently being supported by individuals in operational positions.

		Travis County – Action #7
	Proposed Action:	Public Lands Wildland Fire Management Program: Planning and implementation of land management treatments on public lands to include mechanical and prescribed fire treatments to mitigate the risk from wildland fires. The program would collaborate with existing land management agencies to sustain and enhance existing programs which include approximately 1,000 acres of prescribed fire and 50 acres of mechanical treatments each year.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide high-risk critical infrastructure and landscape scale projects
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of wildfires and the spread of wildfire through targeted fuels reduction programs.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,300,000/per year for a minimum of 5 years $1,000,000 capital
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	TCFMO
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP

COMMENTS:
Existing programs are generally collateral duty, and the work is done almost exclusively on public parks and preserves. The program would target an additional 2,000 acres annually.

		Travis County – Action #8
	Proposed Action:	Wildland Fire Outreach, Education, and Training Program: The program would be responsible for the development and implementation of routine, targeted outreach, education, and training events focused on individual readiness, and the management of contracted marketing initiatives for a broader audience.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$950,000/per year for a minimum of 5 years $500,000 capital
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	TCFMO
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP

COMMENTS:
Public outreach and education are likely to be the most cost-effective wildland fire mitigation strategy but there is limited staffing, and much of the available staffing does not have the skills necessary to implement effective educational campaigns.

		Travis County – Action #9
	Proposed Action:	Routine drainage maintenance program removes debris from bridges, ditches, and culverts, and maintains all drainageways in rights-of-way on an as-needed basis.
	BACKGROUND INFORMATION	
	Site and Location:	On all rights-of-way that have been accepted for maintenance by the Travis County Commissioners Court
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduces risk to the traveling public and liability for the Travis County. Reduce damage caused by flooding by maintaining or restoring drainage capacity.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 (annually)
Potential Funding Sources:	Local Department Budget, Staff time
Lead Agency/Department Responsible:	TNR Department - Public Works Division (Road & Bridge Section)
Implementation Schedule:	Within 12 months of plan adoption, then annually
Incorporation into Existing Plans:	Road & Bridge Maintenance yearly Work Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protect infrastructure, prevents injury to public, and reduces liability.

		Travis County – Action #10
	Proposed Action:	Installation of warning signs at bridges that typically have icy surfaces during winter storm events.
	BACKGROUND INFORMATION	
	Site and Location:	On all bridges that in rights-of-way that have been accepted for maintenance by the Travis County Commissioners Court
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduces risk to the traveling public and liability for the Travis County. Education and awareness of the dangers of driving over bridges that may have an icy surface during winter storm events. Reduce demand on emergency response during winter storms.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Communication, Transportation
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100 per sign plus staff time for installation
Potential Funding Sources:	Local Department Budget, Staff time
Lead Agency/Department Responsible:	TNR Department – Public Works Division (Road & Bridge Section)
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Road & Bridge Maintenance yearly Work Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:

	Travis County – Action #11
Proposed Action:	Installation of “Turn Around, Don’t Drown” warning signs at low water crossings.
BACKGROUND INFORMATION	
Site and Location:	On all low water crossings in rights-of-way that have been accepted for maintenance by the Travis County Commissioners Court
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduces risk to the traveling public and liability for the Travis County. Education and awareness of the dangers of driving through low water crossings during rainstorm events. Reduce risk of injuries, fatalities and damages through education and awareness. Reduce demand on emergency response during flood events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Communication, Transportation
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100 per sign plus staff time for installation
Potential Funding Sources:	Local Department Budget, Staff time
Lead Agency/Department Responsible:	TNR Department – Public Works Division (Road & Bridge Section)
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Road & Bridge Maintenance yearly Work Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Travis County – Action #12
Proposed Action:	Routine tree trimming program trims tree limbs hanging in right-of-way; Remove dead trees from right-of way and drainage systems on an as-needed basis.
BACKGROUND INFORMATION	
Site and Location:	On all rights-of-way that have been accepted for maintenance by the Travis County Commissioners Court
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduces risk to the traveling public and liability for the Travis County. Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hail, Lightning, Tornado, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 (annually)
Potential Funding Sources:	Local Department Budget, Staff time
Lead Agency/Department Responsible:	TNR Department - Public Works Division (Road & Bridge Section)
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Road & Bridge Maintenance yearly Work Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents. Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	Travis County – Action #13
Proposed Action:	Conduct assessment to identify locations in Travis County where burying utility lines would have the greatest risk reduction potential and is most feasible. Bury identified priority above-ground utility lines.
BACKGROUND INFORMATION	
Site and Location:	County-wide utility lines
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to residents and critical infrastructure of power outages and wildfire. Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy, Safety/Security, Communication
Effect on New/Existing Buildings:	Reduce the risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$4,000,000,000
Potential Funding Sources:	Travis County, FEMA grants
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
The County would need to partner and form agreements with the local utility providers who own the utility lines.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Travis County – Action #14
	Proposed Action:	Purchase land at strategic locations around the county to collect debris after storms before it is chipped or otherwise disposed of. Build necessary infrastructure such as roads and parking lots to facilitate this use.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Expedite the collection, staging, processing, and disposal of storm debris. Reduces safety issues associated with downed trees and limbs obstructing roads and other critical infrastructure. Reduce damage caused by flooding by maintaining or restoring drainage capacity. Reduce wildfire risk.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Provide a place to dispose of downed vegetation and other materials in a timely manner to minimize disruption to building functions.
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	Travis County, FEMA grants
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Travis County – Action #15
	Proposed Action:	Assess climate change's potential impact on drinking water supplies in Travis County. Identify potential water supply protections and/or alternate supplies in the case of future water shortages.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to residents of low or exhausted water supplies. Reduces risk to vulnerable populations during drought conditions.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Health/Medical, Food/Water/Shelter
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Travis County, FEMA grants
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:

	Travis County – Action #16
Proposed Action:	Phase 1: Prioritize and design floodplain restoration projects to mitigate flood risk, reduce the urban heat island effect, and improve habitat for native species. Phase 2: Construct/implement floodplain restoration projects identified and designed in phase 1.
BACKGROUND INFORMATION	
Site and Location:	Gilleland, Wilbarger and Onion Creek in Eastern Travis County
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Identifies and implements projects to reduce risk to public safety and natural systems. Improves the capacity of floodplains to slow, retain, and clean stormwater. Improving floodplain function improvements will increase public safety by reducing flood risk and increasing the resiliency of the natural system; Reduce impacts of drought through green infrastructure that works to replenish groundwater reserves.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Extreme Heat, Wildfire, Winter Storm, Thunderstorm Wind
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,850,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #17
Proposed Action:	Plan and implement post-disaster soil stabilization, hazard debris removal, flood diversion, and forest regeneration projects on County preserves, parks, and open spaces affected by wildfire, natural disaster, or severe drought.
BACKGROUND INFORMATION	
Site and Location:	County-wide preserves, parks and open spaces
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Identifies risks and prioritizes actions Travis County can take to adapt landscapes and restore natural ecosystems protections. Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Extreme Heat, Winter Storm, Wildfire, Thunderstorm Wind
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$300,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Balcones Canyonlands Conservation Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure and public safety through increased resiliency and restoration of natural ecosystems protections.

	Travis County – Action #18
Proposed Action:	Plan and implement vegetation planting/seeding, invasive species removal, and selective vegetation management projects on the County preserves and parks to increase biodiversity and vegetative cover.
BACKGROUND INFORMATION	
Site and Location:	County-wide preserves and parks
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Identifies risks and prioritizes actions Travis County can take to reduce risk. Improve resilience, adapt landscapes; Improves wildlife corridors; Improve biodiversity, and restore natural ecosystems protections.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Extreme Heat, Winter Storm, Wildfire, Thunderstorm Wind
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$300,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Balcones Canyonlands Conservation Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure and public safety through increased resiliency and restoration of natural ecosystems protections.

	Travis County – Action #19
Proposed Action:	Prioritize and design rain gardens and rainwater harvesting systems to slow and retain stormwater in parks, provide water storage for fire suppression, and provide green infrastructure demonstration sites for the public.
BACKGROUND INFORMATION	
Site and Location:	County-wide parks
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Identifies and prioritizes sites and develops engineering plans to construct rain gardens and water harvesting systems to keep storm water on site. Reduces the spread of wildfires by providing alternative sources of water. Promotes hazard awareness through educating park visitors about why and how to build green infrastructure to clean and slow stormwater.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Nature based solutions in parks can hold stormwater on site, provide water storage for fire suppression, and provide education to the public about how to design, install and maintain these systems. Retaining more stormwater on public land will increase public safety by reducing flood risk and increasing the resiliency of the natural system.

	Travis County – Action #20
Proposed Action:	Harden/retrofit critical park facilities to hazard-resistant levels.
BACKGROUND INFORMATION	
Site and Location:	County-wide critical park facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduces the risk of damages and loss of critical assets at critical park locations. Assists in ensuring critical facilities are functional during and after a disaster event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,850,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Travis County – Action #21
Proposed Action:	Phase 1: Identify and prioritize flood-prone parcels for acquisition or conservation through conservation easements along minor and major waterways in Travis County to mitigate flood risk, improve water quality, reduce erosion, reduce the urban heat island effect, and improve habitat for native species. Phase 2: Purchase land or acquire conservation easements to restore floodplain function and minimize risk to public safety.
BACKGROUND INFORMATION	
Site and Location:	County-wide conservation easements along waterways
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Identifies, prioritizes, and conserves land to reduce risk to public safety and natural systems; Improve natural system resilience, and restore natural systems functions; Reduce risk of wildfires and the spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Extreme Heat
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Increased resiliency; reduced flood and heat risk
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,950,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Conserving land in flood prone areas will increase the resilience of floodplains, enhance their function, improve public safety, and provide co-benefits including heat mitigation and increased habitat for native species.

SECTION 18: MITIGATION ACTIONS

	Travis County – Action #22
Proposed Action:	Phase 1: Assess and identify the natural ecosystem protections provided by Travis County preserves, parks, and open spaces to the surrounding communities and habitats. Phase 2: Assess and identify hazards and threats to local natural ecosystems due to climate change and natural disasters.
BACKGROUND INFORMATION	
Site and Location:	County-wide preserves, parks and open spaces
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Identifies risks and prioritizes actions Travis County can take to reduce risk, improve resilience, adapt landscapes, and restore natural ecosystems protections.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Wildfire, Flood, Extreme Heat, Winter Storm, Thunderstorm Wind
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Communication
Effect on New/Existing Buildings:	Reduces risk to existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Balcones Canyonlands Conservation Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure and public safety through increased resiliency and restoration of natural ecosystems protections.

	Travis County – Action #23
Proposed Action:	Plan and implement soil and water conservation projects within County preserves, and open spaces including vegetative swales, natural berms, rainwater harvesting, and green infrastructure projects to slow and retain rainwater on the landscape and rebuild resilient soil layers in historically degraded areas.
BACKGROUND INFORMATION	
Site and Location:	County-wide preserves and open spaces
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Identifies risks and prioritizes actions Travis County can take to reduce risk; Improve resilience, adapt landscapes; Improve biodiversity and restore natural ecosystems protections. Reduce risk to structures and infrastructure due to expansive soils by maintaining adequate soil moisture; Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Extreme Heat, Winter Storm, Wildfire, Thunderstorm Wind
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Balcones Canyonlands Conservation Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure and public safety through increased resiliency and restoration of natural ecosystems protections.

		Travis County – Action #24
	Proposed Action:	Engineer & install back-up power capabilities through generators, quick-connections, portable generators, and/or solar panels with batteries to ensure power during an extreme weather incident.
	BACKGROUND INFORMATION	
	Site and Location:	The Herman Center: 6600 E Ben White Blvd, Austin, TX 78741
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services. Closure due to natural disaster incurs a loss of approximately $10,859 per day.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical, Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Integral Care Facilities Department in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Integral Care Disaster Response Plan

COMMENTS:
The facility provides short-term mental health crisis care in a safe overnight facility for people who are in crisis. Integral Care would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Travis County – Action #25
	Proposed Action:	Engineer & install back-up power capabilities through generators, quick-connections, portable generators, and/or solar panels with batteries to ensure power during an extreme weather incident.
	BACKGROUND INFORMATION	
	Site and Location:	Next Step Crisis Respite: 6222 North Lamar, Austin TX 78752
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services. Closure due to natural disaster incurs a loss of approximately $7,278 per day.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical, Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$350,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Integral Care Facilities Department in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Integral Care Disaster Response Plan

COMMENTS:
The facility provides services that help adults who are recovering from a mental health crisis who may also need housing. Integral Care would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	Travis County – Action #26
Proposed Action:	Engineer & install back-up power capabilities through generators, quick-connections, portable generators, and/or solar panels with batteries to ensure power during an extreme weather incident.
BACKGROUND INFORMATION	
Site and Location:	Safe Haven: 5307 E Riverside Dr, Austin, TX 78741
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services. Closure due to natural disaster incurs a loss of approximately $2,603 per day.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical, Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Integral Care Facilities Department in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Integral Care Disaster Response Plan

COMMENTS:
The facility provides temporary housing in a 24/7 residential setting for homeless veterans living with mental illness. Integral Care would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Travis County – Action #27
	Proposed Action:	Engineer & install back-up power capabilities through generators, quick-connections, portable generators, and/or solar panels with batteries to ensure power during an extreme weather incident.
	BACKGROUND INFORMATION	
	Site and Location:	Alameda House: 4019 Menchaca Rd, Austin, TX 78704
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services. Closure due to natural disaster incurs a loss of approximately $3,117 per day.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical, Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Integral Care Facilities Department in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Integral Care Disaster Response Plan

COMMENTS:
The facility helps adults who live with a mental illness and use drugs such as opioids and alcohol. Integral Care would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Travis County – Action #28
	Proposed Action:	Engineer & install back-up power capabilities through generators, quick-connections, portable generators, and/or solar panels with batteries to ensure power during an extreme weather incident.
	BACKGROUND INFORMATION	
	Site and Location:	Austin/Travis County Integral Care Residential Services: 403 E 15th St, Austin, TX 78701
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services. Closure due to natural disaster incurs a loss of approximately $8,493 per day.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical, Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$400,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Integral Care Facilities Department in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Integral Care Disaster Response Plan

COMMENTS:
The facility is a hospital and jail diversion program which provides short-term mental health crisis support. Integral Care would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	Travis County – Action #29
Proposed Action:	Engineer & install back-up power capabilities through generators, quick-connections, portable generators, and/or solar panels with batteries to ensure power during an extreme weather incident.
BACKGROUND INFORMATION	
Site and Location:	E. 2nd Narcotics Treatment Program: 1631 E 2nd St, Austin, TX 78702; Building A & Building C
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services. Closure due to natural disaster incurs a loss of approximately $5,038 per day plus Rx meds spoilage in Clinic.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical, Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Integral Care Facilities Department in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Integral Care Disaster Response Plan

COMMENTS:
Integral Care would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	Travis County – Action #30
Proposed Action:	Engineer & install back-up power capabilities through generators, quick-connections, portable generators, and/or solar panels with batteries to ensure power during an extreme weather incident.
BACKGROUND INFORMATION	
Site and Location:	Terrace at Oak Springs: 3000 Oak Springs Dr., Austin, TX 78702
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services. Closure due to natural disaster incurs a loss of approximately $5,334 per day plus Rx meds spoilage in Clinic.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical, Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$750,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Integral Care Facilities Department in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Integral Care Disaster Response Plan

COMMENTS:
Terrace at Oak Springs is a permanent Supportive Housing apartment complex. Integral Care would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Travis County – Action #31
	Proposed Action:	Engineer & install back-up power capabilities through generators, quick-connections, portable generators, and/or solar panels with batteries to ensure power during an extreme weather incident.
	BACKGROUND INFORMATION	
	Site and Location:	North Lamar Professional Building: 5225 N. Lamar Blvd., Austin, TX 78751
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provides staging center or shelter for clients or other vulnerable persons in the event of extreme weather situations and helps reduce adverse events (such as hypothermia, heatstroke, etc.).
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical, Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$600,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Integral Care Facilities Department in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Integral Care Disaster Response Plan

COMMENTS:
The Center provides Intellectual and Developmental Disability service and would offer shelter and services to clients and/or other vulnerable persons. Integral Care would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	Travis County – Action #32
Proposed Action:	Engineer & install back-up power capabilities through generators, quick-connections, portable generators, and/or solar panels with batteries to ensure power during an extreme weather incident.
BACKGROUND INFORMATION	
Site and Location:	Richard E. Hopkins Behavioral Health Building 1165 Airport Blvd, Austin, TX 78702
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services. Closure due to natural disaster incurs a loss of approximately $5,853 per day.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical, Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$600,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Integral Care Facilities Department in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Integral Care Disaster Response Plan

COMMENTS:
The facility offers Psychiatric Emergency Services (PES) is an extended hours urgent care facility for individuals experiencing psychiatric crisis. Integral Care would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Travis County – Action #33
	Proposed Action:	Engineer & install back-up power capabilities through generators, quick-connections, portable generators, and/or solar panels with batteries to ensure power during an extreme weather incident.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County Exposition Center: 7311 Decker Lane, Austin, TX 78724
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services. Closure due to natural disaster incurs a loss of approximately $5,853 per day.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical, Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$600,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Land, Water, & Transportation Plan (LWTP)

COMMENTS:
The facility is planned to be a reception center and/or a sheltering center in the event of an evacuation. Backup electricity is needed to provide cooling and heating in the event of a power outage.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	Travis County – Action #34
Proposed Action:	Implement a county-wide education and awareness programs utilizing neighborhood advisory councils in high SVI areas, social media, bulletins, flyers, etc. to educate area residents of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages within the district.
BACKGROUND INFORMATION	
Site and Location:	County and Central Health District-wide due to agency serving 147,000+ Travis County residents
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promotes hazard awareness and protects citizens, especially vulnerable and underserved residents, from potential injuries and damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000 - $50,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Central Health District in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
Central Health would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Travis County – Action #35
	Proposed Action:	Implement a text campaign for MAP and MAP BASIC members regarding disaster-related resources.
	BACKGROUND INFORMATION	
	Site and Location:	County and Central Health District-wide as 100,000 patients are enrolled annually in MAP and MAP Basic.
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promotes hazard awareness and protects citizens, especially vulnerable and underserved residents, from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $30,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Central Health District in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
The Medical Access Program (MAP) provides access to eligible residents who are at or below 100 percent or uninsured residents who are at or below 200 percent of the FPL. Central Health would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Travis County – Action #36
Proposed Action:	Work in coordination with Travis County OEM to promote the Emergency Alerts webpage to ensure disaster related messages are available to all residents and translated into multiple languages.
BACKGROUND INFORMATION	
Site and Location:	County and Central Health district-wide public information platforms
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promotes hazard awareness and protects citizens, especially vulnerable and underserved residents, from potential injuries and damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000 - $100,000
Potential Funding Sources:	Local Facilities Budget, Staff time, Bonds; State Grants: GLO, TAMFS, TDA, TDEM; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, HUD, NFIP, NOAA, SBA
Lead Agency/Department Responsible:	Central Health District in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
Central Health would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Travis County – Action #37
	Proposed Action:	Utilize existing agreements with providers and organizations to enhance temporary, emergency response to low-income persons or socially vulnerable communities.
	BACKGROUND INFORMATION	
	Site and Location:	District-wide: 204 provider locations including community health centers, hospitals, specialists, dentists, and urgent care locations; 1500 enterprise employees in Central Health and its clinical and health plan affiliates
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promotes services and response for vulnerable and underserved residents during extreme weather events. Reduces risk of injury and fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Central Health District in coordination with Travis County OEM
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
Central Health would need to form an agreement with the County to implement this action.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Travis County – Action #38
Proposed Action:	Purchase and install alternative power source such as generators with hardwire quick connection, solar panels and batteries, portable generators, etc. connections at critical facilities throughout the planning area.
BACKGROUND INFORMATION	
Site and Location:	County-wide critical facilities and infrastructure such as schools, churches/shelters, water, and wastewater systems etc.
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000 - $500,000 per site location
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Travis County OEM, TNR Department-Public Works
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Travis County – Action #39
	Proposed Action:	Purchase and install alternative power source such as generators with hardwire quick connection, solar panels and batteries, portable generators, etc. connections at critical facilities throughout the planning area.
	BACKGROUND INFORMATION	
	Site and Location:	Juvenile Probation Center
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000 - $500,000 per site location
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Travis County OEM and TNR Department - Public Works Division
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Travis County – Action #40
	Proposed Action:	Require drought tolerant landscaping at all new public buildings. Incorporate drought tolerant landscaping into county-wide facilities.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide public facilities
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on groundwater; Minimize impacts of expansive soils; Reduce rainfall runoff volume and risk of flooding; Reduce risk and spread of wildfire.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 to implement code / ordinance $50 per square foot to implement landscaping
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	County Administration and Code Enforcement
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Codes / Ordinances

COMMENTS:

	Travis County – Action #41
Proposed Action:	Increase public awareness of all hazards and hazardous areas. Distribute public awareness information regarding natural hazards, including SFHAs, along with potential mitigation measures that can reduce the risk of damage and injuries. Utilize resources such as the local newspapers, utility bill inserts, and websites.
BACKGROUND INFORMATION	
Site and Location:	County-wide (all participating jurisdictions)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk through education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness.

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm.
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Travis County OEM and County POI
Implementation Schedule:	On-going
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Travis County – Action #42
	Proposed Action:	Continue to assess and make necessary updates needed to the Austin Travis County Community Wildfire Protection Plan.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide focus on high-risk areas within the WUI
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Identifies risks and prioritizes actions Travis County can take to reduce risk, improve resilience, and adapt landscapes to wildfire.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Austin Travis County Wildfire Coalition in coordination with Travis County OEM, TNR Department, and Fire Mashal's Office
Implementation Schedule:	On-going
Incorporation into Existing Plans:	Community Wildfire Protection Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:

	Travis County – Action #43
Proposed Action:	Evaluate evacuation routes and shelter-in-place locations for public use during wildfire events.
BACKGROUND INFORMATION	
Site and Location:	County-wide evacuation routes
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of injury and loss of life during wildfire events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Transportation, Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Austin Travis County Wildfire Coalition in coordination with Travis County OEM, TNR Department, and Fire Mashal's Office
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:

		Travis County – Action #44
	Proposed Action:	Plan and implement fuel reduction projects at county parks, preserves, open space, and facilities. Project will address increased fuel loads as a result of downed limbs from ice storms or tree die-off from droughts in addition to wildfire mitigation
	BACKGROUND INFORMATION	
	Site and Location:	County-wide parks, preserves, open space, and facilities located within or surrounding the WUI
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risks of harmful wildfire impacts to natural resources, life, and property.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduces risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Austin Travis County Wildfire Coalition in coordination with Travis County OEM, TNR Department, and Fire Mashal's Office
Implementation Schedule:	On-going
Incorporation into Existing Plans:	Community Wildfire Protection Plan; Land, Water, &Transportation Plan (LWTP)

COMMENTS:
Travis County Parks continues to target 12 prescribed burns on 500-1000 acres annually. Obstacles include increasing development and habitat fragmentation, fuel accumulation through flood, drought and ice storm events, and limited financial resources. Mechanical and chemical fuel reduction treatments are necessary to fully meet management needs, but insufficient staff and funds are available to implement those programs.

