Hays County

Multi-Jurisdiction Hazard Mitigation Plan 2025

HAYS COUNTY
STATE OF TEXAS

HAYS COUNTY
EMERGENCY SERVICES

SECTION 1: INTRODUCTION

Background

Hays County is located in Central Texas just south of Travis County, home to Austin which is the 11th largest city in the United States. While large portions of the County remain rural in nature, the regional population and economic growth is being felt in the area and underscores the need to plan for the mitigation of future hazards to protect people and property. Hays County is susceptible to a wide range of natural hazards, including but not limited to hurricanes, flooding, hail, extreme heat, drought, and wildfire. The county has a hazard profile similar to many Central Texas communities with hurricanes and tropical storms from the gulf coast in the summer and fall and flash flooding events typically in the spring and summer. With climate change affecting weather patterns and sea level rise on the Texas coast, these and other hazards are forecast to become more frequent and greater in magnitude in the future.

These hazards can be life-threatening, destroy property, disrupt the economy, and lower the overall quality of life for individuals. Hazard mitigation is defined by the Federal Emergency Management Agency (FEMA) as sustained actions taken to reduce or eliminate long-term risk to people and property from hazards and their effects. Hazard mitigation planning is 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. This hazard mitigation plan is a vehicle for Hays County, including participating jurisdictions, to address hazard vulnerabilities by reducing the future impact of many different hazards on people and property that exist today and in the foreseeable future.

Participation and Scope

The Hays County Hazard Mitigation Plan is a multi-jurisdictional plan covering one (1) County, nine (9) cities, one (1) village, four (4) independent school districts, and one (1) University. The prior hazard mitigation plan for the area was the 2016 Hays County Hazard Mitigation Plan. This plan update includes the Cities of Buda, Dripping Springs, Hays, Kyle, Mountain City, Niederwald, Uhland, Wimberley, the Village of Bear Creek, the Independent School Districts of Dripping Springs, Hays, San Marcos, Wimberley, and Texas State University. Additional entities were invited to participate but chose to do so as stakeholders, rather than jurisdictions. These are listed in Section Two under Public and Stakeholder involvement. Below is an example of outreach efforts to inform the public about the upcoming Hazard Mitigation Action Plan (HMAP) development process.

Notice of mitigation planning efforts on county and city websites and the local newspaper, Winter 2023

> *"The hazard mitigation focus for FEMA is to look at a broad set of threats and how those pair up to community vulnerabilities. We will be considering everything from flood events to hurricanes, tropical storms, severe storms, tornados, hail, lightning, drought, wildfire, wildfire, extreme heat, and winter storms," Rojas said.*
>
> *The required plan includes a Core Planning team of Hays County and its participating jurisdictions along with local teams to develop specific mitigation strategies unique to each community. Once the Core and local teams are both established, Rojas said that they will conduct an on-line community survey to understand residents' top concerns, along with several public hearings. The survey will also be accessible to the public in public facilities such as libraries, city halls, and the county courthouse.*

The 2018 hazard mitigation plan included Hays County and all current participating jurisdictions. The updated plan will expand upon the 2018 plan with new capabilities, risk assessments, and mitigation actions contained therein, but will also provide a more nuanced view of two counties that share similar characteristics regarding history, landscape, risk, economy, transportation, and other factors.

The 2024 plan scope is to develop a detailed understanding of the planning area regarding existing capabilities, historical data, and future development patterns. Next, the vulnerability of the area to different hazards will be studied through a detailed hazard risk assessment that will assist the planning team in identifying and ranking mitigation activities based on their likelihood to reduce overall risk.

Purpose

The Mission Statement of the Plan is, ***Protect the people, property, economy, and quality of life in Hays County from hazards and disasters.***

The Plan was prepared by Hays County, including participating jurisdictions, and in cooperation with Langford Community Management Services and Rojas Planning. The purpose of the Plan is to minimize or eliminate long-term risks to human life and property from known hazards and to break the cycle of high-cost disaster response and recovery throughout Hays County. In order to accomplish this, cost-effective hazard mitigation actions within the planning area are identified along with information critical to successful implementation such as estimated cost, responsible departments, funding sources, and timelines. In addition, a FEMA-approved hazard mitigation plan is a condition for receiving certain types of non-emergency disaster assistance, including funding for mitigation programs and projects.

A successful Hazard Mitigation Plan will:

1. Align risk reduction with other Federal, State or community objectives;
2. Build or encourage partnerships for risk reduction involving government, organizations, businesses, and the public;
3. Communicate priorities to potential sources of funding;
4. Identify long-term, broadly-supported strategies for risk reduction;

5. Identify implementation approaches that focus resources on the greatest risks and vulnerabilities; and,
6. Increase education and awareness around threats, hazards, and vulnerabilities.

The Core Planning Team has identified ten natural hazards and two man-made hazards that need to be addressed in the plan. You can find more information about these hazards in Section 4, while the detailed risk assessments for each hazard are discussed in Sections 5-17. The Plan's specific goals are identified in Section 18, with mitigation actions outlined in Section 19. Section 20 discusses the ongoing maintenance of the Plan, including how it will be incorporated into existing plans and funding mechanisms, monitoring and evaluation, annual and 5-year updates, and a commitment to involve the public continuously in the Hazard Mitigation Plan.

Authority

The Texas Division of Emergency Management (TDEM) and FEMA have the authority to review and approve hazard mitigation plans through the Disaster Mitigation Act of 2000, which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

SECTION 2: PLANNING PROCESS

Plan Preparation and Plan Development

Hazard mitigation is the effort to reduce loss of life and property by lessening the impact of disasters and is most effective when implemented under a comprehensive, long-term mitigation plan. Hazard mitigation planning involves coordination with various constituents and stakeholders to identify risks and vulnerabilities associated with natural disasters and develop long-term strategies for protecting people and property from future hazard events. Mitigation plans are key to breaking the cycle of disaster damage, reconstruction, and repeated damage. This section provides an overview of the planning process including the identification of the key steps of Plan development and a detailed description of how stakeholders and the public were involved.

Figure 1-1: Plan Development Process

1. Organize the Planning Process and Resources – At the start, the participating jurisdictions focus on assembling the resources needed for a successful mitigation planning process. This includes securing technical expertise, defining the planning area, and identifying key individuals, agencies, neighboring jurisdictions, businesses, and/or other stakeholders to participate in the process. The planning process for local and tribal governments must include opportunities for the public to comment on the plan.

2. Assess Risks – Next, the local government needs to identify the characteristics and potential consequences of hazards. It is important to understand what geographic areas each hazard might impact and what people, property, or other assets might be vulnerable.

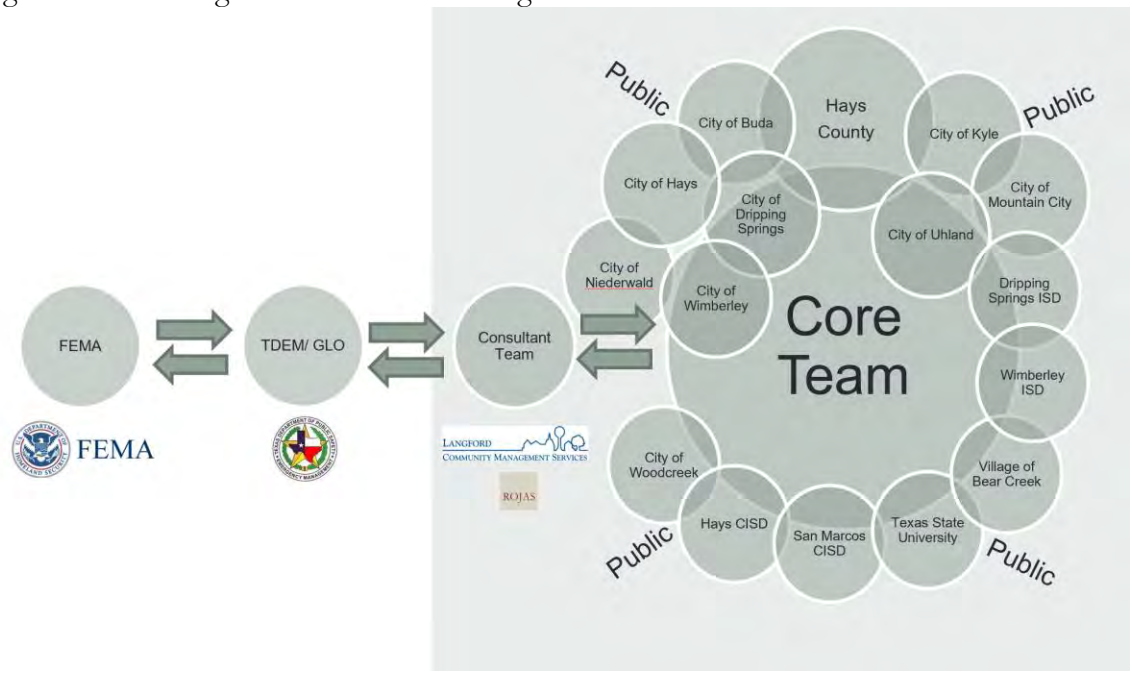
3. Develop a Mitigation Strategy – The local government then sets priorities and develops long-term strategies for avoiding or minimizing the undesired effects of disasters. The mitigation strategy addresses how the mitigation actions will be implemented and administered.

4. Adopt and Implement the Plan – Once FEMA has received the adoption from the governing body and approved the plan, the state, tribe, or local government can bring the mitigation plan to life in a variety of ways, ranging from implementing specific mitigation projects to changing aspects of day-to-day organizational operations. To ensure success, the plan must remain a relevant, living document through routine maintenance. The local government needs to conduct periodic evaluations to assess changing risks and priorities and make revisions as needed.

Planning Team

Hays County, including participating jurisdictions, hired Langford Community Management Services and Rojas Planning to provide technical support and to oversee development of the plan. The Hays County Multi-Jurisdictional Plan update was created using a direct representative model, where each participating jurisdiction chooses and sends a representative to represent their interests. A local planning team was also established at the jurisdictional level, which was responsible for assembling representatives to participate in the meetings and complete relevant tasks. Ultimately, this group was primarily responsible for developing, and eventually implementing the mitigation actions at the local level.

Figure 1-2: Planning Team and Process Diagram



The first Core Planning Team meeting was held on Monday April 24, 2023, at the Hays County Office of Emergency Services Main Conference Room at 810 S Stagecoach Trail, San Marcos, TX 78666. At this meeting an overview of the planning process was discussed as well as what the responsibilities would be of each of the participating jurisdictions and their Core Team representative. Responsibilities of the Core Team that were discussed include Capability Assessment Surveys, identifying critical facilities, providing a survey to the

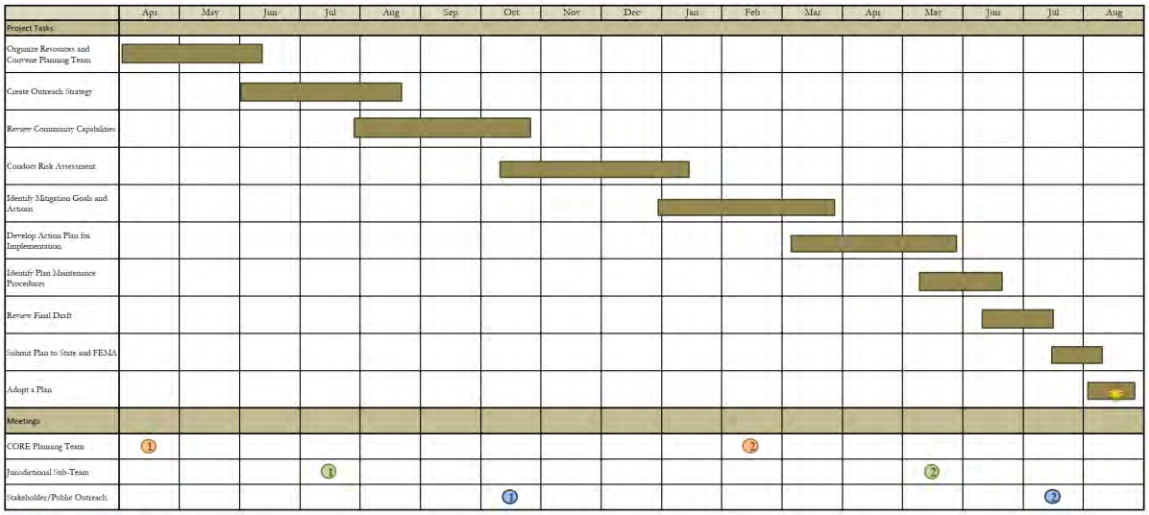
general public, providing input regarding the identification of hazards, identifying mitigation goals, developing new mitigation actions, and ranking mitigation actions.

At least one member from each participating jurisdiction was present at this kickoff Core Team meeting. The meeting included a discussion on Plan stakeholders, options for engaging the public, and developing a schedule for Plan development. Core Team members were asked to attend all workshops; any members that did not attend were given copies of the meeting materials and contacted by phone or e-mail.

Table 2-1. Core Planning Team (2020 Census)

Entity	Position or Title	Department
Hays CO	Emergency Management Coordinator	Office of Emergency Services
City of Buda	City Secretary Public Works Supervisor	City Hall Public Works
City of Dripping Springs	City Secretary City Manager Executive Assistant	Administration
City of Hays	City Manager	Administration
City of Kyle	City Secretary	City Hall
City of Mountain City	City Manager	Administration
City of Niederwald	City Manager	Administration
City of Wimberley	Mayor/ City Administrator/ City Secretary	Administration
City of Woodcreek	City Manager	Administration
Village of Bear Creek	City Manager	Administration
Dripping Springs ISD	Superintendent Executive Assistant	Administration
San Marcos ISD	Superintendent Executive Assistant	Administration
Hays ISD	Superintendent Executive Assistant	Administration
Wimberley ISD	Superintendent Executive Assistant	Administration
Texas State University	Emergency Management Officer	Emergency Response

Project Schedule



CORE Planning Team Meetings	
1	Introductions, outreach brainstorming, process review, capabilities assessment and hazards review.
2	Survey, basemaps, outreach strategy,and Jurisdictional Sub-teams.
	Conduct local risk assessments and identify information gaps, identify mitigation goals and actions, and develop implementation plan

Jurisdictional Sub-Team	
1	Review basemaps, input on risk assessment, create an outreach strategy and complete local capability assessments.
2	Input on mitigation goals and actions, implementation and maintenance procedures, and review and adopt final plan for submission to FEMA

Stakeholder/ Public Outreach Meetings	
1	Present basemaps, capability assessments, risk assessment, and draft mitigation actions for feedback and further development.
2	Opportunity to review and comment on final draft.

Capabilities Assessment

Each municipality's laws, programs, documents, and departments were reviewed to identify the plans, regulations, personnel, and funding mechanisms available to the county and planning partners to impact and mitigate the effects of natural hazards. The county and cities have the capacity to expand their hazard mitigation capabilities through the training of existing staff, cross-training staff across program areas, and hiring of additional staff, as well as acquiring additional funding through the attainment of grand funds, raising of taxes, and levying of new taxes. The complete table of the existing capabilities of each community and a discussion of how each participant can expand on and improve the capabilities described can be found in **Appendix A**.

Resources and Existing Plans

Resources

To conduct hazard risk assessments, various resources were used to gather and analyze data on past hazard events and their impacts on the planning area. The preliminary findings of the hazard risk assessments were presented at Core Meeting 2, and then shared in their entirety with the participants to develop mitigation actions. The information obtained from these assessments facilitated discussions that helped participants develop actions for their respective communities. Resources used for the assessments include the U.S. National Oceanic and Atmospheric Administration (NOAA), U.S. Geographic Society (USGS), U.S. Department of Health and Human Services, U.S. Departments of Agriculture, FEMA, U.S. Army Corp of Engineers (USACE), Texas Water Development Board (TWDB), Texas A & M Forest Service, Texas Commission on Environmental Quality (TCEQ), Texas Division of Emergency Management (TDEM), Texas General Land Office (GLO), local reporting, and other sources.

Existing Plans

Many local plans, programs, and ordinances were reviewed in anticipation of developing mitigation actions to respond to the community risks from hazards discussed in this report.

The following is a selection of existing plans used to develop background information and as a starting point for discussing past and current capabilities, hazards, and mitigation actions.

Texas State Hazard Mitigation plan - The primary role of the plan is to motivate state agencies and local government, as well as the private sector, to prevent catastrophic impact to property and people from natural hazards by addressing their potential for risk, identifying mitigation actions; and establishing priorities to follow through with those actions through collaborative, analytical mitigation planning. An additional role of the plan is to provide the framework for local planning teams to use as a springboard and resource when addressing their local mitigation planning requirements and strategies. The 2018 State Plan is the most recent update.

Guadalupe Blanco River Authority (GBRA) 2018 HMP – GBRA provides stewardship for the water resources in its ten-county statutory district, which begins near the headwaters of the Guadalupe and Blanco Rivers, ends at San Antonio Bay, and includes Kendall, Comal, Hays, Caldwell, Guadalupe, Gonzales, DeWitt, Victoria, Calhoun and Refugio counties. Planning and resource development efforts are carefully coordinated within the broader consideration of regional and statewide water needs to fulfil GBRA's primary responsibilities of developing, conserving and protecting the water resources of the Guadalupe River Basin.

The Guadalupe-Blanco River Authority's Hazard Mitigation Plan Update is a single jurisdictional Plan. Numerous entities and businesses participated as stakeholders in the Plan, including numerous river authorities, Edwards Aquifer Authority, Texas Commission on Environmental Quality, and Texas Parks and Wildlife Department. These groups, and others, provided valuable input into the planning process. The focus of the Plan is to identify activities to mitigate hazards selected from the State Hazard Mitigation Plan which are deemed to pose a risk to the planning area. For each of the hazards selected, a detailed risk assessment was conducted as part of the hazard mitigation planning process. The risk assessment enables the GBRA to prioritize mitigation actions based on hazards that pose the greatest risk to lives and property.

Cypress Creek Watershed Protection Plan (2015) - The Cypress Creek Watershed Protection Plan is a proactive plan that addresses likely future nonpoint source pollution impairments of nitrogen and Total Suspended Solids. Although planning efforts focused primarily on surface water quality, the Stakeholders felt it was important to acknowledge the importance of properly managing the source groundwater in this Watershed Protection Plan. Accordingly, the plan incorporates groundwater and surface water components, spans agency jurisdictions, and is comprehensive in its approach for maintaining balance between natural resource management and economic development. This plan is significant because of its proactive nature, its engaged citizenry, its inclusion of source groundwater for a complete hydrologic picture, and its implications for other potentially impaired watersheds in Central Texas.

Hays County 2021 Transportation Plan - This document is a 2021 update to the Hays County Transportation Plan, which was last adopted in January 2013 and amended in 2016. The timeframes for recommendations in this plan update are short-term (through 2029), mid-term (2029-2039) and long term (2039-2045). Hays County is one of the fastest growing counties in the country. Keeping planning documents up to date allows the County to stay ahead of growth and development and be proactive in its efforts to provide a safe and

efficient transportation system while preserving the character, environmental features, and natural beauty of the county.

Hays County CHA and CHIP 2023 Final – The Hays County Local Health Department launched a Community Health Assessment (CHA) using the Mobilizing for Action through Planning and Partnership (MAPP) process. The goals, objectives, and activities from the Community Health Improvement Plan (CHIP) are designed to respond to the strategic issues identified from the assessment process. The plan emphasizes actionable steps the community can undertake to make real progress toward health equity. In doing so, the CHIP serves as a guiding framework toward realizing the visionary goals of the MAPP process, fostering a healthier and thriving community.

City of Buda Comprehensive Plan 2024 - This plan will be used to inform elected leaders and municipal staff in daily decisions regarding city services and development of land. It provides a consistent guide for growth and development decisions to ensure a healthy future for Buda. When new development proposals are submitted to the City, these and other stakeholders will use the planning framework established in this plan to determine whether a proposal fits within the community driven vision. When key investment decisions are needed (e.g., a new street or wastewater lines), City Council members can look to this plan and its associated focus plans for guidance.

City of Buda Economic Development Strategic Plan (2023/2024) - The Buda Economic Development Corporation works in partnership with the City of Buda and the Buda Area Chamber of Commerce to ensure that Business is Better in Buda. The BEDC will help play a strong part in the activation of Buda's updated comprehensive plan and continue momentum in Buda's historic downtown and Main Street District. BEDC is well positioned to attract higher quality jobs, continue to attract destination retail, support new development projects.

The plan stakeholders outlined key priorities that should guide future economic development decisions for the community. These are achieving operational excellence, creating effective marketing to promote Buda, targeted outreach for business attraction, nurture small to medium businesses, foster entrepreneurship, promote and enhance Downtown, attract destination retail & restaurants and support the City to expand tourism.

City of Buda Transportation and Mobility Plan (2020) - The City of Buda has developed this Transportation Mobility Master Plan (TMMP) to serve as a communication tool and guiding document for the growth of its transportation network, to improve safety and mobility for all modes of transportation. The TMMP describes the City of Buda's transportation needs and the projects that will address them. For these projects, the TMMP provides planning level estimates of timing and cost to inform future programming and funding efforts.

City of Kyle 2030 Comprehensive Plan Update - The existing 2020 Comprehensive Plan was adopted in 2010, updated in 2017, and is the long-range planning document that has helped guide the City of Kyle over the last decade. In the 21st century, Kyle has grown rapidly in both population and land area. Kyle's population has grown over 800% since the 2000 Census, from 5,000 citizens to just over 50,000 in 2022.

On January 16, 2024, the City Council voted unanimously to approve and adopt the Kyle 2030 Comprehensive Plan. It will serve as a guiding document for all future growth and

development in the City of Kyle. As the City continues to experience rapid growth, this Plan aims to address some of the issues that come along with such rapid growth such as fiscal sustainability, infrastructure, land use, and more. As the name suggests, this Plan outlines a "comprehensive", or all-inclusive, picture of city needs and desires. It summarizes the vision and values that are critical to a city, and outlines the path forward. There are always more demands than resources in cities, so clarity and advance planning is crucial.

Design Standards and Downtown Kyle Master Plan (2022) - City Council and Staff understand exponential growth must be carefully and strategically guided to support the Community's shared vision for a safe, healthy, prosperous, and self-reliant Kyle. While growth may be inevitable, low-quality construction and bad design are not. In 2021, the city hired a team of architects and planners to help create a clear set of design guidelines ("Design Standards") alongside a new vision for Downtown Kyle known as the "Downtown Master Plan". These two complimentary efforts will work in conjunction with the Vybe trail network to make Kyle, Texas as exceptional and unique as its history and charm.

Communities and development projects have been planned or built in nearly every area within Kyle's city limits. New construction has mainly been in areas along I-35, and in undisturbed greenfield sites outside of downtown. In and around the downtown core, there remain a number underdeveloped and underutilized parcels that are in the earliest stages of revitalization and transition. While the original goal of the design standards was to encourage good and appropriate design downtown, it was expanded to include all areas of Kyle.

Reimagine Dripping Springs – 2040 Dripping Springs Comprehensive Plan – Vision Statement, As the Gateway to the Hill Country, Dripping Springs is a friendly and charming community with unique scenic beauty. We are committed to exhibiting the best of small-town life in Texas by preserving our natural resources, neighborhoods, and dark skies. The Vision Statement is derived from the Community's Core Values. Community values, or in planning terms, "Guiding Principles", are the non-negotiable core standards that the community's residents wish to maintain. Values must be acknowledged, honored, and constantly defended to ensure that change and development occur in accordance with them. The 2040 Comprehensive Plan process identified a wide range of community values and guiding principles that guided the Plan process. These include Preservation / Nature / Environment, Rural / Country / Small Town, Community / Friendly / Family-oriented • Charming / Quaint / Local, Historic / Cultural, Dark Sky / Quiet and Growing / Economic Opportunity / Balance.

Water and Wastewater Facilities Plan for the portion of Hays County West of the IH-35 Corridor 2011 - Given the worsening water supply situation and the multiple municipal, regulatory districts, public and private water suppliers, and a plethora of individual on-site systems, Hays County government made application in 2008 to the Texas Water Development Board (TWDB) for a regional planning grant to study the situation and examine water and wastewater management options, infrastructure needs, and policy alternatives. The matching-funds grant was awarded, and in January 2009, HDR Engineering, Inc. was contracted to conduct this planning study. The scope of this study includes a closer look at the unincorporated and incorporated areas, a more detailed look at water infrastructure needs beyond the broader water supply planning of the regional water management plans, potential wastewater needs of the study area, and possible policy actions that may facilitate the provision of adequate water and wastewater utility service and help protect environmental resources.

City of Wimberly Comprehensive Plan 2016– The Comprehensive Plan for the City of Wimberley is a long-range planning tool that provides a vision to guide the city government in meeting the expectations of residents, business owners and visitors over the next 20 years. The city should enact and enforce ordinances in a manner to ensure they comply with the Comprehensive Plan. The vision of the plan is:

1. To preserve and enhance the beauty of our environment, protecting and conserving our natural resources and the habitat of wildlife that share the valley with us.

2. To permit only such development and use of land as fulfills our commitment to conservation, quality and harmony, rejecting over-commercialization and development of any kind that is inappropriate in size, character, purpose or appearance,

3. To carry forward into the future the cherished traditions of our chosen lifestyle as residents of a small town – neighborliness, vibrant volunteer spirit and gracious welcome to visitors.

Wimberley Transportation Master Plan 2022 Update - The City of Wimberley adopted its first Transportation Master Plan (TMP) in 2010. That plan presented a program of projects which were collectively intended to address the highest-priority transportation and mobility needs of the city. Since 2010, the city has made modest progress toward implementation of those projects. In December2021, the city engaged CP&Y to update its TMP. The City's objective, which has been a fundamental guiding principle during the planning process, is to provide a safe and efficient transportation system without compromising the small-town character or natural beauty of the community. This document, the City of Wimberley Transportation Master Plan – 2022 Update (2022 TMP Update), supersedes the previous plan. In 2010, the population of Wimberley was 2,626. By 2020, the population was 2,839. This represents an 8.1percent increase in population over the ten-year period. Although the city continues to experience modest growth, at this time, there are no new large-scale developments planned within the Wimberley city limits. Ranch Road (RR) 12, which passes through the heart of the city, is the major north-south arterial through Wimberley. Other arterials (RR 2325 and RR 3237) are also generally oriented in a north/south direction. Major east/west connections do not exist. East/west movements are accommodated on a system of collectors and local roadways. Since 2010, the average daily traffic on RR 12 (downtown) has increased 3.2 percent. Much of Wimberley's economy is tourist-based. The "Wimberley Square" and surrounding area is the hub of the tourist area. Adequate downtown parking and accommodations for cyclists and pedestrians is a must for the community. Field observations of pedestrians and cyclists and other anecdotal data supports this need.

Texas State University Plan (2023-2029) - Texas State University has historically developed an extensive strategic plan to address the long-range vision, mission, goals and expectations of what the university should become by the end of the planning cycle. To make sure that critical concerns receive full attention in the near future, the president has highlighted a series of University Imperatives through the *Hopes and Aspirations High* vision: elevate student success; advance to Carnegie R-1 status; increase global and online enrollment; grow the Round Rock Campus; and become an employer of preference. In particular, University Goals 3-5 align most closely with the goals of this hazard mitigation plan. These are:

1. Goal 3: Expanding discovery, innovation, creativity, and research

- Build relationships with private sector, industry, government, and educational partners

2. Goal 4: Enriching community, collaboration, and partnerships
   - Build community relations, collaborations, and partnerships with external stakeholders
3. Goal 5: Developing infrastructure and resources
   - Provide infrastructure befitting a Carnegie R-1 university

Public and Stakeholder Involvement

The process of hazard mitigation planning presents an opportunity for Hays County, along with the participating jurisdictions, water utility, stakeholders and the general public, to assess and develop effective actions to mitigate the risk of loss of life and property damage that may result from a disaster occurring within or around the planning area. Public participation and stakeholder involvement in the Plan are critical to ensure that the components of the Plan are accurate and relevant to the needs of the community. The Planning Team develops a greater understanding of local concerns and legacy knowledge with input from individual citizens and the community as a whole. If citizens and stakeholders are involved it also imparts more credibility on the final Plan and increases the likelihood of successfully implemented mitigation actions.

Table 2-2. Plan Stakeholders

Aqua Texas	Bastrop County	Blanco County
Bluebonnet Electric Cooperative	BR3T	Buda Chamber of Commerce
Buda Economic Development Corporation	Caldwell County	CAMPO – Capital Area Metropolitan Planning Organization
Charter Communications	Chisolm Trail Fire Rescue	Comal County
Dripping Springs Chamber of Commerce	Dripping Springs HEB	Dripping Springs Home Depot
Dripping Springs Patriot Erectors	Dripping Springs Water Supply	Frontier Cable/Spectrum
GBRA	Goforth Water	Guadalupe County
Hays County Soil and Water Conservation District	Hays Trinity Groundwater Conservation District	Kyle Area Chamber of Commerce
North Hays County Fire & Rescue	LCRA	Pedernales Electric Cooperative
Plum Creek Conservation District	San Marcos Greenbelt Alliance	San Marcos River Foundation
South Hays Fire	Travis County	Upper San Marcos SCS
Wimberley Water Supply	West Travis County PUA	Wimberley Chamber of Commerce

The public input process can be viewed as three tiers of groups based on participation and responsibility for plan development and implementation.

The first tier is the Core Planning Team, which constitutes at least one representative from every participating jurisdiction. Their responsibilities and participation rates are the highest because they are required to attend every meeting in the project schedule. This includes Core Team Meetings, Jurisdictional Sub-Team Meetings, and Public Meetings. Two Core Planning Team Meetings were held throughout the development of this plan with action items and tasks for each member.

Figure 1-3: First Core-Team meeting at the Hays County Office of Emergency Services Main Conference Room, April. 24, 2023 10–11:30 AM

The second tier was the Jurisdictional Sub-Teams comprised of a greater number of members from each participating jurisdiction with the representative Core Team Member leading the meetings and ensuring that tasks were completed. Jurisdictional Sub-Teams are comprised of a diverse group of local officials that have day to day responsibilities for emergency response and preparedness, development review and regulations, and departmental or legislative decision-making authority. This second tier had responsibilities associated with the specific tasks assigned to each of the two meetings scheduled for this group. The first Jurisdictional Sub-Team meeting was held on Wednesday September 13, 2023 at the Hays County Office of Emergency Services Main Conference Room, from 10–11:30 AM. The second Jurisdictional Sub-Team meetings were held virtually throughout June and July 2024. These meetings included a final review of the mitigation action plan for each community, a priority exercise for the actions in the plan, and development of plan maintenance and implementation strategies.