	Travis County – Action #45
Proposed Action:	Continue to assess and make necessary upgrades to GIS database for the Austin Travis County wildfire risk model.
BACKGROUND INFORMATION	
Site and Location:	County-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Improve risk assessment; Reduce risk of damages or injuries through drainage improvements; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	Reduces risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Austin Travis County Wildfire Coalition in coordination with Travis County OEM, TNR Department, and Fire Mashal's Office
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:

		Travis County – Action #46
	Proposed Action:	Develop Atlas 14 mapping for western Travis County, perform data collection related to 164 low water crossings, perform mitigation alternatives for the top 10 crossing, and perform mitigation alternative assessments related to flood prone areas in the Onion Creek, Plum Creek and Maha Creek watersheds.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide structures that are in high-risk flood prone areas
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages or injuries through flood mitigation at high-risk structures; Reduce the need for emergency response in high-risk areas; Reduce repetitive flood losses/claims; Reduce community recovery efforts and costs.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam Failure
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	State Flood Infrastructure Fund Grant and Local Match
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	In-progress
Incorporation into Existing Plans:	Floodplain Management Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Travis County – Action #47
Proposed Action:	Completed analysis and implement feasible and recommended mitigate measures to reduce the effects of drought on natural resources, water supply, and water quality. Adopt and implement water restrictions as needed.
BACKGROUND INFORMATION	
Site and Location:	County-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce loss of habitat and decrease water levels.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Food/Water/Shelter
Effect on New/Existing Buildings:	Reduces risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$600,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	TNR Department
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Codes / Ordinances; Land, Water, & Transportation Plan (LWTP)

COMMENTS:

		Travis County – Action #48
	Proposed Action:	Utilize available communication platforms and host public meetings to discuss the benefits of personal preparedness, emergency preparedness kits, and evacuation / shelter routes.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide with priority on high-risk areas and vulnerable populations
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promotes hazard awareness. Reduces risk of injury and property damage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Expansive Soils, Extreme Heat, Drought, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Travis County OEM
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Travis County – Action #49
Proposed Action:	Assist local communities, neighborhoods, and municipalities with the development of local Community Wildfire Protection Plans.
BACKGROUND INFORMATION	
Site and Location:	County-wide communities, neighborhoods, and municipalities that do not have an active CWPP.
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Educate and engage public in implementing the most effect actions for risk reduction in Central Texas.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduces risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Travis County OEM, Fire Marshal's Office, and Local ESDs / Fire Departments
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Austin-Travis Community Wildfire Protection Plan

COMMENTS:

	Travis County – Action #50
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Felder Lane, 0.10 miles east of FM 973
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,295,200
Potential Funding Sources:	Future bond inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #51
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Westlake Drive, 0.13 miles east of Woodcutters Way
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$382,000
Potential Funding Sources:	Future bond inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #52
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Ledgestone Terrace, 0.39 miles south of US 290
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,010,000
Potential Funding Sources:	2017 Bond
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Estimated completion in Q4 2024
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #53
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Wild Basin Ledge, 0.05 miles southeast of Petticoat Lane
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$418,000
Potential Funding Sources:	Future bond inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #54
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Nameless Road, 0.5 miles north of Honeycomb Lane
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,300,000
Potential Funding Sources:	Future bond inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #55
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Wier Loop, 0.22 miles east of Thomas Springs Road
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$18,500 (2022 inflation material costs).
Potential Funding Sources:	Future bond inclusion or future CO issuances.
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #56
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Springdale Road, 0.11 miles northeast of Ferguson Lane
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$8,095,700
Potential Funding Sources:	Future bond inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Travis County – Action #57
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Juniper Trail, 0.06 miles north of Yaupon Trail
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,016,000
Potential Funding Sources:	Future bond inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #58
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Two locations on Wyldwood Road, 0.27 miles and 0.46 miles west of Brodie Lane. Located on Slaughter Creek and adjacent tributary
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$4,092,000
Potential Funding Sources:	2017 Bond
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Estimated completion in Q4 2024
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #59
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Fall Creek Road, 0.14 miles south of SH 71.
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,168,000
Potential Funding Sources:	Future bond inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #60
Proposed Action:	Installation of Flood Warning System.
BACKGROUND INFORMATION	
Site and Location:	Two adjacent locations on Pedernales Canyon Trail between Canyon Ranch Train and Little Creek Trail
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damage to infrastructure and reduce emergency response. Promotes hazard awareness. Reduces potential injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,324,000
Potential Funding Sources:	2017 Bond
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Estimated completion in Q2 2024
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Travis County – Action #61
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Slaughter Creek Drive, 0.18 miles south of Meadowsouth Lane
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,914,000
Potential Funding Sources:	Future bond inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #62
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Crystal Bend Drive, just east of Crooked Creek Drive
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,516,000
Potential Funding Sources:	CDBG funds approved in 2021
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Estimated completion in Q4 2023
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Travis County – Action #63
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Cottonwood Drive, 0.07 miles west of Long Hollow Trail
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,516,000
Potential Funding Sources:	Future bon inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #64
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Jesse Bohls Road, 0.63 miles east of Weiss Lane
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,516,000
Potential Funding Sources:	Future bon inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Travis County – Action #65
	Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
	BACKGROUND INFORMATION	
	Site and Location:	Lime Creek Road, 0.08 miles south of Fisher Hollow Trail
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,394,000
Potential Funding Sources:	Future bond inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #66
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Nameless Road, 0.83 miles north of Shady Mountain Road
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,016,000
Potential Funding Sources:	Future bond inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #67
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Weir Loop Circle, 0.06 miles south of Rimstone Trail at the westernmost crossing of Devil's Pen Creek
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$592,100
Potential Funding Sources:	Future bond inclusion or future CO issuances
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #68
Proposed Action:	Identify and implement a feasible, cost-effective mitigation action for the low water crossing (identified below), as determined through engineering study.
BACKGROUND INFORMATION	
Site and Location:	Tom Sassman Road, 0.07 miles north of Evelyn Road
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Safer access during flood events. Reduce damages to infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$4,356,000
Potential Funding Sources:	2017 Bond
Lead Agency/Department Responsible:	TNR Department - Public Works Division
Implementation Schedule:	Estimated completion in Q2 2024
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Travis County – Action #69
Proposed Action:	Provide additional means of ingress and egress into single-entry neighborhoods and gated communities for use during emergencies and wildfire events.
BACKGROUND INFORMATION	
Site and Location:	County-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to residents through improved evacuation alternatives; improve firefighting capabilities through improved access alternatives.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Transportation
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$4,000,000 - $8,000,000 per neighborhood
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	TNR Department – Development Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:

	Travis County – Action #70
Proposed Action:	Implement drainage improvements at Arroyo Doble Subdivision and Twin Creeks Park Subdivision to reduce flood damages to structures and infrastructure.
BACKGROUND INFORMATION	
Site and Location:	Area generally located south of FM 1626, west of Onion Creek and east of the Union Pacific Railroad
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to residents and provide safer access during flood events. Reduce damages to structures and infrastructure and reduce emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	TNR Department – Engineering Division
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Basin Study 2009; Land, Water, & Transportation Plan (LWTP)

COMMENTS:
Phases 1 and 2 in design.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Travis County – Action #71
	Proposed Action:	Dam Failure Risk Assessment and Implementation: Assess identified dams to obtain risk assessment analysis on inundation risk and necessary improvements needed. Develop an EAP for each identified dam. Within each individualized EAP begin implement necessary mitigation measure to risk the risk of a potential breach or dam failure.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide dams
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk through improved risk assessment and informed decision making.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Travis County, LCRA, TCEQ and private dam owners (when applicable)
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Travis County has an agreement with LCRA for them to share dam operation and inundation information related to their dams and the highland lakes chain

	Travis County – Action #72
Proposed Action:	Conduct public education program to advise public about evacuation routes, shelter-in-place locations for use during wildfire events, wildfire risks, and best wildland fire mitigation techniques for Central Texas
BACKGROUND INFORMATION	
Site and Location:	County-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of loss of life and property. Reduce emergency response demand through hazard awareness and early warning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Emergency Services, Austin Travis County Wildfire Coalition, TNR Department
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan; Land, Water, & Transportation Plan (LWTP)

COMMENTS:

		Travis County – Action #73
	Proposed Action:	Coordinating with Dell Medical School to obtain and distribute HEPA filters to homes with vulnerable and at-risk populations.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide for residents who are at further risk due to chronic breathing conditions.
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the risk of loss of life and injuries by improving indoor air quality.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50 per air filter
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	TNR Department in coordination with Dell Medical School
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Land, Water, & Transportation Plan (LWTP)

COMMENTS:
https://www.medrxiv.org/content/10.1101/2023.04.17.23288697v1.full

VILLAGE OF BRIARCLIFF

		Village of Briarcliff – Action #1
	Proposed Action:	Install 12” water transmission line to supply fire department and local area with water supply.
	BACKGROUND INFORMATION	
	Site and Location:	Adjacent to FM 2322 and Bee Creek Road
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Continue essential utility services during severe weather event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lighting, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,800,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Water/Wastewater Department
Implementation Schedule:	Within 18 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Disaster Response Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical services during an unforeseen weather event.

	Village of Briarcliff – Action #2
Proposed Action:	Purchase a stand- by generator for the water treatment plant: Secure funding for the purchase and installation of a back-up generator at water treatment plant to provide back-up power during extreme weather events.
BACKGROUND INFORMATION	
Site and Location:	402 Sleat Dr.
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lighting, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy, Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$175,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Water/Wastewater Department
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Disaster Response Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Village of Briarcliff – Action #3
	Proposed Action:	Incorporate xeriscape practices into landscape ordinances: Incorporate xeriscape practices into landscape ordinances to reduce water usage and reduce the effects of natural hazards.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on groundwater; Minimize impacts of expansive soils; Reduce rainfall runoff volume and risk of flooding; Reduce risk and spread of wildfire.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Extreme Heat, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Water Department
Implementation Schedule:	Within 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Ordinances

COMMENTS:

		Village of Briarcliff – Action #4
	Proposed Action:	Reduce fuels for wildfire: Reduction of fuel cedar trees, dry grass, and dead trees for wildfires will reduce the potential for widespread fires.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide with focus on areas with the WUI
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of wildfires and the spread of wildfire through targeted firebreaks.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	On-going
Incorporation into Existing Plans:	N/A

COMMENTS:

	Village of Briarcliff – Action #5
Proposed Action:	Public information and education: Educate and update all citizens of the hazards affecting the area, how to protect themselves from injury and mitigate property damages Provide information on the city website about hazard events and its impact on homeowners.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lighting, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Utilities Department
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Village of Briarcliff – Action #6
Proposed Action:	Promote water conservation: Provide conservation information such as installing low-flow showerheads and toilets, adjusting sprinklers on lawns, checking for leaks in plumping, and encouraging water reuse on the city website and mail outs.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness. Reduce risk to vulnerable populations during extreme weather conditions.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Utilities Department
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Codes

COMMENTS:

	Village of Briarcliff – Action #7
Proposed Action:	Remove brush and tree growth: Remove brush and trees growing in the earthen dam.
BACKGROUND INFORMATION	
Site and Location:	Community-wide dams
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the risk of flood damage due to erosion during a potential breach.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Grounds Department
Implementation Schedule:	On-going
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Village of Briarcliff – Action #8
Proposed Action:	Hail-resistant roof coverings: Provide material selections for roofing materials that will have a minimal impact from hail events.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damage and risk of injury.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:

	Village of Briarcliff – Action #9
Proposed Action:	Urban green space: Public education to provide positive enhancements to the environment, such as the creation and development of urban green spaces.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impacts of flood through expanded greenspace and restoration of floodplains and wetlands; Reduce impacts by replenishing groundwater reserves; Reduce impacts of Urban Island Heat effect in densely populated areas through tree planting.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 60 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

CITY OF CREEDMOOR

	City of Creedmoor – Action #1
Proposed Action:	Harden and/or upgrade community center into a warming/cooling center during extreme weather events.
BACKGROUND INFORMATION	
Site and Location:	Community Center
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of injury to at-risk and vulnerable populations during extreme weather events. Ensure continuity of services during and after a severe weather event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Food/Water/Shelter
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Administration and Public Works
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:

CITY OF JONESTOWN

		City of Jonestown – Action #1
	Proposed Action:	Implement education and awareness programs utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical, Energy, Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Jonestown – Action #2
Proposed Action:	Acquire and install generators with hard wired quick connections at critical facilities.
BACKGROUND INFORMATION	
Site and Location:	Police Station, Northshore Wastewater Plant
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy, Safety/Security, Communication
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000 per generator
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	City of Jonestown – Action #3
Proposed Action:	Adopt and implement landscape ordinance (selection and planting guidelines).
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on groundwater; Minimize impacts of expansive soils; Reduce rainfall runoff volume and risk of flooding; Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Health/Medical
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Building and Development
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Building Codes / Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Jonestown – Action #4
Proposed Action:	Acquisition of property located in the floodway on Sandy Creek, Pecan Park area: Property owners are 35 to 75 percent within the floodway. One property has an SFR. Creek has been in flood status more than 5 times in the last 0 years with swift and rapid water with little to no warning to those who live in the area.
BACKGROUND INFORMATION	
Site and Location:	Sandy Creek and Pecan Park area
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas; Reduce downstream impacts associated with development in the floodplain; Reduce risk of injuries to citizens and emergency services during and after a flood event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000 - $1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Floodplain Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Jonestown – Action #5
	Proposed Action:	Engineer study of stormwater run-off for the City: Prevent future loss and damage to existing properties as the city develops incorporated limits.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Improve risk assessment; Reduce risk of damages or injuries through drainage improvements; Reduce risk of damages and injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000 - $1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Stormwater Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Jonestown – Action #6
Proposed Action:	Acquisition of property located in the floodplain of Lake Travis and Cross Street area: Area is located 2 to 35 feet below the BFE of Lake Travis and has flooded numerous times. Current regulations prohibit the property owners from building or developing the properties.
BACKGROUND INFORMATION	
Site and Location:	Lake Travis and Cross Street area
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas; Reduce downstream impacts associated with development in the floodplain.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000 - $1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Floodplain Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF LAGO VISTA

	City of Lago Vista – Action #1
Proposed Action:	Build safe rooms to FEMA Standards: The city has no storm shelters.
BACKGROUND INFORMATION	
Site and Location:	New Municipal Building
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Building Services
Implementation Schedule:	Within 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Project will be a part of the scope and design for the new Municipal Building.

	City of Lago Vista – Action #2
Proposed Action:	Acquire and distribute NOAA weather radios.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communications and early warning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	Within 60 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Lago Vista – Action #3
Proposed Action:	Conduct public outreach to educate citizens on the full range of hazards: educational information will be presented through digital signage on major thoroughfare, newsletters, and on the city website, to increase awareness of ways the public may protect themselves and mitigate homes and businesses from hazard events.
BACKGROUND INFORMATION	
Site and Location:	Community-wide Major thoroughfares
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soil, Extreme Heat, Flood, Hail, Lightning, Tornado, Wildfire, Wind, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
The cost is associated with constructing the digital LED signage that will be located on a major thoroughfare. The sign will be designed to be seen by traffic coming from both directions.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Lago Vista – Action #4
Proposed Action:	Install back-up generators at critical facilities: Install emergency generators at critical facilities to provide back-up power from hazard events.
BACKGROUND INFORMATION	
Site and Location:	City Hall, WP #1 and WP#3 intakes, Public Works Facility which includes Water Plant #1, and at 3 booster stations
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Lightning, Tornado, Wildfire, Thunderstorm Wind, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$3, 500,000 - $4,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

City of Lago Vista – Action #5	
Proposed Action:	Conduct a drainage study and disseminate study results, and implement findings as identified within study.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Improve risk assessment; Reduce risk of damages or injuries through drainage improvements; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduces risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000 - $1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Building Services
Implementation Schedule:	Within 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
As new homes and businesses locate in Lago Vista, it is apparent that drainage will be an increasing problem. Area topography does not lend itself to an easy solution and the layout of lots and streets exacerbates the problem.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Lago Vista – Action #6
Proposed Action:	Develop a mass debris removal plan: Provide staging areas in less populated areas of the city.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Lightning, Tornado, Thunderstorm Wind, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduces risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
Funds have been allocated this FY for Engineering Site Design at City owned property. This site will include a debris collection facility.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents. Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	City of Lago Vista – Action #7
Proposed Action:	Amend regulations to allow trees in the ROW and landscape requirements for more trees on commercial property: Develop a landscape ordinance that encourages xeriscape. The city experiences mild to severe drought during the summer more trees on months.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	On-going maintenance Within 36 months of plan adoption to implement xeriscape ordinance
Incorporation into Existing Plans:	

COMMENTS:

		City of Lago Vista – Action #8
	Proposed Action:	Replace fire hydrants: Assess and make necessary upgrades to community-wide fire hydrants to ensure more efficient water delivery during fire to mitigate against damage.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provides a more efficient water delivery during fire to mitigate damage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	On-going
Incorporation into Existing Plans:	Capital Improvement Plan; Fire Hydrant Maintenance and Replacement program

COMMENTS:

		City of Lago Vista – Action #9
	Proposed Action:	Community Evacuation Plan: Identify and map potential routes for evacuation, provide mapping of routes, identify deficiencies, recommend projects to correct deficiencies, and identify and map homes of persons with functional and access needs.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to residents through improved evacuation alternatives; improve firefighting capabilities through improved access alternatives
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Medium
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Development Services
Implementation Schedule:	Within 48 months of plan adoption; Currently in-progress
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

City of Lago Vista – Action #10	
Proposed Action:	Educate residents on and implement measures: Educate residents and builders of potential hazards and high-risk areas by providing GIS maps of high hazard areas and implement soil stabilizers or moisture control/irrigation in identified areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soil, Extreme Heat, Flood, Hail, Lightning, Tornado, Wildfire, Thunderstorm Wind, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

CITY OF LAKEWAY

		City of Lakeway – Action #1
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages. Include links to weather alerts and departmental phone listings with contact personnel for residents.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	OEM
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Lakeway – Action #2
Proposed Action:	Acquire and distribute NOAA weather radios.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communications and early warning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	OEM and Local Police and Fire Department
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Lakeway – Action #3
Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy (Power/Fuel)
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration and Public Works
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	City of Lakeway – Action #4
Proposed Action:	Harden/retrofit critical facilities to hazard-resistant levels.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration and Public Works
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #5
Proposed Action:	Adopt an ordinance that will assess and if necessary, restrict future development in high-risk areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damage to new structures and infrastructure through building restrictions in high-risk areas.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants
Lead Agency/Department Responsible:	Administration and BDS
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #6
Proposed Action:	Adopt and implement a routine tree trimming program that clears tree limbs near power lines and/or hanging in right-of-way; Remove dead trees from right-of way and drainage systems on a scheduled basis.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hail, Lightning, Tornado, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy (Power/Fuel)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration, Public Works & Parks/Recreation
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Maintenance Plan; CWPP ; Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents. Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	City of Lakeway – Action #7
Proposed Action:	Incorporate higher standards for hazard resistance in local application of the building code.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damage to structures through improved construction techniques; Reduce recovery efforts for the community after an event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration and BDS
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #8
Proposed Action:	Prohibit animal shelters in known hazard areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to structures and animals by requiring development outside of hazardous areas; reduce burden on emergency response during hazardous events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration and BDS
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injuries and fatalities.

	City of Lakeway – Action #9
Proposed Action:	Implement and enhance an area-wide telephone Emergency Notification System ("Reverse 911").
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communication and early warning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Winter Storm, Tornado, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	OEM and Communication
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Lakeway – Action #10
Proposed Action:	Develop alternative evacuation routes/plans and designate emergency thoroughfares, particularly in areas with limited capacity. Educate citizens on evacuation routes and procedures
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk residents through improved evacuation alternatives and awareness efforts.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration, OEM, BDS and Public Works
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Lakeway – Action #11
Proposed Action:	Provide/construct additional means of access into single-entry neighborhoods; Update subdivision codes for a higher level of ingress and egress.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to residents through improved evacuation alternatives; improve firefighting capabilities through improved access alternatives.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration, OEM, BDS and Public Works
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Building Codes/Ordinances; Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Lakeway – Action #12
Proposed Action:	Adopt smart growth initiatives. Incorporate a formal hazard mitigation plan in long-term community development planning activities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk in high hazard areas by promoting and incentivizing development in low-risk areas; Build resiliency within the community; Reduce risk of damages through improved planning and construction practices.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration and Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #13
Proposed Action:	Amend landscape ordinance (selection and planting guidelines) to continue drought resistance plans.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on groundwater; Minimize impacts of expansive soils; Reduce rainfall runoff volume and risk of flooding; Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration and BDS
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #14
Proposed Action:	Equip sewer manholes with watertight covers and inflow guards.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of flood water contamination; Reduce risk of surface water infiltration and sewage backup; Ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	OEM and Lakeway MUD
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Wastewater Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

City of Lakeway – Action #15	
Proposed Action:	Raise electrical components of sewage lift stations above the Base Flood Elevation (BFE).
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of flood water contamination; Reduce risk of surface water infiltration and sewage backup; Ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy (Power/Fuel)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	OEM and Lakeway MUD
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Wastewater Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #16
Proposed Action:	Adopt an ordinance that will limit aerial extensions to water, sewer, gas, and electrical lines.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations; Reduce risk of sewer infiltration and flood water contamination.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration and BDS
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #17
Proposed Action:	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration and BDS
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

COMMENTS:

	City of Lakeway – Action #18
Proposed Action:	Build safe room shelters at manufactured home parks so that all park residents can reach shelter in less than five minutes.
BACKGROUND INFORMATION	
Site and Location:	Community-wide manufactured home parks
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	OEM and Public Works
Implementation Schedule:	Within 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan

COMMENTS:

	City of Lakeway – Action #19
Proposed Action:	Implement measures to secure traffic lights and traffic controls from high wind damage.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration and Public Works; TXDOT
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:

	City of Lakeway – Action #20
Proposed Action:	Require standards for burial of electrical, telephone, cable lines and other utilities in new developments.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Lightning, Tornado, Thunderstorm Wind, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy (Power/Fuel)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration, BDS and Public Works in conjunction with local utility provider
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #21
Proposed Action:	Bury existing utility lines.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy (Power/Fuel)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration and BDS in conjunction with local utility provider
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #22
Proposed Action:	Evaluate access and road conditions for response vehicles. Develop and implement options to improve access and/or add redundant access routes in high-risk areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through maintained and redundant access routes in high-risk areas; Improve response time for emergency services; Reduce risk of injury or damages; Provide additional ingress/egress routes through high-risk areas to prevent loss of life and avoid rescue efforts.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire, Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new or existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration, OEM and Public Works
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP; Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Lakeway – Action #23
Proposed Action:	Require standard tie-downs of propane tanks.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to structures and infrastructure; Reduce risk of hazardous material release and potential fires; Reduce risk of injuries or fatalities; Reduce risk of flood water contamination.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Tornado
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy (Power/Fuel)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration and BDS
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents. Helps ensure critical facilities continue to provide services during extreme weather events.

	City of Lakeway – Action #24
Proposed Action:	Undertake a comprehensive study of flood risk and reduction alternatives, with the assistance of the US Army Corps of Engineers. Implement feasible alternatives for flood reduction.
BACKGROUND INFORMATION	
Site and Location:	Community-wide flood hazard areas
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Improve risk assessment; Reduce risk of damages or injuries through drainage improvements; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Local Plans and Regulations (for unmapped areas)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Floodplain Administrator and OEM
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Lakeway – Action #25
Proposed Action:	Join the Community Rating System program.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood insurance premiums for local residents; Reduce flood risk and build resiliency.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Floodplain Administrator and OEM
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Lakeway – Action #26
Proposed Action:	Increase freeboard requirements for permitting structures in the SFHA; Adopt a “no-rise" in BFE in the 100-year floodplain; Update local flood ordinance to prohibit granting of variance in SFHA; Include "cumulative damage" provisions in local floodplain management ordinances.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood damages through development restrictions and improved construction requirements in flood-prone areas.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Floodplain Administrator, OEM and BDS/Permitting
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #27
Proposed Action:	Join the National Flood Insurance Program (NFIP).
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide access to flood insurance for local residents; Reduce flood risk and build resiliency.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Floodplain Administrator
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan; Flood Damage Prevention Ordinance

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #28
Proposed Action:	Provide how-to information to residents for installing backflow valves to prevent reverse-flow floods.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damage impact on residents after a flood event; Reduce risk of sewage back-up in structures; Reduce risk of injury or illness to residents.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Floodplain Administrator, OEM and Communication and Water Utility
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Lakeway – Action #29
Proposed Action:	Conduct public education program on fire risks and wildland fire mitigation, with the assistance of the Texas Forest Service.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	OEM and Local Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	CWPP

COMMENTS:

	City of Lakeway – Action #30
Proposed Action:	Adopt and implement routine fire hydrant maintenance plan.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through routine maintenance of fire hydrants; Reduce risk of injury or damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new or existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration, OEM, Local Fire Department, and water utility providers
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	CWPP

COMMENTS:

	City of Lakeway – Action #31
Proposed Action:	Adopt construction regulations for fire-resistant roofing materials, smoke alarm systems, sprinkler systems, cisterns, escape roads, fuels management requirements, and boxing of eaves, overhangs, and decks; Require fire extinguishers for all homes and businesses; Require large side yards between adjacent buildings in residential and commercial areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of wildfires and the spread of wildfire through improved construction practices and building requirements.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDEM; Federal Grants: FEMA HMA Grants, CDBG, HUD, NRCS, USFS, USFWS
Lead Agency/Department Responsible:	Administration, BDS, and Local Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	CWPP; Local Building Codes

COMMENTS:

	City of Lakeway – Action #32
Proposed Action:	Install fire danger rating/burn ban signs.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Public Works and Local Fire Department
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP

COMMENTS:

	City of Lakeway – Action #33
Proposed Action:	Implement a community education program regarding fire dangers for identified risk areas; Distribute pamphlets through neighborhood associations or insert flyers in water bills to make residents aware of wildfire hazard areas and fire protection measures for homes and yards.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	OEM and Local Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	CWPP

COMMENTS:

	City of Lakeway – Action #34
Proposed Action:	Install warning signs at hazardous bridges and roadways subject to ice.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages and injuries on roadways and bridges during winter storm events through education and awareness programs; Reduce demand on emergency response during winter storms.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	OEM and Public Works
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:

	City of Lakeway – Action #35
Proposed Action:	Educate citizens on mitigation measures to prevent frozen pipes; Educate homeowners on carbon monoxide monitors/alarms
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages and injuries through mitigation education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	OEM
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:

	City of Lakeway – Action #36
Proposed Action:	Adopt and implement program to insulate outdoor pipes at critical and public buildings.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical and public facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages at public buildings resulting from freezing temperatures; Ensure continuity of public services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration, OEM, Public Works and Facilities
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:

City of Lakeway – Action #37	
Proposed Action:	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	OEM and Public Works
Implementation Schedule:	Within 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan

COMMENTS:

		City of Lakeway – Action #38
	Proposed Action:	Continue to review the Lakeway Emergency Operations Plan and continue to establish an Emergency Operations Center: Update the plan to current standards and provides greater clarification of assigned responsibilities.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promotes hazard awareness and protects the public from injuries and fatalities. Ensures continuity of critical services during and after a severe weather event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Drought, Tornado, Thunderstorm Wind, Extreme Heat, Expansive Soils, Hail, Lightning, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration and Police Department
Implementation Schedule:	Within 12 months of plan adoption, pending available funding.
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Lakeway – Action #39
Proposed Action:	Develop a mass debris removal plan.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Ensure continuity of critical services and emergency response during and after a severe weather event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind, Flood, Wildfire, Hail
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	D&CE and Public Works
Implementation Schedule:	In-progress
Incorporation into Existing Plans:	City Policy/SOPs for respective City Departments, Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects the community from risk of flooding.

	City of Lakeway – Action #40
Proposed Action:	Upgrade critical facilities to include drought mitigation measures and expansive soils protection such as greywater reuse systems, drought tolerant landscaping, installation of a sprinkler system with regular watering schedule and installation of French drains where high plasticity soils are indicated.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities including all participating jurisdictions
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on ground water. Reduce rainfall runoff volume and risk of flooding. Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	County Public Works, and City Engineer and Administrator
Implementation Schedule:	On-going
Incorporation into Existing Plans:	Local Plans and Ordinances

COMMENTS:

		City of Lakeway – Action #41
	Proposed Action:	Require drought tolerant landscaping at all new public buildings.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce need for water at public buildings during times of drought.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration and BDS
Implementation Schedule:	Within 36 - 48 months of plan adoption
Incorporation into Existing Plans:	Local Plans and Ordinances

COMMENTS:

	City of Lakeway – Action #42
Proposed Action:	Install covered parking facilities for critical vehicles.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical and emergency response vehicles
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to critical emergency vehicles and equipment and ensure continuity of services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Hail, Lightning, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration, Public Works, and Local Police and Fire Departments
Implementation Schedule:	Within 36 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:

CITY OF MANOR

	City of Manor – Action #1	
	Proposed Action:	Install covered parking areas for police and emergency vehicles.
	BACKGROUND INFORMATION	
	Site and Location:	402 W Parsons Street, Manor, TX
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the cost of damage to emergency vehicles and equipment. Ensure emergency response during and after an extreme weather event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Hail, Lightning, Thunderstorm Wind, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Transportation
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:

	City of Manor – Action #2
Proposed Action:	Acquire and install generators at all critical facilities.
BACKGROUND INFORMATION	
Site and Location:	105 E Eggleston St, Manor, TX 402 W Parsons Street, Manor, TX
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy, Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$275,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 12 - 26 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	City of Manor – Action #3
Proposed Action:	Develop/provide additional means of access into existing single-entry neighborhoods; Update subdivision codes for a higher level of ingress and egress.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to residents through improved evacuation alternatives; improve firefighting capabilities through improved access alternatives.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Tornado
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000 to implement subdivision code $250,000 to implement additional access routes
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Planning and Zoning
Implementation Schedule:	Within 36 - 60 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Manor – Action #4
Proposed Action:	Acquire and install all hazards warning sirens.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communications and early warning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$40,000 - $60,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration and Public Works
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Code and Policy

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Manor – Action #5
Proposed Action:	Purchase, distribute, and promote the use of NOAA's all hazard radios. Incorporate with Citizens Police Academy training give away.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communications and early warning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 - $10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Police Department.
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Manor – Action #6
Proposed Action:	Implement a plan to clean up and improve the alleyways. Implement drainage improvements in the downtown area to improve drainage and reduce damages.
BACKGROUND INFORMATION	
Site and Location:	Downtown Manor area
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Removal of debris will reduce flood risk through improved drainage capacity; Reduce risk of damages and injuries; Reduce emergency response demands.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration and Public Works
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	City Development, Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Manor – Action #7
Proposed Action:	Adopt and implement plan to clean up and remove debris from ditches, drains, and culverts to maintain capacity.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduces the potential for flooding. Reduce damages caused by backwater flooding by maintaining or restoring drainage capacity.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000 to implement plan $250,000 to implement maintenance
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration and Public Works
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protect communities and reduces risk of flooding.

	City of Manor – Action #8
Proposed Action:	Develop/Update drought contingency plan. Adopt and implement water restrictions identified in the plan.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Maintain safe water levels and prevent waste. Reduce risk to structures and infrastructure due to expansive soils by maintaining adequate soil moisture; Reduce risk and spread of wildfire. Ensure vulnerable populations adequate water supply.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Food/Water/Shelter, Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Manager, Planning and Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Ordinance

COMMENTS:

	City of Manor – Action #9
Proposed Action:	Public awareness and education campaign to educate the public on expansive soil and methods and actions that can be taken to protect existing structures.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Plan

COMMENTS:

		City of Manor – Action #10
	Proposed Action:	Develop and implement code requirements for foundations to protect against damage caused by expansive soils.
	BACKGROUND INFORMATION	
	Site and Location:	New construction
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to structures and infrastructure due to expansive soils.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	Reduce risk to future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Ordinances

COMMENTS:

		City of Manor – Action #11
	Proposed Action:	Develop and initiate extreme summer heat public awareness campaign and fan drive/giveaway. Implement fan drive to collect donations and distribute fans to vulnerable population.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect at-risk and vulnerable populations from potential injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 - $10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration and Police Department
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Plan

COMMENTS:

	City of Manor – Action #12
Proposed Action:	Upgrade critical facilities to include drought mitigation measures and expansive soils protection such as greywater reuse systems, drought tolerant landscaping, installation of a sprinkler system with regular watering schedule and installation of French drains where high plasticity soils are indicated.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on ground water. Reduce rainfall runoff volume and risk of flooding. Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Plans and Ordinances

COMMENTS:

	City of Manor – Action #13
Proposed Action:	Require drought tolerant landscaping at all new public buildings.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce need for water at public buildings during times of drought.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 36 - 48 months of plan adoption
Incorporation into Existing Plans:	Local Plans and Ordinances

COMMENTS:

CITY OF MUSTANG RIDGE

		City of Mustang Ridge – Action #1
	Proposed Action:	Implement education and awareness programs utilizing bulletin and city website to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages. Include links to weather alerts and departmental phone listings with contact personnel for residents.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	On-going
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Mustang Ridge – Action #2
Proposed Action:	Adopt smart growth initiatives. Incorporate a formal hazard mitigation plan in long-term community development planning activities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk in high hazard areas by promoting and incentivizing development in low-risk areas; Build resiliency within the community; Reduce risk of damages through improved planning and construction practices.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Mustang Ridge – Action #3
Proposed Action:	Adopt a landscape ordinance (selection and planting guidelines).
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on groundwater; Minimize impacts of expansive soils; Reduce rainfall runoff volume and risk of flooding; Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	City Engineers
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Mustang Ridge – Action #4
Proposed Action:	Adopt ordinance requiring tie-downs for mobile homes; Require manufactured housing be securely anchored to permanent foundations.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	City Inspector
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:

	City of Mustang Ridge – Action #5
Proposed Action:	Evaluate access and road conditions for response vehicles. Develop and implement options to improve access and/or add redundant access routes in high-risk areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through maintained and redundant access routes in high-risk areas; Improve response time for emergency services; Reduce risk of injury or damages; Provide additional ingress/egress routes through high-risk areas to prevent loss of life and avoid rescue efforts.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire, Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new or existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP; Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Mustang Ridge – Action #6
Proposed Action:	Adopt regulations to limit amount of impervious cover in conjunction with new development.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood damage and risk of injuries or fatalities through regulated development; Reduce the amount of stormwater runoff in densely developed areas during flood events; Reduce the risk of downstream flooding.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	City Engineer
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Mustang Ridge – Action #7
Proposed Action:	Install fire danger rating/burn ban signs.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Administration and ESD #11
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP

COMMENTS:

	City of Mustang Ridge – Action #8
Proposed Action:	Implement a community education program regarding fire dangers for identified risk areas; Distribute pamphlets through neighborhood associations or insert flyers in water bills to make residents aware of wildfire hazard areas and fire protection measures for homes and yards.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Administration and ESD #11
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	CWPP

COMMENTS:

	City of Mustang Ridge – Action #9
Proposed Action:	Install warning signs at hazardous bridges and roadways subject to ice.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages and injuries on roadways and bridges during winter storm events through education and awareness programs; Reduce demand on emergency response during winter storms.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:

	City of Mustang Ridge – Action #10
Proposed Action:	Educate citizens on mitigation measures to prevent frozen pipes and carbon monoxide monitors/alarms through making information available on the city's website.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages and injuries through mitigation education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24 - 36 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:

	City of Mustang Ridge – Action #11
Proposed Action:	Review Floodplain Management Ordinance: Continue to review floodplain management ordinance and maintain a rating under the TCRFC Ordinance Floodplain Management Assessment Program.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduces risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Development
Implementation Schedule:	On-going
Incorporation into Existing Plans:	Local Codes / Ordinance

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Mustang Ridge – Action #12
Proposed Action:	Partner with Travis County to develop an interlocal agreement to institute a tree trimming program: Work with Travis County to address problem areas by creating an interlocal agreement on services.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Lightning, Tornado, Wildfire, Thunderstorm Wind, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Development and Travis County
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Mustang Ridge – Action #13
Proposed Action:	Xeriscape planting: Encourage and implement xeriscape planting for drought/extreme heat-resistant landscaping and to reduce the effects of expansive soils.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on groundwater; Minimize impacts of expansive soils; Reduce rainfall runoff volume and risk of flooding; Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soil, Extreme Heat
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Development
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:

	City of Mustang Ridge – Action #14
Proposed Action:	Hail-resistant roof coverings: Continue to educate the public on material selections for roofing materials that will have a minimal impact on the environment through city bulletin board and website.
BACKGROUND INFORMATION	
Site and Location:	Community-wide commercial and residential properties
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages; Reduce risk of injury to residents, emergency, and critical personnel.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Development
Implementation Schedule:	On-going
Incorporation into Existing Plans:	N/A

COMMENTS:

CITY OF PFLUGERVILLE

	City of Pflugerville – Action #1	
	Proposed Action:	Install irrigation systems and implement watering schedule at public buildings and critical facilities.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide critical facilities and public buildings
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce maintenance costs, conserve resources, and reduce risk during severe weather. Reduce risk to structures and infrastructure due to expansive soils by maintaining adequate soil moisture; Reduce risk and spread of wildfire.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures through reducing fire risk and improve soil/water conservation
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000.00
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Public Works, Parks & Recreation
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Facilities Plans

COMMENTS:

City of Pflugerville – Action #2	
Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Emergency Management, Communications
Implementation Schedule:	2023
Incorporation into Existing Plans:	Communications Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Pflugerville – Action #3
Proposed Action:	Purchase and install generators and hardwire quick generator connections at critical facilities throughout the planning area.
BACKGROUND INFORMATION	
Site and Location:	All wastewater lift stations
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy (Power/Fuel)
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Emergency Management, Public Works
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	City of Pflugerville – Action #4
Proposed Action:	Install covered parking facilities for critical vehicles.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical and emergency response vehicles
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the cost of damage to emergency vehicles and equipment. Ensure emergency response during and after an extreme weather event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Hail, Lighting, Thunderstorm Wind, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Transportation
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:

	City of Pflugerville – Action #5
Proposed Action:	Construct overnight shelters and safe refuge locations for public evacuation triggered by disasters and extreme weather events.
BACKGROUND INFORMATION	
Site and Location:	Locations to be determined
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Minimize disruption to vulnerable populations reducing injuries and/or fatalities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Food/Water/Shelter
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Pflugerville – Action #6
Proposed Action:	Conduct necessary studies to continue to adopt and implement drainage projects and policies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide drainage system
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Improve risk assessment; Reduce risk of damages or injuries through drainage improvements; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing and future structures and infrastructure.
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Engineer
Implementation Schedule:	On-going, as funding becomes available
Incorporation into Existing Plans:	Drainage Master Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Pflugerville – Action #7
Proposed Action:	Identify locations and construct tornado safe room community shelters. Install tornado safe rooms in new public facilities or designated shelters.
BACKGROUND INFORMATION	
Site and Location:	Site locations to be determined
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Mitigates specific risks to structures, people, and operations. Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Food/Water/Shelter
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Facility Master Plan Scope of Work

COMMENTS:

		City of Pflugerville – Action #8
	Proposed Action:	Continue to assess and incorporate actions designed to reduce flooding. Actions should be related to protecting existing and future development from increased flooding potential and erosion as well as actions related to restricting development in existing floodplains.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide with focus on high-risk flood areas
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood damages through development restrictions and improved construction requirements in flood-prone areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Development Services Department
Implementation Schedule:	On-going, as funding becomes available
Incorporation into Existing Plans:	Comprehensive Plan; City of Pflugerville Unified Development Code

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Pflugerville – Action #9
Proposed Action:	NFIP Community Rating System (CRS): Continue to evaluate and implement activities to improve rating with the CRS, such as adopting higher floodplain standards.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood insurance premiums for residents; Reduce flood risk and build resiliency.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce the number of existing and future buildings that are susceptible to flooding.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Building Department
Implementation Schedule:	Within 24 -3 6 months, pending plan adoption and available funding (then annually)
Incorporation into Existing Plans:	Comprehensive Plan, CRS Materials

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

City of Pflugerville – Action #10	
Proposed Action:	Assess and implement necessary plans, procedures, and capabilities to prevent and respond to dam failure.
BACKGROUND INFORMATION	
Site and Location:	Lake Pflugerville
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Properly maintaining the dam minimizes the potential for losses of life and property should Lake Pflugerville dam fail.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Engineer
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Dam Safety Master Plan; Public Works Emergency Action Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Pflugerville – Action #11
Proposed Action:	Assess and make necessary improvements to roadways and ensure debris clearing capabilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damage to infrastructure; Ensure continuity of services during and after event; Ensure appropriate emergency response and evacuation efforts. Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Tornado, Thunderstorm Wind, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Transportation
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding (then annually)
Incorporation into Existing Plans:	Maintenance and Operations Plan; Public Works Emergency Action Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Pflugerville – Action #12
	Proposed Action:	Adopt ordinance to restrict water and energy consumption at public facilities.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide public facilities
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduces risk to vulnerable populations. Ensure adequate water availability during extreme weather events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Food/Water/Shelter
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Manager's Office
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Action; COOP plans

COMMENTS:

		City of Pflugerville – Action #13
	Proposed Action:	Develop and implement a plan for installing network of lightning detection equipment systems and lightning rods at existing and future city park facilities.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide park facilities
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages; Reduce risk of injury to residents and city personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Parks and Recreation
Implementation Schedule:	Withing 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Incorporate into Parks Master Plan Update

COMMENTS:

		City of Pflugerville – Action #14
	Proposed Action:	Continue to collect data for the Food Protection Plan Study which was published in April 2021. Implement findings and recommendations into city's Drainage Master Plan and FIRM study of Wilbarger Creek watershed.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide – Wilbarger Creek watershed
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Improve risk assessment; Reduce risk of damages or injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulation Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Food/Water/Shelter
Effect on New/Existing Buildings:	Reduce risk to existing and future structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Engineer
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:

		City of Pflugerville – Action #15
	Proposed Action:	Complete a detailed structural/engineering survey of facilities. With information from the survey, implement mitigation activities to harden facilities, reduce damages, and ensure continuity of services. Mitigation actions can include items related hazard resistant construction materials.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide critical facilities
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$150,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 36 - 48 months, pending plan adoption and available funding then continue a regular cycle
Incorporation into Existing Plans:	Facility Master Plan Scope of Work

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Pflugerville – Action #16
Proposed Action:	Implement an elevation program for flood prone properties within the City.
BACKGROUND INFORMATION	
Site and Location:	Designated SFHA
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce loss of property and risk from flooding in flood prone areas. Continuity of home ownership in City.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Pflugerville – Action #17
	Proposed Action:	Require drought tolerant landscaping at all new public buildings.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce need for water at public buildings during times of drought.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 36 - 48 months of plan adoption
Incorporation into Existing Plans:	Local Plans and Ordinances

COMMENTS:

VILLAGE OF POINT VENTURE

	Village of Point Venture – Action #1
Proposed Action:	Adopt and implement a routine tree trimming program that clears tree limbs near power lines and/or hanging in right-of-way; Remove dead trees from right-of way and drainage systems on a scheduled basis.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hail, Lightning, Tornado, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy (Power/Fuel)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Maintenance Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents. Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	Village of Point Venture – Action #2
Proposed Action:	Adopt and implement a program for clearing debris from bridges, drains, and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 (annually)
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Codes / Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Village of Point Venture – Action #3
	Proposed Action:	Upgrade undersized stormwater drains and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide drainage system
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Floodplain Management Plan; Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Village of Point Venture – Action #4
Proposed Action:	Increase drainage capacity; add stormwater detention and/or retention basins as deemed necessary to reduce flood risk.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood risk through improved drainage capacity; Reduce risk of damages and injuries; Reduce emergency response demands.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Village of Point Venture – Action #5
	Proposed Action:	Adopt regulations to limit amount of impervious cover in conjunction with new development.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood damage and risk of injuries or fatalities through regulated development; Reduce the amount of stormwater runoff in densely developed areas during flood events; Reduce the risk of downstream flooding.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Village of Point Venture – Action #6
Proposed Action:	Allow no vegetation in easements or require fire-resistant landscaping.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of wildfires and the spread of wildfire through improved development practices and building requirements/restrictions.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration and Code Enforcement
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Local Codes and Ordinances

COMMENTS:

	Village of Point Venture – Action #7
Proposed Action:	Educate community about the Firewise Program: Annual Firewise event including providing flyers, on doors, sending letters, sending emails to residence about the benefits of the Firewise Program and how wildfires can be worse during drought and extreme heat events. Informing them of the Lot Maintenance Program.
BACKGROUND INFORMATION	
Site and Location:	138 noncompliant lots have been notified
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of wildfires and the spread of wildfire through hazard education.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Code Enforcement
Implementation Schedule:	On-going
Incorporation into Existing Plans:	Local Codes and Ordinances; Lot Maintenance Program

COMMENTS:

		Village of Point Venture – Action #8
	Proposed Action:	Flood prevention: Review Flood Ordinance at council meetings with land development and building construction contractors present.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide flood-prone areas
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood damages through development restrictions and improved construction requirements in flood-prone areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Flood Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Flood Ordinance

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Village of Point Venture – Action #9
Proposed Action:	Debris removal and Contract Chipper: Continue to provide 40 yd brush/limb recycle dumpster for residents and contract with a local chipper and/or purchase a chipper to assist in debris removal. Look to encourage volunteers to help clear roads and property.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the risk of damage and injury. Reduce spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	On-going
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents. Helps ensure critical facilities continue to provide services during extreme weather events.

	Village of Point Venture – Action #10
Proposed Action:	Educate homeowners on hazards: Educate homeowners of how-to mitigate their homes from these hazards at public forums and newsletters, including annual Firewise/neighborhood watch information distribution and have a website with informational articles.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 12 - 24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Village of Point Venture – Action #11
Proposed Action:	Educate residents on and implement measures: Educate residents and builders of potential hazards and high-risk areas by providing GIS maps of high hazard areas and implement soil stabilizers or moisture control/irrigation in identified areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF ROLLINGWOOD

		City of Rollingwood – Action # 1
	Proposed Action:	Implement education and awareness programs utilizing town hall meetings, social media, and flyers to educate residents of hazards that can threaten the area.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damage. Reduce risk to residents, reduce on-going repair costs, reduce disaster response time.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Rollingwood – Action # 2
Proposed Action:	Acquire and install generators with hard wired quick connections at critical facilities. Acquire portable generators to have on hand for vulnerable populations.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services. Reduce risk to residents by ensuring access to electricity and heat during extreme weather events. Reduces emergency response need.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 - 60 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety. Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	City of Rollingwood – Action #3
Proposed Action:	Adopt and implement a program for clearing debris from bridges, drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000.00
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Stormwater Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Rollingwood – Action #4
Proposed Action:	Upgrade undersized stormwater drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide drainage system
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk on new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 12 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Rollingwood – Action #5
Proposed Action:	Install fire danger rating/burn ban signs.
BACKGROUND INFORMATION	
Site and Location:	Community-wide Focus on 4010 Bee Cave Road
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP

COMMENTS:

		City of Rollingwood – Action #6
	Proposed Action:	Implement a community education program regarding fire dangers for identified risk areas; Distribute community newsletter to make residents aware of wildfire hazard areas and fire protection measures for homes and yards. Replicate via web and social media.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 3 months of plan adoption
Incorporation into Existing Plans:	CWPP

COMMENTS:

	City of Rollingwood – Action #7
Proposed Action:	Adopt and implement a routine tree trimming program that clears tree limbs hanging in right-of-way; Remove dead trees from right-of way and drainage systems on a scheduled basis.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hail, Lightning, Tornado, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 3 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, CWPP

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents. Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

City of Rollingwood – Action #8	
Proposed Action:	Incorporate hazard mitigation action plan into city's comprehensive plan
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damage to structures by incorporation into existing plans; Ensure continuity of critical services; Reduce risk of injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Rollingwood – Action #9
	Proposed Action:	Complete Eanes Creek Drainage Improvement Project: Engineering design, construction plans, bid, and construction.
	BACKGROUND INFORMATION	
	Site and Location:	Eanes Creek
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	November 2021 Bond
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Stormwater Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

VILLAGE OF SAN LEANNA

		Village of San Leanna – Action #1
	Proposed Action:	Installation of auxiliary generator at water distribution site as back-up power supply
	BACKGROUND INFORMATION	
	Site and Location:	11400 Sunset Dr, Austin, TX 78748 North well, processing distribution facility
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services. Continue essential water utility services during severe weather.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$154,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	Village of San Leanna – Action #2
Proposed Action:	Implement Reverse 9 in the community: Educational information will be presented at National Night Out, through newsletters, and on the city website, to inform the public how to sign up for the new Reverse 9 Emergency Notification System.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communications and early warning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Public Safety
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Village of San Leanna – Action #3
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages. Include links to weather alerts and departmental phone listings with contact personnel for residents.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soil, Extreme Heat, Flood, Hail, Lightning, Tornado, Wildfire, Thunderstorm Wind, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 – $100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Public Safety
Implementation Schedule:	On-going
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Village of San Leanna – Action #4
	Proposed Action:	Purchase NOAA All Hazard Radios: Purchase radios for residents so they are aware of weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communications and early warning.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Medium
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 60 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Village of San Leanna – Action #5
	Proposed Action:	Floodplain Management Ordinance: TCRFC's Floodplain Management Assessment Program undertakes a periodic review to assess the effectiveness of floodplain management in the region.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood damages through development restrictions and improved construction requirements in flood-prone areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Medium
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Floodplain Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Local Codes / Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Village of San Leanna – Action #6
Proposed Action:	Educate residents regarding xeriscape planning. Educational information will be presented at National Night Out through newsletters, and on the city website, to increase awareness of ways the public may reduce water usage by xeriscaping on their property.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on groundwater; Minimize impacts of expansive soils; Reduce rainfall runoff volume and risk of flooding; Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Extreme Heat
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Environmental
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Codes / Ordinances

COMMENTS:

	Village of San Leanna – Action #7
Proposed Action:	Complete engineering studies and determine project designs for stormwater flood prevention: Complete engineering studies and determine project designs for stormwater. Implement necessary improvements as identified within studies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Improve risk assessment; Reduce risk of damages or injuries through drainage improvements; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Education and Awareness Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Environmental
Implementation Schedule:	Within 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Village of San Leanna – Action #8
	Proposed Action:	Complete stormwater management projects: This project can include installing larger culverts and creating detention basins for stormwater. This action will prevent damage to existing homes during flood events, and help establish areas to develop new structures at the least risk for damage from flooding.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	On-going as funding becomes available
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Village of San Leanna – Action #9
	Proposed Action:	Conduct wildfire fuel removal program: Conduct wildfire fuel removal program on city properties.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide with focus in high-risk areas in and surrounding the WUI
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of wildfires and the spread of wildfire through targeted fuels reduction programs.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Environmental
Implementation Schedule:	Within 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:

	Village of San Leanna – Action #10
Proposed Action:	Update building codes: Village has been designated as being in an extreme wildfire risk area thus Firewise is needed to help educate citizens and mitigate wildfire encroachment. Wildfires are extremely dangerous during drought and extreme heat periods.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Environmental
Implementation Schedule:	Within 12 months of plan adoption, currently in-progress
Incorporation into Existing Plans:	N/A

COMMENTS:

CITY OF SUNSET VALLEY

		City of Sunset Valley – Action #1
	Proposed Action:	Pursue funding and implement land and easement acquisition for the purpose of reducing flood risk.
	BACKGROUND INFORMATION	
	Site and Location:	Designated Special Flood Hazard Area (100-year Floodplain)
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas; Reduce downstream impacts associated with development in the floodplain; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	On-going pending available funding and notification of property availability
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Sunset Valley – Action #2
	Proposed Action:	Implement a natural waterway maintenance program. This program includes debris removal from the waterways, non-native plant removal, and the removal of fallen trees that are in excess of a 45-degree angle within the creek. Under the direction of the City Environmental Manager some trimming and or removal of native vegetation may also be performed.
	BACKGROUND INFORMATION	
	Site and Location:	Williamson Creek Cougar Creek (Sunset Valley Tributary) Kicheon Branch
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Improved natural creek function and flow to reduce flood risk.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural System Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing and future structures.
Priority (High, Moderate, Low):	High
Estimated Cost:	$30,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Annually
Incorporation into Existing Plans:	Flood Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Sunset Valley – Action #3
Proposed Action:	Implement education program to promote the purchase of flood insurance. Advertise the availability of costs, and coverage of flood insurance through the National Flood Insurance Program (NFIP). Encourage the 70 households located within the low water crossing inundation area identified to purchase flood insurance.
BACKGROUND INFORMATION	
Site and Location:	Households within the identified inundation area
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood risk through education and awareness; Increase flood insurance coverage.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Administration / Public Works
Implementation Schedule:	Annually in March
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Sunset Valley – Action #4
Proposed Action:	Implement education programs to increase public awareness of hazards and hazardous areas. Distribute public awareness information regarding natural hazards and potential mitigation measures to reduce risk. Distribute information through local newspaper, utility bill inserts, inserts in the phone book, a city hazard awareness website, and an education program for school age children.
BACKGROUND INFORMATION	
Site and Location:	Community-wide, including Sunset Valley Elementary
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damage. Ensure the public can prepare for disasters.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Annually in March
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

City of Sunset Valley – Action #5	
Proposed Action:	Continue annual maintenance program to insulate outdoor pipes at public buildings annually and hot boxes have been installed over all of the larger above ground backflow devices.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages at public buildings resulting from freezing temperatures; Ensure continuity of public services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Annual prior to winter season
Incorporation into Existing Plans:	SOP

COMMENTS:

	City of Sunset Valley – Action #6
Proposed Action:	Identify properties for possible participation in voluntary acquisition and demolition. Pursue funding and implement acquisition and demolition of flood prone structures.
BACKGROUND INFORMATION	
Site and Location:	Designated SFHA and/or repetitive loss properties
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas; Reduce downstream impacts associated with development in the floodplain; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	On-going as funding becomes available
Incorporation into Existing Plans:	Land Use Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Sunset Valley – Action #7
Proposed Action:	Bi-Annual routine maintenance of ditch lines, storm water inlets, storm water lift stations, as well as make standard preparations for storms and subsequent clean up.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and flooding through routine maintenance; Reduce risk of injury or damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Bi-Annual
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Sunset Valley – Action #8
	Proposed Action:	Annual evaluation of stormwater system: Implement identified improvements to culvert, storm sewer system, and roadside ditches along Sunset Trail, Lone Oak Drive, Yellow Tail Cove, and Pillow Road.
	BACKGROUND INFORMATION	
	Site and Location:	Along Sunset Trail, Lone Oak Drive, Yellow Tail Cove, and Pillow Road
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to existing structures and infrastructure through flood reduction and increased capacity.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$750,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Annual
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Sunset Valley – Action #9
Proposed Action:	Pursue grant funding from FEMA's Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) program to implement acquisition and elevation program for flood prone properties within the City.
BACKGROUND INFORMATION	
Site and Location:	Designated SFHA
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce loss of property and risk from flooding in flood prone areas. Continuity of home ownership in City.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding .
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Sunset Valley – Action #10
Proposed Action:	Develop and implement a Flood Event Warning Systems near several low water crossings to monitor rainfall in key areas upstream of the city and alert citizens to potential flooding.
BACKGROUND INFORMATION	
Site and Location:	Community-wide low water crossing areas
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of loss of life and property.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to existing structures.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Department of Public Works, Police Department
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

City of Sunset Valley – Action #11	
Proposed Action:	Continue to monitor drought conditions through contact with State agencies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk through enhanced risk assessment.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drought and Water Conservation Plan

COMMENTS:

		City of Sunset Valley – Action #12
	Proposed Action:	Complete a detailed structural/engineering survey of City facilities to ensure thorough soundness with respect to resisting the effects of high winds and hail. Initiate/ implement upgrades to at-risk City structures and/or infrastructure (harden facilities). Mitigate specific risks to structures, people, and operations to reduce risk of damage and ensure continuity of services.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to facilities and citizens through building protection and ensuring continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind, Hail, Lightning
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Department of Public Works
Implementation Schedule:	Within 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:

	City of Sunset Valley – Action #13
Proposed Action:	Upgrade critical facilities to include drought mitigation measures and expansive soils protection such as greywater reuse systems, drought tolerant landscaping, installation of a sprinkler system with regular watering schedule and installation of French drains where high plasticity soils are indicated.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities including all participating jurisdictions
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on ground water. Reduce rainfall runoff volume and risk of flooding. Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Plans and Ordinances

COMMENTS:

	City of Sunset Valley – Action #14
Proposed Action:	Require drought tolerant landscaping at all new public buildings.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce need for water at public buildings during times of drought.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	Administration
Implementation Schedule:	Within 36 - 48 months of plan adoption
Incorporation into Existing Plans:	Local Plans and Ordinances