Figure 1-3: First Jurisdictional Sub-team meeting at the Hays County Office of Emergency Services Main Conference Room, Sept. 13, 2023 10–11:30 AM

Figure 1-4: First Jurisdictional Sub-team meeting at the Hays County Office of Emergency Services Main Conference Room, Sept. 13, 2023 10–11:30 AM

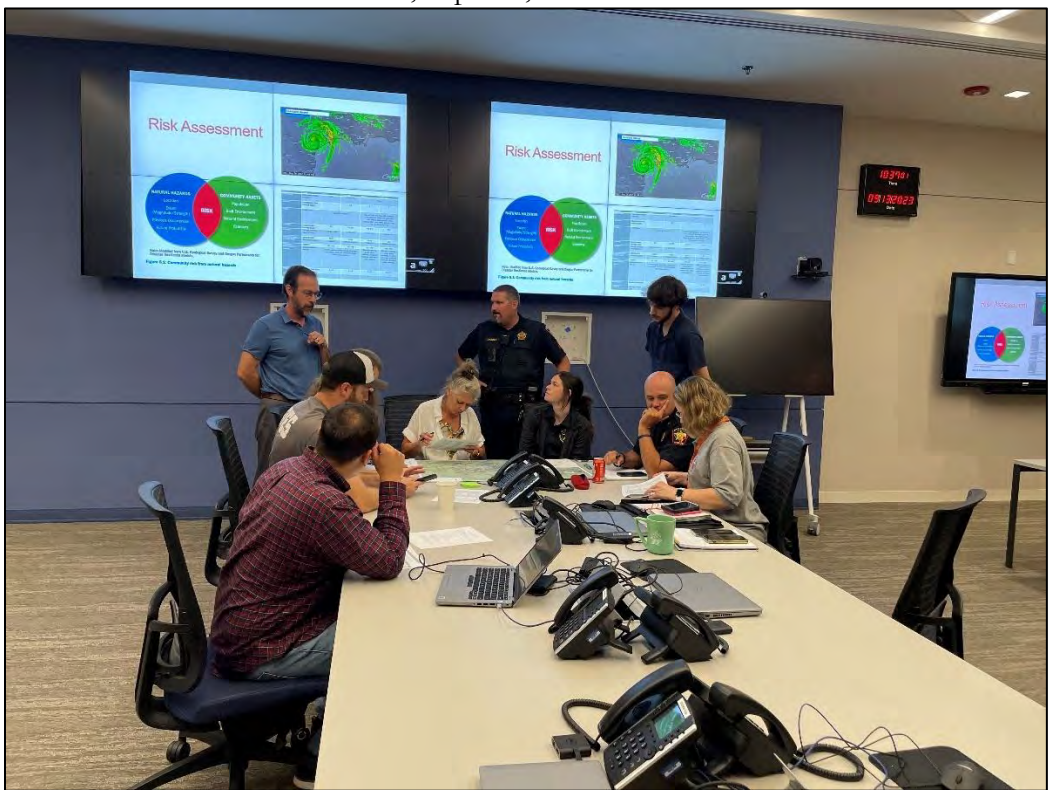


Table 2-3. Jurisdictional Sub-Teams

Entity	Position or Title	Department
Hays County	County EMC	Office of Emergency Services
Hays County	County Judge	Commissioner's Court
Hays County	ESD Fire Chief and County Fire Inspector	Government
Hays County	County Assistant EMC	Office of Emergency Services
Village of Bear Creek	Mayor	Government
Village of Bear Creek	Village Secretary	Government
City of Buda	Police Chief	Police Department
City of Buda	Fire Chief	Fire Department
City of Buda	Water Specialist	Engineering/ Public Works
City of Dripping Springs	Mayor	City Council
City of Dripping Springs	Chief Administrative Officer	Government
City of Dripping Springs	Manager	Government
City of Hays	Manager	Government
City of Hays	Chief Administrative Officer	Government
City of Kyle	Manager	Government
City of Kyle	Floodplain Administrator	Engineering
City of Kyle	Planning Director	Planning
City of Mountain City	Manager	Government
City of Mountain City	Chief Administrative Officer	Government
City of Niederwald	Manager	Government
City of Niederwald	Chief Administrative Officer	Government
City of Uhland	Manager	Government
City of Uhland	Chief Administrative Officer	Government
City of Wimberley	Mayor	Government
City of Wimberley	City Administrator	Government
City of Wimberley	City Secretary	Government
City of Woodcreek	Manager	Government
City of Woodcreek	Chief Administrative Officer	Government
Dripping Springs ISD	Superintendent	School District
Dripping Springs ISD	Director of Student Services	School District
Hays CISD	Superintendent	School District
Hays CISD	Director of Student Services	School District
San Marcos CISD	Superintendent	School District
San Marcos CISD	Director of Student Services	School District
Wimberley ISD	Superintendent	School District
Wimberley ISD	Director of Student Services	School District
Texas State University	Emergency Management Coordinator	Administration
Texas State University	Police Chief	Texas State Police Department

Figure 1-5: Public Meeting at the City of Kyle City Hall, January 24, 2024, 6 pm to 8 pm.

Figure 1-6: Figure 1-5: Public Meeting at the City of Dripping Springs Hall, January 24, 2024, 6 pm to 8 pm.

Two public workshops were held to gather input from local officials and the public for hazard mitigation. The first workshop was held on January 24, 2024, in the City of Kyle City Hall and the second workshop was held on January 25, 2024, in the City of Dripping Springs City Hall. Both public workshops were held from 6-8pm. The results of the survey were released in coordination with the first workshop to develop the final list of hazards to be studied. The workshops were designed to enable communities to examine critical facilities and vulnerable populations, as well as to provide feedback on general and specific vulnerabilities, and areas that are prone to natural hazards. Neighboring communities, as well as local and regional stakeholders, were invited via email and phone. They were given an overview of the planning process and briefed on how they can collaborate with participating jurisdictions to apply for future project funding for implementing mitigation projects that are relevant to their specific hazard risks.

In an effort to reach the widest audience possible, particularly underserved communities and vulnerable populations, Hays County as well as participating jurisdictions offered paper surveys at public facilities including public libraries and city hall buildings, as well as other locations, in addition to the online forms. The survey announcement as well as all meetings were advertised in English and Spanish on county and city websites as well as social media accounts and published in local newspapers with Spanish translation services available for all meetings. In addition, all in-person meetings were held in handicap accessible locations. No feedback was received from attendees self-identifying as a member of an underserved community or vulnerable population.

Figure 1-5: 2nd Core Team Meeting, April 24, 2024, Hays County Office of Emergency Management Services

The second Core Team meeting occurred on April 24, 2024, 10am – 11:30am, at the Hays County Emergency Center meeting room. The focus of this meeting was mitigation action plan development and this phase of the planning process is discussed in more detail in Section 17: Mitigation Strategy.

The following are a summary of findings from the public survey that was opened on September 15, 2023, and closed on December 15, 2023. The survey was first announced in the days following the first jurisdictional sub-team meeting and was advertised on flyers, QR code leaflets, the county website, city websites, social media, and by word of mouth by Core team members.

Summary of Findings from the Survey:

1. Approximately 37% of respondents were in the unincorporated areas of Hays County, 20% of the respondents stated that they were inside the city limits of San Marcos, just under 13% were from the City of Kyle, and 10% were from the Cities of Buda and Dripping Springs.
2. Drought was identified as the highest threat with 30% of all responses, followed by floods, wildfire, extreme heat, and thunderstorms.
3. Extreme heat, Wildfire, Severe Winter Storms, Thunderstorms, Severe Winter Storms, Drought, and Lightning are the more prominent responses in the hazards that had been experienced or hazards expected to be experienced.
4. 77% of respondents are not located in a floodplain, with just more than 8% identified as having flood insurance.
5. 50% of respondents are extremely concerned, 50% of respondents are somewhat concerned about being impacted by a disaster and 0% of respondents are not concerned.
6. The majority, 63%, have taken steps to make home, business, or community more resistant to hazards with 100% of respondents that would like to know more about how to.
7. Internet was identified as the most effective way to receive information about how to make home, business, or community more resistant to hazards at 43%.
8. Contact by text or e-mail was identified as the best single way to alert public to an imminent disaster at 53% with an all of the above approach using text, email, social media, and tv reports preferred by the 30%.
9. The mitigation activities that received the highest responses were to work on improving the damage resistance of utilities (electricity, communications, water / wastewater facilities, etc.), retrofit infrastructure, such as elevating roadways and improving drainage systems, retrofit and strengthen essential facilities such as police, fire, emergency medical services, hospitals, schools, etc., inform property owners of ways they can mitigate damage to their properties, and to provide better information about hazard risk and high-hazard areas.
10. Hazard prevention through building regulations, natural resource protection, structural projects, public education, and emergency services actions were identified as very important. Property protection was the only answer that was identified overall as somewhat important.

Qualitative Answers:

Question 12: Have you taken any actions to make your home, business and/or community more resistant to hazards? If "Yes", please described the action you have taken:

#	RESPONSES
1	New roof and front storm door plus cutting back trees 🌲
2	Prepared with: generator, water supply, stock dry goods, always have fresh gas, medical supplies, and flashlights, batteries etc! I live alone and I am older. I have 2 dogs that are very protective of their domain and myself! I don't have any firearms. I don't have any type of bunker. If it gets so bad that I need a gun or hide on my property, then I guess the lady is singing! It's over!
3	We have a large grassy area around our house in case of wildfires, our house was built at an elevation high enough to resist floods but Blanco Vista raised their elevation and dammed us in, we keep the river front natural to prevent large debris from coming up to the house, we are slowly making modifications to prevent freezing of our pipes and wells after snovid, etc.
4	Volunteering for and promoting CERT
5	We have cleared cedar trees and only have small burns with water hose
6	Cut trees back from property lines and over house. Built up walls of dry creek bed to direct water
7	back up power, lighting, food, water, first aid, blankets...
8	Landscaping to try to reroute water away from house, ongoing improvements as budget allows
9	buying more provisions such as food and water to get through several days, i have not improved anything structurally or changed anything environmentally, but have been preparing for disasters since they have increased in the last few years.
10	Keep trees trimmed up. Keep area uncluttered around the house.
11	We keep the trees trimmed and tree debris removed from the property.
12	Rain water collection, raise livestock, big garden, to go bags, food and water stored
13	Cleared cedar junipers and other vegetation for fire break. Conserve water to avoid well running dry. Had fireplace inspected and repaired and stocked up on firewood for winter storms.
14	Romoved dead trees & brush from the home
15	Too many
16	Selecting a property to build a house that is completely out of the floodplain. Using concrete siding and stone for home building materials to reduce the chance of natural or man-caused fires. Identifying and discussing within the household evacuation routes on public roadways to avoid being cutoff in the event of major flooding in our area.
17	N:A
18	Cert training, go bag and shelter in place discussion
19	Replaced 8 year old roof shingles with heavy grade shingles after windstorm damage. Installed solar.
20	Work with local planning and zoning commission

Question 17: Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?

#	RESPONSES
1	No
2	We have 4 Roads entering into Wimberley. Ranch Road 12 from San Marcos. RR12 from Dripping Springs, FM 3237 from Driftwood, and RR 2325 from Blanco. We can protect our town better than most towns. People are not receiving enough notice when a catastrophic disaster is happening! Most of us live on roads with low water crossings, near a river or creek. So to even get to a shelter is impossible unless we get notice in advance. I don't believe there is a building in Wimberley that can withstand a disaster. Last time the children were at Scudder Elementary. That was a nightmare! I always pick my children up when a bad storm is coming! Want the with me. So yes, there is a lot more to be done in Wimberley!! I've lived here for 44 years. I have never witnessed a community/Public Officials in Wimberley have an organized plan for a disaster. For example: FLOOD Memorial Weekend! Absolutely Devastating!!
3	rising crime
4	Better communication with property owners about what efforts are already underway.
5	Beef up Communications and coordinate efforts with surrounding cities/ESD/Fire Depts. Notifications have been subpar to say the least.
6	Do a little better with the backroads when it flood in terms of blocking the rds and making sure it's noticeable. I get that it's probably expensive to build no crossing barricades, but at least light them up more to make it more noticeable at night. I keep seeing people move the barricades and drive right through. So maybe find a less expensive way to like a gate or wrap red lights around the barricades so they can see don't go
7	Overuse of water resources is the MOST critical hazard/disaster in wimberley and surrounding are
8	We need tornado sirens
9	Over pumping water - Aqua Texas
10	Overpopulation
11	Too much nepotism, not enough experience. Let's use actual requests for proposals and quotes with an evaluation of long term effects to the county and it's growing population. The majority of this county is one "disaster" away from not having a place to live.
12	The county and the municipalities within need to prioritize updating their flood-prone roads now that they have approved and permitted the major housing developments across the county. Mobility on the east side of Kyle becomes greatly limited to only one safe roadway option for thousands of people that live in the newly developed areas with only minor amounts of rainfall/flooding. Bunton Creek Rd and Gristmill Rd are a prime example of areas that have low water crossings that become quickly inundated with floodwaters and force the residents of that area all to FM-150 East, creating a safety issue in itself with the overwhelmed roadway.
13	None
14	I can't think of any.
15	Excessive traffic preventing emergency response

SECTION 3: PLANNING AREA PROFILE

This section provides a profile of the hazard mitigation planning area.

Hays County

Hays County is located on the border between the Edwards Plateau and the southern Black Prairie region. The Balcones Escarpment divides it into hilly, tree-covered ranch country in the northwest three-quarters and grassy, agricultural plains in the southeast quarter. The principal natural grasses are big bluestem and Indian grass; trees commonly associated with Central Texas-including live oak, cedar, pecan, and mesquite-are indigenous to Hays County. The elevation rises from east to west, varying from 600 to over 1,400 feet. The county's numerous streams generally flow in an easterly direction; the principal waterways are Bear, Cypress, and Onion creeks and the Blanco and San Marcos rivers. The Edwards Aquifer underlies the eastern area, where San Marcos Springs, the second largest in Texas, delivers about 160 cubic feet per second. The soil varies from thin limestone to black, waxy, chocolate, and grey loam. The mean annual rainfall is 33.75 inches. The average maximum temperature in July is 96° F; the average minimum temperature in January is 40°. Hays County has a growing season of 254 days.

Population 2020 Census	241,067[1]
Change from 2010	+53.4%
Area (sq. mi.)	680
Altitude (ft.)	600-1,400
Rainfall (in.)	33.75
Jan. avg. min. (F°)	40
July avg. max. (F°)	96

San Marcos (population, 55,527) is the county's seat of government and home to Texas State University. Other communities include Wimberley (2,548) Kyle (32,673), Buda (10,822), Dripping Springs (1,919), and Hays (234). The county offers visitors attractions such as hunting and fishing, Blanco River water resorts, and artistic and cultural activities at Texas State University and in Wimberly.

[1] https://txcip.org/tac/census/profile.php?FIPS=48031

Figure 3-1: Map of Hays County

The Hays County Courthouse is an historic courthouse located in San Marcos, Hays County, Texas. It was built in the Classical Revival style in 1908. It is recognized by both the National Register of Historic Places and Texas Historical Commission.

Figure 3-2: Hays County Courthouse, City of San Marcos

Community Profiles and Economy

Hays County

The economy of Hays County, TX employs 125k people. The largest industries in Hays County, TX are Retail Trade (15,599 people), Educational Services (14,313 people), and Health Care & Social Assistance (12,350 people), and the highest paying industries are Mining, Quarrying, & Oil & Gas Extraction ($96,444), Information ($85,924), and Agriculture, Forestry, Fishing & Hunting, & Mining ($82,500).

City of Buda

Buda is located along Interstate Highway 35 (IH-35) and State Highway 45 (SH-45), just 20 minutes from both downtown Austin and Austin-Bergstrom International Airport. The population in Buda has grown over 107% percent from 2010 to 2020. With more parkland per capita than any City in the State, Buda is known as the Outdoor Capital of Texas.

The city is served by Hays Consolidated Independent School District (ISD), which has 22 campuses throughout Buda and Kyle. Buda students attend Carpenter Hill Elementary School, Elm Grove Elementary School, Dahlstrom Middle School, Jack C. Hays High School, and Moe and Gene Johnson High School. There are also 4 private schools that serve Buda, one of which is located within the jurisdictional boundaries. Buda is served by Buda Fire Department for fire and emergency medical services and the Buda Police Department for law enforcement.

There are over 15 subdivisions that host more than 4,800 homes with more in the permitting and development stages. Incorporated in 1948, Buda is a Home Rule City that has a council-manager form of government. Buda's major employers are shown in Table 3-1 and 3-2 shows the City's utility providers.

Table 3-1: Major Employers

Business Type	Name of Employer
Manufacturing	Texas Lehigh Cement
Manufacturing	Centex Materials

Manufacturing	CTX Builders Supply
Manufacturing	Chatleff Controls
Manufacturing	Nighthawk Foods
Retail	Cabela's
Type	Provider
Electric	Pedernales Electric Cooperative (PEC)
Water	The City of Buda, Goforth Water Supply

Table 3-2: Utility Providers

Type	Provider
Electric	Pedernales Electric Cooperative (PEC)
Water	The City of Buda, Goforth Water Supply

City of Dripping Springs

Dripping Springs lies roughly 25 miles west of Austin. Incorporated in 1981 and known as the "Gateway to the Hill Country", Dripping Springs is served by Dripping Springs Independent School District (ISD). Like most towns on the outskirts of Austin, Dripping Springs has grown and changed from a bedroom community/retirement destination to a city. With a relatively recent and steady influx of population, the city has had to pivot its priorities to keeping up with an increasingly larger population that demands higher quality services and amenities while contending with utility and infrastructure limitations.

Dripping Springs is a Type A General Law City governed by a Mayor and 4 Council members. Dripping Springs' major employers are shown in Table 3-3 and main utility providers are shown in Table 3-4.

Table 3-3: Major Employers

Business Type	Name of Employer
Government	Dripping Springs ISD
Retail	Home Depot
Retail	HEB
Construction	Patriot Erectors

Table 3-4: Utility Providers

Type	Provider
Electric	Pedernales Electric Cooperative (PEC)
Water	Dripping Springs Water Supply Corporation

City of Hays

Hays is located west of Farm to Market Road (FM) 1626 and about a mile and a half from FM 967 to the south and a mile and a half from Brody Lane to the North. Located 3 miles Northwest of Buda, the City of Hays is made up of 6 streets that make up the Country Estates subdivision. FM 1626 serves as the jurisdiction's southeast border.

Students attend schools within the Hays Consolidated Independent School District. Hays is governed by a mayor and 4 City Council members. The community is a General Law City which provides a limit on tax rates. General Law cities can only take actions allowed by the State legislature, similar to County level enforcement. The City's major utility providers are listed in Table 3-5 below.

Table 3-5: Utility Providers

Type	Provider
Electric	Pedernales Electric Cooperative (PEC)
Water	Edwards Aquifer through City of Hays Water System

City of Kyle

The city was incorporated in 1928 and is located in Hays County, in close proximity to the City of Austin. The city covers 31.27 square miles consisting of 31.07 square miles of land, 0.2 square miles of waters or waterways, and contains approximately 139 miles of public streets. According to the 2020 census, Kyle's population was 45,697 with a population density of 1,500/square mile. Kyle's population as of 2022 is estimated to be 48,484 with approximately 17,920 residential homes and 462 commercial businesses in the city. The city is continuing to grow at a rapid rate.

In higher education, Kyle sits just seven miles north of Texas State University located in San Marcos and is home to the Hays campus of the Austin Community College District which has been fully operational since 2014 with the college district's Public Safety Training Center opening a few years afterward.

The city is operated under a Council-Manager form of government and governed by an elected mayor and 6 City Council members. The City Council and planning and zoning commission regulate development within the city. Kyle has a Public Works Department, Planning Department, Engineering Department, and a sophisticated Building Department, all of which play a role in development in the city. The community is served by the Hays Consolidated Independent School District (ISD).

Kyle's major employers are shown in Table 3-6 and the main utility providers are shown in Table 3-7.

Table 3-6: Major Employers

Business Type	Name of Employer
Education	Hays CISD
Medical	Seton Medical Center Hays
Retail	Home Depot
Government	City of Kyle
Retail	Lowes
Education	Austin Community College- Kyle Campus
Retail	HEB Plus
Medical	Legend Oaks Healthcare & Rehabilitation
Retail	Target
Education	Austin Community College Hays Campus
Retail	Kohl's
Small Industry	Construction Metal Products
Small Industry	Southwestern Pneumatic
Small Industry	Miscellaneous Steel Industries

Table 3-7: Utility Providers

Type	Provider
Electric	Pedernales Electric Cooperative (PEC)
Water	City of Kyle, Monarch, County Line, and Goforth

City of Mountain City

Located 12 miles north of San Marcos in Central Hays County, Mountain City is less than a square mile in size. The community previously existed as a subdivision called Mountain City Oaks and incorporated as Mountain City in 1984. Served by Hays Consolidated Independent School District (ISD), the community has no school structures located within the city limits. Mountain City is 100% residential and does not have any employers besides home-based operations run and operated by community members.

Mountain City is governed by a Mayor, Mayor Pro-Tem, 3 Aldermen, and supported by a City Secretary, City Treasurer, and City Administrator. Mountain City's main utility providers are shown in 3-8

Table 3-8: Utility Providers

Type	Provider
Electric	Pedernales Electric Cooperative (PEC)
Water	Mountain City Oaks Water System

City of Niederwald

Located in Hays and Caldwell Counties, Niederwald is located on Highway 21, known as the Camino Real. Niederwald faces the challenges of having to conduct business in 2 separate County jurisdictions with a small staff and limited operating budget. The community is a General Law Type A municipality and is governed by a Mayor, Mayor Pro-Tem and 4 Council Members. These officials are supported by 1 member of the City Staff, the dual role City Administrator/Secretary. Served by the Hays Consolidated Independent School District and Lockhart Independent School District (ISD),

Niederwald incorporated in 1987 and currently is among the communities with the most farmland in Hays County. The city's major employers are listed in table 3-9 and main utility providers in table 3-10 below.

Table 3-9: Major Employers

Business Type	Name of Employer
Retail	Valero (convenience store/gas station)
Restaurant	H & Aleyda's Mexican Restaurant
Restaurant	El Camino Restaurant

Table 3-10: Utility Providers

Type	Provider
Electric	Bluebonnet Electric Cooperative/ Pedernales Electric Cooperative (PEC)
Water	Goforth Special Utilities District

City of Uhland

Uhland is a general law municipality that incorporated in 1985. Known as "The last stagecoach stop in Texas", Uhland is located along the Old Spanish Trail. Now located on State Highway 21, Uhland is a quickly developing community, interested in industrial and commercial growth. The City of Uhland's 2022 population estimate is 1,936 and the community shows signs of continued growth in coming years. A unique characteristic for the City of Uhland is that it resides in both Hays and Caldwell Counties.

The community is governed by 4 Council members, a Mayor Pro-Tem, and Mayor. The elected officials are supported by a City Administrator. City of Uhland students are served by Hays Consolidated Independent School District (HCISD). The City of Uhland is serviced by Chisholm Trail Fire Rescue for fire, San Marcos Hays County EMS and Caldwell EMS for emergency medical services, and the Hays County Sheriff's Office for law enforcement. The city's major employers are listed in table 3-11 and main utility providers in table 3-12 below.

Table 3-11: Major Employers

Business Type	Name of Employer
Small Industrial	Oyster Designs
Retail	Bon Ton Meat Market & Country Store
Industrial	Fire Star Concrete, Inc.

Table 3-12: Utility Providers

Type	Provider
Electric	Bluebonnet Electric/ Pedernales Electric Cooperative (PEC)
Water	County Line Special Utility District

City of Wimberley

The City of Wimberley is in Central Hays County at the confluence of Cypress Creek and the Blanco River. It is situated roughly 1,000 feet above sea level on the Edwards Plateau and is considered the heart of the Texas Hill Country. Wimberley is a tourist destination, known for its quiet secluded lodging, art, music, theater, quaint downtown with diverse shops, river and creeks, camps and retreats, and its frequent festivities. Home to the popular Blue Hole Regional Park, the 126-acre park is one of the only parks in the country that is fully sustainable.

The City's students are served by Wimberley Independent School District (ISD), which is made up of 4 schools that also act as a major employer for the community. The community does not collect ad valorem (property) tax, from Wimberley land owners. The $1 million general fund that supports their government operations is generated from sales tax revenue brought in by the community attractions. The lack of an ad valorem tax may have the effect of minimizing the incentive for growth in population and structures to serve that population, which reduces the risk of exposure to hazards. This also may have the downside of not having the revenue to sufficiently invest in hazard mitigation projects and programs.

Incorporated in May of 2000, Wimberley previously existed as a census-designated place (CDP). The community is governed by a mayor and 5 council members and is supported by 17 city staff and many volunteers. The city's major employers are listed in table 3-13 and main utility providers in table 3-14 below.

Table 3-13: Major Employers

Business Type	Name of Employer
Education	Wimberley Independent School District

Table 3-14: Utility Providers

Type	Provider
Electric	Pedernales Electric Cooperative (PEC)
Water	Wimberley Water Supply Corporation/ Aqua Texas

City of Woodcreek

The City of Woodcreek is a small community surrounded by creeks, situated on 696 acres of land, with much of the acreage devoted to the community golf course. An average of 10 new homes are built per year and 72-unit apartment complex opened in 2017.

The city is made up of several (but not all) phases of the Woodcreek subdivision. The City of Woodcreek incorporated in 1984 and according to City staff, "enjoys a low tax rate and high quality of life." The community has a Master Plan that was adopted as a 10-year plan to reconstruct the 10 miles of streets within the city limits.

Industry in the community includes a Golf Course, and a youth camp called Camp Young Judaea. These 2 recreational attractions, along with a liquor store, account for most of the sales tax revenue for the community. Woodcreek's students are served by Wimberley Independent School District (ISD). The city is governed as a Type A-General Law community, with a mayor and 5 City Council Members. The city's major employers are listed in table 3-15 and main utility providers in table 3-16 below.

Table 3-15: Major Employers

Business Type	Name of Employer
Recreational	Camp Young Judaea
Recreation	Quick Sand Golf Course
Retail	Hill Country Spirits

Table 3-16: Utility Providers

Type	Provider
Electric	Pedernales Electric Cooperative (PEC)
Water	Aqua Texas

Village of Bear Creek

Located in Northern Hays County, this bedroom community values its freedom from regulation and taxation from large cities that have sought their annexation in the past. The community boundaries surround the Bear Oaks Subdivision which voted to be incorporated as a village on November 4, 1997. Regarded as "the Best Little Town in Texas", Bear Creek prioritizes maintaining the rural character of their area and their discretion on how it is developed.

Bear Creek is governed by a mayor and 2 Commissioners and supported by a Village Secretary. The community owns no public buildings, equipment or vehicles.

Children in the Village attend schools within Dripping Springs Independent School District (ISD). Village of Bear Creek is serviced by North Hays Fire/Rescue for fire, San Marcos Hays County EMS for emergency medical services, and the Hays County Sheriff's Office for law enforcement. Bear Creek's main utility providers are shown in Table 3-17 below.

Table 3-17: Utility Providers

Type	Provider
Electric	Pedernales Electric Cooperative (PEC)
Water	West Travis County Public Utility Agency/ Private Wells and Rainwater Collection Systems

The Village of Bear Creek is 100% residential, and has no commercial properties outside of operations that are run out of residences.

Population and Demographics

The 2020 Census count for Hays County is 241,067, of which 15,108 were residents of the City of Buda, 4,650 were residents of the City of Dripping Springs, 227 were residents of the City of Hays, 45,697 were residents of the City of Kyle, 622 were residents of the City of Mountain City, 668 were residents of the City of Niederwald, 1,588 were residents of the City of Uhland, 2,839 were residents of the City of Wimberley, 1,770 were residents of the City of Woodcreek, and 397 were residents of the Village of Bear Creek.

Table 3-18: Population of Hays County and participating jurisdictions

Jurisdiction	2020 Census Population	2022 Population Estimate[2]	Estimated Vulnerable or Sensitive Populations[3]		
			Youth (Under 5)	Elderly (Over 65)	Below Poverty Level
Hays County*	241,067	269,225	32,508	15,529	26,986
City of Buda	15,108	14,997	1,465	993	1,179
City of Dripping Springs	4,650	5,495	945	313	168
City of Hays	227	138	51	4	13
City of Kyle	45,697	48,484	3,579	3,606	3,457
City of Mountain City	622	726	113	71	9
City of Niederwald	668	911	165	117	238
City of Uhland	1,588	1,936	125	143	138
City of Wimberley	2,839	2,858	673	15	219
City of Woodcreek	1,770	2,389	815	113	76
Village of Bear Creek	397	485	113	26	2

* County Totals include jurisdictional totals, including the City of San Marcos which is not shown

Texas State University

Texas State University (TXST) is a public research university with its main campus in San Marcos, Texas and another campus in Round Rock. Since its establishment in 1899, the university has grown to be one of the largest universities in the United States. Texas State University reached a record enrollment of **40,678** students in the 2024 fall semester, continuing a trend of enrollment growth over several years.

Texas State University offers over 200 bachelor's, master's, and doctoral degree programs from its ten colleges. The university is accredited by the Southern Association of Colleges and Schools (SACS) and designated as a Hispanic-Serving Institution (HSI) by the U.S. Department of Education. Texas State is classified among "R2: Doctoral Universities – High research activity" and an Emerging Research University (ERU) by the State of Texas. It spent over $140 million in research expenditures during fiscal year 2023.

The 36th president of the United States, Lyndon B. Johnson, graduated from the institution in 1930; Texas State University is the only college or university in Texas to have a U.S. president as an alumnus. Texas State's main campus consists of 245 buildings on 507 acres (2.05 km^2) of hilly land along the San Marcos River.

[2] 2022 American Community Survey (ACS) Population Estimates
[3] The Estimated Vulnerable or Sensitive Populations are based off of the 2022 American Community Survey

ISD Population

Dripping Springs ISD

Dripping Springs Independent School District is a Pre-K thru Grade 12 public school district based in the northwest portion of Hays County, serving approximately 8,000 students from the community of Dripping Springs and surrounding areas. There are three campuses, one elementary school, one middle school, and one high school. In addition to Dripping Springs, the district serves Driftwood and the village of Bear Creek and rural areas in northwestern Hays County. A small portion of southwestern Travis County also lies within the district.

Hays CISD

Hays Consolidated Independent School District is a public school district based in the City of Kyle. In addition to Kyle, the district serves the city of Buda, and other areas in northern Hays County. The Hays Consolidated Independent School District reaches more than 221 square miles. The district's 23 campuses are located throughout northern Hays County, serving nearly 20,000 students.

San Marcos CISD

San Marcos Consolidated Independent School District is a public school district based in San Marcos, Texas, USA. The school district covers 210 square miles mainly in Hays County and portions of Guadalupe and Caldwell counties. In addition to San Marcos, the district also serves the towns of Martindale, Reedville and parts of Maxwell. The district extends into small portions of Caldwell and Guadalupe counties.

Wimberley ISD

Wimberley Independent School District is a public school district based in Wimberley, Texas, United States. In addition to most of Wimberley, the district serves the city of Woodcreek. In addition to Hays County, it extends into Comal County. The district was formed on July 1, 1986, from portions of the Hays Consolidated and Dripping Springs districts.

Table 3-19 below provides the population of employees, students, and vulnerable populations for each school district

Table 3-19: ISD Population

ISD	Employees	Students	Children (under5)	Staff with Outdoor Jobs
Dripping Springs ISD	1,147	8,709	244	17
Hays ISD	3,500	23,442	797	84
San Marcos Consolidated ISD	1,320	8,195	256	17
Wimberley ISD	415	2,661	164	8

*Includes bus drivers and maintenance workers

Population Growth

The Census 2010 population for Hays County is 157,107 and the 2022 population estimate for Hays County is estimated to be 269,225, a 71% increase in population over 22 years. This 2022 estimate is produced by the U.S. Census Bureau using updated housing unit estimates to distribute county household population to the subcounty area based on housing unit change. Overall, Hays County and all participating jurisdictions experienced an increase in population between 2010 and 2022. The only jurisdiction to experience a decrease over this period of time was the City of Hays. Table 3-20 provides historic and projected population change rates in Hays County and all participating jurisdictions.