COMMENTS:

	City of Sunset Valley – Action #15
Proposed Action:	Install covered parking facilities for critical vehicles.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical and emergency response vehicles
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to critical emergency vehicles and equipment and ensure continuity of services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Hail, Lightning, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Administration and Local Police and Fire Department
Implementation Schedule:	Within 36 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:

VILLAGE OF THE HILLS

		Village of The Hills – Action #1
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages. Include links to weather alerts and departmental phone listings with contact personnel for residents.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Village of The Hills – Action #2
Proposed Action:	Acquire and distribute NOAA weather radios.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communications and early warning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC, Administration, and Local Police and Fire Department
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Village of The Hills – Action #3
Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy (Power/Fuel)
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Village of The Hills – Action #4
	Proposed Action:	Adopt and implement a routine tree trimming program that clears tree limbs near power lines and/or hanging in right-of-way; Remove dead trees from right-of way and drainage systems on a scheduled basis.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hail, Lightning, Tornado, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy (Power/Fuel)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Maintenance Plan; CWPP; Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents. Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	Village of The Hills – Action #5
Proposed Action:	Incorporate higher standards for hazard resistance in local architectural designs and requirements for homeowners association.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages to structures through improved construction techniques; Reduce recovery efforts for the community after an event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC, Administration and Council
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Village of The Hills – Action #6
Proposed Action:	Implement and enhance an area-wide telephone Emergency Notification System ("Reverse 911").
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communication and early warning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Winter Storm, Tornado, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Village of The Hills – Action #7
Proposed Action:	Develop alternative evacuation routes/plans and designate emergency thoroughfares, particularly in areas with limited capacity. Educate citizens on evacuation routes and procedures
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk residents through improved evacuation alternatives and awareness efforts.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway; LTFR
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Village of The Hills – Action #8
Proposed Action:	Provide/construct additional means of access into single-entry neighborhoods; Update subdivision codes for a higher level of ingress and egress.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to residents through improved evacuation alternatives; improve firefighting capabilities through improved access alternatives.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway; LTFR
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Building Codes/Ordinances; Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Village of The Hills – Action #9
	Proposed Action:	Adopt smart growth initiatives. Incorporate a formal hazard mitigation plan in long-term community development planning activities.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk in high hazard areas by promoting and incentivizing development in low-risk areas; Build resiliency within the community; Reduce risk of damages through improved planning and construction practices.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration; LTFR
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Village of The Hills – Action #10
Proposed Action:	Adopt a landscape ordinance (selection and planting guidelines).
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on groundwater; Minimize impacts of expansive soils; Reduce rainfall runoff volume and risk of flooding; Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC, Administration and Council
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Village of The Hills – Action #11
	Proposed Action:	Raise electrical components of sewage lift stations above the Base Flood Elevation (BFE).
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of flood water contamination; Reduce risk of surface water infiltration and sewage backup; Ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy (Power/Fuel)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration; Water Utility
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Wastewater Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Village of The Hills – Action #12
	Proposed Action:	Adopt an ordinance that will limit aerial extensions to water, sewer, gas, and electrical lines.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations; Reduce risk of sewer infiltration and flood water contamination.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Village of The Hills – Action #13
	Proposed Action:	Build safe room shelters at manufactured home parks so that all park residents can reach shelter in less than five minutes.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide manufactured home parks
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan

COMMENTS:

		Village of The Hills – Action #14
	Proposed Action:	Adopt ordinance requiring tie-downs for mobile homes; Require manufactured housing be securely anchored to permanent foundations.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:

		Village of The Hills – Action #15
	Proposed Action:	Implement measures to secure traffic lights and traffic controls from high wind damage.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway; TXDOT
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:

		Village of The Hills – Action #16
	Proposed Action:	Require standards for burial of electrical, telephone, cable lines and other utilities in new developments.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Lightning, Tornado, Thunderstorm Wind, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy (Power/Fuel)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway and local utility provider
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Village of The Hills – Action #17
Proposed Action:	Bury existing utility lines.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy (Power/Fuel)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway and local utility provider
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Village of The Hills – Action #18
	Proposed Action:	Evaluate access and road conditions for response vehicles. Develop and implement options to improve access and/or add redundant access routes in high-risk areas.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through maintained and redundant access routes in high-risk areas; Improve response time for emergency services; Reduce risk of injury or damages; Provide additional ingress/egress routes through high-risk areas to prevent loss of life and avoid rescue efforts.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire, Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new or existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP; Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Village of The Hills – Action #19
Proposed Action:	Require standard tie-downs of propane tanks.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to structures and infrastructure; Reduce risk of hazardous material release and potential fires; Reduce risk of injuries or fatalities; Reduce risk of flood water contamination.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Tornado
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy (Power/Fuel)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC, Administration and Council
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents. Helps ensure critical facilities continue to provide services during extreme weather events.

		Village of The Hills – Action #20
	Proposed Action:	Undertake a comprehensive study of flood risk and reduction alternatives, with the assistance of the US Army Corps of Engineers. Implement feasible alternatives for flood reduction.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide flood hazard areas
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Improve risk assessment; Reduce risk of damages or injuries through drainage improvements; Reduce risk of damages and injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Local Plans and Regulations (for unmapped areas)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 24 - 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Village of The Hills – Action #21
Proposed Action:	Join the Community Rating System program.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood insurance premiums for local residents; Reduce flood risk and build resiliency.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Village of The Hills – Action #22
	Proposed Action:	Increase freeboard requirements for permitting structures in the SFHA; Adopt a “no-rise" in BFE in the 100-year floodplain; Update local flood ordinance to prohibit granting of variance in SFHA; Include "cumulative damage" provisions in local floodplain management ordinances.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce flood damages through development restrictions and improved construction requirements in flood-prone areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		V Village of The Hills – Action #23
	Proposed Action:	Join the National Flood Insurance Program (NFIP).
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide access to flood insurance for local residents; Reduce flood risk and build resiliency.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan; Flood Damage Prevention Ordinance

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Village of The Hills – Action #24
	Proposed Action:	Provide how-to information to residents for installing backflow valves to prevent reverse-flow floods.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damage impact on residents after a flood event; Reduce risk of sewage back-up in structures; Reduce risk of injury or illness to residents.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration; Water Utility
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Village of The Hills – Action #25
	Proposed Action:	Conduct public education program on fire risks and wildland fire mitigation, with the assistance of the Texas Forest Service.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Local Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	CWPP

COMMENTS:

		Village of The Hills – Action #26
	Proposed Action:	Adopt and implement routine fire hydrant maintenance plan.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through routine maintenance of fire hydrants; Reduce risk of injury or damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new or existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC, Administration, and Local Fire Department; Water Utility
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	CWPP

COMMENTS:

		Village of The Hills – Action #27
	Proposed Action:	Adopt construction regulations for fire-resistant roofing materials, smoke alarm systems, sprinkler systems, cisterns, escape roads, fuels management requirements, and boxing of eaves, overhangs, and decks; Require fire extinguishers for all homes and businesses; Require large side yards between adjacent buildings in residential and commercial areas.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of wildfires and the spread of wildfire through improved construction practices and building requirements.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDEM; Federal Grants: FEMA HMA Grants, CDBG, HUD, NRCS, USFS, USFWS
Lead Agency/Department Responsible:	EMC, Administration, and Local Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	CWPP; Local Building Codes

COMMENTS:

	Village of The Hills – Action #28
Proposed Action:	Install fire danger rating/burn ban signs.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Local Fire Department
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP

COMMENTS:

		Village of The Hills – Action #29
	Proposed Action:	Implement a community education program regarding fire dangers for identified risk areas; Distribute pamphlets through neighborhood associations or insert flyers in water bills to make residents aware of wildfire hazard areas and fire protection measures for homes and yards.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Local Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	CWPP

COMMENTS:

	Village of The Hills – Action #30
Proposed Action:	Install warning signs at hazardous bridges and roadways subject to ice.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages and injuries on roadways and bridges during winter storm events through education and awareness programs; Reduce demand on emergency response during winter storms.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:

		Village of The Hills – Action #31
	Proposed Action:	Educate citizens on mitigation measures to prevent frozen pipes; Educate homeowners on carbon monoxide monitors/alarms
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages and injuries through mitigation education and awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:

	Village of The Hills – Action #32
Proposed Action:	Adopt and implement program to insulate outdoor pipes at critical and public buildings.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical and public facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damage at public buildings resulting from freezing temperatures; Ensure continuity of public services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Building Codes/Ordinances

COMMENTS:

	Village of The Hills – Action #33
Proposed Action:	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan

COMMENTS:

	Village of The Hills – Action #34
Proposed Action:	Expand and implement drainage maintenance program to include regular mowing/brush clearing within drainage easements and removal of debris and sediment from roadside culverts and roadside ditches.
BACKGROUND INFORMATION	
Site and Location:	Community-wide easements, common area and park land
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 36 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Standard Operating Procedures

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Village of The Hills – Action #35
Proposed Action:	Identify residential and non-residential structures at risk from wildfire. Expand wildfire vegetation maintenance program to trim back and remove vegetation near high-risk structures.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through maintained and redundant access routes in high-risk areas.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC, Administration and Local Fire Department
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP

COMMENTS:

		Village of The Hills – Action #36
	Proposed Action:	Coordinate with the State to monitor and conserve existing water supplies in the County. Adopt and implement mandatory water conservation measures to ensure sufficient water pressure for firefighting and provision of drinking water during droughts
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impacts of drought through conservation regulations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration; Water Utility
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Local Codes / Ordinances

COMMENTS:

	Village of The Hills – Action #37
Proposed Action:	Pursue funding and implement acquisition and elevation program for flood prone properties within the Village. Prioritize repetitive loss properties. Pursue grant funding from FEMA's Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) program to receive assistance for mitigating (acquisition, elevation, etc.) flood prone properties.
BACKGROUND INFORMATION	
Site and Location:	Community-wide flood-prone properties and high-risk areas
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce or eliminate repetitive flood damage to high-risk properties.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduces risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with the City of Lakeway
Implementation Schedule:	Within 24 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Floodplain Ordinance

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Village of The Hills – Action #38
	Proposed Action:	Sponsor a "Multi-Hazard Awareness Week" to educate the public on all natural hazards (sheltering in place, evacuation, emergency preparedness, health and safety tips and structural retrofitting, flood insurance, etc.). This activity may be carried out in collaboration with the County or other surrounding jurisdictions.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promotes hazard awareness and reduces risk of injury and damages through education and awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration
Implementation Schedule:	Within 24 - 48 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Village of The Hills – Action #39
	Proposed Action:	Implement education and awareness programs to promote the purchase of flood insurance. Advertise the coverage, availability, and costs of flood insurance through the National Flood Insurance Program (NFIP) on the village website.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk through increased insurance coverage and risk awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration
Implementation Schedule:	Within 24 -48 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Village of The Hills – Action #40
	Proposed Action:	Increase tree planting around buildings to shade parking lots and along public rights-of-way.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide critical and public facilities
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce effect of extreme heat on citizens and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC, Administration, and Council in coordination with City of Lakeway
Implementation Schedule:	Within 36 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Codes / Ordinances

COMMENTS:

		Village of The Hills – Action #41
	Proposed Action:	Implement irrigation policies for public facilities; maintain a watering schedule to minimize the effects of expansive soils.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide critical and public facilities
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce effects of expansive soils on public facilities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC, Administration, and Council in coordination with City of Lakeway; Water Utility
Implementation Schedule:	Within 36 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Codes / Ordinances

COMMENTS:

	Village of The Hills – Action #42
Proposed Action:	Establish standard requirements for all utilities regarding tree pruning around lines.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to power lines and damages caused by power outages by reducing risk of downed power lines.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 36 - 48 months of plan adoption
Incorporation into Existing Plans:	Local Codes / Ordinances

COMMENTS:

	Village of The Hills – Action #43
Proposed Action:	Install and maintain surge protection on critical electronic equipment.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities and infrastructure
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages to critical equipment and ensure continuity of services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 36 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS:

	Village of The Hills – Action #44
Proposed Action:	Upgrade critical facilities to include drought mitigation measures and expansive soils protection such as greywater reuse systems, drought tolerant landscaping, installation of a sprinkler system with regular watering schedule and installation of French drains where high plasticity soils are indicated.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce impact on ground water. Reduce rainfall runoff volume and risk of flooding. Reduce risk and spread of wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC and Administration in coordination with City of Lakeway
Implementation Schedule:	Within 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Local Plans and Ordinances

COMMENTS:

		Village of The Hills – Action #45
	Proposed Action:	Require drought tolerant landscaping at all new public buildings.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce need for water at public buildings during times of drought.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue
Lead Agency/Department Responsible:	EMC, Administration, and Council in coordination with City of Lakeway
Implementation Schedule:	Within 36 - 48 months of plan adoption
Incorporation into Existing Plans:	Local Plans and Ordinances

COMMENTS:

	Village of The Hills – Action #46
Proposed Action:	Install covered parking facilities for critical vehicles.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical and emergency response vehicles
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to critical emergency vehicles and equipment and ensure continuity of services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Hail, Lightning, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	EMC, Administration and Local Police and Fire Department
Implementation Schedule:	Within 36 - 48 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:

CITY OF WEST LAKE HILLS

		City of West Lake Hills – Action #1
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damages
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 3 months of plan adoption, and then reoccurring
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of West Lake Hills – Action #2
Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
BACKGROUND INFORMATION	
Site and Location:	4010 Bee Cave Road
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 6 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	City of West Lake Hills – Action #3
Proposed Action:	Relocate critical facilities out of high hazard areas.
BACKGROUND INFORMATION	
Site and Location:	From 911 Westlake Drive to 4010 Bee Cave Road
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages to structures; Ensure continuity of critical services; Reduce risk of injuries to critical service employees.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$17,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 6 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

City of West Lake Hills – Action #4	
Proposed Action:	Upgrade critical facilities to include drought mitigation measures and expansive soils protection such as greywater reuse systems, drought tolerant landscaping, installation of a sprinkler system with regular watering schedule and installation of French drains where high plasticity soils are indicated.
BACKGROUND INFORMATION	
Site and Location:	4010 Bee Cave Road, New city hall
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damage to critical facilities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$750,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 6 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS:

	City of West Lake Hills – Action #5
Proposed Action:	Adopt and implement a program for clearing debris from bridges, drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000.00
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 1 month, pending plan adoption and available funding
Incorporation into Existing Plans:	Stormwater Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

City of West Lake Hills – Action #6	
Proposed Action:	Upgrade undersized stormwater drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide drainage system
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk on new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 1 month, pending plan adoption and available funding
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of West Lake Hills – Action #7
Proposed Action:	Install fire danger rating/burn ban signs.
BACKGROUND INFORMATION	
Site and Location:	Community-wide Focus on 4010 Bee Cave Road
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 6 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP

COMMENTS:

	City of West Lake Hills – Action #8	
	Proposed Action:	Implement a community education program regarding fire dangers for identified risk areas; Distribute community newsletter to make residents aware of wildfire hazard areas and fire protection measures for homes and yards. Replicate via web and social media.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 3 months of plan adoption
Incorporation into Existing Plans:	CWPP

COMMENTS:

		City of West Lake Hills – Action #9
	Proposed Action:	Adopt and implement a routine tree trimming program that clears tree limbs hanging in right-of-way; Remove dead trees from right-of way and drainage systems on a scheduled basis.
	BACKGROUND INFORMATION	
	Site and Location:	Community-wide
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hail, Lightning, Tornado, Winter Storm, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security, Energy
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 3 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Stormwater Management Plan, CWPP

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents. Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

	City of West Lake Hills – Action #10
Proposed Action:	Acquire and sustain a platform for community communications (i.e.: Blackboard).
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communications and early warning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 0-3 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of West Lake Hills – Action #11
Proposed Action:	Incorporate hazard mitigation action plan into city's comprehensive plan
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damage to structures by incorporation into existing plans; Ensure continuity of critical services; Reduce risk of injuries.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of West Lake Hills – Action #12
Proposed Action:	Evaluate adoption of a Wildland Urban Interface Code.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damage to structures through improved building and fire code techniques. Reduces potential threat to life and property from fire and resulting erosion. Reduce recovery efforts for the community after an event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduces risk to new structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills, Local Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Local Codes / Ordinances

COMMENTS:

	City of West Lake Hills – Action #13
Proposed Action:	Implement a Fuels Management Program.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of wildfires and the spread of wildfire through targeted firebreaks.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	Travis County / Wild Basin Preserve
Implementation Schedule:	Within 12 months, pending plan adoption and available funding
Incorporation into Existing Plans:	CWPP

COMMENTS:

	City of West Lake Hills – Action #14
Proposed Action:	Maintain and supplement a local reserve fund for public mitigation measures.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damage. Ensure ability to implement necessary mitigation efforts.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	>$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 6 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Hazard Mitigation Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure and prevents injury to residents.

	City of West Lake Hills – Action #15
Proposed Action:	Implement and maintain lightning protection on public facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages at public facilities; Ensure continuity of critical services during and after event; Reduces risk of injury to citizens.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 6 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS:

	City of West Lake Hills – Action #16
Proposed Action:	Adopt and implement land use restrictions and/or building code requirements in high-risk areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk of damages to new structures and infrastructure through building restrictions in high-risk areas.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 0-3 months of plan adoption
Incorporation into Existing Plans:	Local Codes / Ordinances

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of West Lake Hills – Action #17
Proposed Action:	Purchase NOAA All Hazard Radios: Purchase radios for residents so they are aware of weather events
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communications and early warning.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soil, Extreme Heat, Flood, Hail, Lightning, Tornado, Wildfire, Thunderstorm Wind, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Department Budget, Staff time, Bonds, Tax Revenue; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 60 months, pending plan adoption and available funding
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of West Lake Hills – Action #18
Proposed Action:	Complete Eanes Creek Drainage Improvement Project: Engineering design, construction plans, bid, and construction.
BACKGROUND INFORMATION	
Site and Location:	Eanes Creek
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	November 2021 Bond; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Stormwater Drainage Plan

COMMENTS:
Project is designed and scheduled for bid in 2023.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of West Lake Hills – Action #19
Proposed Action:	Complete Little Bee Creek Drainage Improvement Project: Engineering design, construction plans, bid, and construction.
BACKGROUND INFORMATION	
Site and Location:	Little Bee Creek
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	November 2021 Bond; State Grants: GLO, TAMFS, TDA, TDEM, TWDB, TXDOT; Federal Grants: FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS
Lead Agency/Department Responsible:	City of West Lake Hills
Implementation Schedule:	Within 12 - 24 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Stormwater Drainage Plan

COMMENTS:
Project is designed and scheduled for bid in 2023.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

EMERGENCY SERVICES DISTRICT (ESD) #6

		Emergency Services District (ESD) #6 – Action #1
	Proposed Action:	Implement education and awareness program utilizing district meetings, social media bulletins, flyers, etc. to educate residents and area residents of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages within the district.
	BACKGROUND INFORMATION	
	Site and Location:	Travis County Emergency Service District #6
	Risk Reduction Benefit: (Current Cost/Losses Avoided)	Promote hazard awareness and protect citizens from potential injuries and damage. Helps residents understand the risks faced within our district in an effort to promote decisions to prevent further damage, injury or loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County Emergency Service District #6
Implementation Schedule:	Within 1 month of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Emergency Services District (ESD) #6 – Action #2
Proposed Action:	Acquire and distribute NOAA weather radios to all district locations and administrative office locations.
BACKGROUND INFORMATION	
Site and Location:	Travis County Emergency Service District #6 15304 Pheasant Ln, Lakeway, TX 78734 (30.3634310868953, -97.9510374263605) 15516 General Williamson Dr, Austin, TX 78734 (30.392631049394886, -97.93466365303313) 1211 Lohmans Crossing Rd, Lakeway, TX 78734 (30.3591289237777, -97.97882717726068) 13333 State Hwy 71, Bee Cave, TX 78738 (30.3072160352416, -97.94700949536704) 6003 Comanche Trail, Austin, TX 78732 (30.396407511515783, -97.8688391317954) 3048 Steiner Ranch Blvd, Austin, TX 78732 (30.370023081866606, -97.89437283465149) 17304 Hamilton Pool Rd, Dripping Springs, TX 78620 (30.29224333445441, -98.03462381710193)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce risk to citizens through improved communications and early warning. NOAA weather radios would allow all locations to stay aware of any threating events and be able to plan accordingly.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Expansive Soils, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Communication, Safety/Security
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County Emergency Service District #6
Implementation Schedule:	Within 1 month of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Emergency Services District (ESD) #6 – Action #3
Proposed Action:	Install shaded fuel break into public wooded areas to create defensible space in the ignition zone of structures in the wildland urban interface.
BACKGROUND INFORMATION	
Site and Location:	Belvedere HOA, Travis County, Texas (30.299606358398698, -98.04343215014536)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the hazardous density of fuels in the ignition zones of homes within the community. Reduce upfront costs of initial installation of shaded fuel break. Protect Golden-Cheeked Warbler Habitat. Reduce risk of wildfires and the spread of wildfire through targeted firebreaks.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$350,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Start date: September 1st, 2023, pending plan adoption and available funding
Incorporation into Existing Plans:	Belvedere Wildfire Mitigation Plan

COMMENTS:

	Emergency Services District (ESD) #6 – Action #4
Proposed Action:	Upgrade district facilities to include drought mitigation measures and expansive soils protection such as greywater reuse systems, drought tolerant landscaping, installation of a sprinkler system with regular watering schedule and installation of French drains where high plasticity soils are indicated.
BACKGROUND INFORMATION	
Site and Location:	Travis County Emergency Service District #6 15304 Pheasant Ln, Lakeway, TX 78734 (30.3634310868953, -97.9510374263605) 15516 General Williamson Dr, Austin, TX 78734 (30.392631049394886, -97.93466365303313) 1211 Lohmans Crossing Rd, Lakeway, TX 78734 (30.3591289237777, -97.97882717726068) 13333 State Hwy 71, Bee Cave, TX 78738 (30.3072160352416, -97.94700949536704) 6003 Comanche Trail, Austin, TX 78732 (30.396407511515783, -97.8688391317954) 3048 Steiner Ranch Blvd, Austin, TX 78732 (30.370023081866606, -97.89437283465149) 17304 Hamilton Pool Rd, Dripping Springs, TX 78620 (30.29224333445441, -98.03462381710193)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce water use and sustainability of our district offices. Reduces damage at critical facilities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Expansive Soils
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County Emergency Service District #6
Implementation Schedule:	Within 6 month of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:

	Emergency Services District (ESD) #6 – Action #5
Proposed Action:	Install shaded fuel break into public wooded areas to create defensible space in the ignition zone of structures in the wildland urban interface.
BACKGROUND INFORMATION	
Site and Location:	Falconhead West, Travis County, Texas (30.32272276705933, -97.99403312802903)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the hazardous density of fuels in the ignition zones of homes within the community. Reduce upfront costs of initial installation of shaded fuel break. Protect Golden-Cheeked Warbler Habitat. Reduce risk of wildfires and the spread of wildfire through targeted firebreaks.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$515,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Start date: September 1st, 2023, pending plan adoption and available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS:

	Emergency Services District (ESD) #6 – Action #6
Proposed Action:	Public Park fuel mitigation program: Assess and maintenance to mitigate large amounts of dead and downed vegetation within the park.
BACKGROUND INFORMATION	
Site and Location:	Hamilton Greenbelt, Lakeway, Texas (30.365341287401108, -97.96840349694973)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the density of hazardous fuels in the Hamilton Greenbelt. Highly used park in Lakeway with many homes adjacent. Reduce risk of wildfires and the spread of wildfire through improved maintenance and mitigation practices.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$190,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Start date: March 1st, 2024, pending plan adoption and available funding
Incorporation into Existing Plans:	Lakeway Wildfire Hazard Plan

COMMENTS:
LTFR completed a massive fuels reduction in the Hamilton Greenbelt in 2022 at the expense of the city. Winter Storm Mara essentially reset all of the work that was completed.

	Emergency Services District (ESD) #6 – Action #7
Proposed Action:	Install shaded fuel break into public wooded areas to create defensible space in the ignition zone of structures in the wildland urban interface.
BACKGROUND INFORMATION	
Site and Location:	Hurst Creek Greenbelt, Lakeway, Texas (30.370464481934853, -97.97719955346273)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the hazardous density of fuels in the ignition zones of homes adjacent to the park. Reduce upfront costs of initial cutting of shaded fuel break. Reduce risk of wildfires and the spread of wildfire through improved maintenance and mitigation practices.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$72,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Start date: March 1st, 2024, pending plan adoption and available funding
Incorporation into Existing Plans:	Lakeway Wildfire Hazard Plan

COMMENTS:

	Emergency Services District (ESD) #6 – Action #8
Proposed Action:	Install shaded fuel break into public wooded areas to create defensible space in the ignition zone of structures in the wildland urban interface.
BACKGROUND INFORMATION	
Site and Location:	Lakeway City Park, Lakeway, Texas (30.37897937221237, -97.96869366611823)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the hazardous density of fuels in the ignition zones of homes adjacent to the park. Reduce upfront costs of initial cutting of shaded fuel break. Reduce risk of wildfires and the spread of wildfire through improved maintenance and mitigation practices.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,400
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Start date: March 1st, 2024, pending plan adoption and available funding
Incorporation into Existing Plans:	Lakeway Wildfire Hazard Plan

COMMENTS:

	Emergency Services District (ESD) #6 – Action #9
Proposed Action:	Install shaded fuel break into public wooded areas to create defensible space in the ignition zone of structures in the wildland urban interface.
BACKGROUND INFORMATION	
Site and Location:	Rebel City Park, Lakeway, Texas (30.369241744353108, -97.99660920545021
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the hazardous density of fuels in the ignition zones of homes adjacent to the park. Reduce upfront costs of initial cutting of shaded fuel break. Reduce risk of wildfires and the spread of wildfire through improved maintenance and mitigation practices.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$29,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Start Date: March 1st, 2024, pending plan adoption and available funding
Incorporation into Existing Plans:	Lakeway Wildfire Hazard Plan

COMMENTS:

Emergency Services District (ESD) #6 – Action #10	
Proposed Action:	Install shaded fuel break into public wooded areas to create defensible space in the ignition zone of structures in the wildland urban interface.
BACKGROUND INFORMATION	
Site and Location:	Rough Hollow, Lakeway, Texas (30.34157042798355, -98.00872807010718)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the hazardous density of fuels in the ignition zones of homes adjacent to the park. Reduce upfront costs of initial cutting of shaded fuel break. Reduce risk of wildfires and the spread of wildfire through improved maintenance and mitigation practices.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$700,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Start Date: September 1st, 2023, pending plan adoption and available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS:

Emergency Services District (ESD) #6 – Action #11	
Proposed Action:	Install shaded fuel break into public wooded areas to create defensible space in the ignition zone of structures in the wildland urban interface.
BACKGROUND INFORMATION	
Site and Location:	Smith Greenbelt, Lakeway, Texas (30.361619131413615, -97.97901232956436)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the hazardous density of fuels in the ignition zones of homes adjacent to the park. Reduce upfront costs of initial cutting of shaded fuel break. Reduce risk of wildfires and the spread of wildfire through improved maintenance and mitigation practices.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$15,120
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Start Date: March 1st, 202, pending plan adoption and available funding
Incorporation into Existing Plans:	Lakeway Wildfire Hazard Plan

COMMENTS:

Emergency Services District (ESD) #6 – Action #12	
Proposed Action:	Install shaded fuel break into public wooded areas to create defensible space in the ignition zone of structures in the wildland urban interface.
BACKGROUND INFORMATION	
Site and Location:	Sailfish Park, Lakeway, Texas (30.37121653992751, -97.99180303257144)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the hazardous density of fuels in the ignition zones of homes adjacent to the park. Reduce upfront costs of initial cutting of shaded fuel break. Reduce risk of wildfires and the spread of wildfire through improved maintenance and mitigation practices.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$29,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Start Date: March 1st, 2024, pending plan adoption and available funding
Incorporation into Existing Plans:	Lakeway Wildfire Hazard Plan

COMMENTS:

Emergency Services District (ESD) #6 – Action #13	
Proposed Action:	Install shaded fuel break into public wooded areas to create defensible space in the ignition zone of structures in the wildland urban interface.
BACKGROUND INFORMATION	
Site and Location:	Steiner Ranch, Travis County, Texas Steiner Ranch Masters Association (SRMA) (30.38224068450426, -97.89781031803221)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce the hazardous density of fuels in the ignition zones of homes within the SRMA. Reduce upfront costs of initial installation of shaded fuel break. Protect Golden-Cheeked Warbler Habitat. Reduce risk of wildfires and the spread of wildfire through improved maintenance and mitigation practices.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$950,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Start Date: September 1st, 2023, pending plan adoption and available funding
Incorporation into Existing Plans:	Steiner Ranch Wildfire Hazard Plan

COMMENTS:
Labor Day Weekend of 2011 the Steiner Ranch community had a wildfire that destroyed 15 homes. Some fuels mitigation has been accomplished in the area, but mostly on the Travis County BCCP owned property. This community is essentially the definition of the Wildland Urban Interface problem. Massive amounts of unmanaged fuels within 30 feet of the homes. SRMA already actively participates in the NFPA Firewise program.