Table 3-20: Population Change

Jurisdiction	2010 Census	2020 Census	2022 Estimate	Pop Change (2010-2020)	% Change (2010-2020)	Pop Change (2010-2022)	% Change (2010-2022)	Pop Change (2020-2022)	% Change (2020-2022)
Hays County*	157,107	241,067	269,225	83,960	61%	112,118	71%	28,158	12%
City of Buda	7,295	15,108	14,997	7,813	107%	7,702	106%	-111	-1%
City of Dripping Springs	1,788	4,650	5,495	2,862	160%	3,707	207%	845	18%
City of Hays	217	227	138	10	5%	-79	-36%	-89	-39%
City of Kyle	28,016	45,697	48,484	17,681	63%	20,468	73%	2,787	6%
City of Mountain City	648	622	726	-26	-4%	78	12%	104	17%
City of Niederwald	565	668	911	103	18%	346	61%	243	36%
City of Uhland	1,014	1,588	1,936	574	57%	922	91%	348	22%
City of Wimberley	2,626	2,839	2,858	213	8%	232	9%	19	1%
City of Woodcreek	1,457	1,770	2,389	313	14%	932	64%	619	35%
Village of Bear Creek	382	397	485	15	4%	103	27%	88	22%

* County Totals include jurisdictional totals, including the City of San Marcos which is not shown

Population Projections

Population projections are a useful tool to understand how future growth and development may affect vulnerability to hazards. Planning and growth management efforts will guide city infrastructure investment away from hazard prone areas as both occupied and vacant areas are considered for future development. Population projections from 2030 to 2080 are listed in Table 3-21 and are based on Texas Water Development Board (TWDB) demand projections used for the 2026 State Water Plan. Population projections are based on county-level 1.0 migration scenario projections from the Texas Demographic Center (TDC), which used migration rates between the 2010 and the 2020 decennial Census to project future growth. The population projections show an increase in population for the overall Hays County Planning Area of 1,240,600 persons over the 50-year period, or 275%. However, with the recent uptick in growth between 2020-2022, the 50-year projections may tell a different story once 2030 decennial Census is taken into account. As is evident from the last

22 years of population data, Hays County and participating jurisdictions are growing rapidly and will continue to do so as the I-35 corridor between Austin and San Antonio see continued growth. The TDC does maintain population projections for the Cities of Mountain City, Niederwald, Uhland, and Woodcreek and the Village of Bear Creek. The changes in population to Hays County and all participating jurisdictions are anticipated to increase the impacts of hazards on vulnerable assets and populations in the area due to high growth projections over the 50-year outlook.

Table 3-21: TWDB Population Projections

Jurisdiction	P2030	P2040	P2050	P2060	P2070	P2080
Hays County**	451,531	638,523	876,457	1,146,428	1,406,124	1,692,131
City of Buda	20,475	28,665	34,156	39,620	45,959	53,312
City of Dripping Springs	16,368	23,698	34,310	40,673	40,673	40,673
City of Hays	1,109	1,601	2,248	3,127	4,123	5,250
City of Kyle	61,050	91,138	124,117	139,145	144,092	147,735
City of Mountain City*	-	-	-	-	-	-
City of Niederwald*	-	-	-	-	-	-
City of Uhland*	-	-	-	-	-	-
City of Wimberley	5,272	7,640	10,758	14,989	19,834	25,379
City of Woodcreek*	-	-	-	-	-	-
Village of Bear Creek*	-	-	-	-	-	-

*Municipality not included in the 2026 Regional Water Plan TWDB population projections as a separate entity
** County Totals include jurisdictional totals, including the City of San Marcos which is not shown

Existing and Future Land Use and Development Trends

It is expected that commercial and residential growth will increase along the transportation corridors as they are upgraded leading to Hays County principally from Travis County to the north and Comal County to the south but also Blanco, Caldwell, and Guadalupe Counties. Communities along the I-35 and US 290 West corridors will experience more targeted growth as access is expanded and improved. While land development, redevelopment, and the general conversion from open space to imperious areas will be most pronounced within the city limits and extra-territorial jurisdictions (ETJ) along larger corridors, all municipalities and the unincorporated Hays County areas just outside these boundaries area expected to continue to experience growth pressure over the next 5 years.

As these changes in land use are realized, the impacts from hazards are expected to be diminished due to better understanding, modeling, and regulatory control of areas that are at higher risk of being affected by hazards such as floodplains and the wildland urban interface. Staying current on updating building codes and the enforcement of existing codes and regulations have also served to diminish the impacts from hazards. New methods of road design and construction will also increase the resilience of and access to transportation infrastructure in the event of hazardous conditions or evacuation requirements.

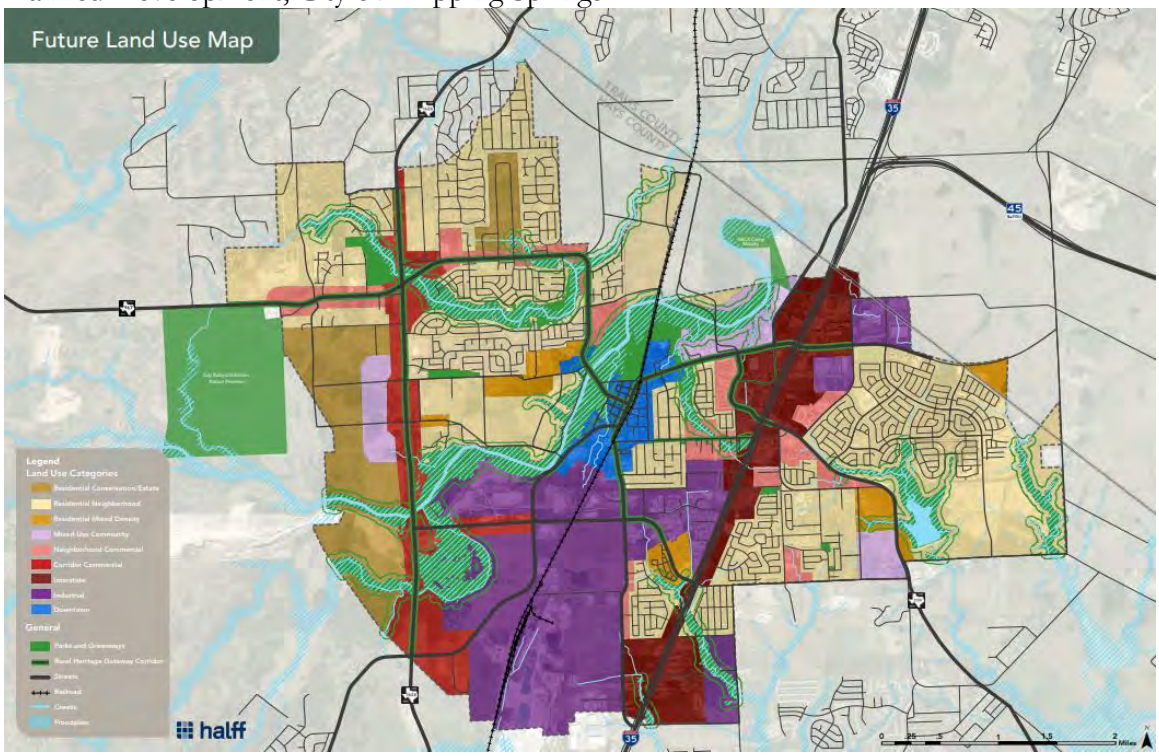
Hays County

Hays County has grown by over 50% in the last ten years. Among counties with populations of 100,000 or more, Hays County has continuously topped the list as one of the fastest growing counties in the United States. Hays County is going to continue experiencing the greatest growth in the incorporated areas that lie adjacent to or near the I-35 corridor. This includes the communities of Buda, Kyle, and San Marcos. The City of Dripping Springs will also continue to experience growth principally along the US 290 corridor in the northwestern part of the county.

City of Buda

Buda residents primarily live in single-family homes in a collection of neighborhoods that were mostly constructed over the last 20 years. Since 2015, an average of 215 single-family housing units per year have been permitted. The majority of houses (52%) have been constructed since 2010. Buda has six constructed multi-family developments representing 1,331 units, of which 290 are senior housing units. The largest residential neighborhood in Buda is not in the city limits but in the ETJ. Sunfield, a municipal utility district, currently has about 3,000 total residences with a build-out of 5,300 units anticipated. Given the declining availability of undeveloped land and increasing land values, much of the future residential growth is likely to occur on land presently within Buda's ETJ.[4] The Future Land Use Plan and Map from the Comprehensive Plan serves as the primary guide for future development.

Planned Development, City of Dripping Springs



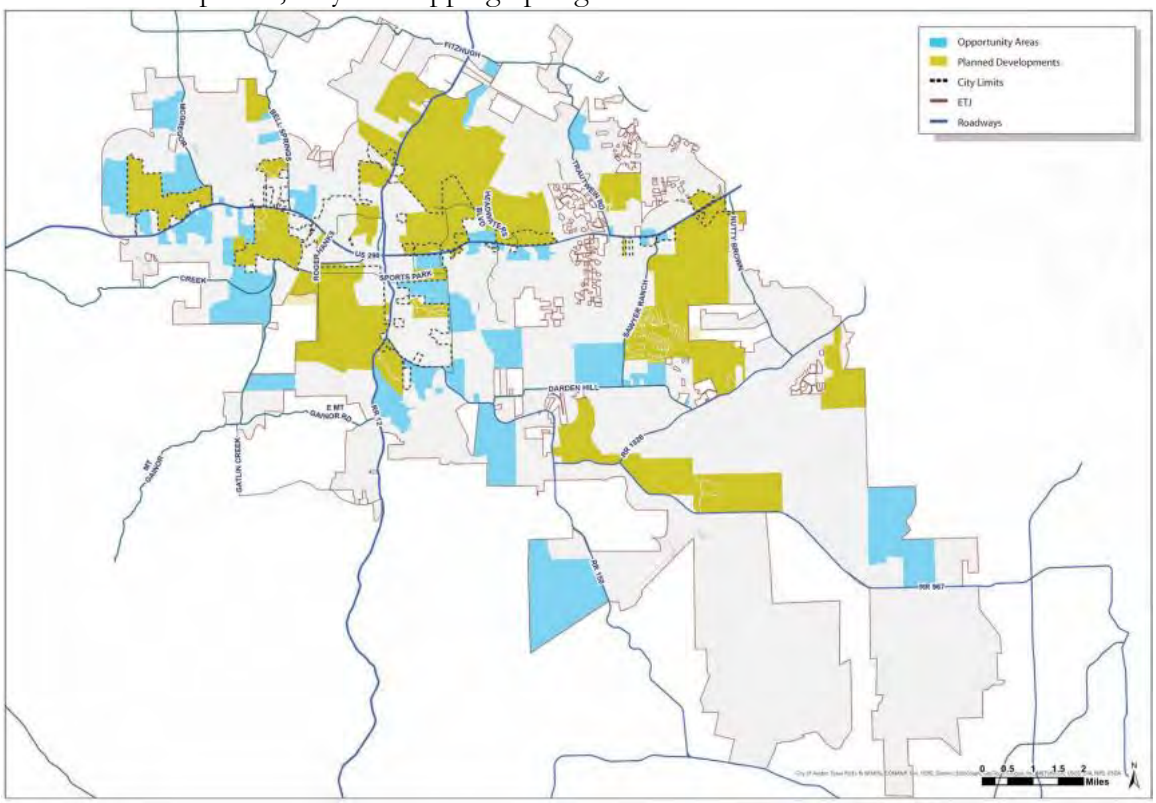
Source: Our Buda, Our Future Comprehensive Plan

[4] Our Buda, Our Future Comprehensive Plan

City of Dripping Springs

The community has experienced a large surge of development in their municipal boundaries as well as their extraterritorial jurisdiction areas over the past 10 years. New developments have been added and are planned principally to the north, east, and south of the city both in the ETJ and the city limits and several have requested annexation before construction has begun. Due to topography, the City of Dripping Springs has developed with a hierarchical street system with a low level of interconnectedness requiring the use of major corridors for most trips. This expansion of the population and the city limits is expected to continue and will impact hazard mitigation planning due to having a larger geographic area with more people living in it in which it is necessary to deploy city resources to mitigate and respond to hazards.

Planned Development, City of Dripping Springs



Source: City of Dripping Springs Comprehensive Plan

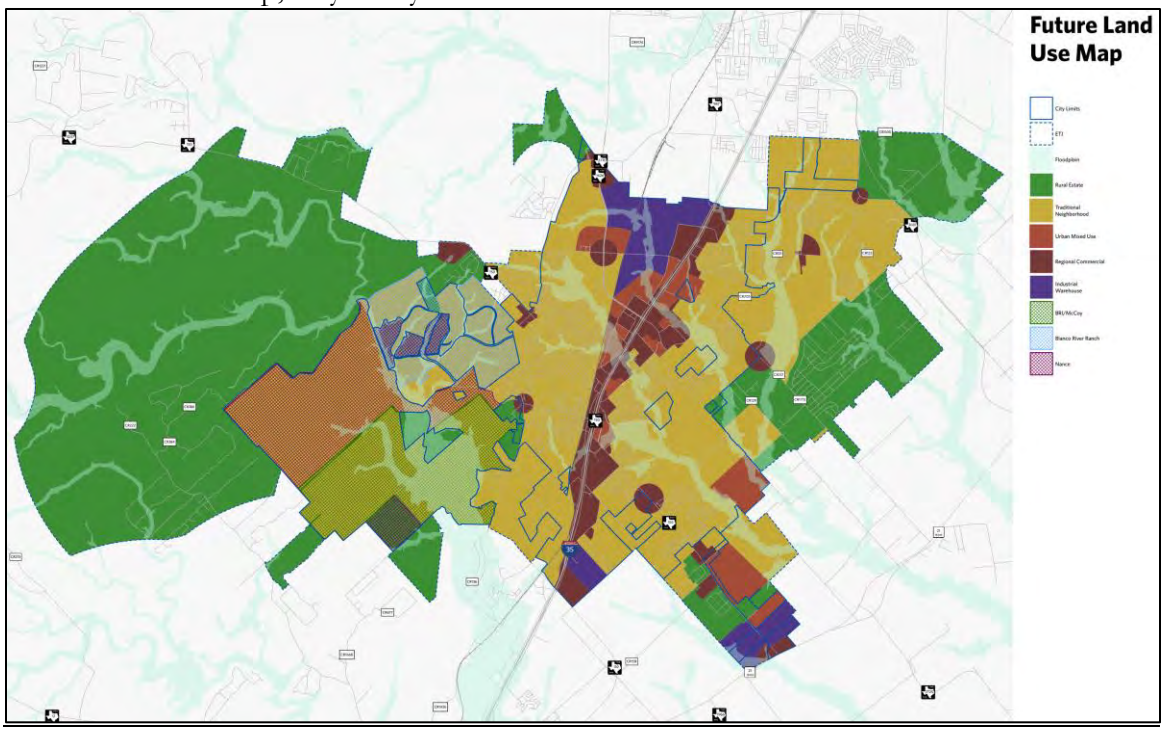
City of Hays

The city is purely residential and nearly fully developed. There are 90 homes in 1 subdivision that make up the community. City of Hays is 100% residential and does not have any employers besides home-based operations run and operated by community members.

City of Kyle

The future land use map below shows the City of Kyle geographically expanding east of I-35 as well as planned growth areas identified as subdivisions west of CR336 and south of SH 150.

Future Land Use Map, City of Kyle



City of Mountain City

The community is 100% residential with 237 structures making up the entire City.

City of Niederwald

Niederwald has 9 subdivisions within the city limits that are a combination of site-built and mobile homes. The community land uses are approximately 40% single-family home subdivisions, 40% manufactured/mobile homes, 10%-15% farmland and undeveloped tracts and 5% ranchettes and commercial uses.

The overall community development goal is to increase retail and residential land uses. There is currently 1 convenience store and 2 restaurants that support the tax base.

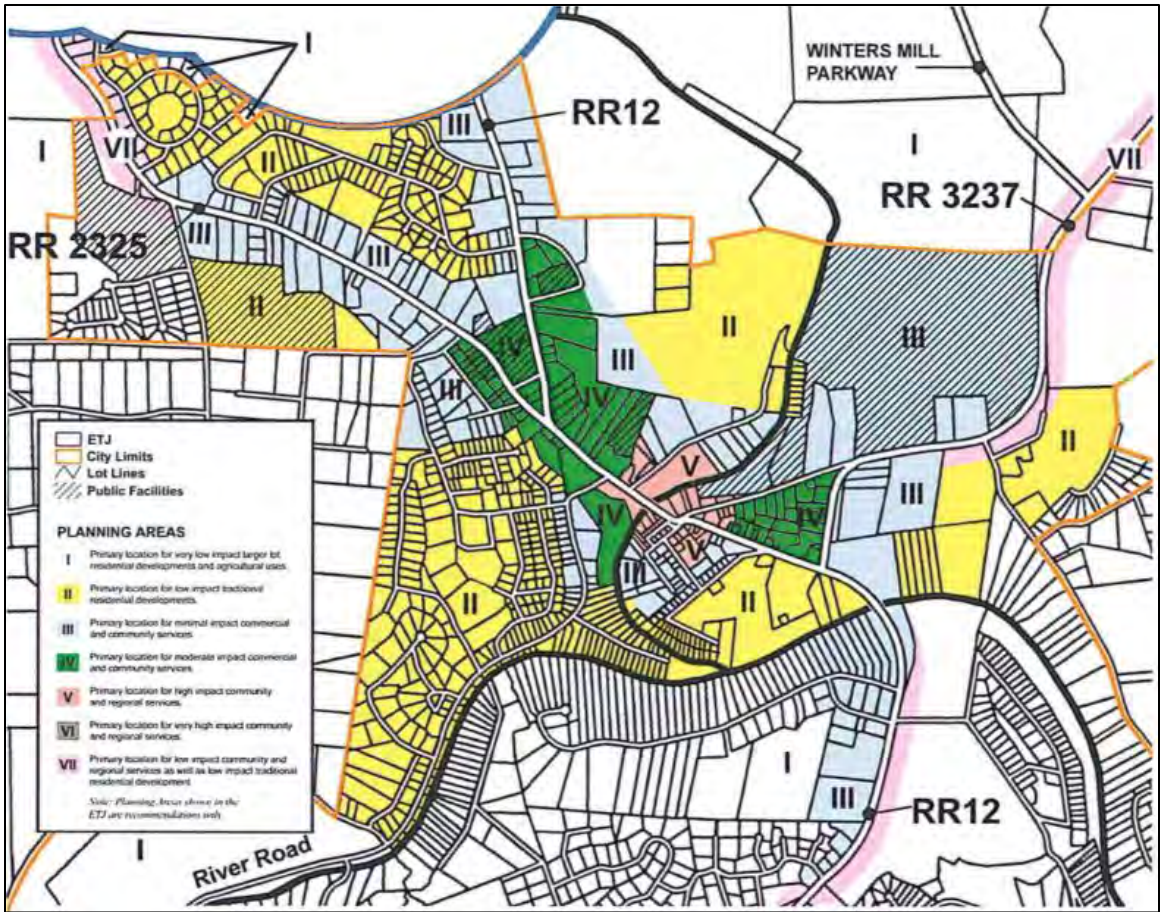
City of Uhland

The Highlands at Grist Mill is a recently approved development with a community entrance on Grist Mill Road.

City of Wimberley

In 2010, the population of Wimberley was 2,626. By 2020, the population was 2,839. This represents an 8.1 percent increase in population over the ten-year period. Although the city continues to experience modest growth, at this time, there are no new large-scale developments planned within the Wimberley city limits. Ranch Road (RR) 12, which passes through the heart of the city, is the major north-south arterial through Wimberley. Other arterials (RR 2325 and RR 3237) are also generally oriented in a north/south direction. Major east/west connections do not exist. East/west movements are accommodated on a system of collectors and local roadways. Since 2010, the average daily traffic on RR 12 (downtown) has increased 3.2 percent. Much of Wimberley's economy is tourist-based. The "Wimberley Square" and surrounding area is the hub of the tourist area. Adequate downtown parking

and accommodations for cyclists and pedestrians is a must for the community. As the city grows and traffic increases, a second bridge over the Blanco River will become a safety and mobility necessity.



Source: City of Wimberley Comprehensive Plan

Village of Bear Creek

The Village of Bear Creek is located in the Bear Creek Oaks Subdivision (687 acres) in Hays County, Texas. The subdivision was developed in the late 1970's by Robert Ingrum and E. D. Bohls and was originally part of the Koening Family Ranch. The subdivision was planned with 5 and 6-acre tracts, some of which have been subdivided. Several property owners own more than one tract so there exists today a 22-acre tract, an 18-acre tract and several 10-acre tracts. This fairly new community is comprised of approximately 159 residences within 687 acres in Hays County.

Village of Woodcreek

The primary growth areas for the village of Woodcreek are

1. CR218 corridor: This area includes the Shadow Valley subdivision in the north and a swath of land to the south approximately ½ mile wide along CR218.
2. Ledgerock subdivision: This area follows established subdivision boundaries.
3. Woodcreek North: This area follows the subdivision boundaries for Woodcreek Phase II, west of Jacob's Well Road.
4. Wimberley & Woodcreek: Includes the remainder of the Woodcreek subdivision east of Jacob's Well Rd. and some surrounding parcels, plus areas of northern

Wimberley and its ETJ to the RR12/RR2325 intersection in downtown Wimberley.

5. Skyline Ranch subdivision: Includes the Skyline Ranch, Skyline Acres, Sagemont, and Wimberley Heights subdivisions.
6. Wimberley East: Includes downtown Wimberley along RR12 and areas to the north and east of RR12. Includes several large-lot inholdings, the Cypress Creek Acres, Ranch at Wimberley, and Pinnacle Ridge subdivisions, and areas along Winter's Mill Pkwy. Much of this area is within Wimberley and Woodcreek ETJs. (From "Understanding Hill Country Water Resources, pg. 11)

Critical Facilities and Assets

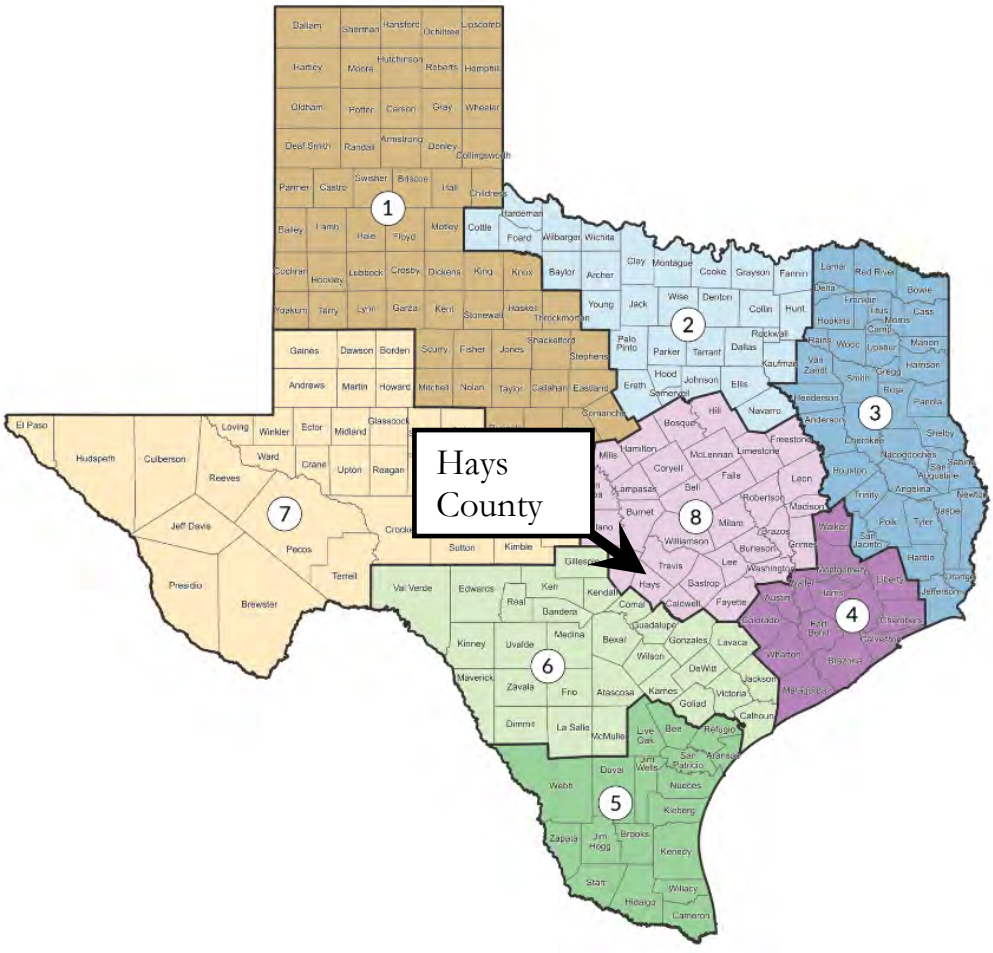
For certain activities and facilities, even a slight risk from a hazard event is too great a threat. FEMA defines these types of places as critical facilities; hospitals, fire stations, police stations, courthouse, communications, public schools, utility infrastructure and similar facilities where essential programs/services are provided. These facilities should be given special consideration when formulating regulatory alternatives, floodplain management plans, and mitigation actions. A critical facility should not be located in a floodplain if at all possible and emergency plans should be developed to continue to provide services during a flood or hazard event. If located in a floodplain it should be provided a higher level of protection so that it can continue to function and provide services during and after a flood. Hazard mitigation actions to mitigate risk to critical facilities are included in this Plan by jurisdiction in Section 19 and a summary of critical facilities is provided in **Appendix D.**

SECTION 4: HAZARDS AND RISK

Based upon a full review of the range of hazards suggested under FEMA planning guidance and input from Hays County Core Team members, 12 hazards have been identified as important to be addressed in the Hays County Hazard Mitigation Plan Update. These were chosen based upon a review of the State Hazard Mitigation Plan, a review of the historical record of disaster declarations for the Hays County planning area, historical incidents contained in the National Centers for Environmental Information (NCEI), and local records and accounts of magnitude and damages from different and distinct hazard events.

According to the State Hazard Mitigation Plan, Hays County is located within the western portion of Texas Division of Emergency Management Region 8 where floods, wildfire, and drought can be expected to dominate the hazard profile. This is a rapidly developing area located in the geographic region known as "flash flood alley." It is also one of the areas in Texas that is losing the most working lands such as farms, ranches, and forests. Increasing urbanization in an already flash flood prone area makes this region particularly vulnerable to riverine flooding.

Figure 4-1: Texas State Texas Division of Emergency Management Regions



Source: Texas Division of Emergency Management

The increased risk for these specific hazards in the planning area is confirmed in the table below. Disaster declarations are made at the county level and are not specific to any one city or sub-area, however, it is illustrative for local emergency planners to understand the type and frequency of the hazards impacting the larger region. Keep in mind that the incidents listed are only those that had a level of impact sufficient to necessitate a disaster declaration and that hazards have affected the area more frequently than what the table may initially suggest. Statewide disaster declarations are not included in this list.

Table 4-1: Disaster Declarations in Hays County

Disaster Number	Year	Title
286	1970	Tornado
333	1972	Flood
930	1991	Flood
3113	1993	Drought
1179	1997	Flood
1239	1998	Severe Storm
1257	1998	Flood
3142	1999	Fire
2352	2001	Fire
1425	2002	Flood
3216	2005	Hurricane
1606	2005	Hurricane
2617	2006	Fire
1624	2006	Fire
2680	2006	Fire
3284	2008	Fire
2751	2008	Fire
1999	2011	Fire
4159	2013	Severe Storm
4223	2015	Severe Storm
4245	2015	Severe Storm
3458	2020	Biological
4485	2020	Biological
3554	2021	Severe Ice Storm
4586	2021	Severe Ice Storm
4705	2023	Winter Storm

Source: www.FEMA.gov

Since the US Federal Government began issuing disaster declarations in 1953, Hays County has had 26 disaster declarations where individual and/or public assistance has been approved. Based on Table 4-1 above, 22 of the 26 disaster declarations have been issued in the past 25 years (since 1997). The infographics below provide a summary of the type of hazard, year, and time of year in which it occurred.

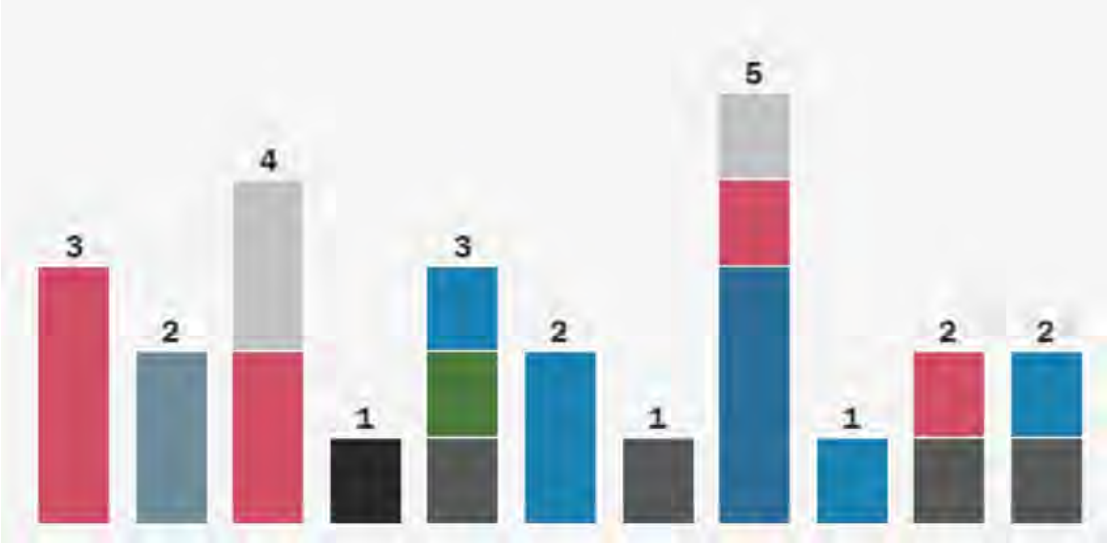
The types of hazards that have had disaster declarations for the Hays County planning area since 1953 are shown in Figure 4-2 below and color-coded for use in Figure 4-3 on the following page.

Figure 4-2: Hays County Disaster Declarations Since 1953 by Type

The months during which disasters have been declared in the planning area are shown in Figure 4-3 below. The number above the color-coded disasters refers to the month of the

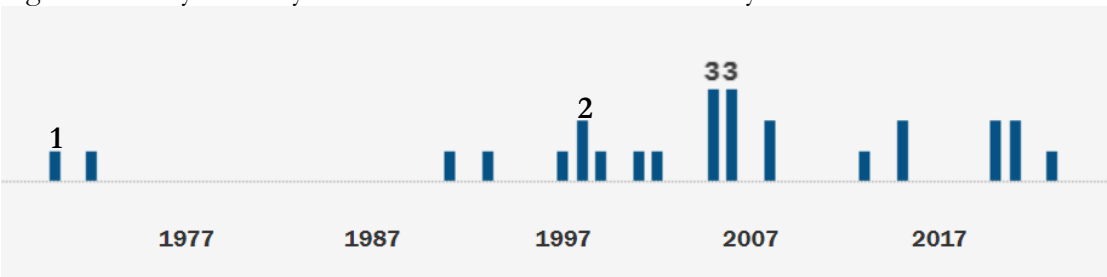
year. The colors in the figure below refer to the hazards as listed below each corresponding color in figure 4-2.

Figure 4-3: Hays County Disaster Declarations Since 1953 by Month of Occurrence



The years in which disasters have been declared in the planning area are shown in Figure 4-4 below. Table 4-1 on the previous page can also be used as a reference.

Figure 4-4: Hays County Disaster Declarations Since 1953 by Year of Occurrence



Hazard Descriptions

The following 12 hazards in table 4-2 below are included in the State of Texas Hazard Mitigation Plan and are determined to be a risk to the planning area. Severe Coastal Flooding and coastal erosion were left off of this list due to the distance of the planning area from the Texas coast and no history of impact.

Table 4-2: Hazard Descriptions

HAZARD	DESCRIPTION
HYDROLOGIC	
Drought	A deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people.
Floods	Flooding is a general or temporary condition of partial or complete inundation of water, usually floodplains. The floodplain is an area of land susceptible to being inundated by floodwater from any source.
ATMOSPHERIC	

Extreme Heat	Extreme Heat is a condition when temperatures hover above local excessive heat criteria combined with high humidity levels.
Hailstorm	Hail is showery precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter.
Hurricanes, Tropical Storms, and Depressions	A hurricane is a large rotating storm with high-speed winds that forms over warm waters in tropical areas. Hurricanes have sustained winds of at least 74 miles per hour and an area of low air pressure in the center called the eye. Hurricanes, tropical storms, and depressions are associated with heavy rainfall and inland flooding, storm surge, and high winds.
Lightning	These are sudden charges of electricity that develop from storms or excessive heat.
Severe Winter Storms	A condition when temperatures hover below freezing and can include ice, snow, and sleet.
Tornado	A tornado is a narrow, violently rotating column of air that extends from the base of a thunderstorm to the ground.
Windstorms	Severe wind storms can occur alone, or when accompanied by severe thunderstorms. Flying debris can cause major damage to utilities, infrastructure, and property.
OTHER	
Earthquake	Any sudden shaking of the ground caused by the passage of through Earth's rocks. Seismic waves are produced when some form of energy stored in Earth's crust is suddenly released, usually when masses of rock straining against one another suddenly fracture and "slip."
Wildfire	Wildfires are an unplanned, unwanted fire burning in a natural area, like a forest, grassland, or prairie. Buildings and human development that are susceptible for wildfires are considered the wildland urban interface.
TECHNOLOGICAL	
Dam Failure	Dam Failure can occur with little warning from intense storms, flash flooding, or engineering failures. 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.