Emergency Services District (ESD) #6 – Action #14	
Proposed Action:	Perform home assessments to gauge mitigation actions that can be taken by residents to reduce their wildfire risk and provide incentives for work completed per said assessment.
BACKGROUND INFORMATION	
Site and Location:	Travis County Emergency Service District #6
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Reduce retrofitting costs, promote community buy-in to home hardening. Reduce damage to residential structures in at-risk areas. Reduce risk of injury to residents, emergency, and critical personnel. Reduces need for emergency response during and after extreme weather events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructures. Reduce structure ignition potential
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Within 1 month of plan adoption
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS:
Residents have been given free home ignition zone assessments, but few have made the changes recommended due to lack of available funding. The funds would be spent on a matched basis if awarded a grant.

Emergency Services District (ESD) #6 – Action #15	
Proposed Action:	Acquire, install and/or upgrade generators with hard wired quick connections at all critical facilities and infrastructure.
BACKGROUND INFORMATION	
Site and Location:	District-wide critical facilities and infrastructure 15304 Pheasant Ln, Lakeway, TX 78734 (30.3634310868953, -97.9510374263605) 15516 General Williamson Dr, Austin, TX 78734 (30.392631049394886, -97.93466365303313) 1211 Lohmans Crossing Rd, Lakeway, TX 78734 (30.3591289237777, -97.97882717726068) 13333 State Hwy 71, Bee Cave, TX 78738 (30.3072160352416, -97.94700949536704) 6003 Comanche Trail, Austin, TX 78732 (30.396407511515783, -97.8688391317954) 3048 Steiner Ranch Blvd, Austin, TX 78732 (30.370023081866606, -97.89437283465149) 17304 Hamilton Pool Rd, Dripping Springs, TX 78620 (30.29224333445441, -98.03462381710193)
Risk Reduction Benefit: (Current Cost/Losses Avoided)	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline: (Safety/Security, Food, Water Shelter, Health/Medical, Energy (Power/Fuel), Communication, Transportation, Hazardous Materials)	Energy (Power/Fuel)
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Travis County ESD#6
Implementation Schedule:	Within 36 - 60 months, pending plan adoption and available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

SECTION 19
PLAN MAINTENANCE

SECTION 19: PLAN MAINTENANCE

PLAN MAINTENANCE PROCEDURES

The following is an explanation of how the participating jurisdictions within Travis County, and the general public will be involved in implementing, evaluating, and enhancing the Plan over time. When the plan is discussed in all maintenance procedures it includes mitigation actions and hazard assessments. The sustained hazard mitigation planning process consists of four main parts:

- Incorporation
- Monitoring and Evaluation
- Updating
- Continued Public Involvement

INCORPORATION

Participating jurisdictions within Travis County will be responsible for further development and implementation of mitigation actions. Each action has been assigned to a specific department within the participating jurisdictions. The following describes the process by which participating jurisdictions will incorporate elements of the mitigation plan into other planning mechanisms.

PROCESS OF INCORPORATION

Once the Plan Update is adopted, participating jurisdictions within Travis County will implement actions based on priority and the availability of funding. The Planning Area currently implements policies and programs to reduce loss to life and property from hazards. The mitigation actions developed for this Plan Update enhance this ongoing effort and will be implemented through other program mechanisms where possible.

The potential funding sources listed for each identified action may be used when the jurisdiction seeks funds to implement actions. An implementation time period or a specific implementation date has been assigned to each action as an incentive for completing each task and gauging whether actions are implemented in a timely manner.

Participating jurisdictions within Travis County will integrate implementation of their mitigation actions with other plans and policies such as construction standards and emergency management plans, and ensure that these actions, or proposed projects, are reflected in other planning efforts.

SECTION 19: PLAN MAINTENANCE

Coordinating and integrating components of other plans and policies into goals and objectives of the Plan Update will further maximize funding and provide possible cost-sharing of key projects, thereby reducing loss of lives and property and mitigating hazards affecting the area.

Upon formal adoption of the Plan Update, planning team members from each participating jurisdiction will work to integrate the hazard mitigation strategies into other plans and codes as they are developed. Participating team members will conduct periodic reviews of plans and policies, once per year at a minimum, and analyze the need for revisions in light of the approved Plan. The planning team will review all comprehensive land use plans (applicable jurisdictions only), capital improvement plans (applicable jurisdictions only), annual budget reviews, emergency operations or management plans (applicable jurisdictions only), and transportation plans (applicable jurisdictions only) to guide and control development. Participating jurisdictions will ensure that capital improvement planning (applicable jurisdictions only) in the future will also contribute to the goals of this hazard mitigation Plan Update to reduce the long-term risk to life and property from all hazards. Within one year of formal adoption of the hazard mitigation Plan Update, existing planning mechanisms will be reviewed by each jurisdiction.

Travis County is committed to supporting the participating jurisdictions as they implement their mitigation actions. Planning team members will review and revise, as necessary, the long-range goals and objectives in strategic plan and budgets to ensure that they are consistent with this mitigation action plan. Additionally, the Planning Area will work to advance the goals of this hazard mitigation plan through its routine, ongoing, long-range planning, budgeting, and work processes.

Table 19-1 identifies types of planning mechanisms and examples of methods for incorporating the Plan Update into other planning efforts. The team members, listed in Table 19-2 below, will be responsible for the review of these planning mechanisms and their incorporation of the plan, with the exception of the Floodplain Management Plans; the jurisdictions who have a Floodplain Administrator on staff will be responsible for incorporating the plan when floodplain management plans are updated or new plans are developed.

Table 19-1. Methods of Incorporation of the Plan

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
Annual Budget Review	Travis County: EMC Village of Briarcliff: City Administrator City of Creedmoor: City Administrator City of Jonestown: City Manager City of Lago Vista: City Manager City of Lakeway: EMC City of Manor: Police Lieutenant City of Mustang Ridge: City Administrator City of Pflugerville: EMC Village of Point Venture: Village Secretary City of Rollingwood: Assistant Police Chief	Various departments and key personnel that participated in the planning process for participating jurisdictions within Travis County will review the Plan and mitigation actions therein when conducting their annual budget review. Allowances will be made in accordance with grant applications sought, and mitigation actions that will be undertaken, according to the implementation schedule of the specific action.

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	Village of San Leanna: City Administrator City of Sunset Valley: EMC Village of The Hills: City Manager City of West Lake Hills: City Administrator Emergency Services District #6: Assistant Fire Chief	
Capital Improvement Plans	Travis County: EMC City of Jonestown: City Manager City of Lago Vista: City Manager City of Lakeway: EMC City of Manor: Police Lieutenant City of Mustang Ridge: City Administrator City of Pflugerville: EMC Village of Point Venture: Village Secretary City of Rollingwood: Assistant Police Chief City of Sunset Valley: EMC Village of The Hills: City Manager City of West Lake Hills: City Administrator Emergency Services District #6: Assistant Fire Chief	Several participating jurisdictions within Travis County have a Capital Improvement Plan (CIP) in place or under development. Prior to any revisions to the CIP, County, City, Village, and special district departments will review the risk assessment and mitigation strategy sections of the HMAP, as limiting public spending in hazardous zones is one of the most effective long-term mitigation actions available to local governments.
Comprehensive Plans	Travis County: EMC City of Creedmoor: City Administrator City of Jonestown: City Manager City of Lago Vista: City Manager City of Lakeway: EMC City of Mustang Ridge: City Administrator City of Pflugerville: EMC Village of Point Venture: Village Secretary City of Rollingwood: Assistant Police Chief Village of San Leanna: City Administrator City of Sunset Valley: EMC Village of The Hills: City Manager City of West Lake Hills: City Administrator	Several participating jurisdictions within Travis County have Long-term Comprehensive Development Plans in place. Since comprehensive plans involve developing a unified vision for a community, the mitigation vision and goals of the Plan will be reviewed in the development or revision of a Comprehensive Plan.

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
Floodplain Management Plans	Travis County: Floodplain Administrator Village of Briarcliff: Floodplain Administrator City of Creedmoor: Floodplain Administrator City of Jonestown: Floodplain Administrator City of Lago Vista: Floodplain Administrator City of Lakeway: Floodplain Administrator City of Manor: Floodplain Administrator City of Mustang Ridge: Floodplain Administrator City of Pflugerville: Floodplain Administrator Village of Point Venture: Floodplain Administrator City of Rollingwood: Floodplain Administrator Village of San Leanna: Floodplain Administrator City of Sunset Valley: Floodplain Administrator Village of The Hills: Floodplain Administrator City of West Lake Hills: Floodplain Administrator	Floodplain management plans include preventative and corrective actions to address the flood hazard. Therefore, the actions for flooding and information found in Section 9 of this Plan Update discussing the people and property at risk to flood will be reviewed and revised when participating jurisdictions within Travis County update their management plans or develops new plans.
Grant Applications	Travis County: EMC Village of Briarcliff: City Administrator City of Creedmoor: City Administrator City of Jonestown: City Manager City of Lago Vista: City Manager City of Lakeway: EMC City of Manor: Police Lieutenant City of Mustang Ridge: City Administrator City of Pflugerville: EMC	The Plan will be evaluated by participating jurisdictions within Travis County when grant funding is sought for mitigation projects. If a project is not in the Plan Update, a Plan Revision may be necessary to include the action in the Plan.

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	Village of Point Venture: Village Secretary City of Rollingwood: Assistant Police Chief Village of San Leanna: City Administrator City of Sunset Valley: EMC Village of The Hills: City Manager City of West Lake Hills: City Administrator Emergency Services District #6: Assistant Fire Chief	
Regulatory Plans	Travis County: EMC Village of Briarcliff: City Administrator City of Creedmoor: City Administrator City of Jonestown: City Manager City of Lago Vista: City Manager City of Lakeway: EMC City of Manor: Police Lieutenant City of Mustang Ridge: City Administrator City of Pflugerville: EMC Village of Point Venture: Village Secretary City of Rollingwood: Assistant Police Chief Village of San Leanna: City Administrator City of Sunset Valley: EMC Village of The Hills: City Manager City of West Lake Hills: City Administrator Emergency Services District #6: Assistant Fire Chief	Currently, several participating jurisdictions within Travis County have regulatory plans in place, such as Emergency Management Plans, Continuity of Operations Plans, Land Use Plans, and Evacuation Plans. The Plan Update will be consulted when County, City, Village, and special district departments review or revise their current regulatory planning mechanisms, or in the development of regulatory plans that are not currently in place.

MONITORING AND EVALUATION

Periodic revisions of the Plan are required to ensure that goals, objectives, and mitigation actions are kept current. When the plan is discussed in these sections it includes the risk assessment and mitigation actions as a part of the monitoring, evaluating, updating and review process. Revisions may be required to ensure the Plan is in compliance with federal and state statutes and regulations. This section outlines the procedures for completing Plan revisions, updates, and review. Table 19-2 indicates the department and title of the party responsible for Plan monitoring, evaluating, updating, and review of the Plan.

Table 19-2. Team Members Responsible for Plan Monitoring, Evaluating, Updating, and Review of the Plan

JURISDICTION	TITLE
Travis County	Emergency Management Coordinator
Village of Briarcliff	City Administrator
City of Creedmoor	City Administrator
City of Jonestown	City Manager
City of Lago Vista	City Manager
City of Lakeway	Emergency Management Coordinator
City of Manor	Police Lieutenant
City of Mustang Ridge	City Administrator
City of Pflugerville	Emergency Management Coordinator
Village of Point Venture	Village Secretary
City of Rollingwood	Assistant Police Chief
Village of San Leanna	City Administrator
City of Sunset Valley	Emergency Management Coordinator
Village of The Hills	City Manager
City of West Lake Hills	City Administrator
Emergency Services District #6	Assistant Fire Chief

MONITORING

Designated Planning Team members are responsible for monitoring, evaluating, updating, and reviewing the Plan, as shown in Table 19-2. Individuals holding the title listed in Table 19-2 will be responsible for monitoring the Plan on an annual basis. Plan monitoring includes reviewing and incorporating into the Plan other existing planning mechanisms that relate or support goals and objectives of the Plan; monitoring the incorporation of the Plan into future updates of other existing planning mechanisms as appropriate; reviewing mitigation actions submitted and coordinating with various County, City, Village and special district departments to determine if mitigation actions need to be re-evaluated and updated; evaluating and updating the Plan as necessary; and monitoring plan maintenance to ensure that the process described is being followed, on an annual basis, throughout the planning process. The Planning Team will develop a brief report that identifies policies and actions in the plan that have been successfully implemented and any changes in the implementation process needed for continued success. A summary of meeting notes will report the particulars involved in developing an action into a project. In addition to the annual monitoring, the Plan will be similarly reviewed immediately after extreme weather events include but not limited to state and federally declared disasters.

SECTION 19: PLAN MAINTENANCE

EVALUATION

As part of the evaluation process, the Planning Team will assess changes in risk; determine whether the implementation of mitigation actions is on schedule; determine whether there are any implementation problems, such as technical, political, legal, or coordination issues; and identify changes in land development or programs that affect mitigation priorities for each respective department or organization.

The Planning Team will meet on an annual basis to evaluate the Plan and identify any needed changes and assess the effectiveness of the plan achieving its stated purpose and goals. The team will evaluate the number of mitigation actions implemented along with the loss-reduction associated with each action. Actions that have not been implemented will be evaluated to determine if any social, political, or financial barriers are impeding implementation and if any changes are necessary to improve the viability of an action. The team will evaluate changes in land development and/or programs that affect mitigation priorities in their respective jurisdictions. The annual evaluation process will help to determine if any changes are necessary. In addition, the Plan will be similarly evaluated immediately after extreme weather events including but not limited to state and federally declared disasters.

UPDATING

PLAN REVISIONS

At any time, minor technical changes may be made to update the Travis County Hazard Mitigation Action Plan Update 2023. The plan may be amended to include additional hazard mitigation actions as they are developed. Material changes to mitigation actions or major changes in the overall direction of the Plan or the policies contained within it, must be subject to formal adoption by the participating jurisdictions.

The participating jurisdictions within Travis County will review proposed revisions and vote to accept, reject, or amend the proposed change. Upon ratification, the Revision will be transmitted to TDEM.

In determining whether to recommend approval or denial of a Plan Revision request, participating jurisdictions will consider the following factors:

- Errors or omissions made in the identification of issues or needs during the preparation of the Plan Update;
- New issues or needs that were not adequately addressed in the Plan Update; and
- Changes in information, data, or assumptions from those on which the Plan Update was based.

FIVE (5) YEAR REVIEW

The Plan will be thoroughly reviewed by the Planning Team at the end of three years from the approval date, to determine whether there have been significant changes in the planning area that necessitate changes in the types of mitigation actions proposed. Factors that may affect the content of the Plan include new development in identified hazard areas, increased exposure to hazards, disaster declarations, increase or decrease in capability to address hazards, and changes to federal or state legislation.

The Plan review process provides the participating jurisdictions within Travis County an opportunity to evaluate mitigation actions that have been successful, identify losses avoided due to the implementation of specific mitigation measures, and address mitigation actions that may not have been successfully implemented as assigned.

It is recommended that the full Executive and Advisory Planning Team (Section 2, Tables 2-1 and 2-2) meet to review the Plan at the end of three years because grant funds may be necessary for the development of a five-year update. Reviewing planning grant options in advance of the five-year Plan update deadline is recommended considering the timelines for grant and planning cycles can be in excess of a year.

Following the Plan review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and Plan Revision process outlined herein. Upon completion of the review, update, and revision process the revised Plan will be submitted to TDEM for final review and approval in coordination with FEMA.

CONTINUED PUBLIC INVOLVEMENT

Public input was an integral part of the preparation of this Plan and will continue to be essential for Plan updates. The Public will be directly involved in the annual evaluation, monitoring, reviews and cyclical updates. Changes or suggestions to improve or update the Plan will provide opportunities for additional public input.

The public can review the Plan on the participating jurisdictions' websites, where officials and the public are invited to provide ongoing feedback, via email.

The Planning Team may also designate voluntary citizens from the planning area or willing stakeholder members from the private sector businesses that were involved in the Plan's development to provide feedback on an annual basis. It is important that stakeholders and the immediate community maintain a vested interest in preserving the functionality of the planning area as it pertains to the overall goals of the mitigation plan. The Planning Team is responsible for notifying stakeholders and community members on an annual basis and maintaining the Plan.

Media, including local newspaper and radio stations, will be used to notify the public of any maintenance or periodic review activities during the implementation, monitoring, and evaluation phases. Additionally, local news media will be contacted to cover information regarding Plan updates, status of grant applications, and project implementation. Local and social media outlets, such as Facebook and Twitter, will keep the public and stakeholders apprised of potential opportunities to fund and implement mitigation projects identified in the Plan.

APPENDIX A
PLANNING TEAM

APPENDIX A: PLANNING TEAM

PLANNING TEAM MEMBERS

The Travis County Hazard Mitigation Action Plan 2023 was organized using a direct representative model. An Executive Planning Team from the participating jurisdictions, shown in Table A-1, was formed to coordinate planning efforts and request input and participation in the planning process. Table A-2 reflects the Advisory Planning Team, consisting of area organizations and departments that participated throughout the planning process. Table A-3 is comprised of stakeholders who were invited to provide Plan input. Public outreach efforts and meeting documentation is provided in Appendix E.

Table A-1. Executive Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Travis County	Emergency Management Coordinator
Travis County	Deputy Emergency Management Coordinator (Mitigation and Resiliency)
Travis County	Deputy Emergency Management Coordinator
Village of Briarcliff	City Administrator
City of Creedmoor	City Administrator
City of Creedmoor	Finance
City of Jonestown	City Manager
City of Lago Vista	City Manager
City of Lakeway	Emergency Management Coordinator
City of Manor	Police Lieutenant
City of Mustang Ridge	City Administrator
City of Pflugerville	Emergency Management Coordinator
Village of Point Venture	Village Secretary
City of Rollingwood	Assistant Police Chief
Village of San Leanna	City Administrator
City of Sunset Valley	Police Chief/Emergency Management Coordinator
Village of The Hills	Interim City Manager
City of West Lake Hills	City Administrator
Emergency Services District #6	Assistant Fire Chief/Fire Marshall

APPENDIX A: PLANNING TEAM

Table A-2. Advisory Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Travis County	Administrative Associate
Travis County	CDBG Planning Manager
Travis County	CDBG Planner
Travis County	Economic Development and Strategies Investments Director
Travis County	Fire Mitigation Officer
Travis County	Floodplain Project Manager
Travis County	HHS Chief Deputy
Travis County	Policy and Planning Manager
Travis County	Transportation and Natural Resource - Assistant Public Works Director
Travis County	Transportation and Natural Resource - Community Resiliency
Travis County	Transportation and Natural Resource - Community Resiliency
Travis County	Transportation and Natural Resource - Division Director of Development Services & Long-Range Planning
Travis County	Transportation and Natural Resource - Environmental Project Manager
Travis County	Transportation and Natural Resource - Environmental Quality Manager
Travis County	Transportation and Natural Resource - Floodplain Administrator / Permits Program Manager
Travis County	Transportation and Natural Resource – GIS Manager
Travis County	Transportation and Natural Resource - Long Range Planning Manager
Travis County	Transportation and Natural Resource - NREQ Division Director
Travis County	Transportation and Natural Resource - Program Manager
Travis County	Transportation and Natural Resource - Public Works Director
Travis County	Transportation and Natural Resource - Senior Planner

APPENDIX A: PLANNING TEAM

ORGANIZATION / DEPARTMENT	TITLE
Village of Briarcliff	Mayor
City of Lago Vista	Firewise Coordinator
City of Lago Vista	Mayor
City of Lakeway	Assistant City Manager
City of Manor	Assistant Chief of Police / Police Captain
City of Manor	Chief of Police
City of Manor	Community Program Officer
City of Mustang Ridge	City Secretary
City of Mustang Ridge	Mayor
City of Pflugerville	Assistant Chief of Police
Village of Point Venture	Mayor Pro-Tem
City of Rollingwood	City Administrator
City of Rollingwood	Police Sergeant
Village of San Leanna	Mayor
City of Sunset Valley	City Manager
Village of the Hills	Mayor Pro-Tem
City of West Lake Hills	Police Chief
Emergency Services District #6	Fire Chief
Emergency Services District #6	Wildfire Mitigation Specialist
Emergency Services District #6 (Lake Travis Fire Rescue)	Chairman of Steiner Ranch
Emergency Services District #6 (Lake Travis Fire Rescue)	Director of Communications

STAKEHOLDERS

The following groups listed in Table A-3 represent a list of organizations invited to stakeholder meetings, public meetings, and workshops throughout the planning process and include members of community groups, non-profit organizations, private businesses, utility providers, neighboring counties, school and universities, state and federal agencies, and legislators. The public were also invited to participate via e-mail throughout the planning process. Many of the invited

organizations and stakeholders participated and were integral to providing comments and data for the Plan. For a list of attendees at meetings, please see Appendix E[1].

Table A-3. Stakeholders

AGENCY	TITLE	STAKEHOLDER TYPE
Austin Independent School District	Emergency Management Coordinator	Academia
Bastrop County	Emergency Management Coordinator	Neighboring Community
Burnet County	Emergency Management Coordinator	Neighboring Community
Caldwell County	Chief/Emergency Management Coordinator	Neighboring Community
Capital Area Council of Governments	Burnet County Commissioner	Regional Agency
Capital Area Council of Governments	Executive Director	Regional Agency
Capital Area Trauma Regional Advisory Council	Executive Director	Healthcare Agency
Central Health	Director of Public Health Strategy, Policy, and Disaster Response	Healthcare Agency
City of Austin Water Utility	Representative	Utility Provider
City of Round Rock	Representative	Neighboring Community
County Commissioner Assistants	County Commissioner Assistants (5)	Authority To Regulate Development
County Commissioner	Precinct 2 Commissioner	Authority To Regulate Development
County Commissioner	Precinct 3 Commissioner	Authority To Regulate Development
County Emergency Services	Representative	Public Service Agency
County Emergency Services	Executive Director	Public Service Agency
County Fire Marshal's Office	Fire Marshal	Authority To Regulate Development
County Judge's Office	County Judge	Authority To Regulate Development
Environmental Protection Agency, Region 6	Regional Administrator	Federal Agency
Hays County	Director, Office of Emergency Services	Neighboring Community

[1] Information contained in Appendix E is exempt from public release under the Freedom of Information Act (FOIA).

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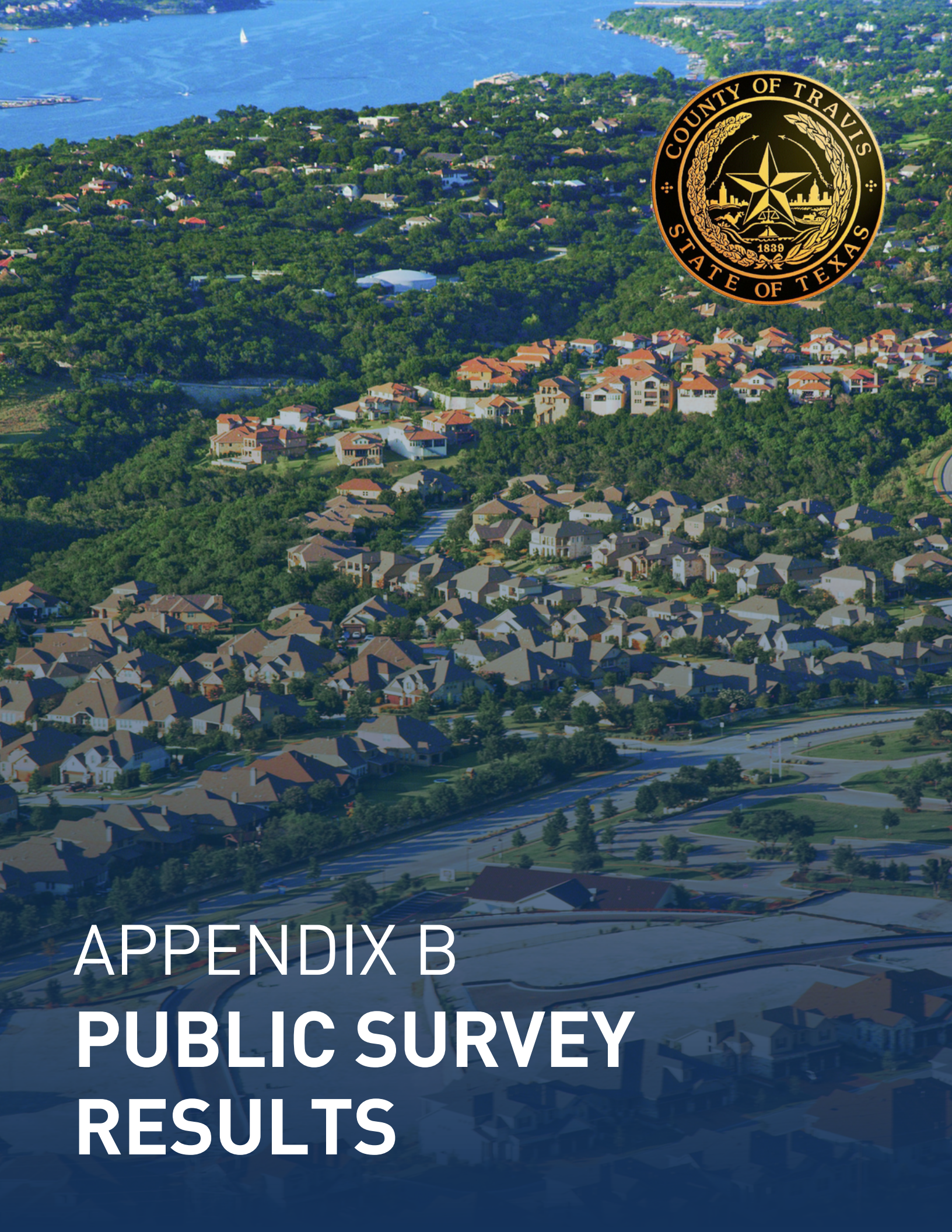
AGENCY	TITLE	STAKEHOLDER TYPE
Integral Care	Director of Accountable Care Systems	Healthcare Agency
Llano County	Emergency Management Coordinator	Neighboring Community
Lower Colorado River Authority	Mid-Basin Regional Affairs	Utility Provider
National Weather Service	Warning Coordination Meteorologist	Federal Agency
NOAA	Chief of Policy, Planning & Communications	Federal Agency
Pflugerville ISD	Director, Office of Emergency Management	Academia
Pflugerville ISD	Executive Director of Health, Safety, Crisis, and Emergency Management	Academia
Texas A&M Agrilife Extension, District 10	District Extension Administrator	State Agency
Texas A&M Forest Service	La Grange Office Mitigation & Prevention Coordinator	State Agency
Texas Commission on Environmental Quality	Region 11 Director	State Agency
Texas Department of Health Services	Deputy Chief Press Officer	State Agency
Texas Department of Housing and Community Affair	Director, Community Affairs Division	State Agency
Texas Department of Transportation	Austin District Engineer	State Agency
Texas Development Water Board	Region K Project Manager	State Agency
Texas Division of Emergency Management	District Coordinator	State Agency
Texas Floodplain Management	Region 5 Director	State Agency
Travis County	ESD #2 Accountability Officer	Public Service Agency
Travis County	ESD #2 Battalion Chief	Public Service Agency
Travis County	ESD #12 Battalion Chief	Public Service Agency
Travis County	ESD #12 Assistant Chief	Public Service Agency
Travis County	ESD #12 Commissioner	Public Service Agency
Travis County	ESD #12 Public Information Officer	Public Service Agency

APPENDIX A: PLANNING TEAM

AGENCY	TITLE	STAKEHOLDER TYPE
Travis County	FMD Director	Authority To Regulate Development
Travis County	Intergovernmental Relations Officer	Authority To Regulate Development
Travis County	Public Information Officer	Authority To Regulate Development
Travis County Parks	Parks Assistant Division Director	Authority To Regulate Development
Travis County Parks	Park Land Manager	Authority To Regulate Development
Williamson County	Director/Emergency Management Coordinator	Neighboring Community



APPENDIX B
PUBLIC SURVEY RESULTS

APPENDIX B: PUBLIC SURVEY RESULTS

OVERVIEW

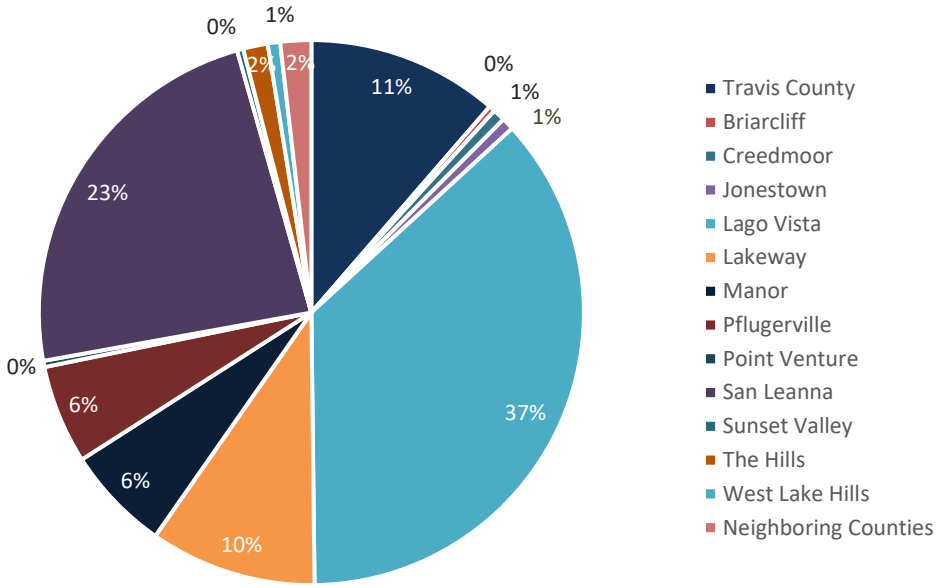
Travis County prepared a public survey that requested public opinion on a wide range of questions relating to natural hazards. The survey was made available via the County's websites, along with participating jurisdictions. This survey link was also distributed at public meetings and stakeholder events throughout the planning process.

A total of 273 surveys were collected, the results of which are analyzed in Appendix B. The purpose of the survey was twofold: 1) to solicit public input during the planning process, and 2) to help the jurisdictions identify any potential actions or problem areas.

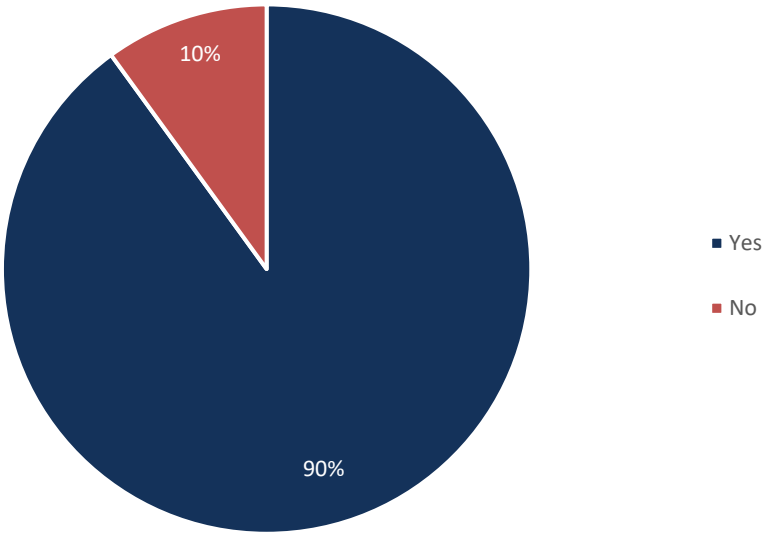
The following survey results depict the percentage of responses for each answer. Similar responses have been summarized for questions that did not provide a multiple-choice answer or that required an explanation.

PUBLIC SURVEY RESULTS

1. Please state the jurisdiction (city or community) where you reside.[1]

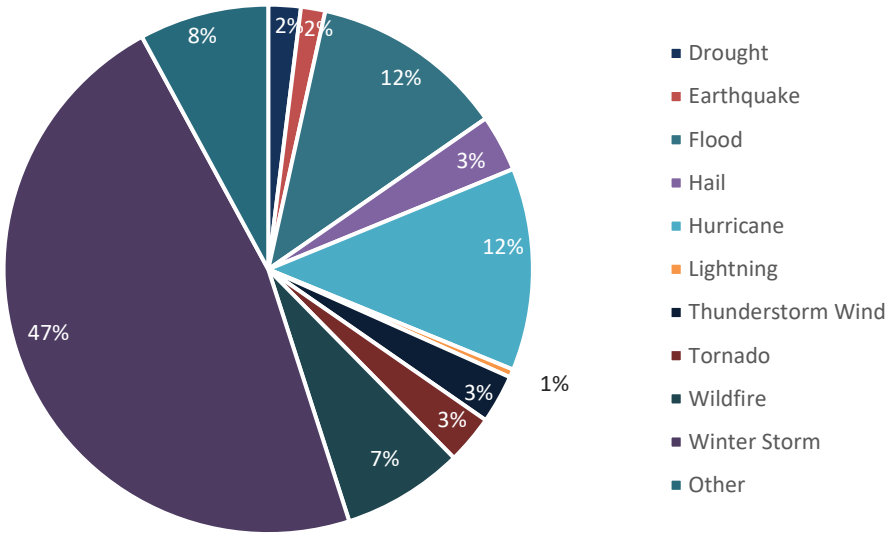


2. Have you ever experienced or been impacted by a disaster?

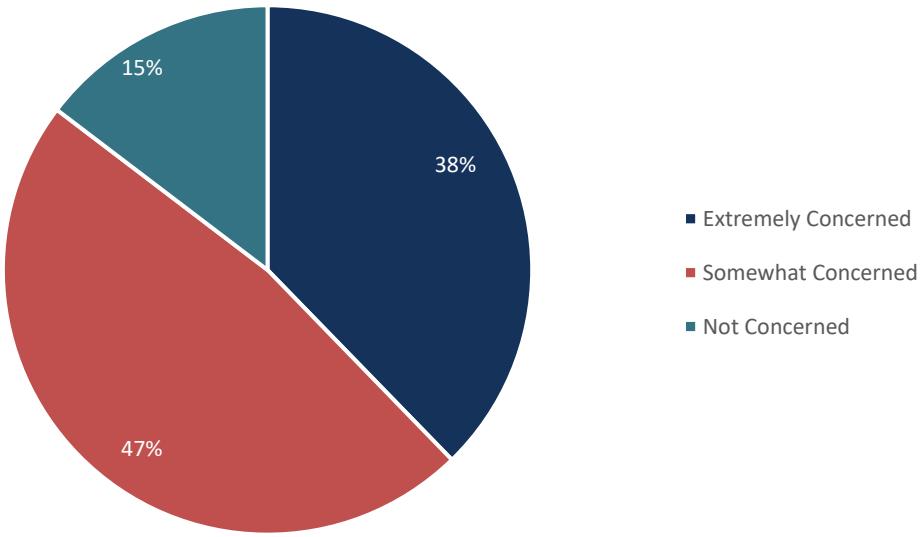


[1] Some respondents were in neighboring counties, however due to their proximity to Travis County, their responses were included in the survey results.

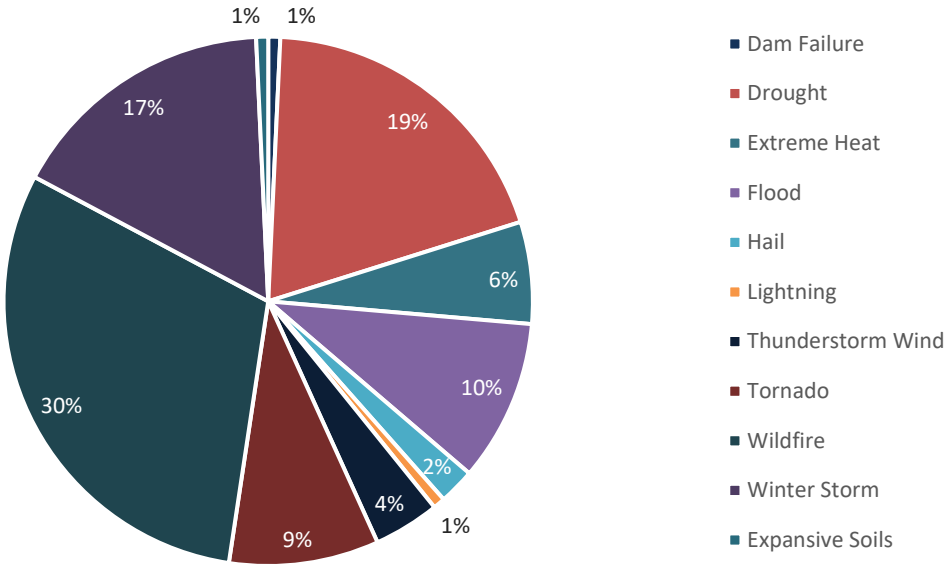
3. If you answered “Yes” to Question #2, please explain.



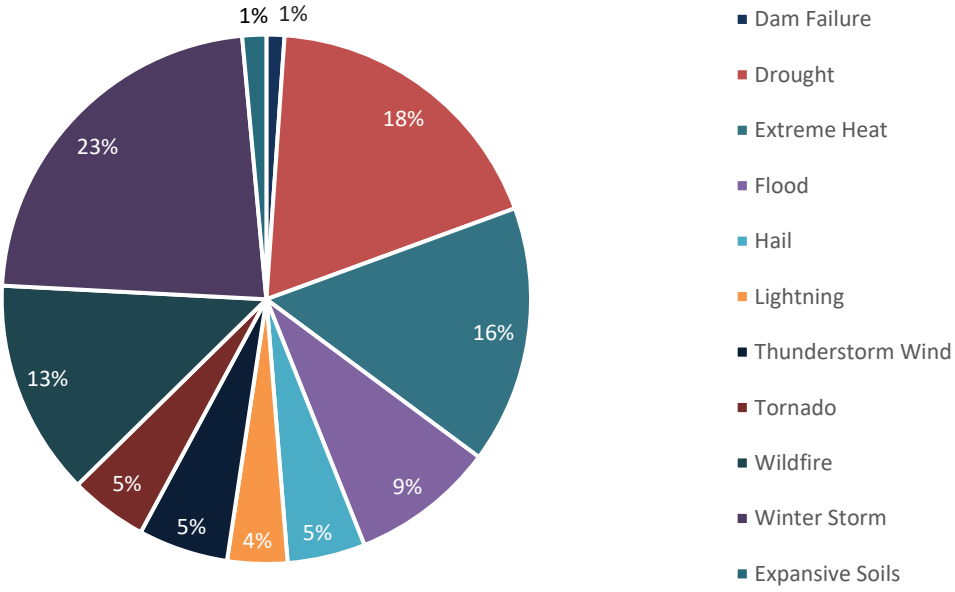
4. How concerned are you about the possibility of your community being impacted by a disaster?



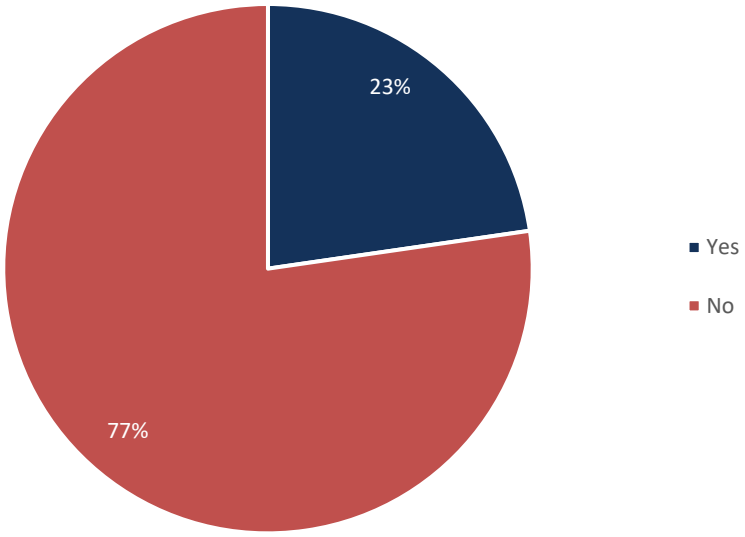
5. Please select the one hazard you think is the highest threat to your neighborhood:



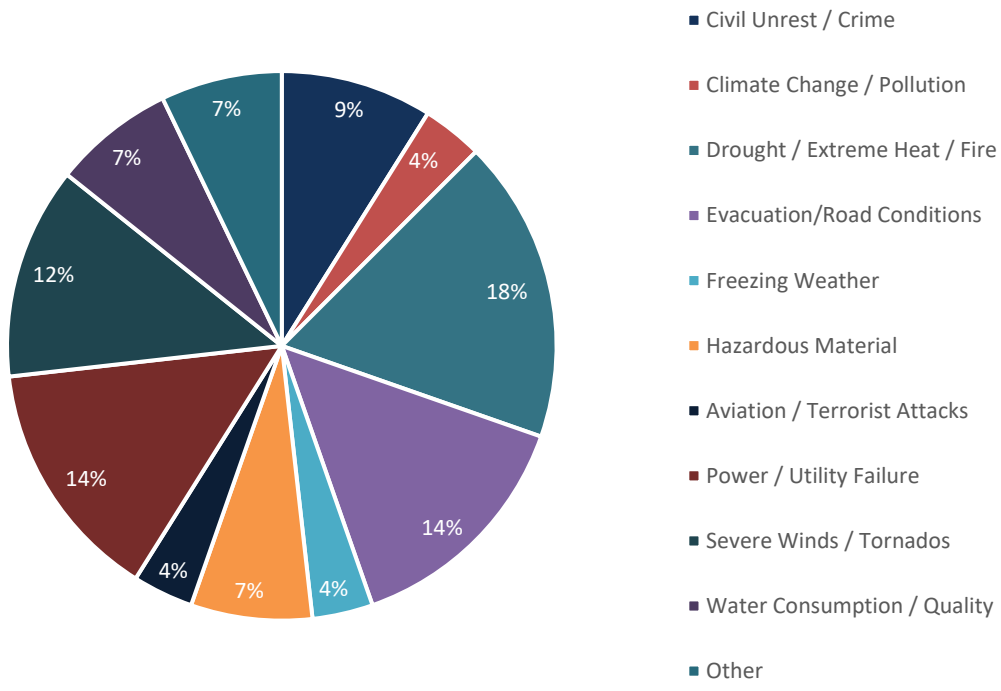
6. Please select the one hazard you think is the second highest threat to your neighborhood:



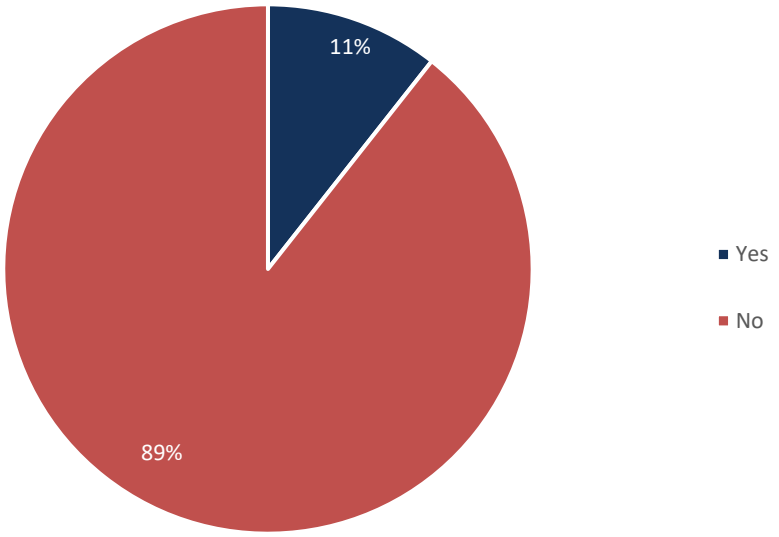
7. Is there another hazard not listed above that you this is a wide-scale threat to your neighborhood?



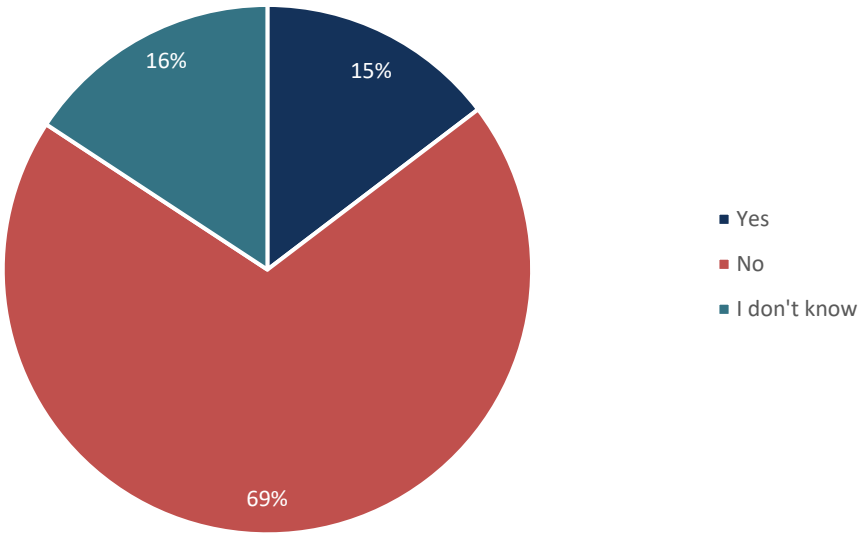
8. If you answered “Yes” to Question #7, please explain.



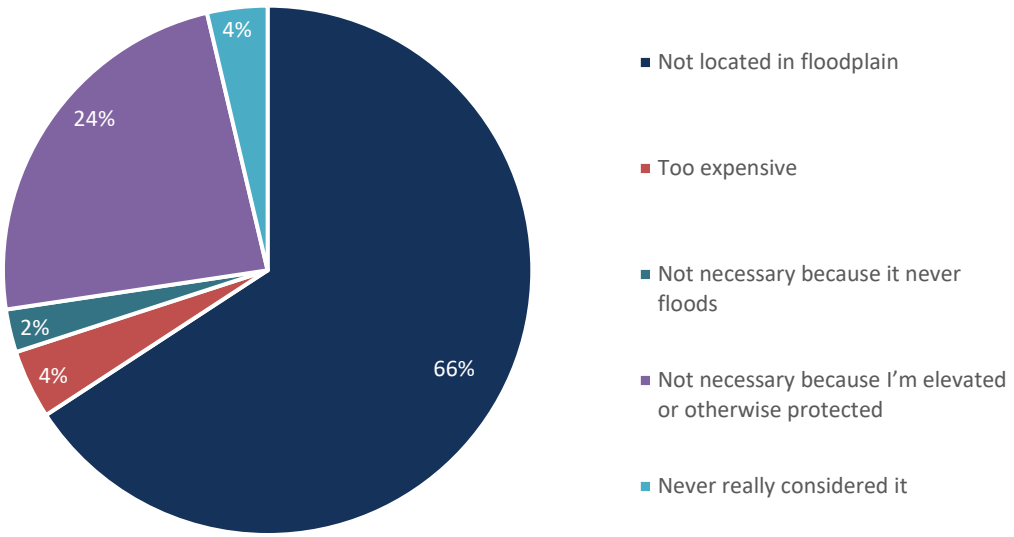
9. Is your home located in a floodplain?



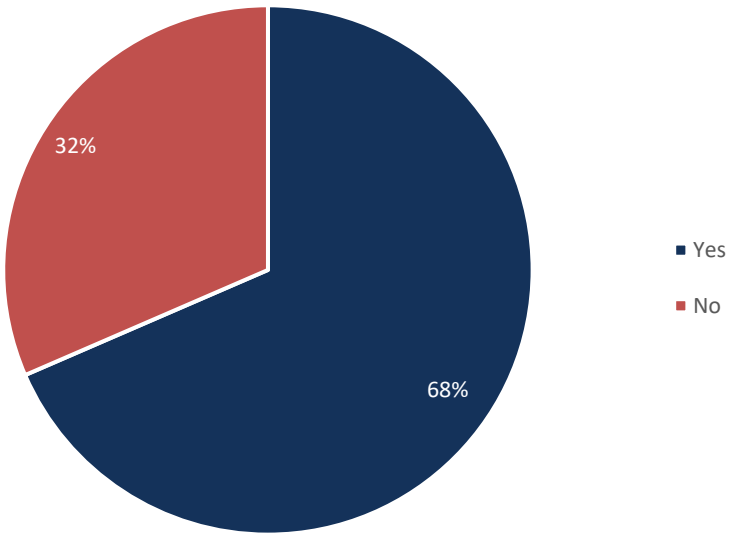
10. Do you have flood insurance?



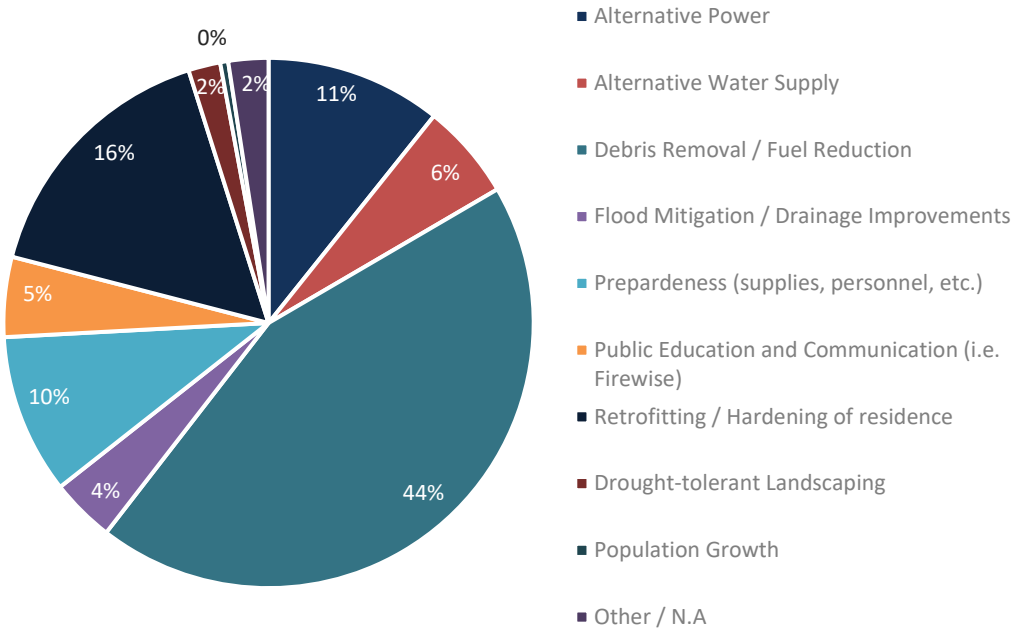
11. If you do not have flood insurance, why not?