Expansive soils and land subsidence were considered by the Core Planning Team but presented such a low risk based on the recorded history of impacts that future impacts are not expected, and therefore they are not necessary to include in the hazard assessment. Based on tabular data from the NID (National Inventory of Dams), 21 dams have a high hazard potential in the Hays County planning area.

Natural Hazards and Climate Change

Climate change describes the rapid and relatively recent increase in global average temperatures that has helped drive a fivefold increase in the number of weather-related disasters in the last 50 years. Climate change means disasters are happening simultaneously, too.

With increasing global surface temperatures, the possibility of more droughts and increased intensity of storms will likely occur. As more water vapor is evaporated into the atmosphere it becomes fuel for more powerful storms to develop. More heat in the atmosphere and

warmer ocean surface temperatures can lead to increased wind speeds in tropical storms. Rising sea levels expose higher locations not usually subjected to the power of the sea and to the erosive forces of waves and currents. This increases the likelihood and magnitude of future occurrences of hazards such as floods, extreme heat hailstorm, hurricanes, lightning, severe winter storms, tornado, windstorms, wildfire, and dam failures. The impacts from each of these hazards on the vulnerable assets of Hays County and participating jurisdictions are expected to increase in the future as a result of climate change. A greater regulatory environment that will move new development out of high-risk areas as well as updated building requirements that new and redeveloped structures be more resilient to hazards will help to dull the impact of climate change. These critical facilities and vulnerable populations are located in Appendix D for each participating jurisdiction. Earthquakes are not considered to have any measurable impact due to climate change in the area.

Texas is considered one of the more vulnerable states in the U.S. to abrupt climate changes and to the impact of gradual climate changes to the natural and built environments. Megadroughts can trigger abrupt changes to regional ecosystems and the water cycle, drastically increase extreme summer temperature and fire risk, and reduce availability of water resources, as Texas experienced during 2011-2012. Adapting to climate change through efforts like flood control measures or drought-resistant crops partially reduces climate change risks, although some limits to adaptation have already been reached.

Overview of Hazard Analysis

The hazard risk analysis methodology involves performing a historical review and statistical analysis on past data gathered with regard to hazards impacts to the planning area. Records were retrieved from National Centers for Environmental Information (NCEI) and National Oceanic and Atmospheric Administration (NOAA) that were reported for the Hays County planning area. Other records from local sources were also evaluated and included in the analysis when available. Geographic information system (GIS) mapping software was also used to identify and assess risks for Hays County and all participating jurisdictions by evaluating community critical facilities and their vulnerability to the hazards. The general parameters that are described for each hazard in the Risk Assessment include the location in the planning area, the extent or magnitude of the hazard to be expected, the frequency of return based on the number of historical events over the time period of study, the approximate annualized losses, a description of general vulnerability, and a statement of the hazard's impact.

Frequency of return statements are defined in Table 4-3 below.

Table 4-3. Frequency of Return Statements

Frequency of Occurrence	
Highly likely	Event probable in next year.
Likely	Event probable in next 3 years.
Occasional	Event probable in next 5 years.
Unlikely	Event probable in next 10 years.

Impact statements with their associated potential severity are defined in Table 4-4 below.

Table 4-4. Impact Statements

Impact	Severity
High	High classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.
Medium	Middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating.
Low	Two or more of the criteria fall in lower classifications or the event has minimal impacts on the planning area.

Table 4-5 summarizes deaths, injuries, property damage, crop damage, frequency of occurrence, and potential severity of all studied hazard events from 1997-2023 for the Hays County Planning area.

Table 4-5: Hays County Hazard Impact Summary (1997-2023)

Hazard	Deaths	Injuries	Property Damage	Crop Damage	Frequency	Potential Severity
Drought	0	0	$0	$0	Likely	Low
Floods	15	177	$224,629,000	$330,000	Highly Likely	High
Earthquake	0	0	$0	$0	Unlikely	Low
Extreme Heat	0	0	$0	$0	Highly Likely	Medium
Hailstorm	0	1	$100,702,000	$0	Likely	High
Hurricanes, Tropical Storms, and Depressions	0	0	$0	$0	Unlikely	Low
Lightning	0	0	$175,000	$0	Highly Likely	Low
Severe Winter Storms	0	0	$2,525,000	$0	Likely	Medium
Tornado	0	7	$1,225,000	$0	Unlikely	Medium
Windstorms	0	0	$7,798,800	$100,000	Likely	Medium
Wildfire	0	0	$6,500,000	$0	Highly Likely	Medium
Dam Failure	0	0	$0	$0	Unlikely	Low/High

Source: NCEI Storm Events Database 1997 to 2023.

The 25-year hazard profile shows that floods have had an outsized impact on the planning area. Floods are the leading cause of property damage and crop damage with 15 deaths and 177 injuries, at a minimum, attributed to floods. The second highest number of damages can

be attributed to hailstorms and the second highest number of injuries can be attributed to tornadoes. The total of all other hazard damages is 5.3% of the flood and hailstorm totals. Based on the historical impact summary, flooding and hailstorms are the priority hazard from which to protect people and property in the Hays County planning area. This is followed by windstorms, wildfire, severe winter storms, tornadoes, and lightning. All other hazards included in this analysis present a lower mitigation priority based on the historical severity of impact.

SECTION 5: HURRICANE

Description

A hurricane is an intense tropical weather system of strong thunderstorms with a well-defined surface circulation and maximum sustained winds of 74 mph or higher. Hurricanes, along with Tropical Storms and Depressions, produce a variety of potential hazards including damaging winds, coastal flooding due to storm surge, severe storms with heavy rainfall and high winds, and even tornados.

The information in this section covers historical damage within Hays County associated with hurricanes, tropical storms, and depressions associated with severe winds. Tornadoes and flooding, other hazards associated with this hazard event, are addressed in Chapters 6 and 11, respectively. Severe winds pose a threat to lives, property, and vital utilities primarily due to the effects of flying debris or downed trees and power lines. Severe winds typically cause the greatest damage to structures of light construction, particularly manufactured homes.

Location

Hurricanes and tropical storms can occur throughout the planning area and are not confined to any geographic area; however, the likelihood of impact decreases the further a location is from the Texas coast. Hays County is approximately 140 miles away from the Gulf of Mexico at its closest point. The table below lists hurricanes or tropical storm events with a storm track (center of the storm) that crossed the planning area, listed in order of the reported event date. Storm tracks are categorized according to the Saffir-Simpson wind intensity scale with the category assigned as the "peak magnitude" of the storm at some time during its lifespan and not necessarily when the storm track crossed the planning area.

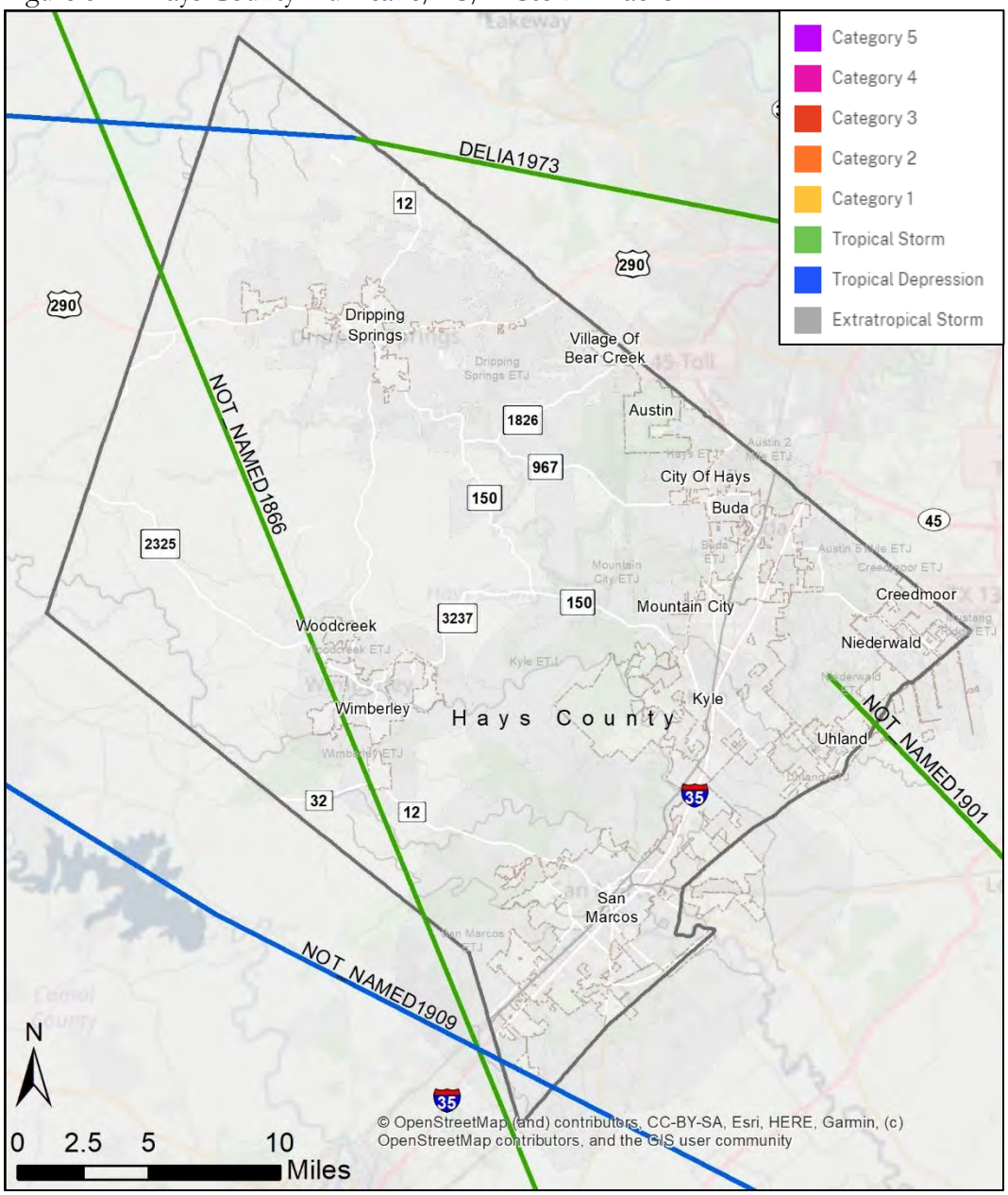
Table 5-1: Hurricane/TS/D Storm Track Events Table

Storm Name	Year	Dates	Category
Unnamed	2017	Aug 26	Tropical Storm (TS)

WWW.NOAA.ORG

The map on the following page shows the historical tracks of hurricanes through the planning area from 1842 to 2023. The category assigned to each storm on the map is its magnitude at the time it crossed into Hays County. Based on data provided by NOAA's National Climatic Data Center (NCDC) and the FEMA National Risk Index, Hays County's hurricane risk is very low when compared to areas closer to the Gulf and Atlantic coasts of Texas and the United States.

Figure 5-1: Hays County Hurricane/TS/D Storm Tracks



Source: *National Climatic Data Center (NCDC), International Best Track Archive for Climate Stewardship (IBTrACS) dataset.*

Extent

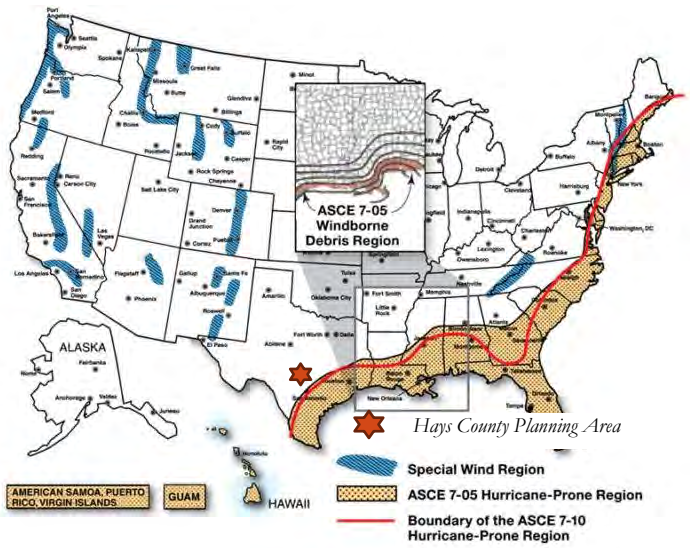
For Hurricanes, extent can be expressed separately for flood, wind, and surge. Flooding will be examined in the next section, but surge is not an issue for Hays County since it is located so far from the coast. For hurricane wind extent, the Saffir-Simpson Hurricane Wind Scale (SSHWS) scale is the scientific scale most often used to measure hurricane winds. The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preventative measures. Wind speeds range from 39-73 mph for Tropical Storms and Tropical Depressions have wind speeds equal to or less than 38 mph.

Table 5-2: Saffir Simpson Scale

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (Major)	111-129 mph	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (Major)	130-156 mph	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (Major)	157 mph or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

According to the FEMA Wind Zones Map used to determine building standards, Hays County is not located in a hurricane-prone region. Based on the location and the historical storm tracks for hurricanes and tropical storms in the Hays County planning area, tropical storms are the key event to be mitigated.

Figure 5-2: FEMA Wind Zone Map (www.FEMA.gov)



Historical Occurrences

Hurricanes and Tropical Storms that had a direct path through the Hays County planning area, as well as tracks that went through adjacent counties yet still impacted the Hays County planning area, are identified in this section. Based on historical storm data provided by NOAA's National Climatic Data Center (NCDC), only one (1) tropical depression event has occurred in the planning area since 1842. Table 5-3 below lists the storms that have impacted the planning area. There have not been any events recorded past the listed dates.

Table 5-3: Historical Hurricane/TS/D Impact Events Table, 1997-2023

Events	Magnitude	Injuries	Fatalities	Property Damage	Crop Damage
1	Tropical Depression	0	0	$0	$0

Source: *NOAA NCEI Storm Events Database*

Significant Events

August 26, 2017

Hurricane Harvey moved onshore as a Category 4 hurricane over San Jose Island east of Rockport during the late evening of August 25th. Harvey moved inland entering southern DeWitt County during the morning of August 26th as a Category 1 hurricane. It continued to weaken as it moved farther inland eventually reaching south central Gonzales County as a tropical storm during the late evening of August 26th. The center of the storm made a loop through Gonzales, Karnes, and DeWitt Counties before exiting our County Warning Area during the afternoon of August 27th moving into Victoria County.

The eastern half of Hays County experienced tropical storm force winds with gusts as high as 50 mph during the storm. This produced some minor tree damage and knocked out power. 100 people were evacuated due to rising water on creeks and the threat of a small dam breach during the height of the event. A sinkhole developed on Highway 21 due to the heavy rain amounts. Across the county, rainfall totals averaged 8 to 12 inches along and east of Interstate 35. Monetary loss are estimates of road repair.

Probability of Future Events

The probability of future events relies on measuring the number of previous occurrences of a hurricane or tropical storm event over the 180-year reporting period. Based on four occurrences of a hurricane or tropical storm in the planning area during this time, it is forecast that such a storm event will happen approximately once every 30 years. This frequency provides an unlikely probability that a hurricane or tropical storm will impact some portion of the planning area.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

Vulnerability and Impact

The proximity of Hays County to the Texas Coast makes this area slightly vulnerable to flooding from hurricanes and hurricane-force winds that cause damage across large areas. This exposes all building, facilities, and populations in the planning area equally to the impact of a hurricane or tropical storm. Damage to towers, trees, and underground utility lines from uprooted trees and fallen poles can cause damage to utility infrastructure, resulting in considerable disruption. Debris such as small items left outside, signs, roofing materials, and trees can become extremely hazardous in hurricanes and tropical storms and strong winds can easily destroy poorly constructed buildings, barns, and mobile homes. Hurricanes and tropical storms also produce large amounts of rain increasing the risk of flooding. This rain can overwhelm drainage systems as hurricanes and tropical storms that have weakened after making landfall can continue to drop significant quantities of water. The impacts to communities from a Category 5 storm can result in complete destruction of houses,

commercial property, and cropland. This would result in large-scale economic impacts and population displacement. Warning time for hurricanes, however, has lengthened due to modern early warning technology allowing the community time to reduce the impact of tropical storms and hurricanes.

Historic Hurricane Impacts

There have been no recorded property damage or crop damage impacts to the planning area.

The Hays County planning area features mobile and manufactured home parks which are more vulnerable to hurricane winds than site-built structures. In addition, manufactured and temporary housing is located sporadically throughout rural portions of the planning area which are also vulnerable to the hurricane hazard, but more prone to being isolated from essential needs and emergency services in the event of a disaster. Based on 2022 American Community Survey estimates, there are 101,449 housing units in Hays County of which 4.8%, or 4,872 units, are mobile or manufactured homes. In addition, 8,432 (8.3%) of the housing units in the overall planning area were built before 1980. These structures are likely to have been built to less stringent construction standards than newer construction and could be more susceptible to damages during significant events.

Table 8-3. Structures at Greater Risk by Jurisdiction

Jurisdiction	Total Housing Units	Mobile Homes	Housing units built prior to 1980
Hays County*	101,449	4,872/ 4.8%	8,432/ 8.3%
City of Buda	5,695	49/ 0.9%	177/ 3.1%
City of Dripping Springs	2,044	48/ 2.3%	123/ 6.0%
City of Hays	63	0/ 0%	55/ 87.3%
City of Kyle	17,316	957/ 5.5%	581/ 3.4%
City of Mountain City	240	0/ 0%	28/ 11.7%
City of Niederwald	344	142/ 41.3%	48/ 14.0%
City of Uhland	530	275/ 51.9%	94/ 17.8%
City of Wimberley	1,275	73/ 5.7%	300/ 23.5%
City of Woodcreek	1,128	0/ 0%	162/ 14.4%
Village of Bear Creek	194	1/ 0.5%	15/ 7.7%

*County totals include all jurisdictions in addition to unincorporated areas.
Source: 2022 American Community Survey 5-year estimate, selected housing characteristics

Based on the ACS 2022 data, the City of Hays is at highest risk of damage from thunderstorm winds when considering age of residential structures and the higher standard of building codes enacted after 1980. The City of Uhland is at the highest risk of damage from thunderstorm winds when considering number and ratio of manufactured homes.

SECTION 6: FLOOD

Description

Floods are defined as the accumulation of water within a water body and the overflow of excess water into adjacent floodplain lands. When surface water runoff enters into streams, rivers, or dry creek beds, riverine flooding conditions occur whenever the water carrying capacity of the water channel is compromised by excess runoff. Types of flooding include riverine flooding, coastal flooding, and shallow flooding. If the local basin drainage area is relatively flat then slow-moving floodwater can last for days. In drainage areas with substantial slope, or the channel is narrow and confined, rapidly moving and extreme highwater conditions, called a flash flood, can occur.

Common impacts of flooding include damage to personal property, buildings, and infrastructure; bridge and road closures; service disruptions; and injuries and fatalities. In this report, historical damage from flooding is reported here and in Chapter 1 (along with other hurricane related damages).

Location

The Digital Flood Insurance Rate Map (DFIRM) data provided by FEMA for Hays County delineates the Special Flood Hazard Areas (SFHAs) as those at highest risk of flooding. Flood areas or zones from the most recent DFIRMs from FEMA for Hays County, and all participating jurisdictions, are illustrated in Figures 6-1 to 6-17. Critical Facilities are labeled by number with more information found in Appendix D.