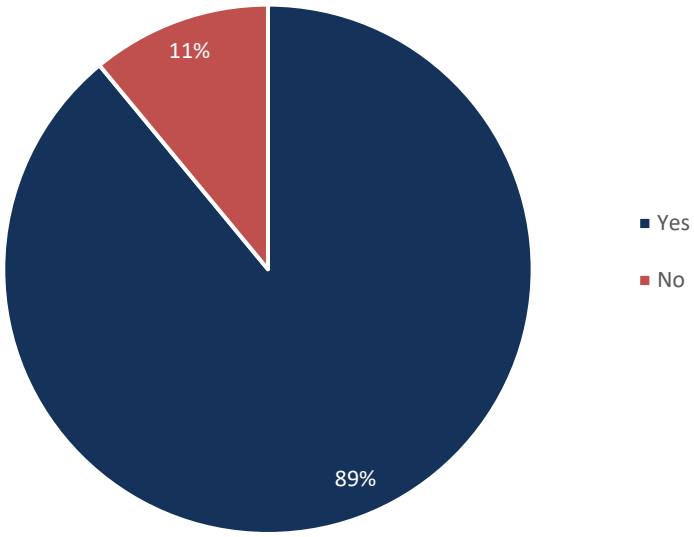
12. Have you taken any actions to make your home or neighborhood more resistant to hazards?



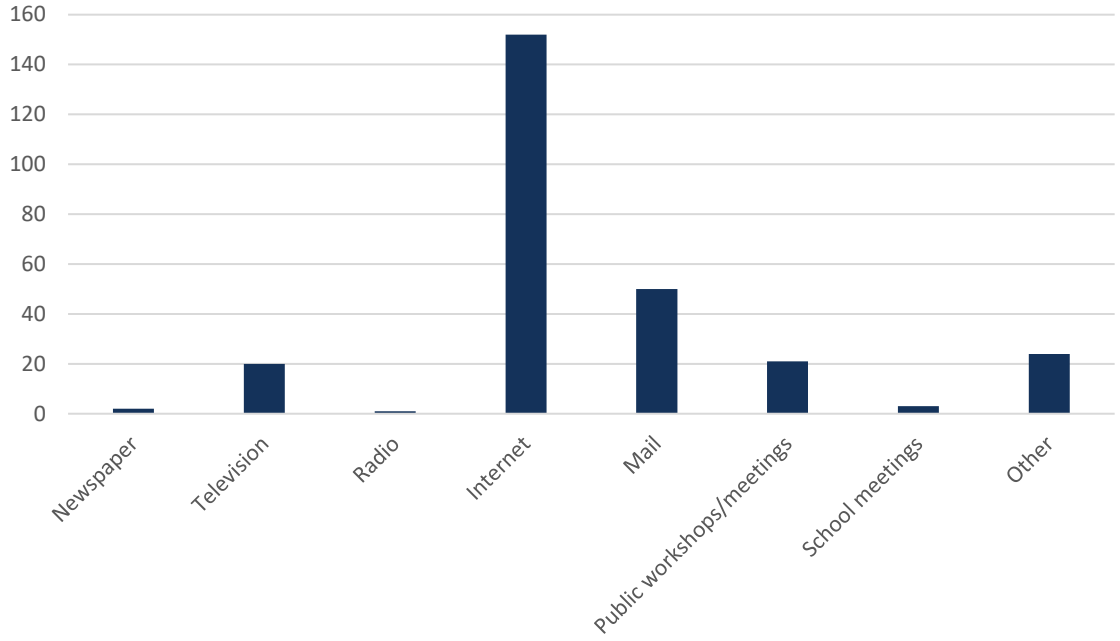
13. If you answered “Yes” to Question #12, please explain.



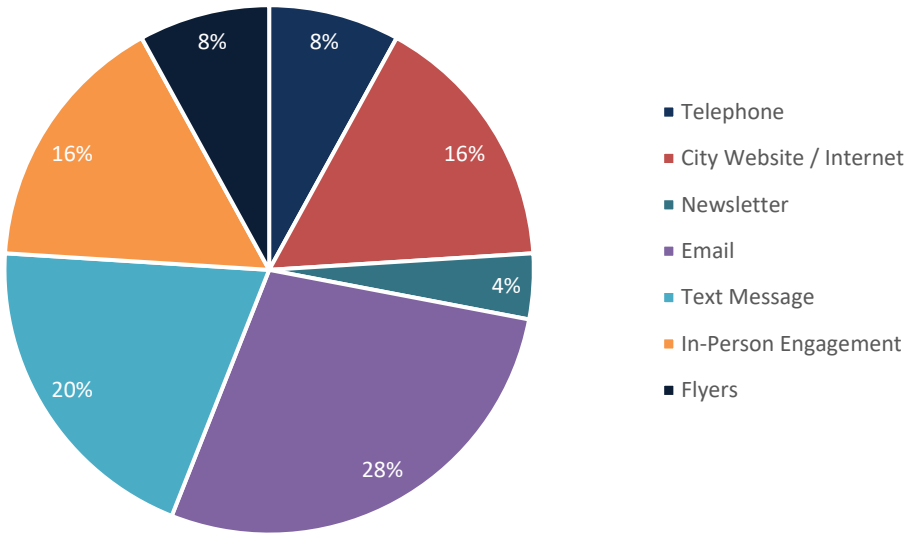
14. Are you interested in making your home or neighborhood more resistant to hazards?



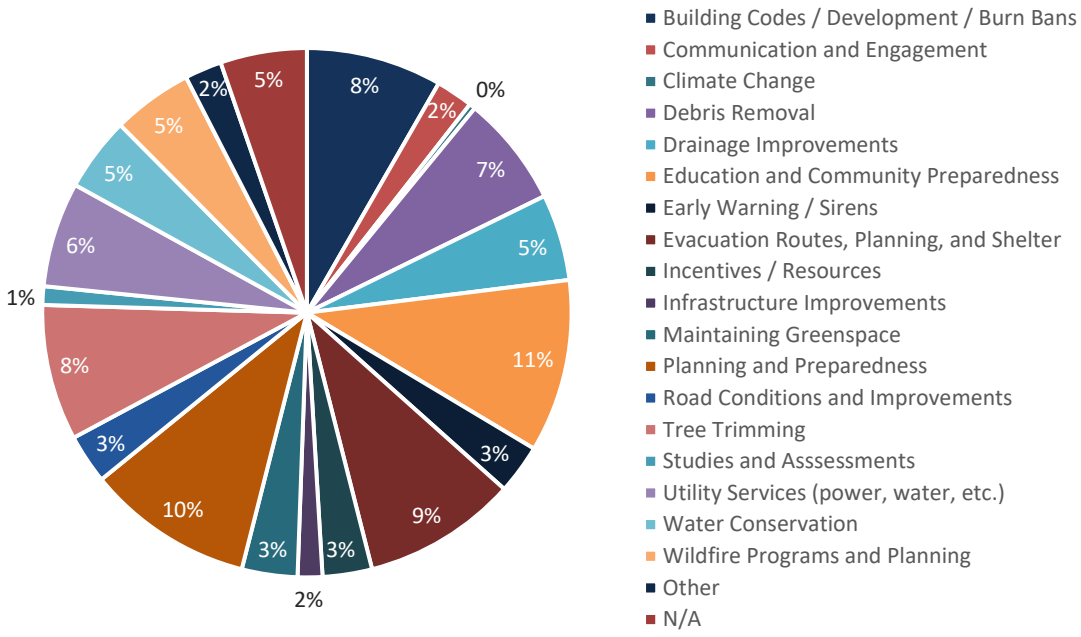
15. What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?



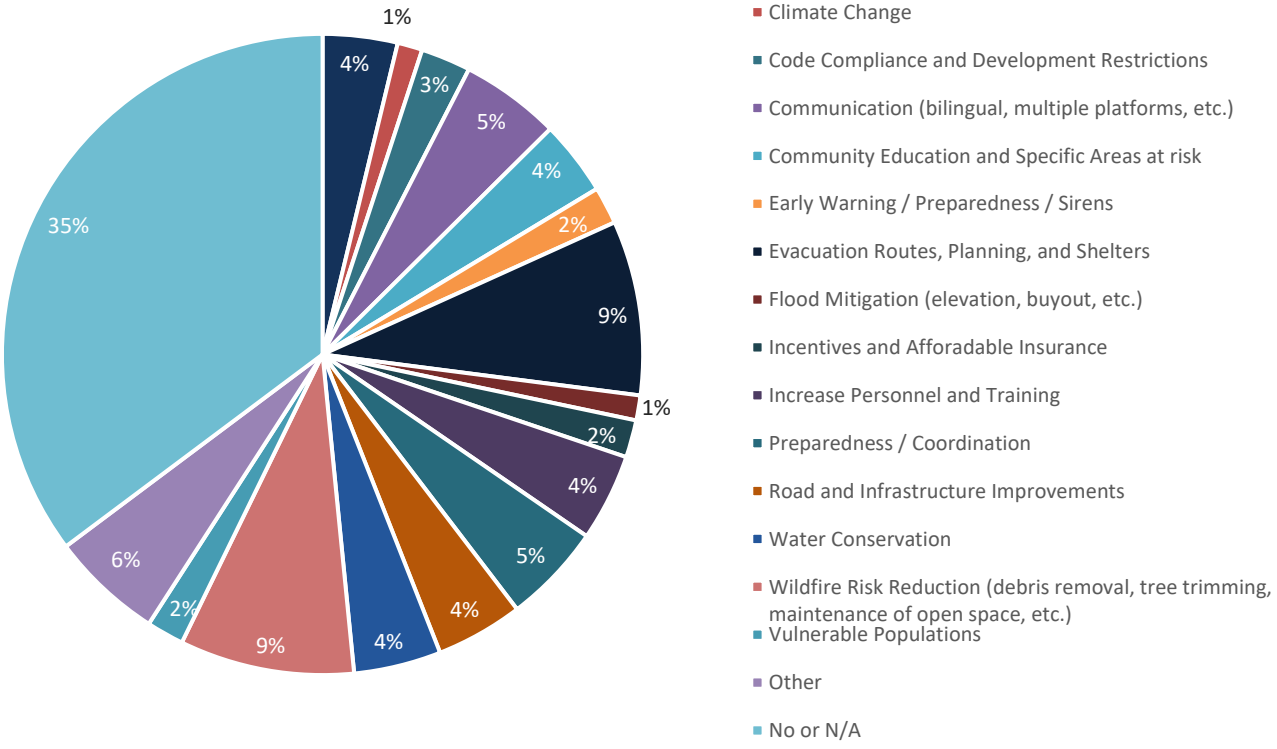
16. If you answered “Other” to Question #15, please explain.



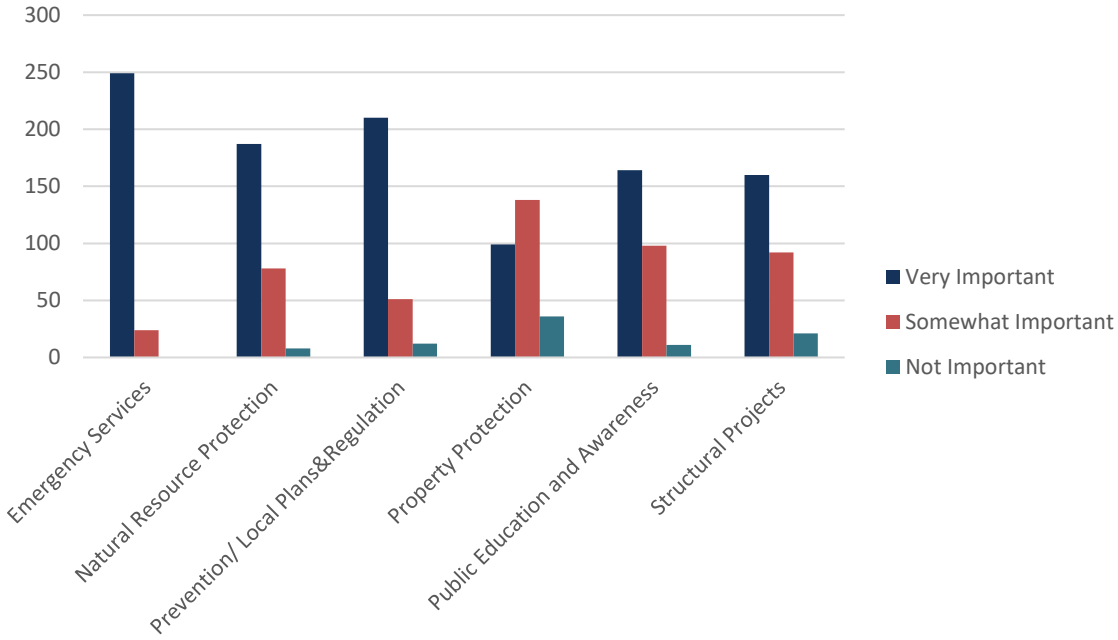
17. In your opinion, what are some steps your local government could take to reduce or eliminate the risk of future hazard damages in your neighborhood?



18. Are there any other issues regarding the reduction of risk and loss associated with hazards or disaster in the community that you think are important?



19. A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each one is for your community to consider pursuing.



Emergency Services - Actions that protect people and property during and immediately after a hazard event. Examples include warning systems, evacuation planning, emergency response training, and protection of critical facilities or systems.

Natural Resource Protection - Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples include floodplain protection, habitat preservation, slope stabilization, riparian buffers, and forest management.

Prevention / Local Plans & Regulations - Administrative or regulatory actions that influence the way land is developed and buildings are built. Examples include planning and zoning, building codes, open space preservation, and floodplain regulations.

Property Protection - Actions that involve the modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include acquisition, relocation, elevation, structural retrofits, and storm shutters.

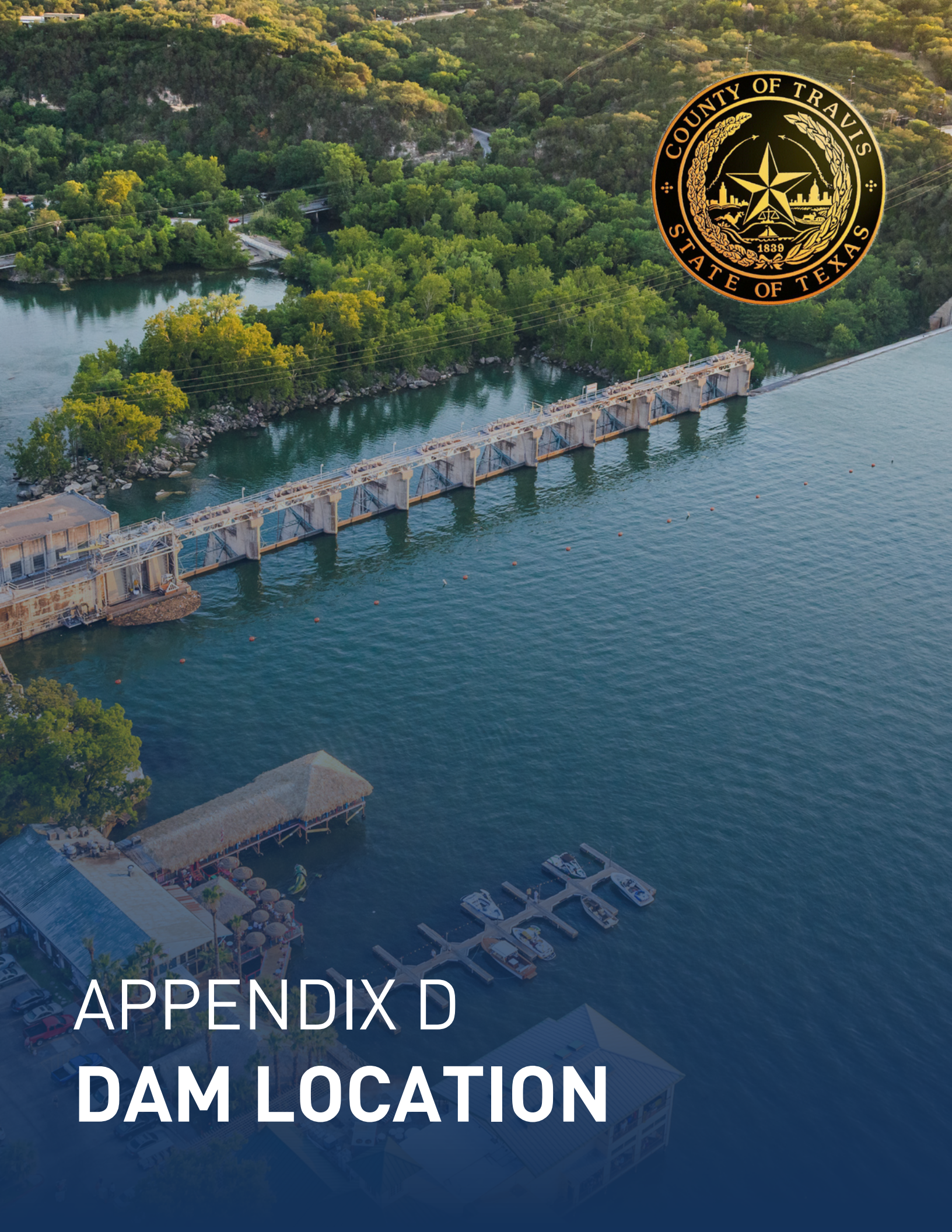
Public Education and Awareness - Actions to inform citizens about hazards and techniques they can use to protect themselves and their property. Examples include outreach projects, school education programs, library materials, and demonstration events.

Structural Projects - Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples include dams, levees, seawalls detention / retention basins, channel modification, retaining walls, and storm sewers.

APPENDIX C
CRITICAL FACILITIES

APPENDIX C: CRITICAL FACILITIES

Appendix C is For **Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).



APPENDIX D
DAM LOCATION

APPENDIX D: DAM LOCATIONS

Appendix D is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).

APPENDIX E
MEETING DOCUMENTATION

APPENDIX E: MEETING DOCUMENTATION

Appendix E is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).

APPENDIX F
CAPABILITY ASSESSMENT

APPENDIX F: CAPABILITY ASSESSMENT

Appendix F is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).

APPENDIX G
STATE AND FEDERAL FUNDING OPPORTUNITIES

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

OVERVIEW

Texas utilizes state funds to improve statewide hazard mitigation capabilities and advance their hazard mitigation goals to help identify, understand, and manage various risks associated with natural hazards. State funds also provide funding for state facility and infrastructure upgrades, hazard mapping, mitigation planning, and other mitigation programmatic activities. Table G-1 describes a variety of loan and grant programs offered by state agencies for which mitigation activities may be eligible.

Table G-1. Summary of State Funded Mitigation Programs

AGENCY	FUNDING PROGRAM
Texas A&M Forest Service (TAMFS)	• Community Fire Protection Program • Community Wildfire Defense Grant • Fire-Adapted Communities Program (FAC) • Firewise USA Program • Mitigation Project Support Fund • Forest Land Enhancement Program • Forest Legacy Program • Prescribed Fire Grants • Resilient Landscapes Program • Rural Fire Assistance Grant • State Fire Assistance for Mitigation (SFAM) - Mechanical Fuels Grants • SFAM Vegetative Fuel Break Grant • Texas Longleaf Conservation Assistance Program • Urban Tree Canopy Project (UTC
Texas Commission on Environmental Quality (TCEQ)	• Clean Water Act Section 319 Grants • Nonpoint Source Grant Program • High Hazard Potential Dam Program (HHPD) • U.S.-Mexico Border Water Infrastructure Program
Texas Department of Agriculture (TDA)	• Agricultural Management Assistance (AMA) • Agricultural Water Enhancement Program (AWEP) • Community Development Block Grant • Community Development Block Grant for Rural Texas • Conservation Innovation Grants (CIG) • Environmental Quality Incentives Program (EQUIP)
Texas Department of Housing and Community Affairs (TDHCA)	• Texas HOME Disaster Relief
Texas Department of State Health Services (TXDSHS)	• Hospital Preparedness Program (HPP) Cooperative Agreement • Public Health Emergency Preparedness (PHEP) Cooperative Agreement

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

AGENCY	FUNDING PROGRAM
Texas Department of Transportation (TXDOT)	• Bridge Preventative Maintenance Program • Emergency Relief (ER) Program • Highway Bridge Replacement and Rehabilitation Program • Safe Rest Stops Program • Transportation Enhancement Program
Texas Division of Emergency Management (TDEM)	• Building Resilient Infrastructure & Communities (BRIC) • Emergency Management Performance Grant (EMPG) • Fire Management Assistance Grants (FMAG) • Hazard Mitigation Planning Grants Program (HMGP) • Homeland Security Grant Program (HSGP) • Individual Assistance (IA) • National Earthquake Hazard Reduction Program (NEHRP) • Public Assistance (PA) Section 406 Funds • Fire Management Assistance Grants (FMAG)
Texas Economic Development & Tourism (EDT)	• Economic Development Administration Grants and Investments
Texas General Land Office (TXGLO)	• Beach Grants • Beach Maintenance Reimbursement Fund • Coastal Erosion Planning and Response Act (CEPRA) • Coastal and Estuarine Land Conservation Program (CELCP) • Coastal Management Program (CMP) • Community Development Block Grant – Disaster Recovery (CDBG-DR) • Community Development Block Grant – Mitigation (CDBG-MIT) • Gulf of Mexico Energy Security Act (GOMESA) • Hazard Mitigation Grant Program Supplemental -LHMPP
Texas Parks and Wildlife Department (TPWD)	• Nation Resources Damage Assessment (NRDA) • National Wildlife Wetland Refuge System • North American Wetland Conservation Fund • Partners for Fish and Wildlife • Texas Farm and Ranch Lands Conservation Program (TFRLCP) • Wildlife Habitat Incentive Program (WHIP)
Texas State Soil and Water Conservation Board (TSSWCB)	• Clean Water Act Section 319 Grants • Nonpoint Source Grant Program
Texas Water Development Board (TWDB)	• Agricultural Water Conservation Grants • Agricultural Water Conservation Loans • Clean Water State Revolving Fund (SWSRF) • Community Assistance Program (CAP) • Drinking Water State Revolving Fund (DWSRF) • Economically Distressed Areas Program

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

AGENCY	FUNDING PROGRAM
	• Emergency Community Water Assistance Grants • Flood Infrastructure Fund (FIF) • Flood Mitigation Assistance (FMA) Program • Flood Protection Planning Program • Groundwater Conservation District Loan Program • Planning Assistance to States • Regional Facility Planning Grant Program • Regional Water Planning Group Grants • Research and Planning Fund and Fund Development program • Risk MAP Program • Rural Development Grants • Rural Water Assistance Fund • Silver Jackets • Small Flood Control Projects (USACE Section 205) • State Participation Program – Regional Water and Wastewater Facilities • State Water Implementation Fund for Texas (SWIFT) • State Water Resources Research Act Program • Texas Infrastructure Resiliency Fund (TIRF) • Water Research Grant Program • Water SMART - Drought Response Program • Texas Water Development Fund (DFund)

In addition to State funded programs, many local jurisdictions benefit from federal mitigation funding opportunities. FEMA'S Hazard Mitigation Assistance is a primary source for the implementation of mitigation projects throughout the Nation. Table G-2 described additional Federal, State, Local, and Non-Profit mitigation funding sources specifically within the State of Texas.

Table G-2. Federal, State, Local and Non-Profit Mitigation Funding Sources in Texas

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Agricultural Management Assistance (AMA)	Federal	USDA, NRCS	TDA	Provides financial and technical assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation methods into their farming operations.
Agricultural Water Enhancement Program (AWEP)	Federal	USDA, NRCS	TDA	Voluntary conservation initiative that provides financial and technical assistance to agricultural producers to implement water enhancement activities on agricultural land to conserve surface and ground water and improve water quality.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Agricultural Water Conservation Grants	State	TWDB	TWDB	Provided to state agencies and political subdivisions for projects that support the implementation of conservation of water management strategies identified in state and regional water plans. Yearly applications. Up to $1.2 million available annually. Grant categories vary from year to year.
Agricultural Water Conservation Loans	State	TWDB	TWDB	Agricultural water conservation loans to use either for improvements on facilities or as loan to individuals. Low-interest, fixed rates. Up to 10-year repayment terms. U.S. Iron and Steel requirements apply to certain projects. Eligible Loan applicants include political subdivisions.
AmeriCorps - Corporation for National & Community Service (CNCS)	Federal	AmeriCorps	N/A	Provides funding for volunteers to serve communities, including disaster prevention. AmeriCorps/Vista has assisted local communities with wildfire mitigation projects.
American Recovery and Reinvestment Act (ARRA)	Federal	DOT Federal Transit Administration	TDA	Nicknamed the Recovery Act was a stimulus package enacted by the 111th U.S. Congress and signed into law by President Barack Obama in February 2009. Developed in response to the Great Recession, the primary objective of this federal statute was to save existing jobs and create new ones as soon as possible. Other objectives were to provide temporary relief programs for those most affected by the recession and invest in infrastructure, education, health, and renewable energy.
Assistance to Firefighters program - Fire Prevention & Safety (FP&S) **Grants**	Federal	FEMA, AFG		Fire Prevention & Safety (FP&S) Grants support projects that enhance the safety of the public and firefighters from fire and related hazards.
Beach Grants	Federal	EPA	TXGLO	EPA awards grants under authority of the BEACH Act to eligible states, territories, and tribes with beaches on ocean and Great Lakes coasts to develop and implement programs to monitor their beaches and notify the public when it is not safe to swim.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Beach Maintenance Reimbursement Fund	State	GLO	TXGLO	Allocates approximately $750,000 per year to help communities keep their beaches maintained. Applications are distributed to eligible participants in early fall and are due within a specified amount of time, no less than 30 days. Contracts are renewable annually.
Bridge Preventative Maintenance Program	State	TXDOT	TXDOT	A planned, cost-effective treatment that preserves, improves, or delays future deterioration of the condition of a bridge. To be eligible for the BMIP a bridge must have a condition rating of 5 or 6 for at least one of the following: deck, superstructure, substructure, culvert, or channel. Safety and improvement to the physical conditions of the State's on-system bridges are TxDOT's main goals in the prioritization of the bridges using BMIP funds. The Bridge Division develops an initial list each FY of eligible bridges in each district and distribute to the districts for the annual program call.
Building Resilient Infrastructure & Communities (BRIC)	Federal	FEMA	TDEM	Pre-disaster/annual cycle addressing all natural hazards, emphasis on infrastructure & lifelines.
Clean Water Act Section 319 Grants	Federal	EPA	TCEQ and TSSWCB	Provides grants for a wide variety of activities related to non-point source pollution runoff mitigation.
Clean Water State Revolving Fund (CWSRF)	Federal	EPA	TWDB	Providing low-cost financing for a wide range of wastewater, stormwater, reuse, and other pollution control projects.
Coastal Erosion Planning and Response Act (CEPRA)	State	GLO	TXGLO	Since 2000, the Texas General Land Office's Coastal Erosion Planning and Response Program has received more than $62 million in state funding and more than $62 million in matching funds, completing more than 200 coastal erosion projects and studies. The application process for non-emergency project funding requests opens every even year in February and closes in early June of that same year.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Coastal and Estuarine Land Conservation Program (CELCP)	Federal	NOAA	TXGLO	When NOAA provides funding for CELCP, the GLO provides coastal communities an opportunity to apply for up to three projects per year, with federal grants for any single project not to exceed $3 million.
Coastal Management Program (CMP)	Federal	NOAA	TXGLO	Texas receives approximately $2 million annually in grants from National Oceanic and Atmospheric Administration (NOAA) and 90% of the funds are passed through to local governments and entities to address environmental needs and promote sustainable economic development along the coast. Projects must improve the management of the state's coastal resources and ensure long-term ecological and economic productivity. Section 306 administrative funds can be used for non- construction, coastal planning and education, and research. Section 306A improvement funds can be utilized for construction and land acquisition projects and preservation and restoration. CMP funding categories include Coastal Natural Hazards Response, Critical Areas Enhancement, Public Access, Water/Sediment Quantity and Quality Improvements, Waterfront Revitalization and Ecotourism Development, Permit Streamlining/ Assistance, Governmental Coordination and Local Government Planning Assistance.
Community Assistance Program (CAP)	Federal	FEMA, NFIP	TWDB	Product-oriented financial assistance program directly related to the flood loss reduction objectives of the NFIP.
Community Development Block Grant	Federal	HUD	TDA	The primary objective is to develop viable communities by providing decent housing and suitable living environments and expanding economic opportunities principally for persons of low- to moderate- income. Eligible applicants are non-entitlement cities under 50,000 in population and non-entitlement counties that have a non-metropolitan population under 200,000 and are not eligible for direct CDBG funding from HUD may apply for funding through any of the Texas CDBG programs.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Community Development Block Grant for Rural Texas	State	TDA	TDA	TDA administers the Community Development Block Grant for Rural Texas. The primary objective of the CDBG is to develop viable communities by providing decent housing and suitable living environments and expanding economic opportunities principally for persons of low- to moderate-income. Eligible applicants are non-entitlement cities under 50,000 in population and non-entitlement counties that have a non-metropolitan population under 200,000 and are not eligible for direct CDBG funding from HUD may apply for funding through any of the Texas CDBG programs.
Community Development Block Grant – Disaster Recovery (CDBG-DR)	Federal	HUD	TXGLO	Often following a disaster, the state may receive a CDBG-DR Supplement intended for mitigation and disaster recovery projects in the affected areas. Funding can be used to acquire properties in hazard prone areas. Since CDBG funds lose their federal identify they can also be used to supplement state or local match requirements on other funds such as FEMA HMA grants. Funding also supports public facilities including water and wastewater.
Community Development Block Grant – Mitigation (CDBG-MIT)	Federal	HUD	TXGLO	Eligible grantees to use this assistance in areas impacted by recent disasters to carry out strategic and high-impact activities to mitigate disaster risks and reduce future losses. In February of 2018, Congress appropriated $12 billion dollars in Community Development Block Grant (CDBG) funds specifically for mitigation activities for qualifying disasters in 2015, 2016, and 2017. HUD was able to allocate an additional $3.9 billion, bringing the amount available for mitigation to nearly $16 billion.
Community Fire Protection Program	Federal	USDA	TAMFS	Mitigation delivered via USDA Forest Service and Private Forestry Coop Fire Program.
Community Wildfire Defense Grant	Federal	USFS	TAMFS	Offers financial assistance to at-risk local communities with planning for and mitigating against the risk of catastrophic wildfire. This program is authorized in Public Law 117-58, the Infrastructure Investment and Jobs Act.