Figure 6-1: Hays County Floodplain Map

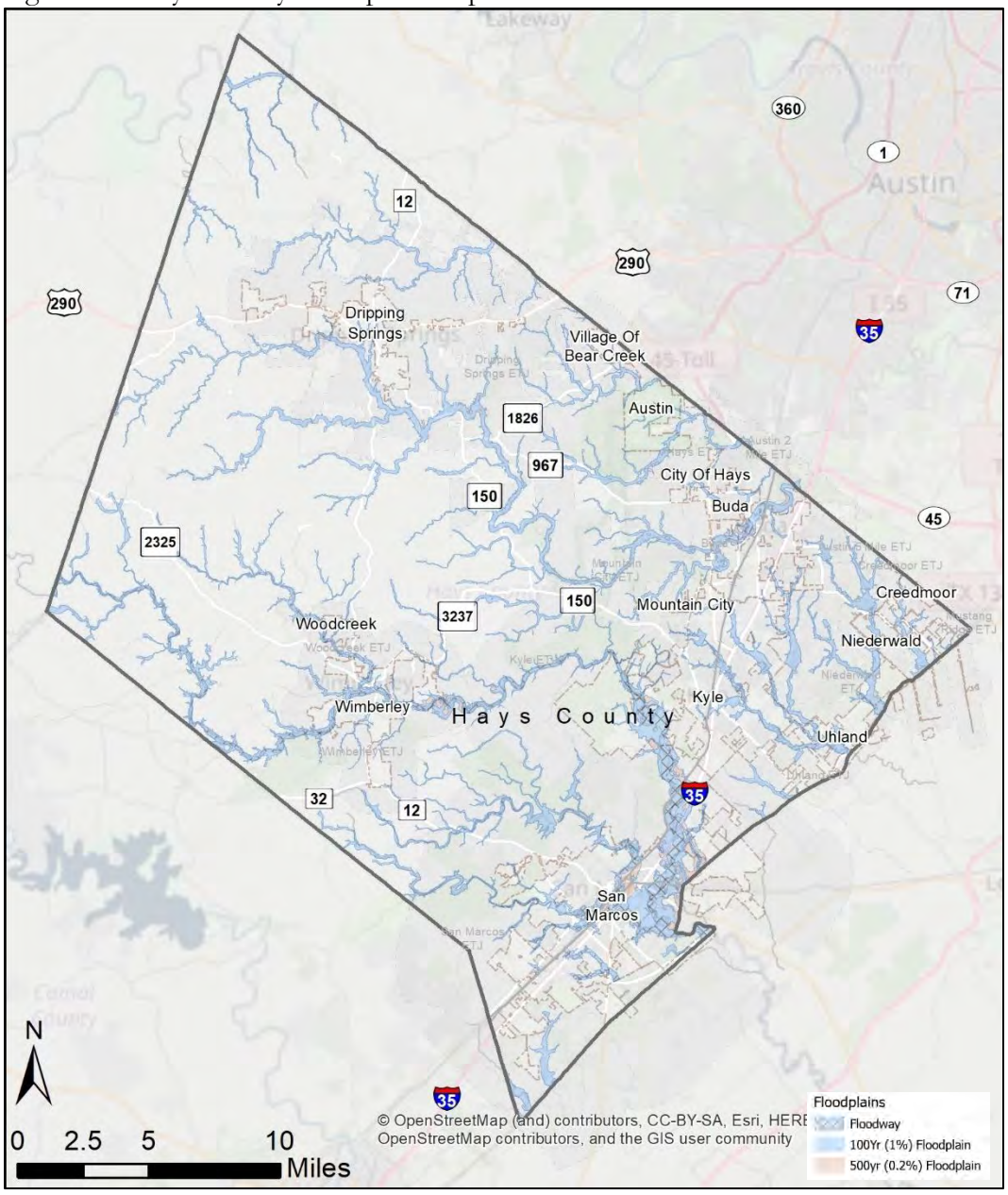


Figure 6-2: City of Buda Floodplain Map

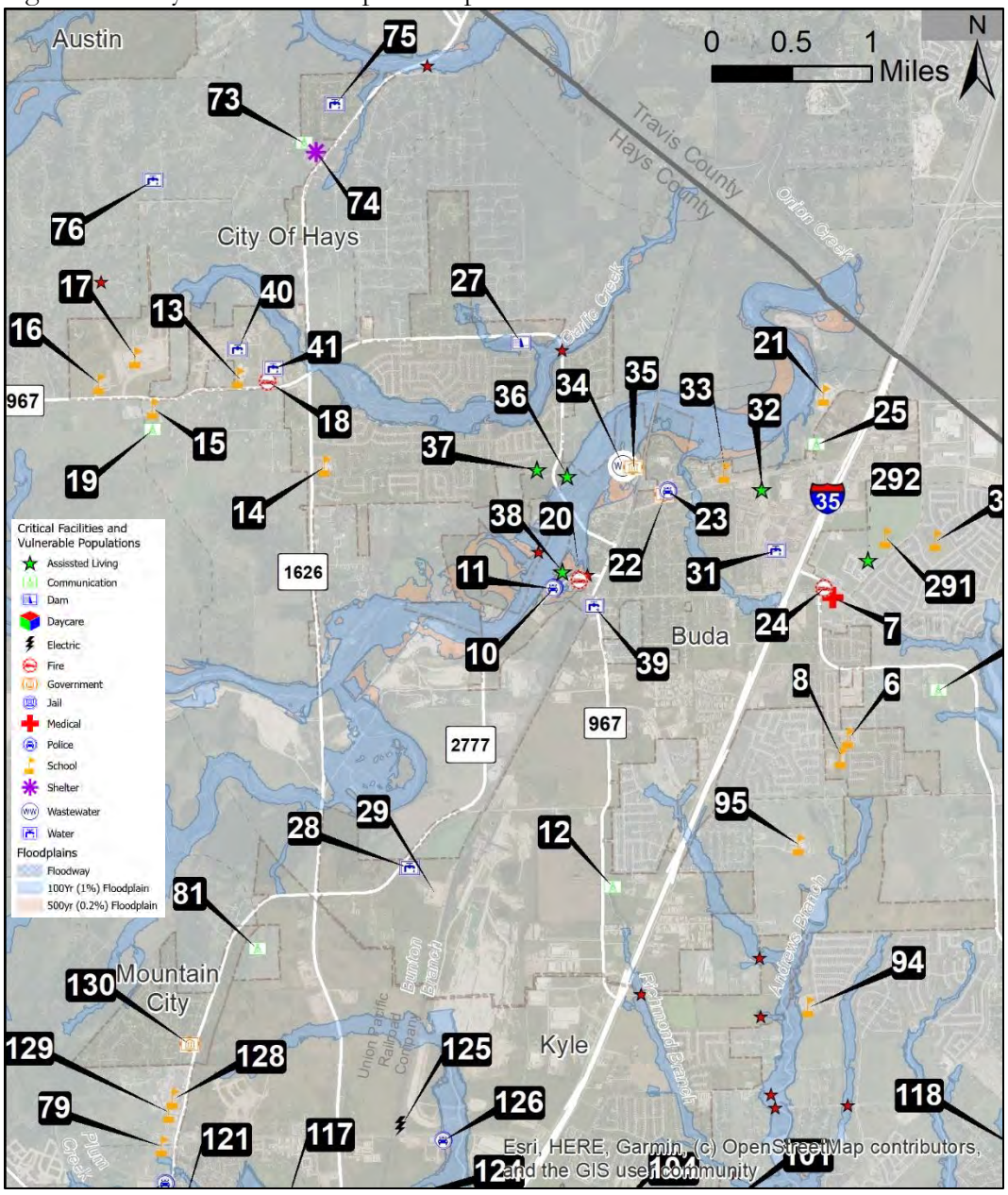


Figure 6-3: City of Dripping Springs Floodplain Map

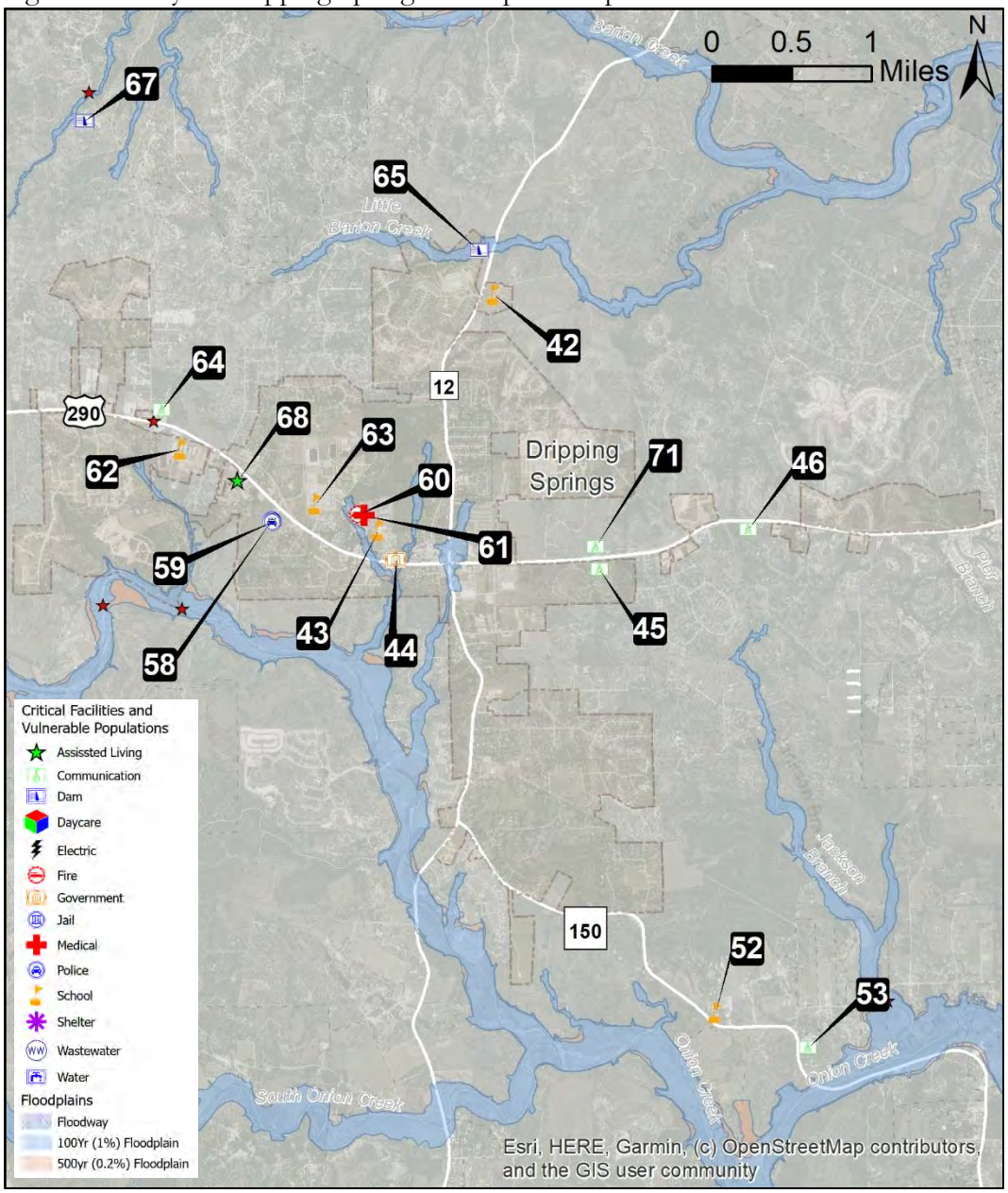


Figure 6-4: City of Hays Floodplain Map

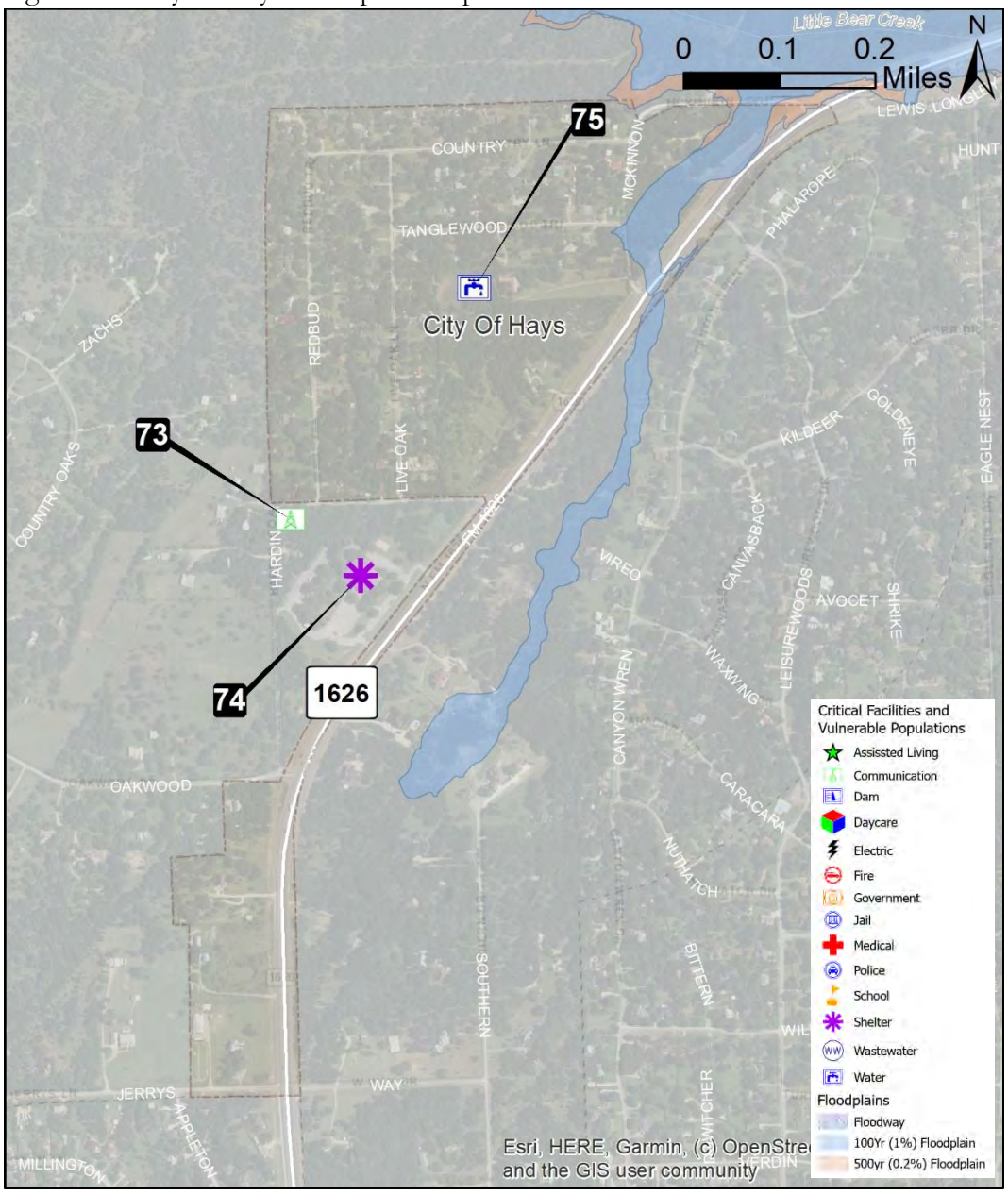


Figure 6-5: City of Kyle Floodplain Map

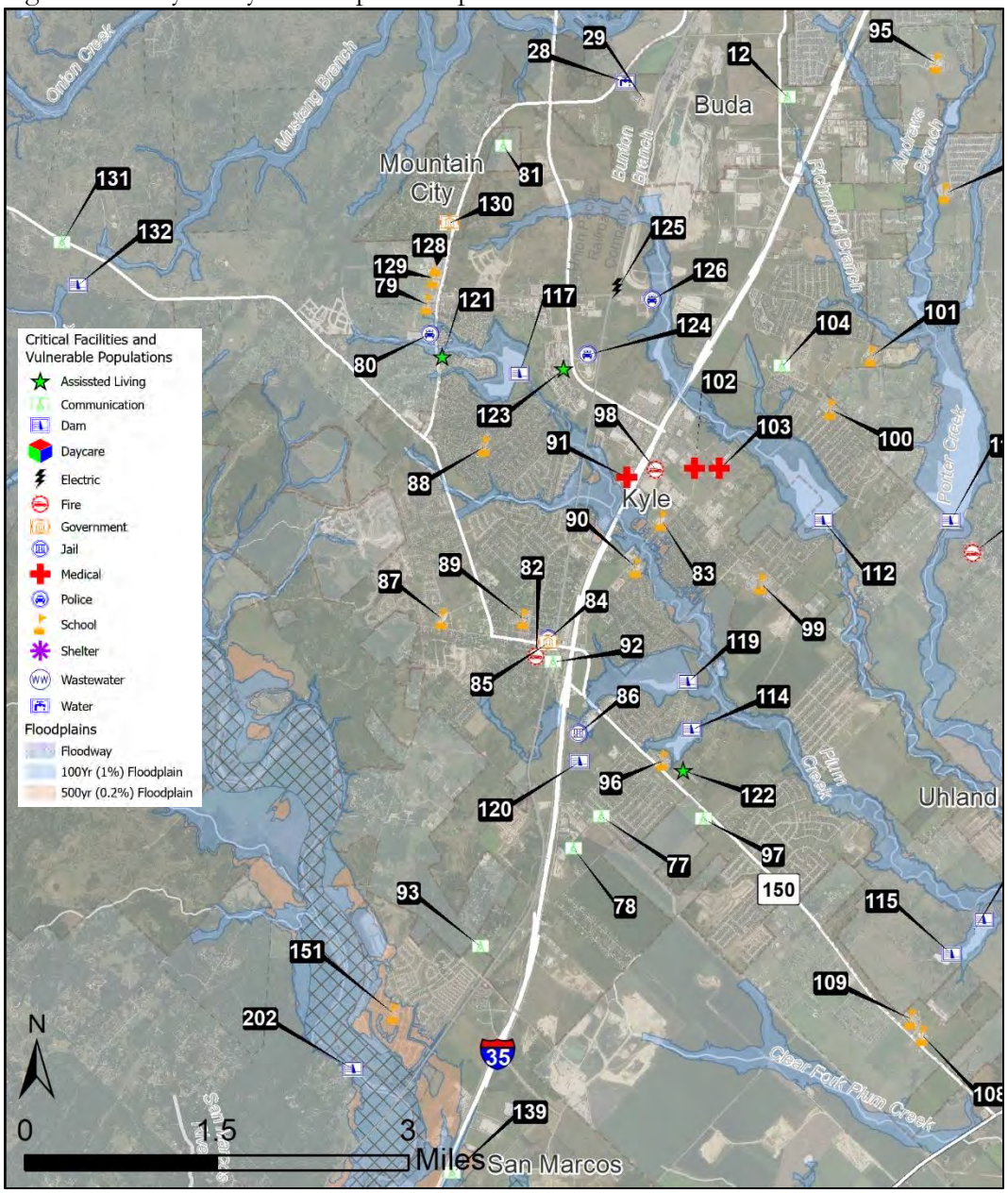


Figure 6-6: City of Mountain City Floodplain Map

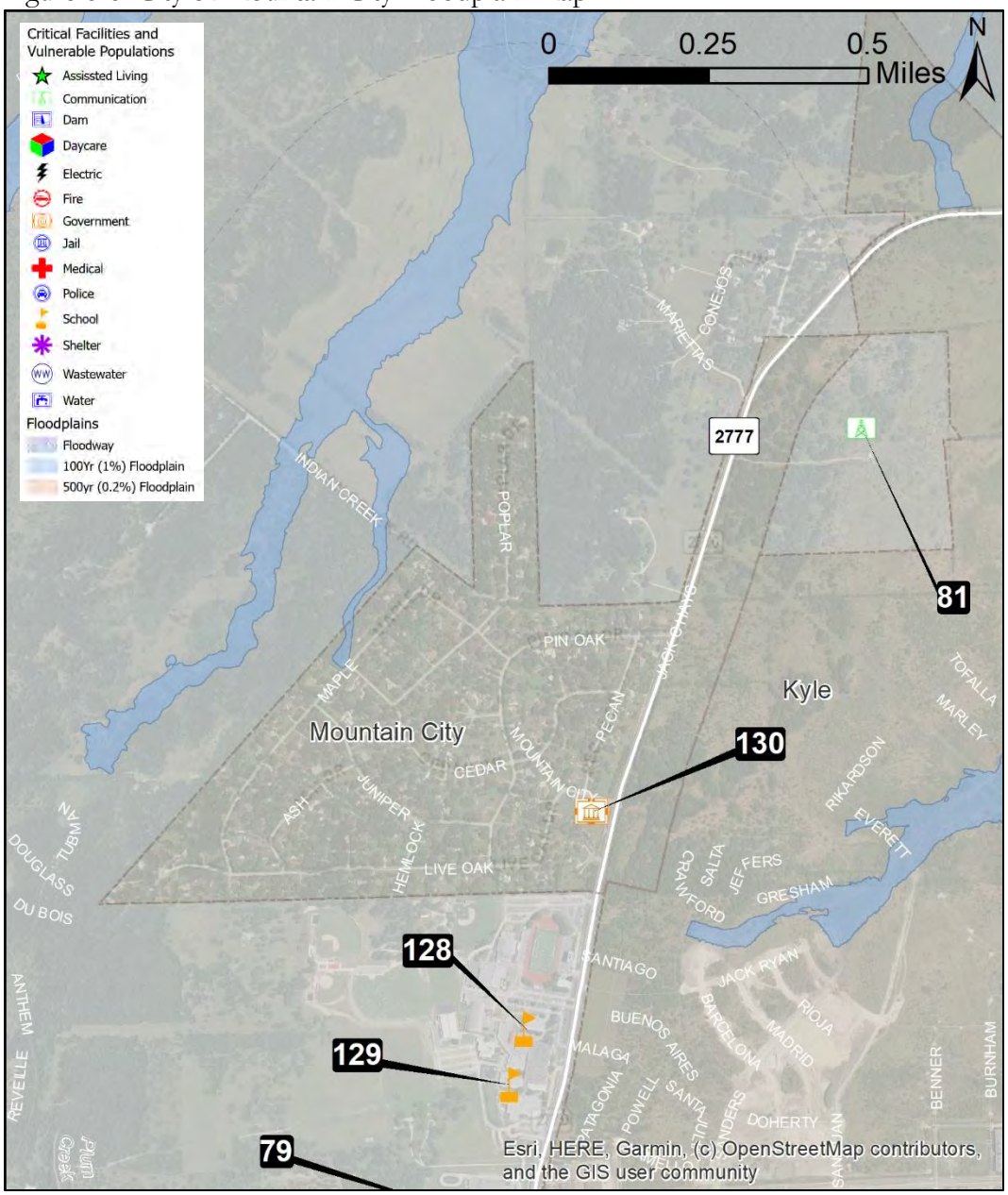


Figure 6-7: City of Niederwald Floodplain Map

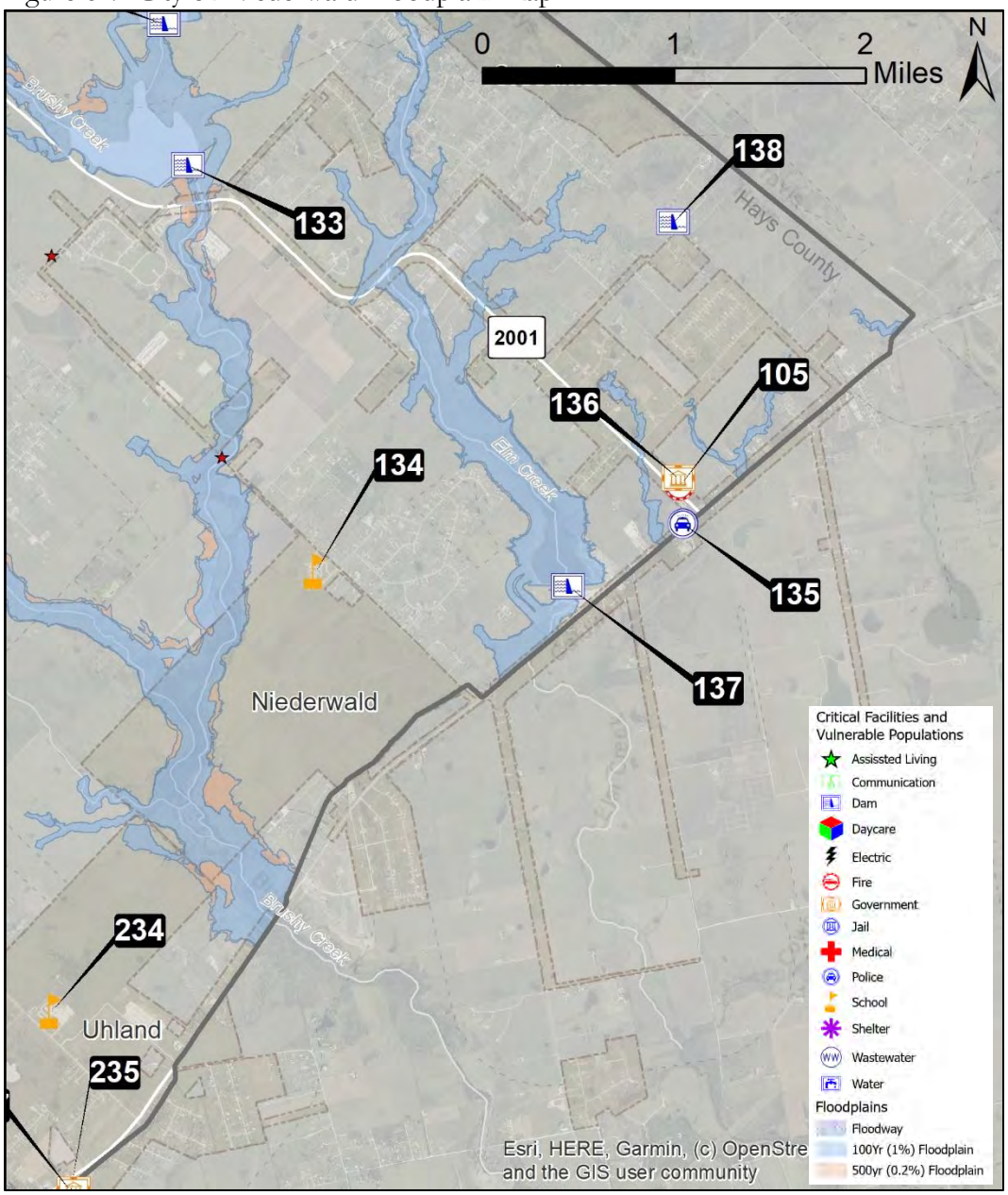


Figure 6-8: City of Uhland Floodplain Map

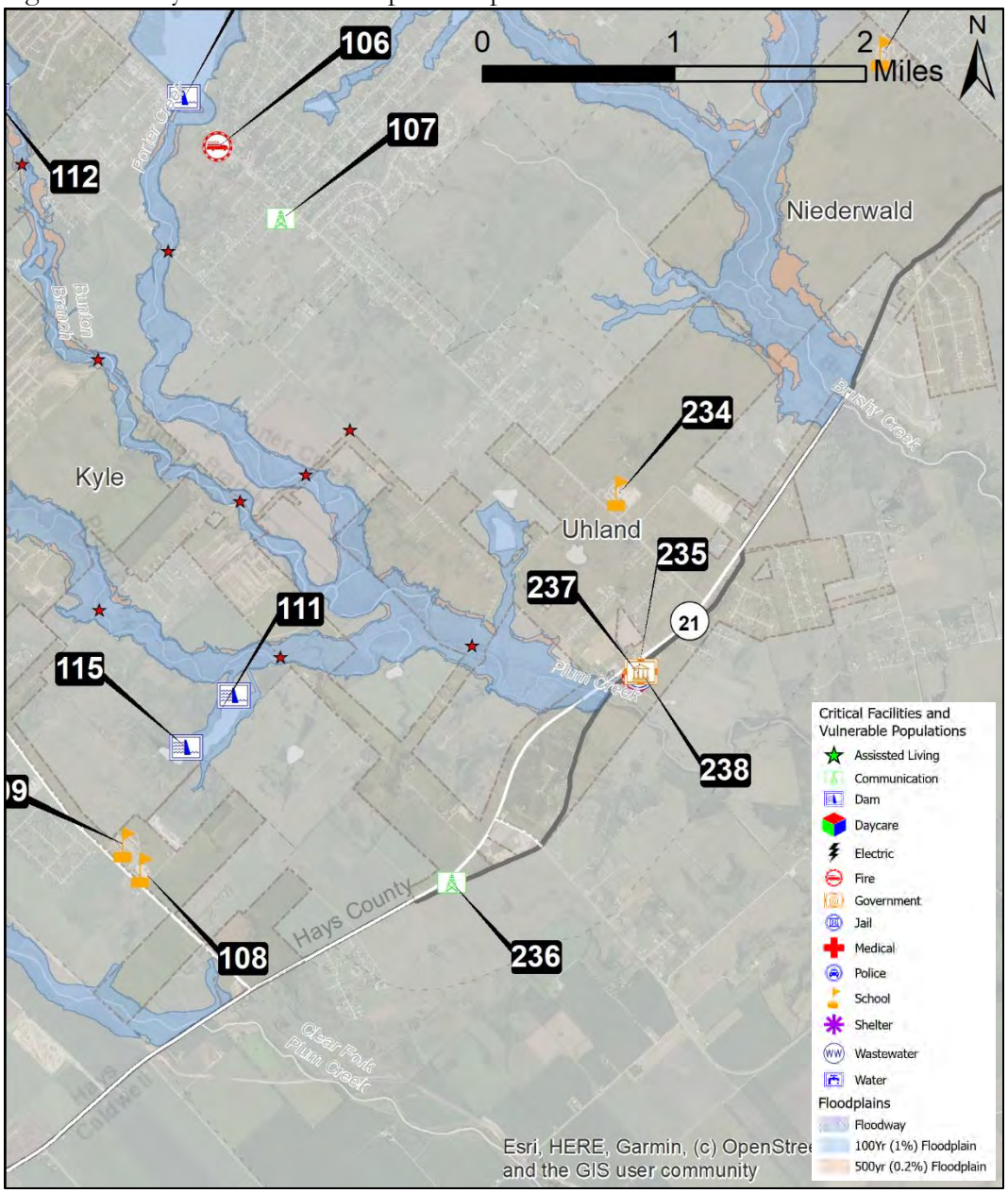


Figure 6-9: City of Wimberley Floodplain Map

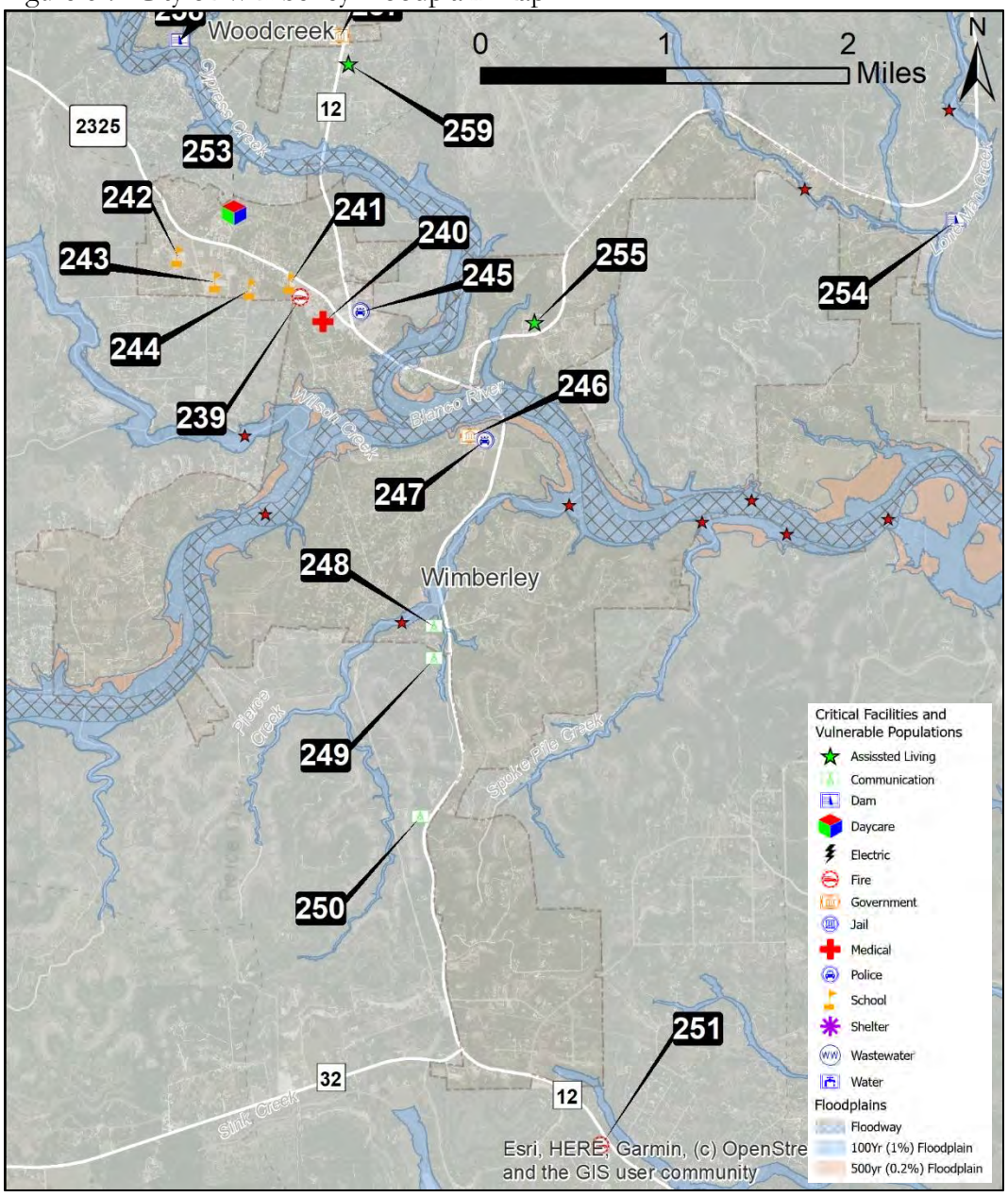


Figure 6-10: City of Woodcreek Floodplain Map

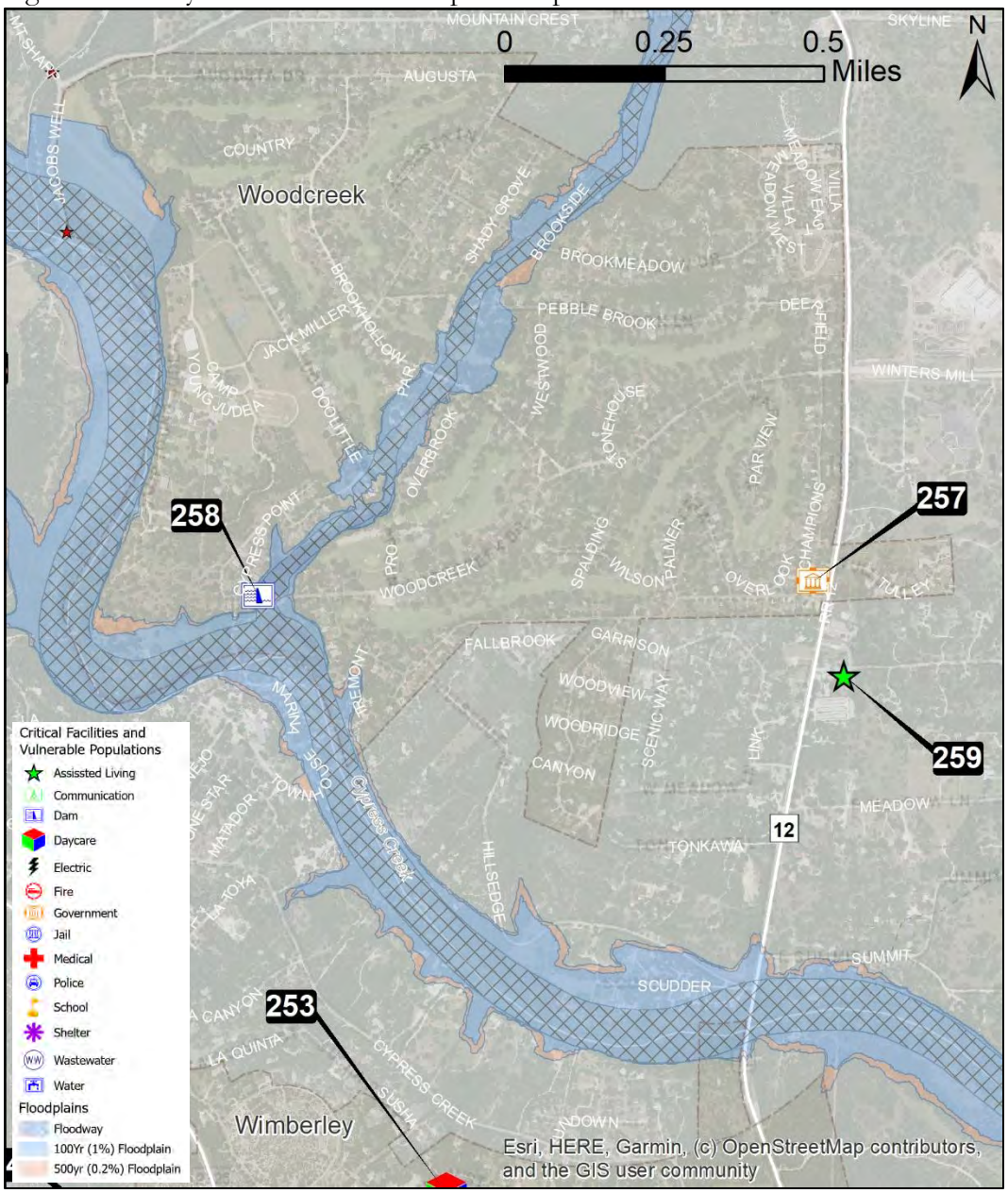


Figure 6-11: City of Bear Creek Floodplain Map

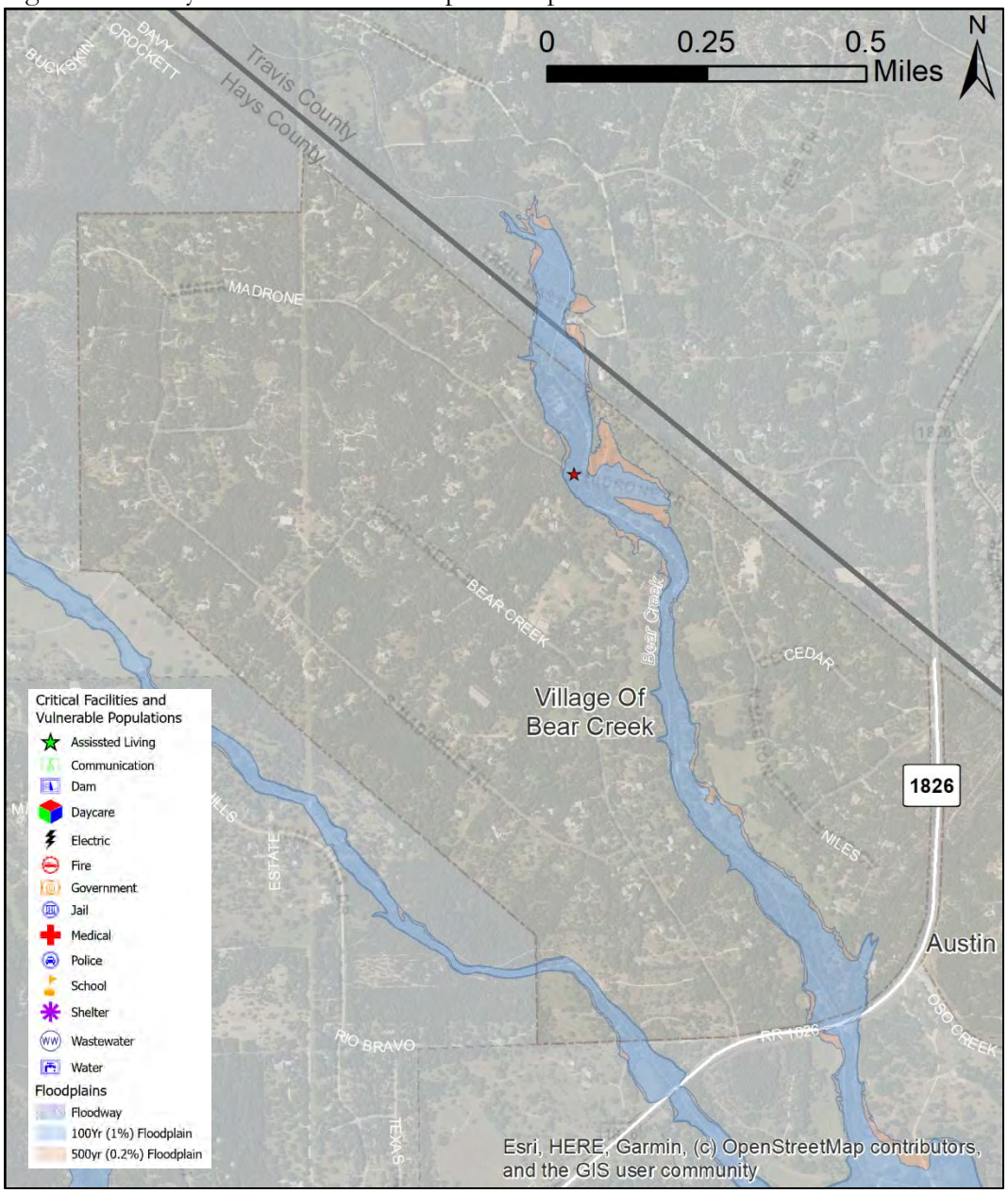


Figure 6-12: Hays County School Districts Boundary Floodplain Map

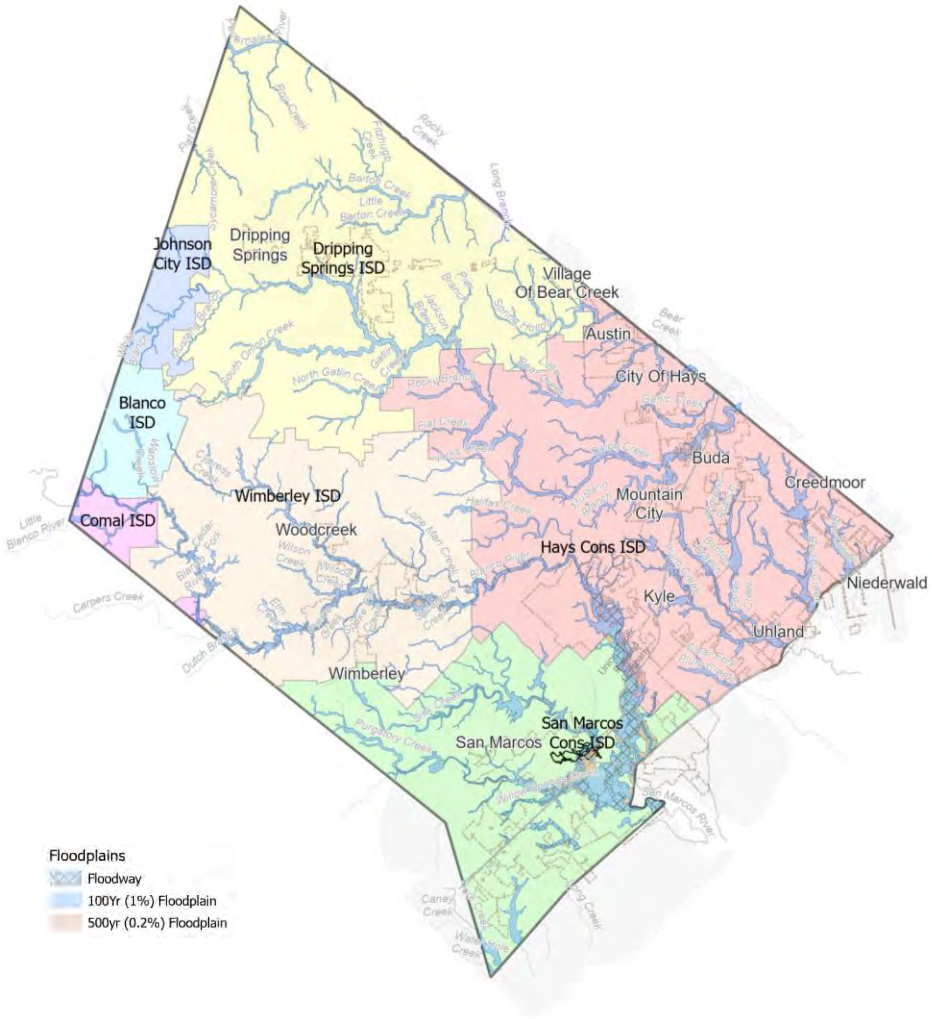


Figure 6-13: Dripping Springs ISD Boundary Floodplain Map

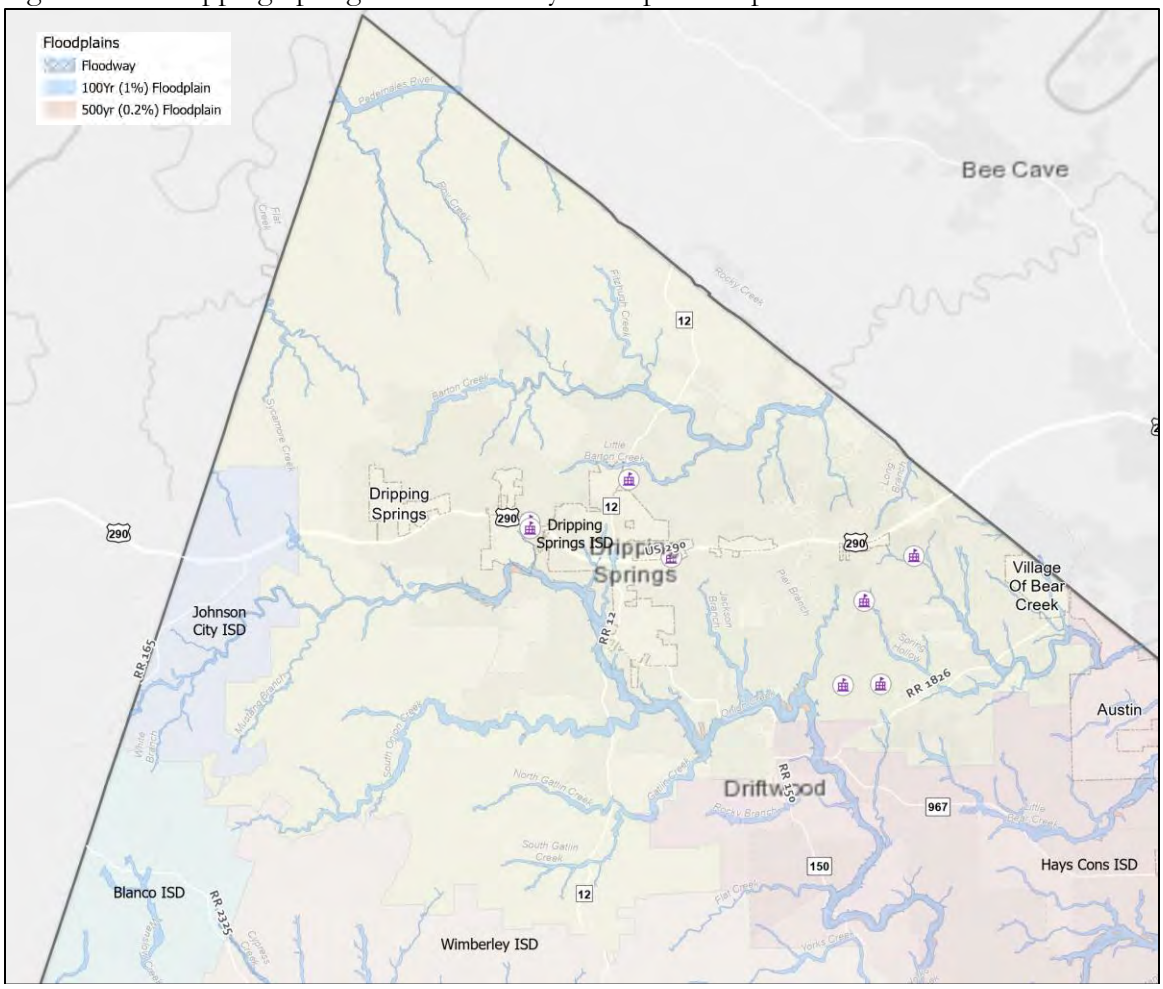


Figure 6-14: Hays Consolidated ISD Boundary Floodplain Map

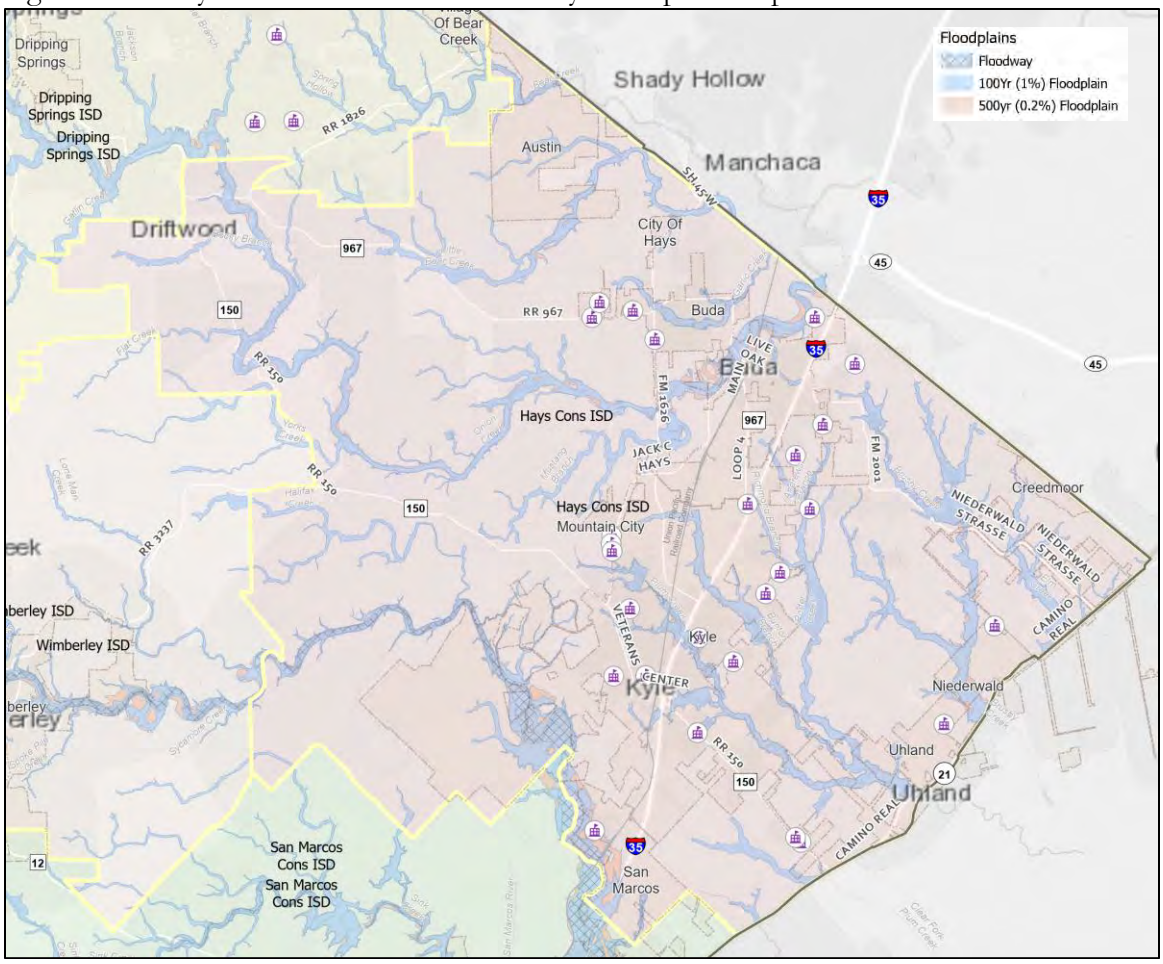


Figure 6-15: San Marcos Consolidated ISD Boundary Floodplain Map

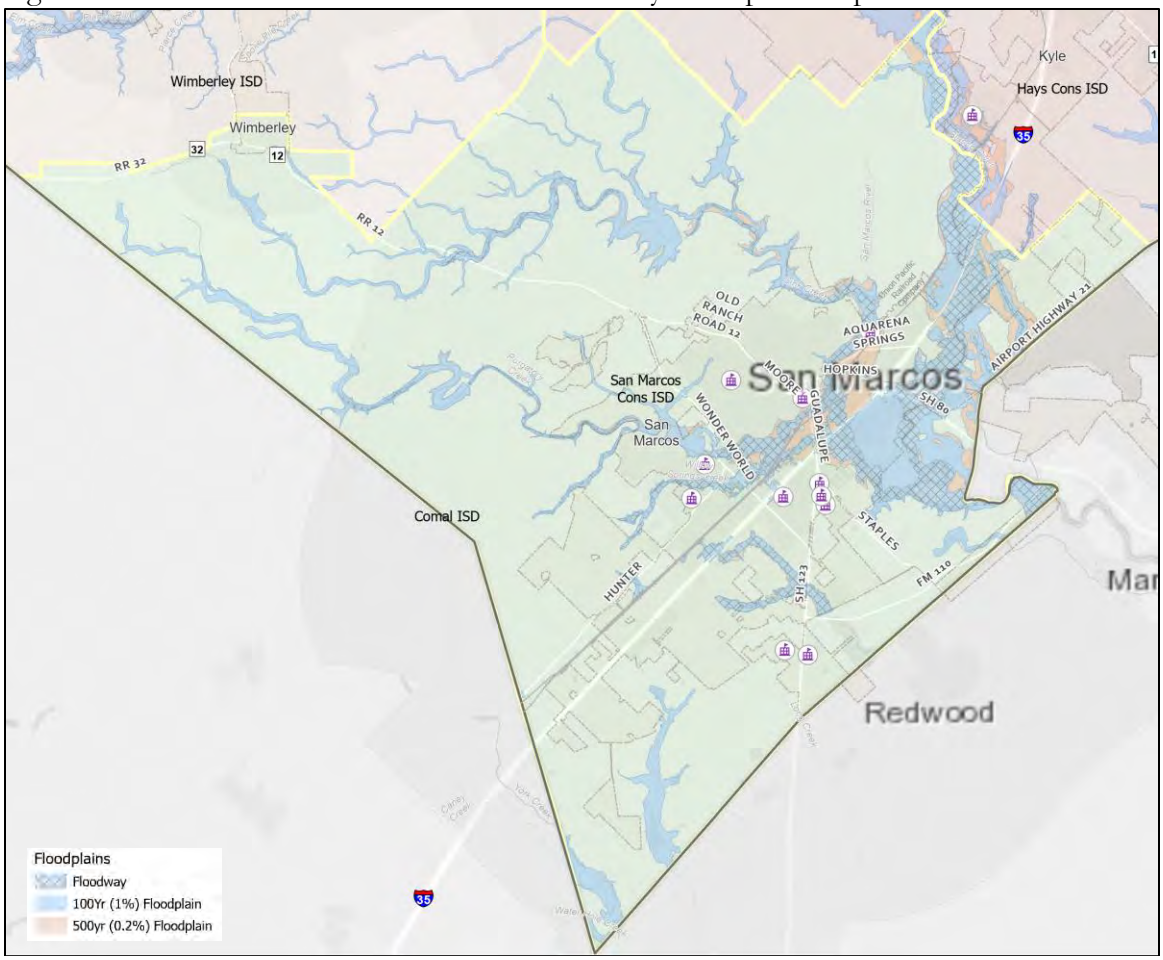
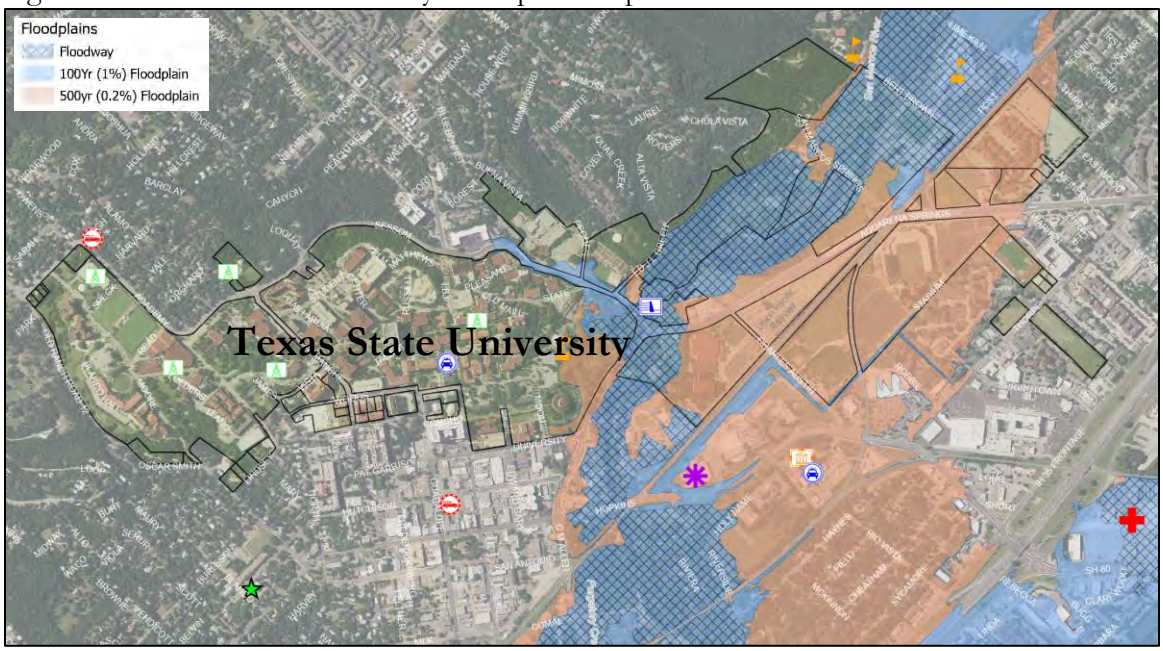


Figure 6-16: Wimberley ISD Boundary Floodplain Map

Figure 6-17: Texas State University Floodplain Map



Extent

Flood event severity is a complex science studied by hydrologists and engineers. The severity of a flood event is established by a combination of several factors including stream and river basin topography and physiography, precipitation, weather patterns, recent soil moisture conditions, and degree of vegetative clearing and impervious surface. Urbanization, due to its relationship to increased impervious cover, contributes to flood severity. Based on historical occurrences, floods events can last anywhere from a couple of hours to several days.

A Flood Zone provides a measure of a flood's intensity and magnitude. A base flood is defined by FEMA as a flood having a one percent change of being equaled or exceeded in any given year. It is also known as the "100-year flood" or the "1% annual chance event". The base flood is the national standard used by the National Flood Insurance Program. Flood zones are delineated on Flood Insurance Rate Maps, and the depths of flooding can be interpreted from the summary data and profiles in the Flood Insurance Study. Flood depths may range from less than one foot to more than 5 feet in places, and depending on the severity of the event (as measured in annual chance exceedance). Table 6-1 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 planning area and determine the intensity of a potential flood event.

Table 6-1: FEMA Flood Zone Categories

Flood Zone	Description
Floodway	A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Communities must regulate development in these floodways to ensure that there are no increases in upstream flood elevations. For streams and other watercourses where FEMA has provided Base Flood Elevations (BFEs), but no floodway has been designated, the community must review floodplain development on a case-by-case basis to ensure that increases in water surface elevations do not occur, or identify the

	need to adopt a floodway if adequate information is available.
Zone A	Areas with a 1% annual chance of flooding and a 26% 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 AE	Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Base Flood Elevations (BFEs) are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
Zone AO	Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.
0.2 SFHA	These are the areas that have a 0.2 percent chance of being equaled or exceeded on any given year.
Zone X	The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are Zone X.

Historical Occurrence

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 reported flood events 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 6-2 identifies historical flood events that resulted in damages, injuries, or fatalities within the planning area. Historical Data is provided by the Storm Prediction Center (NOAA), NCEI database for Hays County. There have not been any events recorded past the listed dates.

Figure 6-18: Blanco River Flood, Memorial Day 2015

Table 6-2: Historical Flood Events, 1997-2023

Location	Date	Time	Deaths	Injuries	Property Damage	Crop Damage
Countywide	5/23/1997	6:00 PM	0	0	$10,000	$0
Countywide	6/6/1997	3:00 PM	0	0	$10,000	$0
Countywide	6/7/1997	8:00 AM	0	0	$15,000	$0
Countywide	6/8/1997	11:00 PM	2	7	$2,500,000	$50,000
Countywide	6/21/1997	10:30 AM	0	0	$5,000	$0
Countywide	6/22/1997	8:00 AM	0	0	$50,000	$50,000
Countywide	2/21/1998	5:45 PM	0	0	$5,000	$0
Countywide	7/3/1998	11:30 PM	0	0	$20,000	$0

Countywide	8/22/1998	3:00 PM	0	0	$20,000	$10,000
Countywide	8/23/1998	7:30 AM	0	0	$10,000	$0
Countywide	10/17/1998	7:30 AM	0	100	$500,000	$50,000
	10/17/1998	10:00 AM	0	25	$4,000,000	$50,000
	10/17/1998	10:00 AM	0	25	$4,000,000	$50,000
Countywide	6/21/1999	1:00 PM	0	0	$3,000	$0
Countywide	6/9/2000	12:30 PM	0	0	$15,000	$0
Countywide	11/2/2000	7:30 PM	0	0	$20,000	$0
	11/4/2000	5:00 AM	0	0	$0	$0
North Portion	8/26/2001	8:00 PM	0	0	$10,000	$0
Countywide	8/31/2001	4:00 AM	0	0	$20,000	$0
Countywide	8/31/2001	8:30 PM	0	0	$30,000	$20,000
Countywide	11/15/2001	10:00 AM	0	20	$200,000	$50,000
	11/15/2001	3:30 PM	0	0	$0	$0
West Portion	6/30/2002	5:45 AM	0	0	$10,000	$0
	7/1/2002	12:00 AM	0	0	$0	$0
South Portion	7/1/2002	8:30 PM	0	0	$0	$0
Countywide	7/2/2002	5:45 AM	0	0	$0	$0
West Portion	7/3/2002	5:00 AM	0	0	$0	$0
West Portion	7/5/2002	3:30 AM	0	0	$0	$0
South Portion	9/19/2002	2:30 PM	0	0	$0	$0
South Portion	10/24/2002	11:30 AM	0	0	$0	$0
Countywide	11/4/2002	12:45 PM	0	0	$0	$0
Countywide	2/20/2003	8:15 AM	0	0	$10,000	$0
West Portion	6/13/2003	6:30 PM	0	0	$5,000	$0
South Portion	9/11/2003	9:30 PM	0	0	$3,000	$0
Northwest Portion	1/16/2004	6:30 PM	0	0	$3,000	$0
East Portion	6/5/2004	12:30 AM	0	0	$0	$0
Countywide	6/9/2004	11:30 AM	0	0	$350,000	$0
Driftwood	6/26/2004	5:30 PM	0	0	$0	$0
West Portion	6/27/2004	10:00 AM	0	0	$0	$0
West Portion	6/28/2004	10:00 AM	0	0	$0	$0
Countywide	6/29/2004	10:30 AM	0	0	$0	$0
South Portion	6/30/2004	3:30 AM	0	0	$0	$0
	6/30/2004	4:00 AM	0	0	$0	$0
West Portion	7/25/2004	6:300 PM	0	0	$0	$0
Countywide	10/2/2004	4:30 AM	0	0	$0	$0
Countywide	10/23/2004	5:00 AM	0	0	$0	$0
	10/23/2004	10:00 AM	0	0	$0	$0
	10/24/2004	12:45 AM	0	0	$0	$0
San Marcos	11/14/2004	9:00 PM	1	0	$0	$0
Countywide	11/16/2004	11:00 PM	0	0	$0	$0
	11/17/2004	4:45 AM	0	0	$0	$0
Countywide	11/21/2004	1:30 PM	0	0	$0	$0
Countywide	11/22/2004	12:30 AM	0	0	$0	$0
Countywide	11/22/2004	9:00 AM	0	0	$0	$0
Southeast Portion	11/23/2004	9:30 AM	0	0	$0	$0
Buda	5/29/2005	10:00 PM	0	0	$0	$0
South Portion	5/6/2006	2:30 AM	0	0	$0	$0

Kyle	1/13/2007	7:30 AM	0	0	$0	$0
Wimberley	3/11/2007	10:30 PM	1	0	$0	$0
Wimberley	3/12/2007	2:30 AM	0	0	$0	$0
Henly	3/30/2007	9:30 AM	0	0	$0	$0
Driftwood	3/30/2007	2:00 PM	0	0	$0	$0
Henly	5/2/2007	10:30 PM	0	0	$0	$0
Kyle	6/20/2007	11:00 AM	0	0	$0	$0
Henly	7/2/2007	6:30 PM	0	0	$0	$0
Wimberley	7/4/2007	11:30 AM	0	0	$0	$0
Dripping Springs	7/20/2007	1:00 PM	0	0	$100,000	$0
Dripping Springs	7/21/2007	1:30 PM	0	0	$0	$0
Wimberley	7/23/2007	5:00 PM	0	0	$0	$0
Kyle	7/25/2007	1:00 PM	0	0	$0	$0
Wimberley	7/28/2007	11:30 AM	0	0	$0	$0
Dripping Springs	8/16/2007	6:00 PM	0	0	$0	$0
Wimberley	9/10/2009	2:30 PM	0	0	$0	$0
Henly	5/17/2010	6:23 PM	0	0	$0	$0
Kyle	6/9/2010	3:40 AM	0	0	$0	$0
Wimberley	6/9/2010	4:30 AM	0	0	$0	$0
Driftwood	9/7/2010	10:00 PM	0	0	$0	$0
San Marcos	9/8/2010	9:10 AM	0	0	$0	$0
Niederwald	2/4/2012	3:30 PM	0	0	$0	$0