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
				Two primary objectives: The development and revision of Community Wildfire Protection Plans (CWPP), and the implementation of projects described in a CWPP that is less than ten years old. Prioritizes at-risk communities that are in an area identified as having high or very high wildfire hazard potential, are low-income, and/or have been impacted by a severe disaster. No minimum federal funding limit for projects.
Conservation Innovation Grants (CIG)	Federal	USDA, NRCS	TDA	Voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging federal investment in environmental enhancement and protection, in conjunction with agricultural production.
Drinking Water State Revolving Fund (DWSRF)	Federal	EPA	TWDB	Makes funds available to drinking water systems to finance infrastructure improvements. The program also emphasizes providing funds to small and disadvantaged communities and to programs that encourage pollution prevention as a tool for ensuring safe drinking water.
Economic Development Administration Grants and Investments	Federal	U.S. DOC, EDA	EDT	Invests and provides grants for community construction projects, including mitigation activities.
Economically Distressed Areas Program	State	TWDB	TWDB	Provides financial assistance for projects serving economically distressed areas where water or sewer services do not exist, or systems do not meet minimum state standards. Eligible EDAP applicants include cities, counties, water districts, nonprofit water supply corporations, and all other political subdivisions. The city or county where the project is located must adopt and enforce Model Subdivision Rules for the regulation of subdivisions prior to application for financial assistance. Projects must also be in an economically distressed area where the median household income is not greater than 75 percent of the median state household income.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Emergency Community Water Assistance Grants	Federal	USDA	TWDB	$150,000 to $500,000 available to rural communities with populations over 10,000 people with a median household income less than $65,900. Aids communities who have experienced a decline in quantity or quality of drinking water as a result of an emergency including drought.
Emergency Management Performance Grant (EMPG)	Federal	FEMA	TDEM	The EMPG program provides a yearly allocation of funding to support state and local emergency management programs. This has included providing some funding for local mitigation plans, mitigation-oriented studies, and related activities.
Emergency Relief (ER) **Program**	Federal	US DOT - FHWA	TXDOT	Provides funds for roads and bridges on Federal-aid highways that are damaged as a direct result of a natural disaster or catastrophic failure from an external cause.
Emergency Watershed Protection (EWP)	Federal	USDA, NRCS	TWDB	Provides funding and technical assistance for emergency measures such as floodplain easements in impaired watersheds. Funding available through the Simplified Acquisition Procedures (SAP) ranges from $25K to $100K. Funded through contracts between project sponsors and the NRCS. There are no grants. The NRCS pays 75% of the costs.
Environmental Quality Incentives Program (EQUIP)	Federal	USDA, NRCS	TDA	Provides funding and technical assistance to farmers and ranchers to promote agricultural production and environmental quality as compatible goals.
Fire-Adapted Communities Program (FAC)	Federal	FEMA, USFA	TAMFS	Collaborates to identify its wildfire risk and works collectively on actionable steps to reduce its risk of loss. This work protects property and increases the safety of firefighters and residents.
Fire Management Assistance Grants (FMAG)	Federal	FEMA	TDEM	Provides fire suppression support to states when loss of life and property are imminent. Wildfire mitigation is also eligible under emergency protection if life is in imminent danger.
Firewise USA Program	Federal	USDA, DOI, NASFF, NFPA	TAMFS	The national Firewise USA® recognition program provides a collaborative framework to help neighbors in a geographic area get organized, find direction, and take action to increase the ignition resistance of their homes and community and to reduce wildfire risks at the local level.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Flood Infrastructure Fund (FIF)	State	TWDB	TWDB	Enacted through Senate Bill 7 to address needs identified following the flood disasters of 2015, 2016, and 2017. Senate Bill 500 appropriated $793 million. The purpose is to provide loans and grants for flood activities and projects. Once the State Flood Plan is adopted, the account may only be used for projects included in the plan. The SWIFT Advisory Committee is the oversight entity.
Flood Mitigation Assistance Program (FMA)	Federal	FEMA	TWDB	Repetitive flood loss property reduction and projects that mitigate losses to NFIP insured properties.
Flood Protection Planning Program	State	TWDB	TWDB	Developed to evaluate solutions to flooding problems in the state of Texas. Planning activities eligible for this program may include:
Forest Land Enhancement Program	Federal	USDA, NRCS	TAMFS	Provides educational, technical, and financial assistance to help landowners implement sustainable forestry management objectives.
Forest Legacy Program	Federal	USFS	TAMFS	Program providing funding to protect private forest lands that are environmentally, economically, and socially critical. This program reduces development in the wildland-urban interface.
Hazard Mitigation Grant Program (HMGP)	Federal	FEMA	TDEM	Post-disaster multi-hazard mitigation funding for federally declared disasters. HMGP Post Fire funds are available for FMAG declarations.
Hazard Mitigation Grant Program Supplemental – Local Hazard Mitigation Plan Program (LHMPP)	Federal	FEMA	TXGLO	Local Hazard Mitigation Plan Program (LHMPP) assists eligible entities by providing grants to develop or update local hazard mitigation plans, or to provide cost share for hazard mitigation planning activities funded through other federal sources. Community Development Block Grant Mitigation (CDBG-MIT) funds allocated by the United States Department of Housing and Urban Development (HUD) and administered by the Texas General Land Office (GLO) fund these planning activities, and the Hazard Mitigation Plan development and approval oversight is administered by the Federal Emergency Management Agency (FEMA) and administered

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
				by the Texas Division of Emergency Management (TDEM Grant awards will range from $20,000 – $100,000.
High Hazard Potential Dam Program (HHPD)	Federal	FEMA	TCEQ	Pre-disaster/annual cycle, for non-federal high hazard dams rated Unsatisfactory. Local match is 35% for each of the four grant periods.
Highway Bridge Replacement and Rehabilitation Program	Federal	FHWA	TXDOT	Provides funding to enable states to improve the condition of highway bridges through replacement, rehabilitation, and systematic preventive maintenance. Also includes the National Historic Covered Bridge Preservation Program.
Homeland Security Grant Program (HSGP)	Federal	DHS	TDEM	Homeland security activities identified in the state and local strategic plans. Funding supports threat & hazard and risk identification for natural, technological, and human-caused hazards. Some prevention activities may be considered mitigation.
Hospital Preparedness Program (HPP) **Cooperative Agreement**	Federal	HHS	TXDSHS	HPP is the primary source of federal funding for health care system preparedness and response and, in collaboration with public health, prepares health care delivery systems to save lives through the development of health care coalitions (HCCs). Under the direction of the HPP providers, the HCCs develop plans and provide training, and coordinate regional exercises.
Hydrologic Research Grants	Federal	NOAA		Up to $125,000 to conduct joint research and development on pressing surface water hydrology issues common to national, regional, local operational offices. Eligible applicants are federally recognized agencies of state or local governments, quasi-public institutions such as water supply or power companies, hydrologic consultants and companies involved in using and developing hydrologic forecasts.
Groundwater Conservation District Loan Program	State	TWDB	TWDB	Provides short-term loans to finance the start-up costs of Groundwater Conservation Districts. Funding is available for any Groundwater District or Authority with the authority to regulate the spacing of water wells, the production from water wells, or both. The program is authorized under

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
				Texas Water Code Chap. 36, Subchapter. L, and governed by TWDB rules in 31 Tex. Admin. Code Chap. 363, Subchapter. H.
Gulf of Mexico Energy Security Act (GOMESA)	Federal	DOI	TXGLO	GOMESA significantly enhances oil and gas leasing activities and creates revenue sharing provisions for the oil- and gas-producing states of Alabama, Louisiana, Mississippi, and Texas, and their coastal political subdivisions (CPSs). GOMESA funds are used for coastal conservation, restoration, and hurricane protection. The second phase of GOMESA revenue sharing began in Fiscal Year 2017 and expands the definition of qualified Outer Continental Shelf revenues to include receipts from Gulf of Mexico leases subject to withdrawal or moratoria restrictions. A revenue-sharing cap of $500 million per year for the four Gulf producing states, their CPSs and the Land and Water Conservation Fund applies from fiscal years 2016 through 2055.
Individual Assistance (IA)	Federal	FEMA	TDEM	Following a disaster, funds can be used to mitigate hazards when repairing individual and family homes.
In-Lieu Fee Program Mitigation Projects	Federal	USACE	Community Applicants	Restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for Department of the Army permits.
Mitigation Banks	Federal	USACE	Community Applicants	Mitigation Banks are sites approved by the Corps to sell compensatory mitigation credits for projects resulting in unavoidable impacts to waters of the U.S. When a permit is issued that requires compensatory mitigation, the permit will specify how many credits are required to be purchased at an approved mitigation bank.
National Earthquake Hazards Reduction Program (NEHRP)	Federal	FEMA	TDEM	Provides money to support enhanced earthquake risk assessments in local hazard mitigation plans and other earthquake hazard mitigation and preparedness activities.

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Natural Resources Damage Assessment (NRDA)	Federal	EPA	TPWD	ERAs evaluate the likelihood that adverse ecological effects are occurring or may occur as a result of exposure to physical stressors (e.g., cleanup activities) or chemical stressors (e.g., release of hazardous substances) at a site.
National Weather Service (NWS)	Federal	NOAA - NWS		NWS offers storm spotter training, along with weather and flooding safety guides. They can also sometimes provide funding to support severe weather signage in parks or other public places.
National Wildlife Wetland Refuge System	Federal	USFWS	TPWD	Provides funding for the acquisition of lands into the federal wildlife refuge system.
Nonpoint Source Grant Program	Federal	EPA	TCEQ, TSSWCB	The federal Clean Water Act (CWA) requires States to develop a program to protect the quality of water resources from the adverse effects of nonpoint source (NPS) water pollution. TCEQ and TSSWCB administer federal grants for activities that prevent or reduce nonpoint source pollution (NPS).
North American Wetland Conservation Fund	Federal	USFWS	TPWD	Provides funding for wetland conservation projects.
NRCS Conservation Programs	Federal	USDA, NRCS	Community Applicants	Provides funding through several programs for the conservation of natural resources.
Partners for Fish and Wildlife	Federal	USFWS	TPWD	Provides financial and technical assistance to landowners for wetland restoration projects in “Focus Areas” of the state.
Planning Assistance to States	Federal	USACE	TWDB	Aids states in planning for the development, utilization, and conservation of water and related land resources.
Pre-Disaster Mitigation Loan Program	Federal	SBA		Provides low-interest loans to small businesses for mitigation projects.
Prescribed Fire Grants	State	TAMFS	TAMFS	TAMFS’s Mitigation & Prevention Department annually implements four prescribed fire grants intended to protect local communities and restore ecosystems.

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				(1) SFAM Plains Prescribed Fire Grant – aids communities that have been or may be threatened by wildland fire by funding prescribed burning to reduce hazardous fuels in or around communities. Treatment areas will be located adjacent to priority communities in Texas that are at the highest risk for loss during a Southern Plains Wildfire Outbreak event. (2) The Community Protection Program Grant aids reducing the hazard of high-risk fuels on private lands through the use of prescribed burning. The treatment area will be within 10 miles of a National Forest boundary. The grant's goal is to protect high-risk communities and associated forest resources by reducing the risk of catastrophic wildfire on private and public lands. (3) The State Fire Assistance for Mitigation Central & East Texas Grant provides assistance to communities that have been or may be threatened by wildfire by funding prescribed burning to reduce hazardous fuels in and around communities. Treatment areas will be private property in the 43 Counties in Central and East Texas that have a Community Wildfire Protection Plan within the county. The goal is to protect high-risk communities and aid in ecosystem restoration by utilizing prescribed fire to consume excess vegetation before it contributes to catastrophic wildfire. Priority will be given to treatments sites that are within a CWPP, located near a Firewise community, located near homes based on Texas Wildfire Risk Assessment Portal and contain ecosystems that will benefit from prescribed fire. (4) Neches River and Cypress Basin Watershed Restoration Program - Prescribed Fire Grant provides assistance to landowners in utilizing prescribed fire for ecological improvement to the Neches River and Cypress Basin watersheds. This program will benefit the public and natural resources through improvement of water quality and quantity, control of invasive species and enhancement

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				of wildlife habitat. Treatment areas will be private property in the Neches River and Cypress Basin Watersheds. Priority will be given to prescribed burn treatments that promote native ecosystem restoration, are in priority watershed protection zones and near public land.
Public Assistance (PA) **Section 406 Funds**	Federal	FEMA	TDEM	Following a disaster, funds can be used to mitigate hazards when repairing damages to a public structure or infrastructure. Wildfire mitigation is also eligible under emergency protection if life is in imminent danger.
Public Health Emergency Preparedness (PHEP) **Cooperative Agreement**	Federal	CDC	TXDSHS	Helps health departments build and strengthen their abilities to effectively respond to a range of public health threats, including infectious diseases, natural disasters, and biological, chemical, nuclear, and radiological events. Preparedness activities funded by the PHEP cooperative agreement specifically target the development of emergency-ready public health departments that are flexible and adaptable.
Regional Facility Planning Grant Program	State	TWDB	TWDB	TWDB grants to political subdivisions of the State of Texas for studies and analyses to evaluate and determine the most feasible alternatives to meet regional water supply and wastewater facility needs, estimate the costs associated with implementing feasible regional water supply and wastewater facility alternatives, and identify institutional arrangements to provide regional water supply and wastewater services for areas in Texas.
Regional Water Planning Group Grants	State	TWDB	TWDB	Developed to guide and support planning of the state's water resources by administering and assisting in the development of the regional and state water plans. The department strives to improve the planning process each cycle by developing clear guidance for the program's stakeholders and utilizing best-available data, methodologies, and technical innovations.
Research and Planning Fund and Fund Development Program	State	TWDB	TWDB	Offers grants to eligible applicants for the development or revision of regional water plans. The proposed planning must be a plan, an amendment to an approved regional water plan developed by the regional water planning group

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				for a regional water planning area pursuant to the Texas Water Code, §16.053 and Chapter 357, or other special studies approved by the TWDB which will enhance water planning efforts in the region. Activities eligible for funding are those related to the development, revision, or improvement of regional water plans including public meetings, hearings, and special studies.
Resilient Landscapes Program	Federal	USDA, USFS	TAMFS	The USFS is working with partners to restore healthy, resilient, fire-adapted ecosystems. Restoring ecosystems includes thinning crowded forests and using prescribed fire on two to three million acres each year, which can help prevent the buildup of flammable vegetation that feeds extreme wildfires.
Risk MAP Program	Federal	FEMA, NFIP	TWDB	Establishes or updates floodplain mapping and multi-hazard risk products.
Rural Development Grants	Federal	USDA-Rural Development	TWDB	Provides grants and loans for infrastructure and public safety development and enhancement in rural areas. Provides $100,000 or 75% of the total project, whichever is less.
Rural Fire Assistance Grant	Federal	NIFC	TAMFS	Funds fire mitigation activities in rural communities.
Rural Utilities Service (RUS)	Federal	USDA-Rural Development		RUS administers programs that provide much-needed infrastructure or infrastructure improvements to rural communities. These include water and waste treatment, electric power, and telecommunications services.
Rural Water Assistance Fund	State	TWDB	TWDB	Designed to assist small rural utilities to obtain low-cost financing for water and wastewater projects. The RWAF offers tax-exempt equivalent interest rate loans with long-term finance options.
Safe Rest Stops Program	State	TXDOT	TXDOT	Texas has 21 major highways that serve as long distance travel corridors. Along each of these roadways, rest areas are an essential safety feature to reduce accidents caused by driver fatigue. These facilities give travelers a break from driving, and then return them to the road rested, refreshed and alert.

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State Fire Assistance for Mitigation (SFAM) **- Mechanical Fuels Grants**	State	TAMFS	TAMFS	Provides financial assistance to reduce the hazard of high-risk fuels on private lands using hazardous fuel reduction. The grant's goal is protected high risk communities within the 32 high risk counties in Central Texas identified by Texas A&M Forest Service Mitigation and Prevention Department. Priority will be given to landowners that live with in the 32 high risk counties, are in a county or city that has an active Community Wildfire Protection plan or live with in a Firewise USA Site.
SFAM Vegetative Fuel Break Grant	State	TAMFS	TAMFS	Provides financial assistance for the creation of vegetative fuel breaks on private lands in Texas. Vegetative fuel breaks are trees and shrubs systematically planted adjacent to fields, homesteads, or feedlots to reduce or redirect the wind. Projects will be in the Texas High Plains. The goal of the grant is to protect high-risk communities by reducing the risk of catastrophic wildfire on private and public lands. Grant recipients will be reimbursed up to $2,500 for actual costs associated with creating a green, vegetative fuel break, consisting of a minimum of 3 rows of trees and 400 feet in length.
Silver Jackets	Federal	USACE	TWDB	Can provide funding for flood related studies, public awareness, risk analysis, and flood response plans. Construction of small flood control projects.
Small Flood Control Projects (USACE Section 205)	Federal	USACE	TWDB	Authorizes use of USACE to do feasibility and construction of small flood control projects.
State Participation Program – Regional Water and Wastewater Facilities	State	TWDB	TWDB	The State Participation Program enables the TWDB to provide funding and assume a temporary ownership interest in a regional water, wastewater, or flood control project when the local sponsors are unable to assume debt for an optimally sized facility. The program is intended to encourage the optimum regional development of projects by funding excess capacity for future use where the benefits can be documented, and where such development is unaffordable without state participation. The goal is to allow for the

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				"right sizing" of projects in consideration of future needs.
State Water Implementation Fund for Texas (SWIFT)	State	TWDB	TWDB	Passed by the Legislature and approved by Texas voters through a constitutional amendment, the SWIFT program helps communities develop and optimize water supplies at cost-effective rates. The program provides low-interest loans, extended repayment terms, deferral of loan repayments, and incremental repurchase terms for projects with state ownership aspects.
State Water Resources Research Act Program	Federal	USGS	TWDB	USGS in cooperation with the National Institutes for Water Resources supports an annual call for proposals to focus on water problems and issues that are of a regional or interstate nature or relate to a specific program priority identified by the Secretary of the Interior and the Institutes.
Texas Farm and Ranch Lands Conservation Program (TFRLCP)	State	TPWD	TPWD	Maintains and enhances the ecological and agricultural productivity of these lands through Agricultural Conservation Easements. The TFRLCP supports responsible stewardship and conservation of working lands, water, fish and wildlife, and agricultural production through: • Generating interest and awareness in easement programs and other options for conserving working lands. • Leveraging available monies to fund as many high-quality projects as possible. Highlighting the ecological and economic value of working lands and the opportunities to conserve working lands for the future.
Texas HOME Disaster Relief	Federal	TDHCA	TDHCA	The Texas HOME Disaster Relief Program is a long-term housing program designed to help eligible organizations serve income eligible households impacted by disasters. Funds are available to assist with federal or state declared disasters, or other natural or man-made disasters that may occur. The Department's practice is to maintain a HOME Disaster Relief Fund balance of $1 million whenever possible. These funds can be accessed to support impacted households not located in communities that receive HOME funds

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				directly from the U.S. Department of Housing and Urban Development (HUD).
Texas Longleaf Conservation Assistance Program	Federal	National Fish and Wildlife Foundation (NFWF)	TAMFS	Provides eligible landowners with financial and technical assistance for establishing, enhancing, and managing longleaf pine. Landowners with property within ten East Texas counties which include Angelina, Hardin, Jasper, Nacogdoches, Newton, Polk, San Augustine, Sabine, San Jacinto, Trinity, and Tyler are eligible to apply. Approved participants may receive up to 50% payment not to exceed a standard cap rate for implementing approved conservation practices. Approved conservation practices include prescribed burning, reforestation, site preparation, and forest stand improvement.
Texas Infrastructure Resiliency Fund (TIRF)	State	TWDB	TWDB	Enacted through Senate Bill 7 to address needs identified following the flood disasters of 2015, 2016, and 2017. Senate Bill 500 appropriated $685 million. Purpose is to provide loans, grants, and matching funds for flood projects through four separate accounts. Each account has different purposes. The oversight entity is the TIRF Advisory Board (SWIFT Advisory Committee and TDEM Director as non-voting member).
Texas Water Development Fund (DFund)	State	TWDB	TWDB	State funded loan program The DFund enables the Board to fund multiple eligible components in one loan to our borrowers, e.g., an application for funding of water and wastewater components can be processed in a single loan. Provide financial assistance for water supply projects, wastewater projects, and flood control projects (including structural and nonstructural flood protection improvements).
Transportation Enhancement Program	Federal	FHWA	TXDOT	Provides opportunities for non-traditional transportation related activities. Projects should go above and beyond standard transportation activities and be integrated into the surrounding environment in a sensitive and creative manner that contributes to the livelihood of the communities, promotes the quality of our environment, and enhances the aesthetics of our roadways. Projects undertaken with enhancement funds are eligible for

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				reimbursement of up to 80 percent of allowable costs.
United States Geological Survey (USGS)	Federal	USGS		USGS issues competitive grants and cooperative agreements to support research in earthquake hazards, the physics of earthquakes, earthquake occurrence, and earthquake safety policy.
Urban Tree Canopy Project (UTC)	Federal	USDA, USFS	TAMFS	Urban tree canopy (UTC) is the layer of leaves, branches, and stems of trees that cover the ground when viewed from above. In urban areas, the UTC provides an important stormwater management function by intercepting rainfall that would otherwise run off of paved surfaces and be transported into local waters though the storm drainage system, picking up various pollutants along the way. UTC also reduces the urban heat island effect, reduces heating/cooling costs, lowers air temperatures, reduces air pollution, increases property values, provides wildlife habitat, and provides aesthetic and community benefits such as improved quality of life.
U.S.-Mexico Border Water Infrastructure Program	Federal	EPA	TCEQ	Provides grant assistance to U.S. and Mexican communities located within 60 miles of the border for the development and construction of high-priority drinking water and wastewater facilities. The program furthers EPA's mission of protecting human health and the environment by providing critical resources for what is often an area's first drinking water and basic sanitation services.
Water Research Grant Program	State	TWDB	TWDB	TWDB funds a variety of water planning and water research studies and projects intended to assist and support regional water planning efforts or to answer regional water planning questions.
Water Conservation Field Services Program	Federal	HUD	Texas A&M AgriLife	Provides several grants related to safe housing initiatives.
Water2025 Challenge Grant Program for Western States	Federal	Bureau of Reclamation	TWDB	Up to $25,000 for projects that improve water use efficiency and improve water management practices.

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Watershed Processes and Water Resources	Federal	Bureau of Reclamation	TWDB	Up to $250,000 for projects that can be completed within 24 months and that reduce conflicts through water conservation, efficiency, and markets.
Watershed Processes and Water Resources – National Research Initiative Standard Research (Part T)	Federal	USDA	TWDB	$100,000 available. Sponsors research that addresses two areas: (1) understanding fundamental watershed processes; and (2) developing appropriate technology and management practices for improving the effective use of water (consumptive and non-consumptive) and protecting or improving water quality for agriculture and forestry production.
WaterSMART – Drought Response Program	Federal	USDA	TWDB	$500,000 available. Innovative research in understanding fundamental processes that affect the quality and quantity of water resources at diverse spatial and temporal scales, ways on improving water resource management in agriculture, forested, and rangeland watersheds, and developing appropriate technology to reach those goals.
Wildlife Habitat Incentive Program (WHIP)	Federal	USDA, NRCS	TPWD	Voluntary program for conservation-minded landowners who want to develop and improve wildlife habitat on agricultural land, nonindustrial private forest land, and tribal land.