Wimberley	2/4/2012	3:30 PM	0	0	$0	$0
Driftwood	5/10/2012	10:30 PM	0	0	$0	$0
Driftwood	5/11/2012	2:00 AM	0	0	$0	$0
Dripping Springs	10/13/2013	5:00 AM	0	0	$0	$0
Wimberley	10/31/2013	3:00 AM	0	0	$1,000,000	$0
Wimberley	10/31/2013	6:30 AM	0	0	$0	$0
Dripping Springs	5/12/2014	11:15 PM	0	0	$0	$0
San Marcos	5/13/2014	1:00 AM	0	0	$0	$0
San Marcos	5/27/2014	7:00 AM	0	0	$0	$0
Fitzhugh	5/17/2015	7:00 AM	0	0	$0	$0
Wimberley	5/23/2015	10:11 PM	0	0	$0	$0
Wimberley	5/24/2015	3:00 AM	10	0	$100,000,000	$0
Kyle	5/24/2015	2:17 AM	0	0	$100,000,000	$0
Henly	5/30/2015	3:16 PM	0	0	$0	$0
San Marcos Lowman Ar	5/30/2015	4:15 PM	0	0	$5,000	$0
Fitzhugh	6/14/2015	6:46 AM	0	0	$0	$0
San Marcos	6/28/2015	9:45 PM	0	0	$0	$0
Driftwood	10/30/2015	7:00 AM	0	0	$10,000,000	$0
Wimberley	10/30/2015	7:58 AM	0	0	$1,000,000	$0
Kyle	10/30/2015	8:12 AM	0	0	$0	$0
Kyle	10/30/2015	9:54 AM	0	0	$0	$0
San Marcos	5/19/2016	9:25 AM	0	0	$0	$0
Fitzhugh	5/19/2016	10:02 AM	0	0	$0	$0
Buda	5/26/2016	11:03 AM	0	0	$0	$0
Buda	5/27/2016	1:40 AM	0	0	$0	$0
Wimberley	6/2/2016	5:03 AM	0	0	$0	$0
Driftwood	8/16/2016	6:57 AM	0	0	$0	$0
Buda	8/20/2016	3:55 PM	0	0	$0	$0

San Marcos	9/26/2016	11:13 AM	0	0	$0	$0
San Marcos Lowman Ar	4/11/2017	11:20 AM	0	0	$0	$0
San Marcos Lowman Ar	4/11/2017	12:22 PM	0	0	$500,000	$0
Kyle	8/26/2017	9:14 AM	0	0	$100,000	$0
San Marcos Lowman Ar	3/28/2018	2:22 AM	0	0	$0	$0
Kyle	3/28/2018	4:33 AM	0	0	$0	$0
Kyle	3/28/2018	10:43 AM	0	0	$0	$0
Kyle	9/9/2018	7:26 AM	0	0	$0	$0
Wimberley	9/9/2018	7:45 AM	0	0	$0	$0
Dripping Springs	5/3/2019	5:45 PM	1	0	$0	$0
Dripping Springs	5/3/2019	6:25 PM	0	0	$100,000	$0
Fitzhugh	5/8/2019	11:39 AM	0	0	$0	$0
Kyle	4/3/2020	3:54 PM	0	0	$0	$0
Niederwald	6/28/2020	10:55 PM	0	0	$0	$0
Buda	9/4/2020	8:00 AM	0	0	$0	$0
Buda	9/4/2020	8:05 AM	0	0	$0	$0
Kyle	5/1/2021	2:08 PM	0	0	$0	$0
Wimberley	8/2/2021	7:15 AM	0	0	$0	$0
Wimberley	8/2/2021	7:50 AM	0	0	$0	$0
Wimberley	9/29/2021	1:00 AM	0	0	$0	$0
San Marcos Lowman Ar	9/29/2021	2:00 AM	0	0	$0	$0
Buda	10/13/2021	10:46 PM	0	0	$0	$0
San Marcos	10/14/2021	7:30 AM	0	0	$0	$0
Kyle	10/26/2023	11:12 AM	0	0	$0	$0
San Marcos	10/26/2023	11:48 AM	0	0	$0	$0
San Marcos Lowman Ar	10/26/2023	12:40 PM	0	0	$0	$0
San Marcos Lowman Ar	10/26/2023	2:45 PM	0	0	$0	$0

*Only recorded events with fatalities, injuries, and/or damages are listed, 130 total events from 1997-2023.
*Values are in 2023 dollars.

Significant Events

May 24, 2015

Thunderstorms produced heavy rain that caused flash flooding in Kyle and San Marcos. The majority of the flooding was along the Blanco and San Marcos Rivers. A massive flood wave came down the Blanco River from Wimberley. Huge amounts of debris came with the flood waters. Four people were trapped on a roof awaiting a helicopter rescue in Kyle. I-35 was closed in both directions in San Marcos when the Blanco River flooded and overtopped the interstate. Hwy 80 bridge was also overtopped with flood water just east of I-35. Highway 80 was closed with debris bumping into a bridge structure. Water flooded the Aspen Apartment complex and water was reported to be up to the top of car tires in the parking lot. The Hays County jail in San Marcos was evacuated due to flooding. Many homes along River Road were flooded as well as businesses along the I-35 frontage road as the San Marcos River started to backup into town. All along the Blanco River in Hays County 1515 structures were impacted with 321 houses destroyed and an additional 376 receiving Major damage according to assessments. It is estimated that there were 100 million dollars in insured losses for this flash flood.

October 17, 1998

In Hays County, the flooding along the San Marcos River was most devastating to the eastern part of San Marcos, with many permanent homes flooded and several mobile homes

washed from their sites. Homes and apartments were flooded along the San Marcos River on Riverside and Riviera Drives, along Purgatory Creek, and along Uhland and Post Roads.

Probability of Future Events

FEMA states that flooding is the most common natural disaster in the United States, affecting every region and every state. Based on recorded historical occurrences and extent within the Hays planning area, 134 recorded flooding events in the 25-year reporting period provides a probability of occurrence of at least 1 event per year. This frequency supports a highly likely probability of future events, meaning that an event is probable in the next year.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

Vulnerability and Impact

The flood hazard areas throughout Hays County are subject to periodic inundation, which may result in loss of life and property, reduction in health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief, all of which adversely affect public safety. Riverine Flooding has killed and injured more people than any other weather-related hazard and the greatest number of deaths is due to people driving into water going over roads. For this study, the location and proximity to the floodplain or SFHA determines a property's vulnerability to a flood. Structures that lie along banks of a waterway are the most vulnerable and are often repetitive loss structures. Future development is encouraged to be outside of the floodplain, although there are some critical facilities, homes, and businesses already located in the floodplain due to their development before current floodplain regulations. Table 6-3 below describes the critical facilities that are withing either the 1% or 0.2 annual chance floodplain by participating jurisdiction. Hays County, City of Buda, and Texas State University all exhibit some increased vulnerability and possible impacts to the location of facilities listed.

Table 6-3: Critical Facilities in the 1% or 0.2% Annual Chance Floodplain by Jurisdiction

Jurisdiction	Critical Facilities
Hays County	GBRA Structures (1 Water Treatment Plant, 1 Wastewater Plant), 2 Communication Towers
City of Buda	1 Constable's Office, 1 Sheriff's Office, 1 Wastewater Plant, 2 Assisted Living Facilities
City of Dripping Springs	1 Shelter
City of Hays	None
City of Kyle	None
City of Mountain City	None
City of Niederwald	None
City of Uhland	None
City of Wimberley	None
City of Woodcreek	None
Village of Bear Creek	None

Dripping Springs ISD	None
Hays Consolidated ISD	None
San Marcos Consolidated ISD	None
Wimberley ISD	None
Texas State University	1 Arena, 2 Stadiums, 1 Baseball Field, 1 Student Housing Center, 1 Meadows Center for Water and the Environment

Flood losses are exacerbated by the cumulative effect of obstructions in floodplains. Occupancy of flood hazard areas is especially hazardous when development is inadequately elevated, flood-proofed, or otherwise protected from flood damage. Moreover, increased development in floodplain can increase flood heights and velocities making flooding more intense and widespread then predicted. Mitigation actions are included to address flood maintenance issues as well (Section 15), such as routinely clearing debris from roadside ditches and bridges and hardening existing facilities against hazards such as flooding. Expanding drainage culverts and storm water structures to more adequately convey flood waters is critical to flood mitigation as well. Table 6-4 below shows Hays County dollar losses from January 1997 through December 2023.

Table 6-4: Hays County Impact from Flooding

Time Period	Deaths	Injuries	Property Damage	Crop Damage
Loss Summary, Hays County				
25-year Total	15	177	$224,629,000	$330,000
Per Year	0.6	7.1	$8,985,160	$13,200
Per Capita Dollar Losses (2022 Population - 269,225)				
25-year Total			$834.35	$1.23
Per Year			$33.37	$0.05

Source: NCEI Storm Events Database 1997 to 2023 subset for Texas

Table 6-5 below distributes the countywide impacts presented in table 6-4 amongst the various participating jurisdictions based on location information.

Table 6-5: Flood Losses by Jurisdiction 1997-2023

Jurisdiction	Est. Prop. Losses	Est. Crop Losses	Total Est. Losses
Hays County*	$22,329,000	$300,000	22,629,000
City of Buda	$0	$0	$0
City of Dripping Springs	$200,000	$0	$200,000
City of Hays	$0	$0	$0
City of Kyle	$100,100,000	$0	$100,100,000
City of Mountain City	$0	$0	$0
City of Niederwald	$0	$0	$0
City of Uhland	$0	$0	$0
City of Wimberley	$102,000,000	$0	$102,000,000
City of Woodcreek	$0	$0	$0
Village of Bear Creek	$0	$0	$0
Total	$224,629,000	$330,000	$224,929,000

*Hays County totals include jurisdictions within the county that are not participating in the plan

National Flood Insurance Program (NFIP) Participation

In addition to all eligible participating jurisdictions, Hays County is part of the National Flood Insurance Program (NFIP). The NFIP protects businesses and homeowners from devastating losses in the event of a flood hazard. 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, none of the participating jurisdictions in this Hazard Mitigation Plan participate in CRS. It is the purpose of all 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. These communities are guided by their local Floodplain Management Ordinance and will continue to comply with NFIP requirements through their local permitting, inspection, and record - keeping requirements for new and substantially developed construction. After an event, each participating jurisdiction with a Floodplain Management Ordinance sends out local inspection and appraisal teams in cooperation with Hays County Emergency Management to survey and document the damage that all structures have received within the boundaries of that jurisdiction. This is done to determine if the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure. A building must be brought into compliance with the current local floodplain management ordinance if a building in a Special Flood Hazard Area is determined by local official to be a Substantial Improvement/ Substantial Damage structure. This may involve elevating or modifying a structure to meet floodplain standards, relocating or demolishing a structure, or floodproofing non-residential or historic buildings. The NFIP participating jurisdictions each have a floodplain manager; the city manager serves this role for the cities, and the emergency management coordinator serves this role for Hays County.

Table 6-5: Repetitive Loss and Severe Repetitive Loss Properties

Jurisdiction	Number RL of Structures	Number RL of Losses	Number SRL of Structures	Number SRL of Losses
Hays County	47	110	3	10
City of Buda	4	8	0	0
City of Dripping Springs	2	4	0	0
City of Hays	0	0	0	0
City of Kyle	0	0	0	0
City of Mountain City	1	2	0	0
City of Niederwald	0	0	0	0
City of Uhland	0	0	0	0
City of Wimberley	16	35	1	2
City of Woodcreek	2	4	0	0
Village of Bear Creek	0	0	0	0
Total	72	163	4	12

There are several repetitive loss and severe repetitive loss properties as defined by the NFIP within the Hays County planning area. These are residential structures with a combination of slab and pier and beam foundations.

SECTION 7: DROUGHT

Description

Drought is deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people. Droughts are defined as a moisture deficit at a magnitude high enough to have social, environmental or economic effects and can become very prolonged and persist from one year to the next. Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality. The Texas Hazard Mitigation Plan describes the climate of 2/3rds of Texas Counties as arid or semi-arid with these Counties almost always in varying stages of drought.

Location

Droughts vary greatly in their intensity and duration and can occur regularly throughout Hays County, including all participating jurisdictions, equally. Drought is monitored nationwide by the National Drought Mitigation Center (NDMC) which provides the Drought Monitor map in Figure 7.1 showing the entirety of the planning area currently experiencing extreme drought (D3) conditions or exceptional drought (D4). The planning area has experienced exceptional drought conditions within the last fifteen years, particularly during the drought of summer 2011 where the entire state of Texas was in some level of drought (Figure 7.2).

Figure 7.1: US Drought Monitor, March 28, 2024

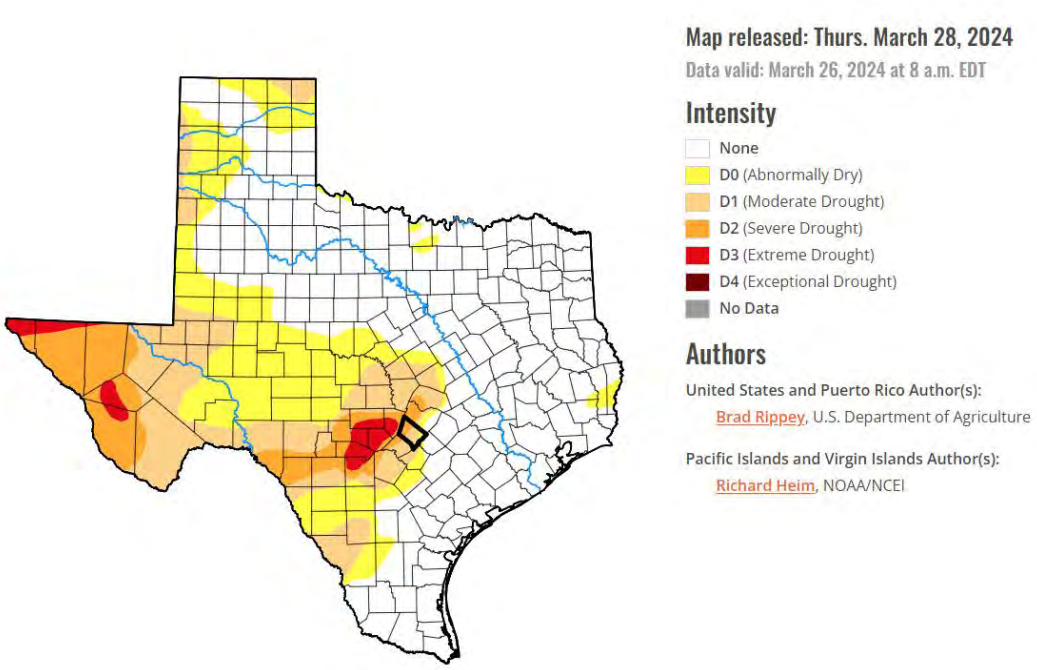
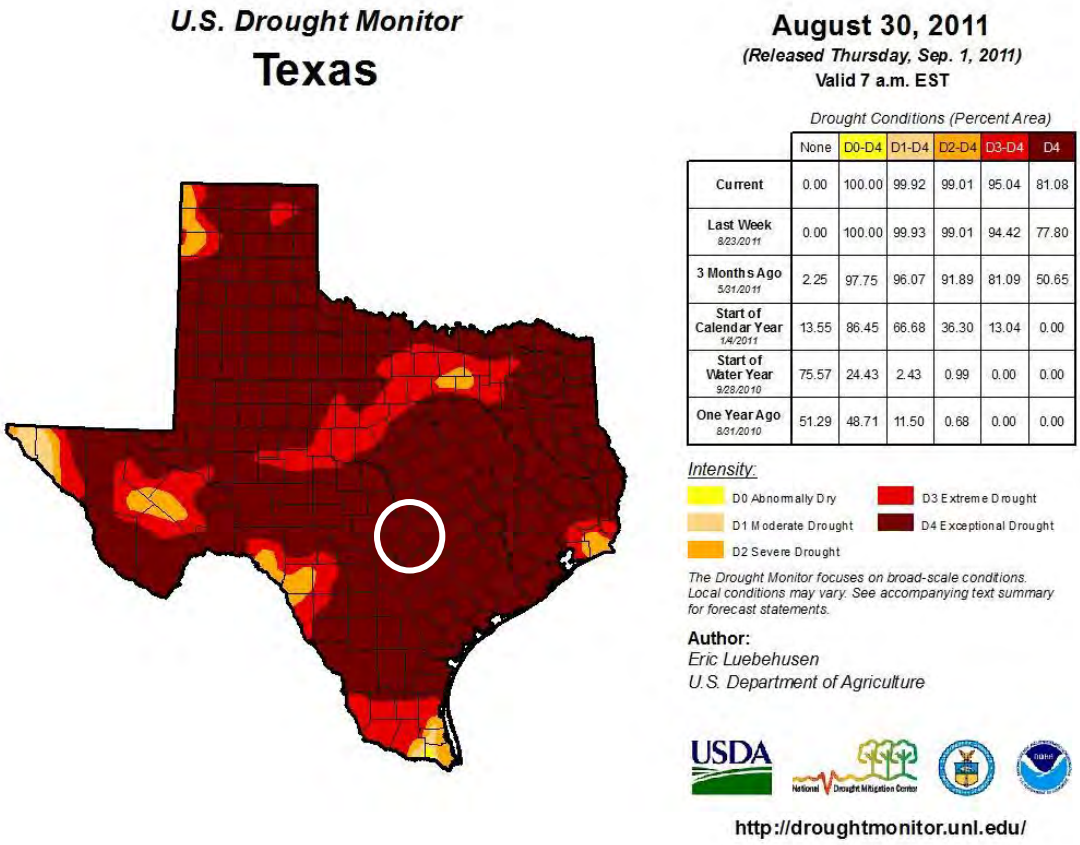


Figure 7.2: US Drought Monitor, August 30, 2011



Extent

The Palmer Drought Severity Index (PDSI) is based on precipitation and temperature and is used to measure the extent of drought. The index measures the moisture supply of the environment. The PDSI classifications vary roughly between -4.0 and +4.0 ranging from extremely dry to extremely wet periods. NOAA's United States Drought Monitor (USDM) Categories range from D0 to D4 according to the intensity of drought and are based on a number of indicators, including the PDSI, and used to describe broad scale drought conditions across the United State. Table 7.1 describes the basic PDSI classification descriptions and Table 7.1 depicts the magnitude of drought with descriptions of possible impacts.

Table 7-1: PDSI Classifications for Dry and Wet Periods	
4.00 or more	Extremely Wet
3.00 to 3.99	Very Wet
2.00 to 2.99	Moderately Wet
1.00 to 1.99	Slightly Wet
0.50 to 0.99	Incipient Wet Spell
0.49 to -0.49	Near Normal
-0.50 to -0.99	Incipient Dry Spell
-1.00 to -1.99	Mild Drought
-2.00 to -2.99	Moderate Drought
-3.00 to -3.99	Severe Drought
-4.00 or less	Extreme Drought

http://drought.unl.edu/whatis/indices.htm

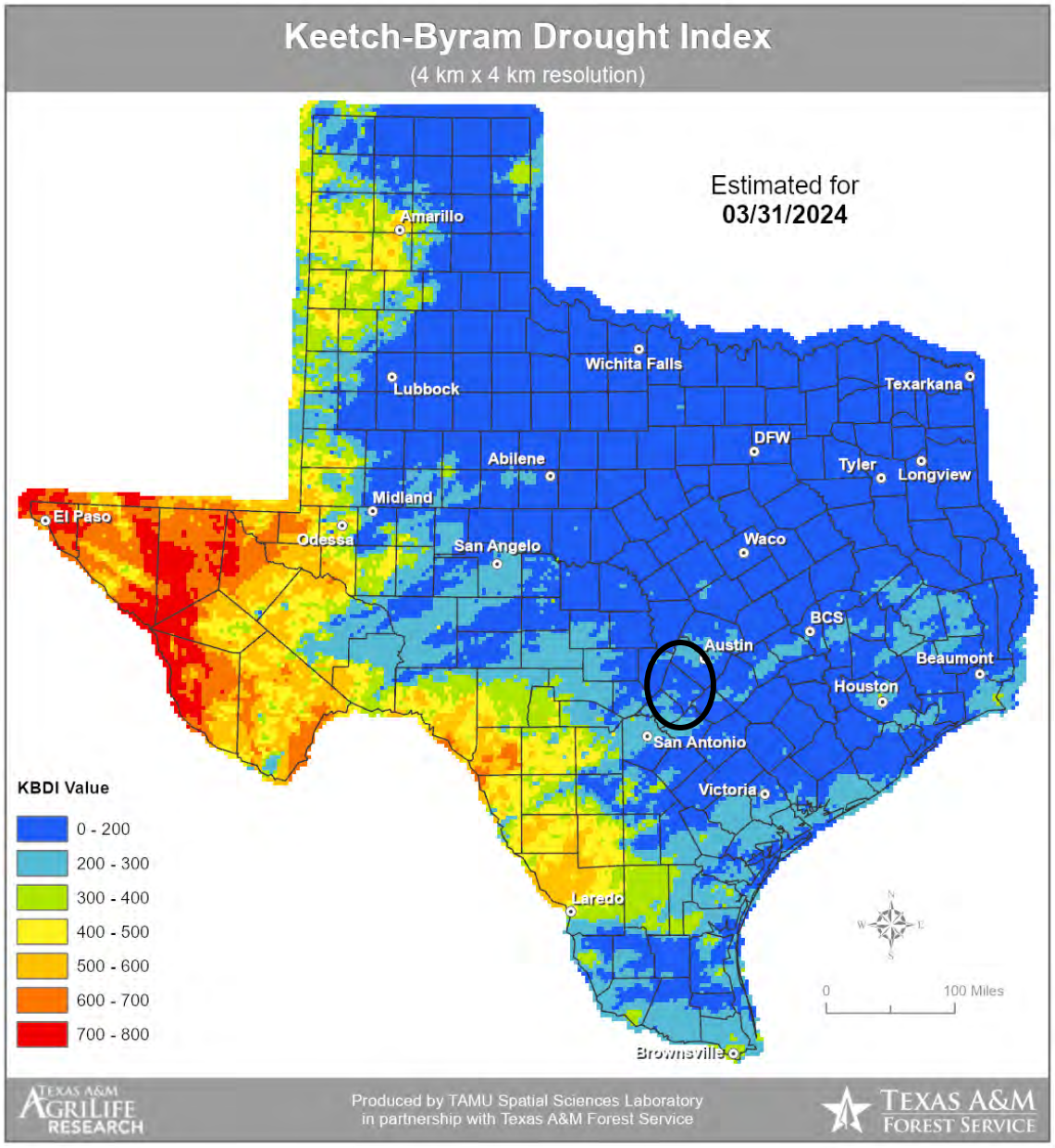
Table 7-1: Drought Severity Classification

			Ranges				
Category	Description	Possible Impacts	Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures Coming out of drought: some lingering water deficits, pastures or crops not fully recovered	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	Crop or pasture losses likely Water shortages common Water restrictions imposed	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	Major crop/pasture losses Widespread water shortages or restrictions	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Based on the extent and location for historic and current drought conditions, the Hays County planning area can anticipate a range of drought from abnormally dry to exceptional, or D0 to D4 based on the USDM Drought Intensity Category.

The Keetch-Byram Drought Index is used by the Texas Forest Service to determine the fire potential based on daily water balance, precipitation, and soil moisture. Figure 7-3 shows the Keetch-Byram Drought Index rating classification for all of Texas and color coded by County with a scale of 0 to 800 (low risk to high risk). Hays County is in the 200-300 risk category at the time this report was written. The Keetch-Byram Drought Index is also discussed in relation to wildfires in section 13.

Figure 7-3: Keetch-Byram Drought Index



Historical Occurrences

Hays County has often experienced moderate to significant drought in the past. It is difficult to identify the start of prolonged drought since they develop over an extended period of time. The hydrological impacts of drought such as depleted reservoir and groundwater levels take longer still to develop.

Significant Events

1950-1957, Statewide
Driest period in state history. By 1956, 244 of 254 counties are declared federal disaster areas with an annual estimated economic loss of $3.5 billion.

1995-1996, Statewide
Agricultural losses of more than $5 billion statewide exceed previous record.

2005, South, East, Central, and Northeast Texas
The state records only 4.93 inches average rainfall as the third driest period in 110 years.

May 2011 – March 2012, Statewide
The drought of 2011 in South Central Texas was the most severe one-year drought ever for Texas. Agricultural losses in the state due to the 2011 drought reached a record $7.62 billion, making it the costliest drought in history, according to totals by Texas AgriLife Extension Service economists. "2011 was the driest year on record and certainly an infamous year of distinction for the state's farmers and ranchers," said Dr. David Anderson, AgriLife Extension livestock economist. "The $7.62 billion mark for 2011 is more than $3.5 billion higher than the 2006 drought loss estimates, which previously was the costliest drought on record."[5] Drought conditions began in May and were exacerbated by a La Niña event causing below normal rainfall. Conditions began to improve in the spring of 2012 when the La Niña event weakened and most of South-Central Texas saw above normal rainfall.

The data used to assess the historical experience with drought for the planning area came from the NOAA's NCEI National Storms Database. This database contains extensive and authoritative information for weather related event in the country from 1997 thru 2023 (a 25-year period). Agricultural producers such as farmers and ranchers purchase crop insurance to protect their yield in the event of a natural disaster such as drought, hail, or flood. Historical crop damages are typically not found in the public record and likely much higher than quantified by NCEI data due to agricultural losses being a transaction between the agricultural land owner and insurance policy holder. Furthermore, the extent of crop loss due to drought is difficult to quantify because a drought during a growing season can impact the next two years of crop production. Table 7-2 lists historical events that have occurred in Hays County as reported in the NCEI. There have not been any events recorded past the listed dates.

Table 7-2: Historical Occurrences of Drought in Hays County

Date Range	Direct Injuries	Direct Fatalities	Property Damage	Crop Damage
July - October, 2000	0	0	$0	$0
May, 2011 – January, 2012	0	0	$0	$0
June, 2012	0	0	$0	$0
December, 2012	0	0	$0	$0
February - April, 2013	0	0	$0	$0
June – August, 2013	0	0	$0	$0
August, 2014	0	0	$0	$0
August, September, 2018	0	0	$0	$0

[5] https://today.agrilife.org/2012/03/21/updated-2011-texas-agricultural-drought-losses-total-7-62-billion/

September - November, 2019	0	0	$0	$0
January, February, 2020	0	0	$0	$0
October, 2019 - February, 2020	0	0	$0	$0
November, December, 2020	0	0	$0	$0
January, 2021	0	0	$0	$0
May, 2022 – September, 2023	0	0	$0	$0

Data provided the by NOAA drought monitor also provides a perspective of historical occurrences of drought in the planning area by summarizing the percent of area in each drought category by county on a weekly basis. The table below provides a summary of the number of weeks in each drought category or the magnitude of the drought that describes the drought condition for the majority of the county for each weekly period from 1/4/2000 to 1/17/2023. This nearly 28-year window of drought data provides a clear picture as to how often the occurrence of different drought categories can be expected in the future.

Table 7-3: Historical Drought Magnitude

Drought Category	Description	Hays County	
None	Normal to Wet Conditions	507	40%
D0	Abnormally Dry	173	14%
D1	Moderate Drought	206	16%
D2	Severe Drought	146	12%
D3	Extreme Drought	131	10%
D4	Exceptional Drought	101	8%
	Total	1,264	100%

Source: https://droughtmonitor.unl.edu/Data/DataDownload/ComprehensiveStatistics.aspx

Probability of Future Events

Based on available records of historic events from NCEI, there have been fourteen (14) time periods of drought within a 25-year reporting period. This provides a probability of occurrence of one event every one to two years. Based on the drought monitor data for a 25-year reporting period, the planning area is in severe to exceptional drought approximately 30% of the time. This frequency supports a **likely** probability of future events occurring within the Hays County planning area which means that an event is probable in the next 3 years.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

Vulnerability and Impact

Drought affects large areas creating vulnerability for people, animals, property, agriculture, and the environment. Over the entirety of the planning area the biggest impacts of drought are dead crops and grazing land, edible plants for animals, and even trees. This primarily affects farming and wildlife, but people can be directly impacted as well due to shortages of potable water supply. Communities will also ration the use of water during prolonged

drought, particularly for lawn care, swimming pools, and irrigation. Drought is related to, and can exacerbate, the natural hazards of wildfires and extreme heat. Drought can contribute to the cause of wildfires due to dying vegetation serving as ignition fuel and can be intensified by extreme heat. The impacts of drought mostly affect water shortages and crop/livestock losses and do not typically extend to buildings and critical facilities.

The entire population of Hays County is vulnerable to water supply shortages which present widespread health risks since people can only survive a few days without water. Potable water is used for many essential functions such as drinking, bathing, heating and cooling systems, and some electricity production. This affects vulnerable populations more acutely such as children, older adults, and people with illnesses or fragile health conditions. Also, vulnerable populations that do not have adequate air conditioning units in their homes are more at risk for injury or fatalities.

The planning area has a total population of 269,225 according to the 2022 ACS population estimate. Those over the age of 65 represent 12.1% (32,508) of the total population and children under the age of 5 represent 5.8% (15,529) of the total population. The total population of the county that is estimated to be below the poverty level is 10.0% (26,986). Table 7-4 presents the 2022 American Community Survey population and age cohort estimates below.

Table 7-4: Populations at Greater Risk by Jurisdiction

Jurisdiction	Population 65 and Older	Population Under 5	Population Below Poverty Level
Hays County	32,508	15,529	26,986
City of Buda	1,465	993	1,179
City of Dripping Springs	945	313	168
City of Hays	51	4	13
City of Kyle	3,579	3,606	3,457
City of Mountain City	113	71	9
City of Niederwald	165	117	238
City of Uhland	125	143	138
City of Wimberley	673	15	219
City of Woodcreek	815	113	76
Village of Bear Creek	113	26	2

Source: 2022 American Community Survey (Note: County totals include both incorporated and unincorporated areas)

The environment of the Hays County planning area is also vulnerable to damage during drought. Through lack of food and water and habitat degradation, aquatic and terrestrial species both can experience significant reductions due to death and lower reproduction rates.

Water is central to the ability of people to inhabit and transact commerce in a region and the economic impacts of drought can be significant, especially during prolonged drought. The ability to produce goods and provide services is dependent on direct and indirect access to clean water. Due to the interconnected nature of supply and production chains, the negative effects of droughts can have ripple effects on many industries and sectors of the economy. The overall impact of damages caused by periods of drought is dependent on its extent and duration. It is rare that drought alone leads to a direct risk to the health and safety of people in the Hays County planning area, however severe water shortages could lead to a direct risk to the health and safety of the population. The severity of the impact of a drought event can

be mitigated by preparedness and planning by the community comprised of government, businesses, and citizens.

The National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln developed the drought impact reporter to provide a national database of drought impacts by county. The number of impacts in ten distinct impact categories from 2005-Present are provided below. Table 7-5 lists the drought impacts in Hays County based on reports received by the Drought Impact Reporter. These reports are predominantly provided by the media, but can also come from NWS, other agencies, CoCoRaHS, legacy reports, and user reports.

Table 7-5: Drought Impacts, 2005-Present

Hays County	
Agriculture	97
Business & Industry	6
Energy	0
Fire	33
Plants & Wildlife	84
Relief, Response & Restrictions	80
Society & Public Health	22
Tourism & Recreation	13
Water Supply & Quality	80
County Impact Reports	194

Source: https://droughtreporter.unl.edu/map/

Based on 25 years of data from the NCEI, the direct impacts of droughts in the Hays County planning area have resulted in no known property or crop losses and no known injuries and fatalities. The impact to the planning area from drought has been limited and negligible based on data reported to the NCEI from 1997-2023. Drought impact reports like those presented above, however, come from a number of different sources and provide a different perspective of the impact that drought can have on communities beyond direct monetary property or crop damages that typically aren't reported publicly. It is important to consider that crop damage information is rarely publicly reported and water availability issues are not easily quantified so the impact is likely much more pronounced than the direct losses attributed to this hazard.

SECTION 8: WINDSTORMS

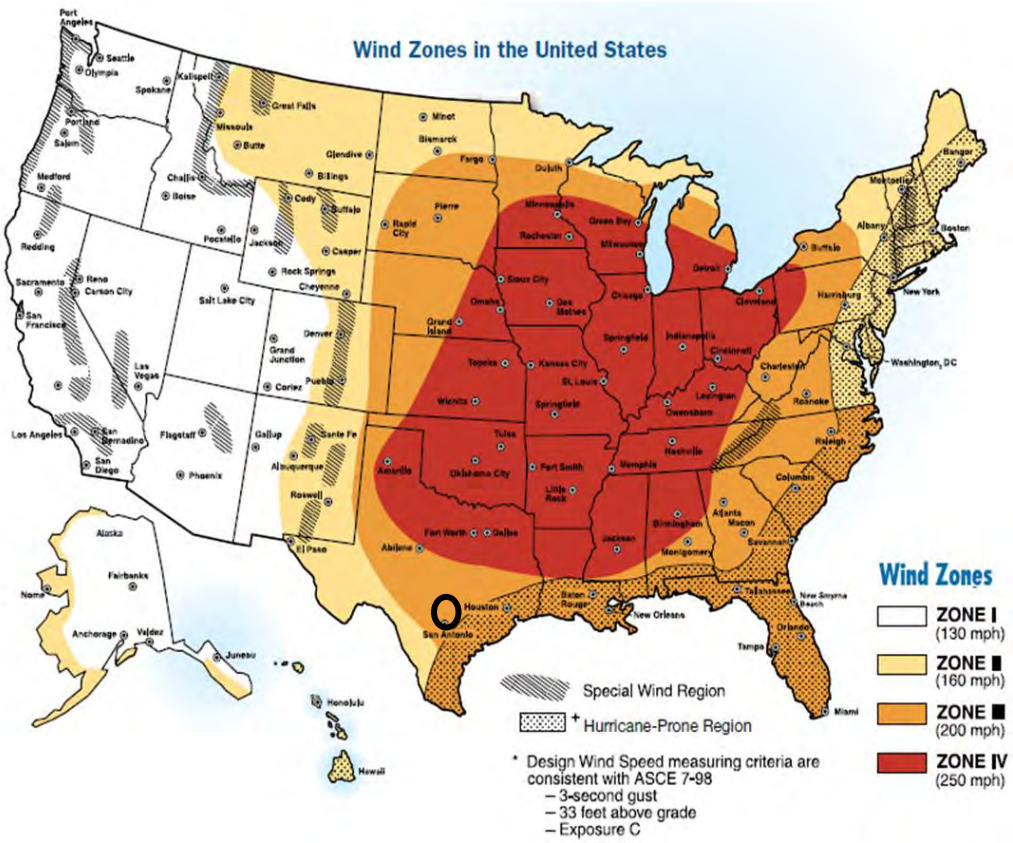
Description

Severe Wind can occur as straight-line events (derechos), or with other natural hazards including hurricanes and severe thunderstorms. According to the National Weather Service (NWS), a thunderstorm occurs when thunder accompanies rainfall. Thunderstorms create extreme wind events and are created when heat and moisture near the Earth's surface is transported to the upper levels of the atmosphere. The clouds, precipitation, and severe wind that become the thunderstorm are the result of this process. Straight line winds can have gusts of 87 knots (100 mph) or more and 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

Thunderstorms are unpredictable and can occur anywhere in the planning area. Hays County, along with all participating jurisdictions, is equally at risk of thunderstorm winds. According to FEMA's Wind Zones map of the United States (Figure 8-1), the planning area falls under Wind Zone II, which is associated with winds that can reach up to 160 mph. This area is also situated near the coast, making it vulnerable to hurricanes.

Figure 8-1: FEMA wind zones in the United States



Source: FEMA and the American Society of Civil Engineers (ASCE)

Extent

The extent or magnitude of a specific thunderstorm wind event is measured by the Beaufort Wind Scale, developed in 1805. Table 8-1 describes the Beaufort Wind Scale, with different intensities of wind events in terms of speed and effect, from calm to violent and destructive. Based on historical occurrences, the planning area is expected to experience a windstorm with a maximum magnitude of 70 Knots.

Table 8-1: Beaufort Wind Scale

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects	
			On the Water	On Land
0	Less than 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	17-21	Fresh Breeze	Moderate waves 4-8 ft taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger waves 8-13 ft, whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Sea heaps up, waves 13-19 ft, white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Moderately high (18-25 ft) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Twigs breaking off trees, generally impedes progress
9	41-47	Strong Gale	High waves (23-32 ft), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Very high waves (29-41 ft) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Exceptionally high (37-52 ft) waves, foam patches cover sea, visibility more reduced	
12	64+	Hurricane	Air filled with foam, waves over 45 ft, sea completely white with driving spray, visibility greatly reduced	

Source: www.spc.noaa.gov/faq/tornado/beaufort.html

Historical Occurrences

Historical occurrences of thunderstorm wind events with resulting damages that have impacted the Hays County planning area are shown below in Table 8-2. Only high wind

events associated with thunderstorm wind are considered in this section. Wind damage associated with other hazards, such as tornados or hurricanes, are accounted for in other sections. From 1997-2023, there have been 57 thunderstorm wind events recorded in the NCEI storm events database that have impacted the Hays County planning area. The NCEI, organized under the National Oceanic and Atmospheric Administration, is the largest archive available for climate data, however, it is important to note that only incidents and damages reported to the NCEI have been factored into this risk assessment. Some occurrences seem to appear multiple times which is due to reports from various locations throughout the planning area. There have not been any events recorded past the listed dates.

Table 8-2: Historical Thunderstorm-Wind Events in Hays County, 1997-2023

Jurisdiction	Month	Day	Year	Magnitude	Injuries	Fatalities	Property Damage	Crop Damage
Buda	July	22	1997		0	0	$5,000	$0
San Marcos	March	7	1998		0	0	$30,000	$0
San Marcos	March	16	1998		0	0	$30,000	$0
Buda	August	30	1998		0	0	$20,000	$0
Dripping Spgs	March	26	2000		0	0	$20,000	$0
San Marcos	July	31	2000		0	0	$5,000	$0
Kyle	October	22	2000		0	0	$15,000	$0
Countywide	March	19	2002		0	0	$100,000	$100,000
San Marcos Muni Arpt	March	19	2002	50	0	0	$0	$0
Buda	April	7	2002		0	0	$100,000	$0
San Marcos	June	2	2003	60	0	0	$7,000,000	$0
San Marcos	August	11	2003	60	0	0	$30,000	$0
Dripping Spgs	October	13	2004	60	0	0	$50,000	$0
Dripping Spgs	April	18	2006	70	0	0	$0	$0
San Marcos	January	13	2007	70	0	0	$100,000	$0
San Marcos	April	25	2007	70	0	0	$50,000	$0
San Marcos	June	3	2007	58	0	0	$0	$0
San Marcos	June	11	2009	50	0	0	$50,000	$0
San Marcos Lowman Ar	August	24	2010	50	0	0	$0	$0
Niederwald	April	2	2013	43	0	0	$500	$0
San Marcos Lowman Ar	May	9	2013	50	0	0	$0	$0
Wimberley	June	2	2013	43	0	0	$200	$0
Niederwald	June	13	2013	43	0	0	$5,000	$0
Driftwood	April	14	2014	50	0	0	$0	$0
Kyle	June	12	2014	56	0	0	$5,000	$0
Driftwood	June	12	2014	61	0	0	$0	$0
Dripping Spgs	June	12	2014	52	0	0	$0	$0
Fitzhugh	June	12	2014	61	0	0	$0	$0

Fitzhugh	June	12	2014	56	0	0	$0	$0
Kyle	June	12	2014	52	0	0	$0	$0
Kyle	March	18	2016	52	0	0	$0	$0
Wimberley	March	24	2016	52	0	0	$0	$0
Wimberley	March	24	2016	52	0	0	$0	$0
Mt Gaynor	April	30	2016	61	0	0	$0	$0
Kyle	April	30	2016	61	0	0	$0	$0
Fitzhugh	May	4	2018	70	0	0	$25,000	$0
Dripping Spgs	May	3	2019	51	0	0	$0	$0
Kyle	June	9	2019	52	0	0	$1,000	$0
San Marcos Lowman Ar	June	9	2019	65	0	0	$5,000	$0
Niederwald	June	9	2019	70	0	0	$5,000	$0
Kyle	January	10	2020	65	0	0	$100,000	$0
Fitzhugh	May	15	2020	50	0	0	$0	$0
Kyle	August	2	2020	52	0	0	$0	$0
Kyle	August	2	2020	52	0	0	$100	$0
Buda	May	18	2021	61	0	0	$5,000	$0
San Marcos	July	19	2021	61	0	0	$25,000	$0
Buda	May	24	2022	50	0	0	$1,000	$0
Wimberley	June	27	2022	52	0	0	$2,000	$0
San Marcos Lowman Ar	June	27	2022	52	0	0	$2,000	$0
San Marcos	June	27	2022	61	0	0	$10,000	$0
San Marcos Lowman Ar	June	27	2022	52	0	0	$2,000	$0
San Marcos Lowman Ar	October	24	2022	52	0	0	$0	$0
San Marcos	November	4	2022	52	0	0	$0	$0
Dripping Spgs	March	2	2023	50	0	0	$0	$0
Dripping Spgs	March	2	2023	50	0	0	$0	$0
Driftwood	June	21	2023	51	0	0	$0	$0
Driftwood	June	21	2023	51	0	0	$0	$0

Source: NCEI Storm Events Database

Significant Events

June 2, 2003 – San Marcos

A line of thunderstorms formed along a cold front in central Texas and moved quickly southward. As the storms moved through Hays County, they produced a downburst that struck the town of San Marcos and spread southeastward into Caldwell County. An NWS Storm Survey Team reported numerous large tree limbs of diameter from 6 to 12 inches broken or blown over in San Marcos and along the I-35 corridor. Blown over trees and limbs were generally pointed toward a southeast direction. Many business signs and awnings were damaged along with roof damage to several businesses. Metal or tin roof in some businesses was peeled off on the side of the incoming high winds. Based on the damage and

its pattern, it appeared that damage was the result of straight-line winds indicative of a strong downburst estimated at 60 knots or greater. The strong winds also toppled over a semi-truck. At Dudley Johnson Park the winds knocked over portable toilets and blew down numerous trees across the roads. Total damage in the town was estimated at $7 million.

March 19, 2002 – Hays County
The derecho continued across Hays County where winds estimated at 60 to 70 knots knocked over trees, brought down large limbs and damaged homes and vehicles. The worst damage was in the southeast part of the county, near the town of San Marcos, where several power lines were blown down.

Probability of Future Events

Windstorms are most likely to strike during the spring in the months of March, April, and May. There is also a brief period in September when the likelihood of windstorm hazards increases. The Hays County planning area has experienced, on average, approximately 1 thunderstorm wind events every one to two years. Wind events categorized as Forces 10-12 on the Beaufort scale with hurricane force winds have routinely impacted the area and is the level of windstorm hazard the area should mitigate for in the future. The probability of future events is **likely**, meaning that an event is probable within the next three years for the planning area.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

Vulnerability and Impact

Thunderstorm winds exist at different strength levels and occur randomly throughout the planning area with the potential to cause injury and property damage. All people, animals, existing and future structures, and facilities in Hays County planning area could potentially be impacted and remain vulnerable to strong winds. A thunderstorm wind event can impact human health including injuries from windblown debris, direct injuries, traffic accidents, and in rare cases, fatalities. Debris from damaged structures can also cause damage to other buildings not directly impacted by the event. Infrastructure, such as power lines, poles, radio towers, water towers, and street lights are vulnerable to the impacts of severe thunderstorm winds. In addition, street signs, garbage cans, outdoor furniture, storage sheds, roofs, vehicles, trees, and other objects commonly found outdoors are at risk. While these vulnerabilities do exist, the overall impacts of thunderstorm wind are limited in scope and have not yet resulted in any reported injuries or fatalities.

The Hays County planning area features mobile and manufactured home parks which are more vulnerable to thunderstorm winds than site-built structures. These types of homes are also located in rural areas throughout the county, which could result in limited access to essential services and emergency aid in the event of a disaster. Based on 2022 American Community Survey estimates, there are 101,449 housing units in Hays County of which 4.8%, or 4,872 units, are mobile or manufactured homes. In addition, 8,432 (8.3%) of the housing units in the overall planning area were built before 1980. These structures are likely

to have been built to less stringent construction standards than newer construction and could be more susceptible to damages during significant events.

Table 8-3. Structures at Greater Risk by Jurisdiction

Jurisdiction	Total Housing Units	Mobile Homes	Housing units built prior to 1980
Hays County*	101,449	4,872/ 4.8%	8,432/ 8.3%
City of Buda	5,695	49/ 0.9%	177/ 3.1%
City of Dripping Springs	2,044	48/ 2.3%	123/ 6.0%
City of Hays	63	0/ 0%	55/ 87.3%
City of Kyle	17,316	957/ 5.5%	581/ 3.4%
City of Mountain City	240	0/ 0%	28/ 11.7%
City of Niederwald	344	142/ 41.3%	48/ 14.0%
City of Uhland	530	275/ 51.9%	94/ 17.8%
City of Wimberley	1,275	73/ 5.7%	300/ 23.5%
City of Woodcreek	1,128	0/ 0%	162/ 14.4%
Village of Bear Creek	194	1/ 0.5%	15/ 7.7%

*County totals include all jurisdictions in addition to unincorporated areas.
Source: 2022 American Community Survey 5-year estimate, selected housing characteristics

Based on the ACS 2022 data, the City of Hays is at highest risk of damage from thunderstorm winds when considering age of residential structures and the higher standard of building codes enacted after 1980. The City of Uhland is at the highest risk of damage from thunderstorm winds when considering number and ratio of manufactured homes.

Historic Windstorm Impacts

Below is the summary table, 8-4, for Hays County that shows the 25-year column totals and the average annual (Per Year) losses in these categories. The bottom half of each table shows per capita dollar loss rates for the total and average annual losses. These rates are important measures for comparing losses between different hazards. The average annual loss estimate of property and crop is $314,952 for Hays County.

Table 8-4: Hays County Loss Summary

Time Period	Fatalities	Injuries	Property Damage	Crop Damage
Loss Summary, Hays County				
25-year Total	0	0	$7,798,800	$100,000
Per Year	0	0	$311,952	$4,000
Per Capita Dollar Losses (2022 American Community Survey)				
25-year Total	0	0	$28.97	$0.37
Per Year	0	0	$1.16	$0.01

Table 8-5 below distributes the countywide impacts presented previously in table 8-4 amongst the various participating jurisdictions based on ratios of populations based on location information when available.

Table 8-5: Windstorm Losses by Jurisdiction 1997-2023

Jurisdiction	Est. Prop. Losses	Est. Crop Losses	Total Est. Losses
Hays County*	$7,459,000	$100,000	$7,459,100
City of Buda	$136,000	$0	$136,000
City of Dripping Springs	$70,000	$0	$70,000
City of Hays	$0	$0	$0
City of Kyle	$121,100	$0	$121,100
City of Mountain City	$0	$0	$0
City of Niederwald	$10,500	$0	$10,500
City of Uhland	$0	$0	$0
City of Wimberley	$2,200	$0	$2,200
City of Woodcreek	$0	$0	$0
Village of Bear Creek	$0	$0	$0
Total	$7,798,800	$100,000	$7,898,000

* County totals include all other jurisdictions not participating in this plan as well as unincorporated areas.

SECTION 9: EXTREME HEAT

Description

Extreme heat is a condition where temperatures exceed local average high temperatures by ten degrees or more for an extended period of time and is also characterized by high humidity levels. Extreme heat is a common occurrence in Texas during the summer months. Extended periods of extreme heat are called heat waves and can lead to illness and death, particularly among vulnerable populations. In fact, heat waves have been the top cause of U.S. weather fatalities, on average, over the past 30 years.[6] Texas had a particularly deadly year in 2011, when 203 heat-related deaths were reported. The major human risks associated with severe summer heat include heat cramps, sunburn, dehydration, fatigue, heat exhaustion, and heat stroke. Extreme heat can lead to power outages as heavy demands for air conditioning strain the power grid and prolonged exposure to excessive temperatures can damage crops and injure or kill livestock. As the Earth's climate warms overall heat waves are expected to become more frequent, longer, and more intense.[7]

Location

Extreme heat is not confined to any specific geographic area and can occur anywhere within the planning area. City residents can face a heightened risk to extreme heat because of warmer temperatures in cities from the urban heat island effect. The urban heat island effect is caused by large amounts of paved surfaces that absorb and re-radiate heat. The lack of green spaces and tree cover in these areas adds to the issue. Since Hays County does not have any large major metropolitan areas, the urban heat island effect is not as pronounced. This results in a negligible variance in extreme temperatures from heat waves in the unincorporated areas of the counties versus the incorporated areas.

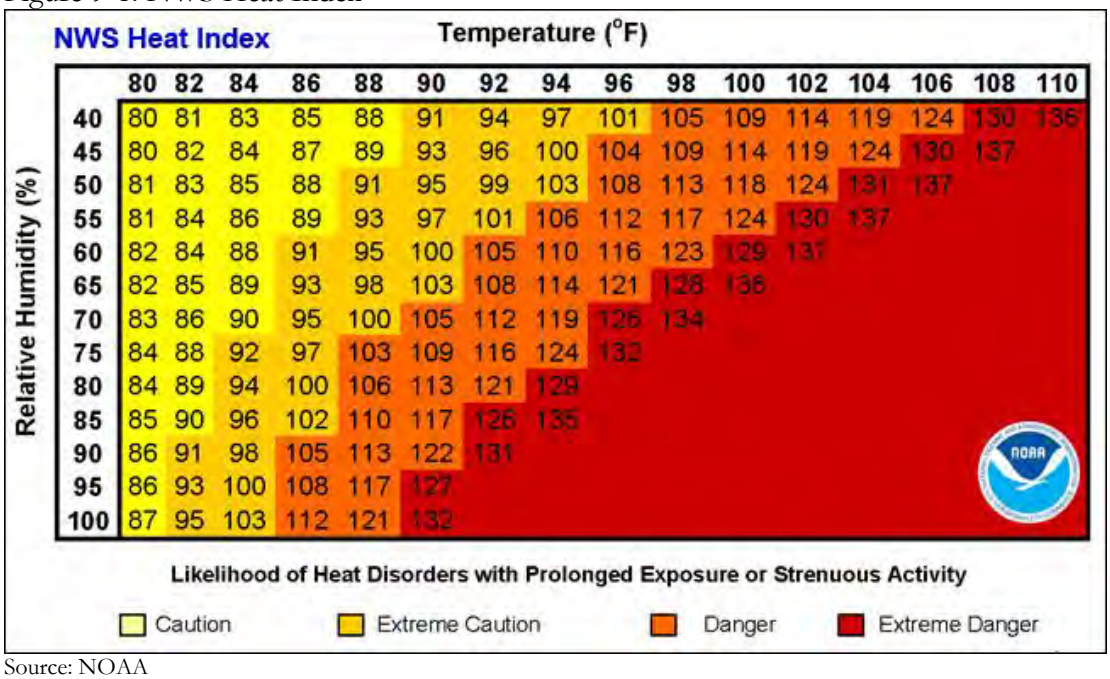
Extent

The "Heat Index" is the relationship between temperature and relative humidity established by the National Oceanic Atmospheric Administration (NOAA) to measure magnitude or intensity of an extreme heat event. This index combines the effect of high temperatures with high humidity to determine how hot it feels outside. Figure 9.1 below describes the heat index as it relates to the likelihood of heat disorders due to prolonged exposure or strenuous activity. As an example, if the air temperature is 98°F and the relative humidity is 65%, the heat index, or how hot it feels, is 128°F. The red area indicates extreme danger and the example above would fall into this category. Also, exposure to full sunshine can increase heat index values by up to 15°F since the heat index values in the chart below were devised for shady light wind conditions.

[6] http://www.nws.noaa.gov/om/hazstats.shtml

[7] Melillo, J.M., T.C. Richmond, and G.W. Yohe (eds.). 2014. Climate change impacts in the United States: The third National Climate Assessment. U.S. Global Change Research Program. http://nca2014.globalchange.gov.

Figure 9-1: NWS Heat Index



Source: NOAA

The likelihood of health disorders associated with ranges of heat index values are displayed below. The classifications of "Caution," "Extreme Caution," "Danger," and "Extreme Danger" are associated with increasingly harmful effects on the body. Effects on the body depend on the magnitude or intensity of the event with the shaded rows in the table below (Table 9.1) corresponding to the colors in the chart above (Figure 9.1). The National Weather Service will initiate alert procedures when the Heat Index is expected to exceed 105°-110°F, depending on local climate, for at least 2 consecutive days.

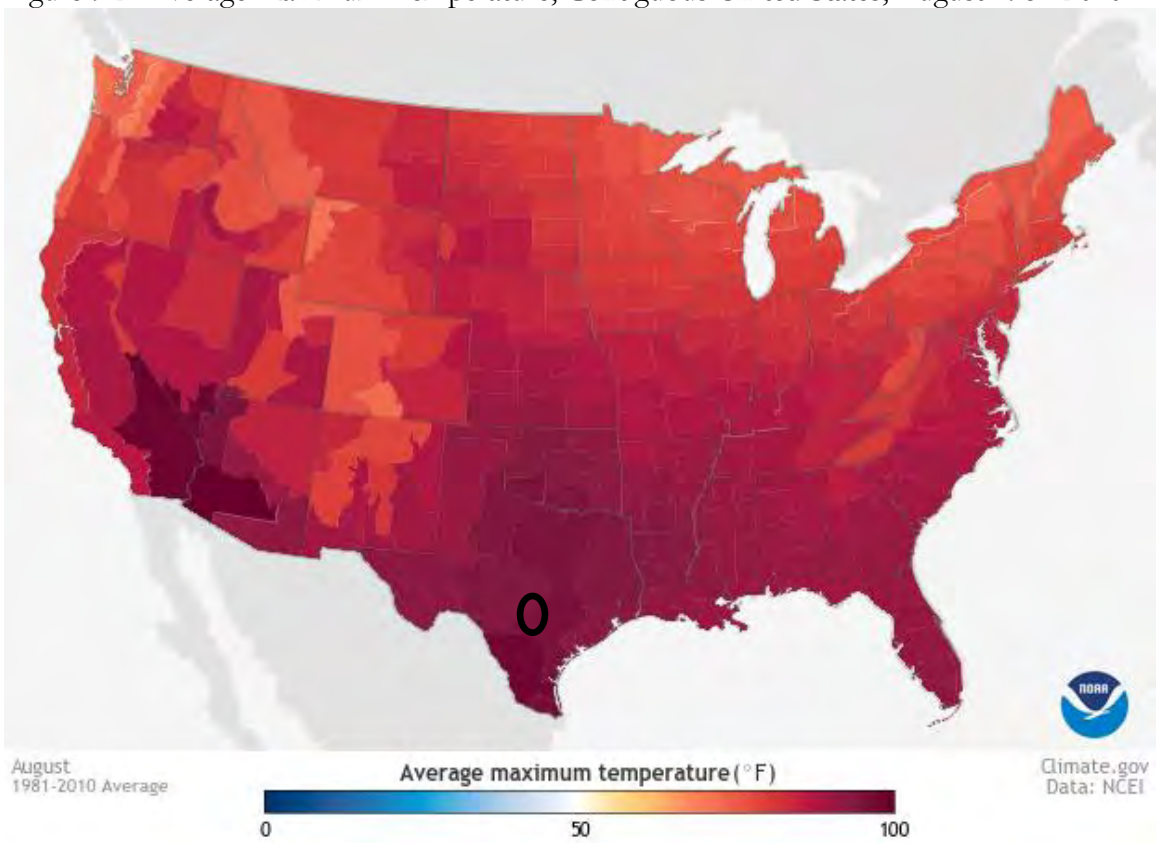
Table 9-1: Heat Index and Warnings

Classification	Heat Index	Effect on the body
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity
Extreme Caution	90°F - 103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	103°F - 124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
Extreme Danger	125°F or higher	Heat stroke highly likely

source: https://www.weather.gov/ama/heatindexH

The hottest month of the year for the Hays County planning area is typically August with an average relative humidity of 65%. The National Oceanic and Atmospheric Administration (NOAA) provides the map below that shows the long-term average maximum temperature in each climate division across the contiguous United States for the month of August. This data is based on daily observations from 1981-2010. The planning area exhibits an average maximum temperature of 90-100°F or above based on historical data and has the potential to reach "dangerous" heat index levels at just 92°F and "extremely dangerous" heat index levels at 98°F.

Figure 9-2: Average Maximum Temperature, Contiguous United States, August 1981-2010



https://www.climate.gov/maps-data/data-snapshots/averagemaxtemp-monthly-1981-2010-cmb-0000-08-00?theme=Temperature

Based on the average maximum temperature (90-100°F) and the average relative humidity (65°F) in the Hays County planning area, extreme heat events to the extent of "Danger" and "Extreme Danger" should be mitigated to reduce threats to humans, livestock, and pets. When the heat index reaches a "Danger" classification, effects can include sunstroke, muscle cramps, heat exhaustion, and prolonged exposure can bring on heatstroke. When the heat index reaches an "Extreme Danger" classification, effects on the body can include all of the above in addition to increasing the risk of heat stroke and even death.

Historical Occurrences

There are two historical occurrences of extreme heat found in the NCEI database for the Hays County Planning Area for time period from 1997-2023. This doesn't necessarily indicate that the area has rarely experienced an extreme heat event that impacts people, property, and agriculture. The lack of many historical occurrences in the NCEI record simply reflects that injury, fatalities, property losses, or crop losses were not directly attributed to any particular extreme heat event at the time. There have not been any events recorded past the listed dates.

Table 9-2: Historical Excessive Heat Events in Hays County, 1997-2023

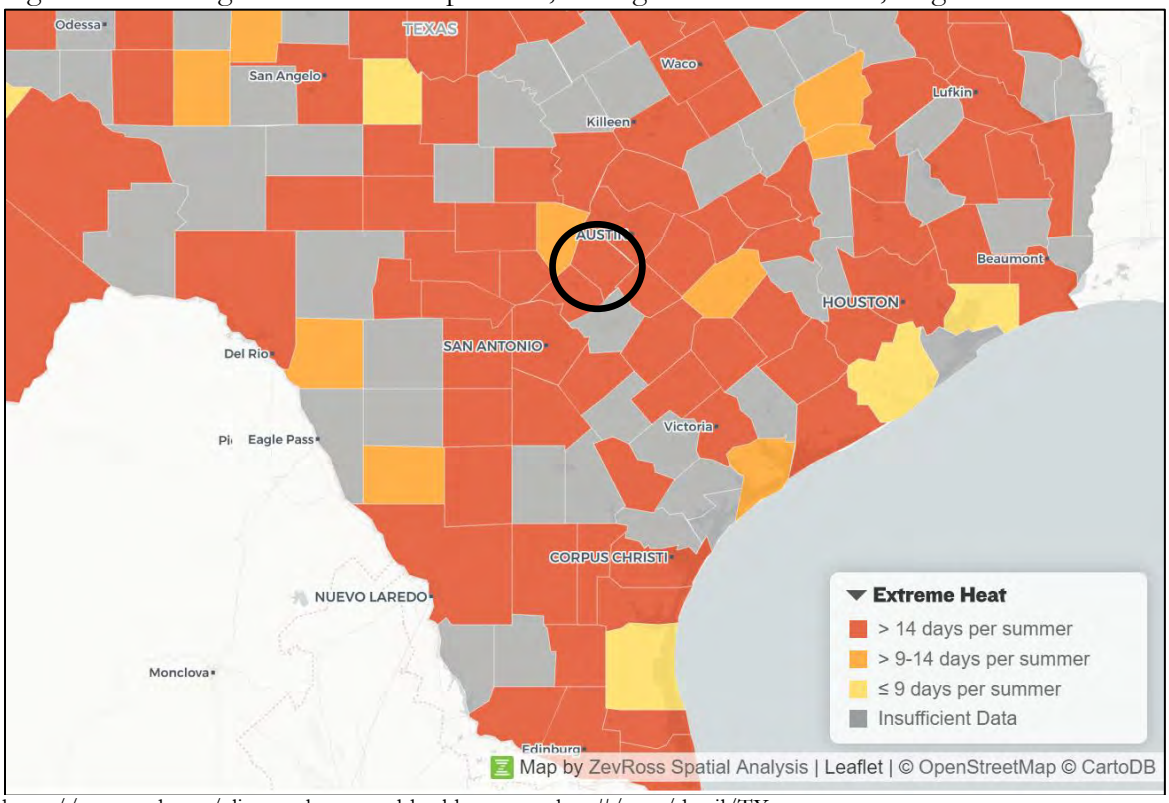
Year	Month	Day	Injuries	Fatalities	Property Damage	Crop Damage
2018	July	22	0	0	$0	$0
2020	July	13	0	0	$0	$0
2023	June	15	0	0	$0	$0
2023	June	25	0	0	$0	$0

2023	July	10	0	0	$0	$0
2023	August	4	0	0	$0	$0

Source: *NOAA NCEI Storm Events Database*

The map below provides an analysis of extreme heat events based on weather station records from the Global Historical Climatology Network (GHCN), formerly the National Climatic Data Center. With this analysis from the NRDC, "extreme heat days" are defined as those days from June 1 to August 31 in the years 2007 to 2016 on which the maximum temperature exceeded the 90th-percentile value. The June to August daily maximum temperatures from the 1961 to 1990 were used as a reference period for the same monitoring station to calculate the 90th percentile. The 90th percentile value is among the more common ways to define extreme heat and the map below is indicative of how the number of extreme heat days per summer periods are changing over time.

Figure 9-3: Average Maximum Temperature, Contiguous United States, August 1981-2010

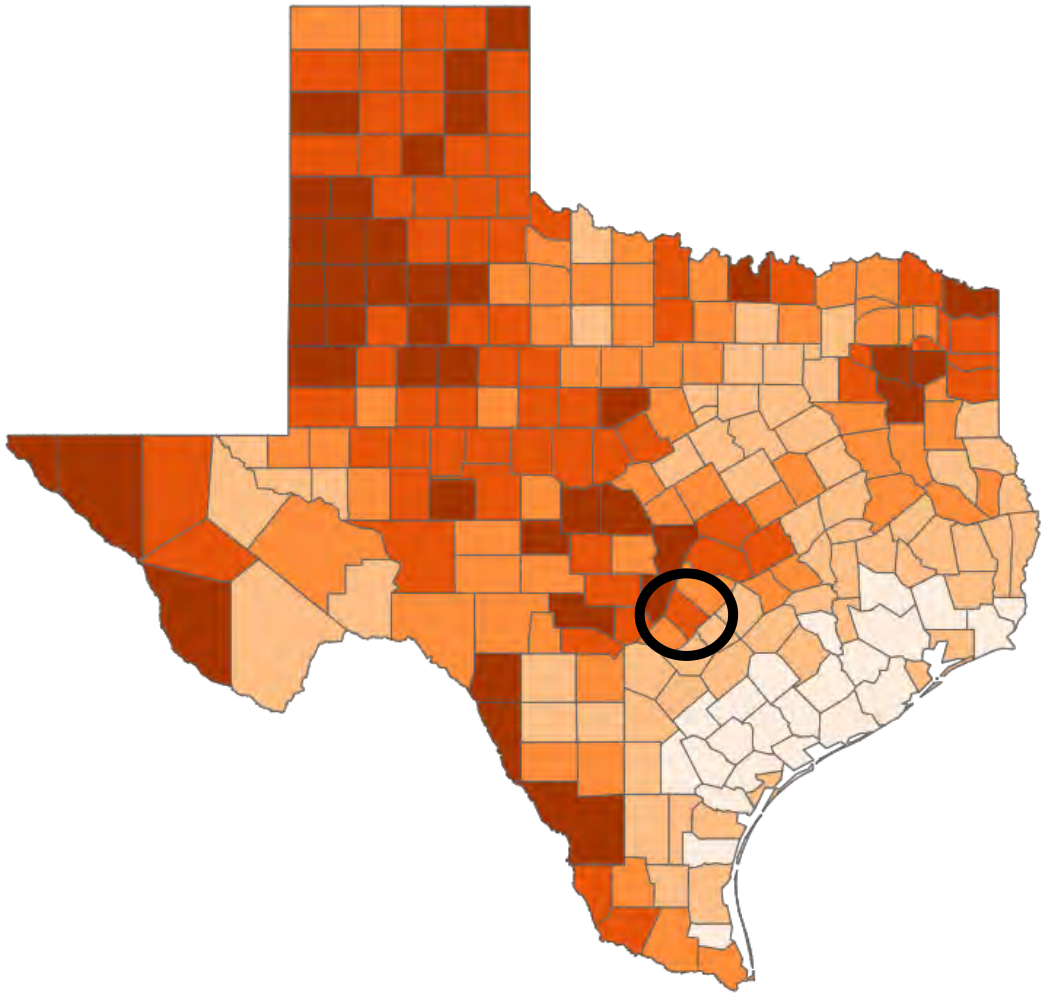


https://www.nrdc.org/climate-change-and-health-extreme-heat#/map/detail/TX

Based on historical monitoring station data from 1961-1990, areas with more than 9 days of extreme heat per summer in the map above are experiencing more days of extreme heat than they did in the past. The map above depicts Hays County as having > 14 days of extreme heat per summer. This analysis shows that the Hays County planning area is experiencing more heat days during the summer than it did past.

Data from CDC can also help tell a story of how the number of extreme heat days to be expected each summer are increasing. The two maps below depict a 29-year period from 1981-2010 and a 10-year period from 2000-2010. The Hays County planning area is depicted within the white circle in Central Texas on the maps below.

Figure 9-4: 1981-2010 Average Heat Wave Days Based on Daily Maximum Heat Index for Texas



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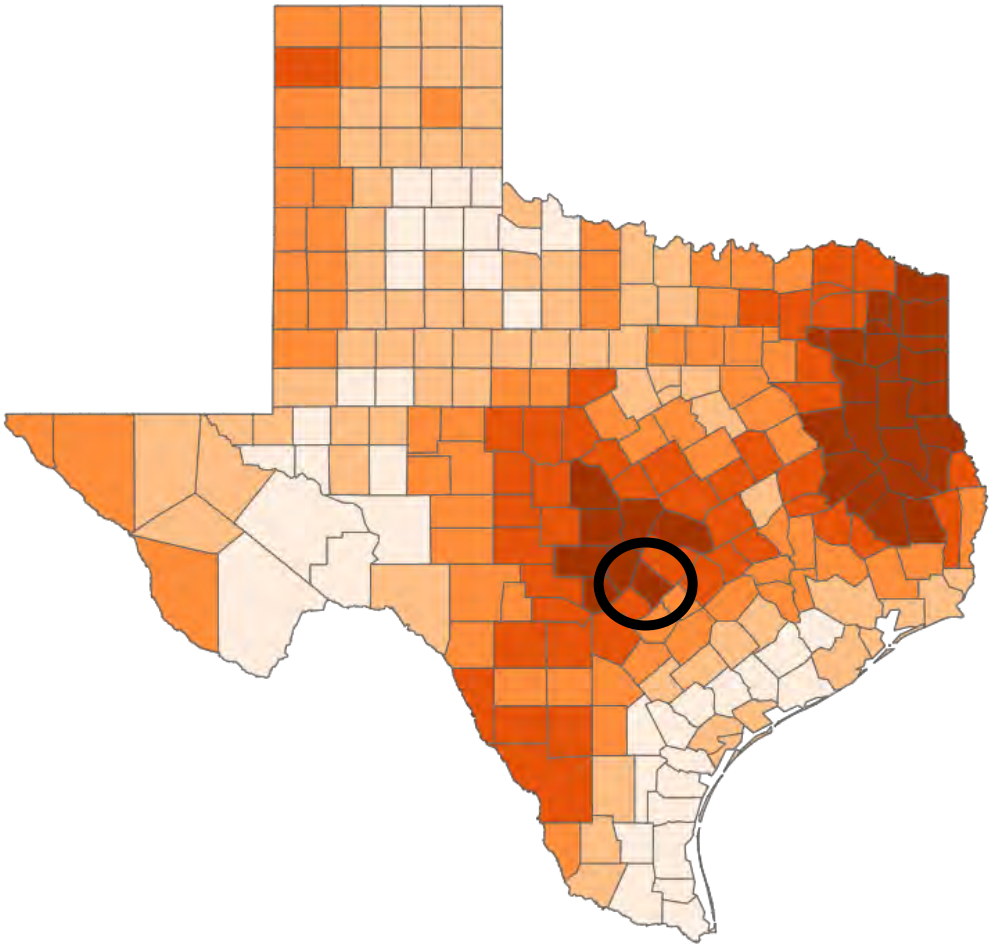
DAYS:

Source: https://wonder.cdc.gov/NCA-heatwavedays-historic.html

Figure 9-5: 2000-2010 Average heat wave days based on daily maximum heat index for Texas



Source: https://wonder.cdc.gov/NCA-heatwavedays-historic.html

The Extreme Heat Events data available on the CDC WONDER website are county-level measures of the number of heat wave days in the months of May through September spanning the years 1981-2010. The CDC defines heat wave days as those that are 95th percentile of daily maximum Heat Index. The number of heat wave days is computed at the county level and the choropleth map and associated legends show the average number of heat wave days occurring based on the selected time period and location.

Probability of Future Events

The planning area can expect 9-14 extreme heat days and at least one extreme heat event, or heat wave, each summer due to the warm, sunny, and humid subtropical climate in the Hays County planning area. The probability of the area experiencing at least one extreme heat event in the next year is **highly likely**.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

The probability that the number of extreme heat days will continue to increase in the future is also highly likely. According to NOAA, the top 10 warmest years on record (1880-2023) across the globe have all occurred within the past 10 years. The table below ranks the warmest years on record with land and ocean annually averaged measurements compiled from 1880-2023.

Table 9-2: Top 10 warmest years, globally (NOAA, 1880-2023)

Rank	Year
1	2023
2	2016
3	2020
4	2019
5	2015
6	2017
7	2022
8	2021
9	2018
10	2014

"Global Climate Report – Annual 2022". NOAA. Retrieved 18 March 2024.

The average maximum temperature maps in Figures 9-6 and 9-7 on the following page are produced by the U.S. National Climatic Data Center and depict trends for the most recent complete 30-year period as well as the trend when looking at all recorded temperatures since 1896. The maps show average maximum temperature trends across the United States during the summer periods from 1991-2020 and 1896-2020 which show how trends from which forecasts are made can change drastically when looking at different periods of time. The Hays County planning area is in an area that can expect an increase of 0.5-1.5^{o}F in average maximum summer temperatures over the next century.

Figure 9-6: Average Maximum Temperature Trends, Summer 1991-2020 (30 years)

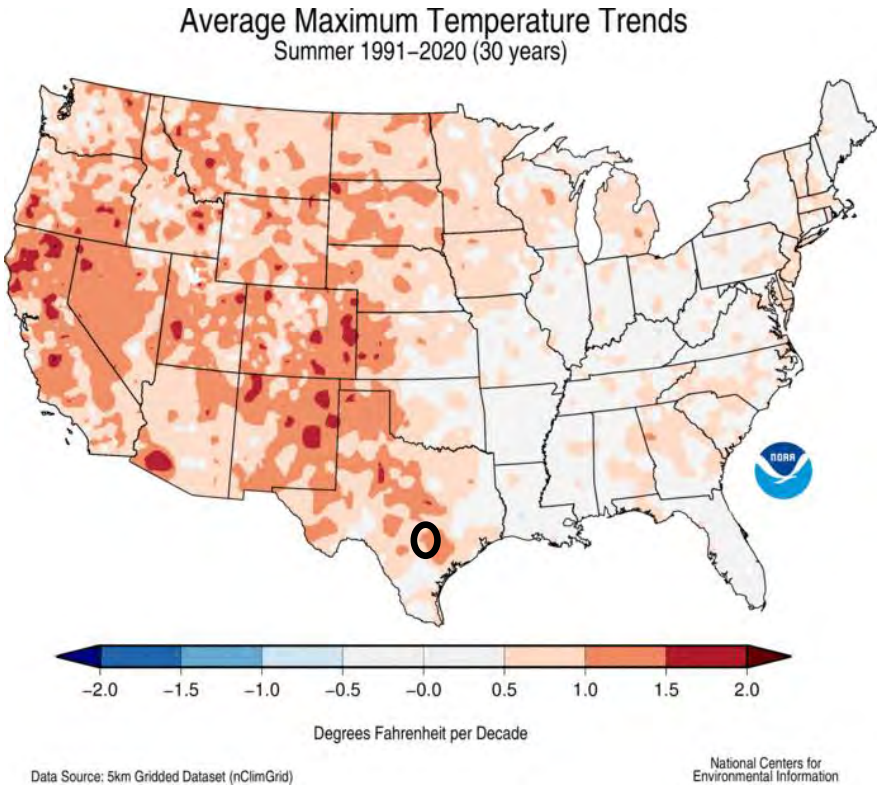
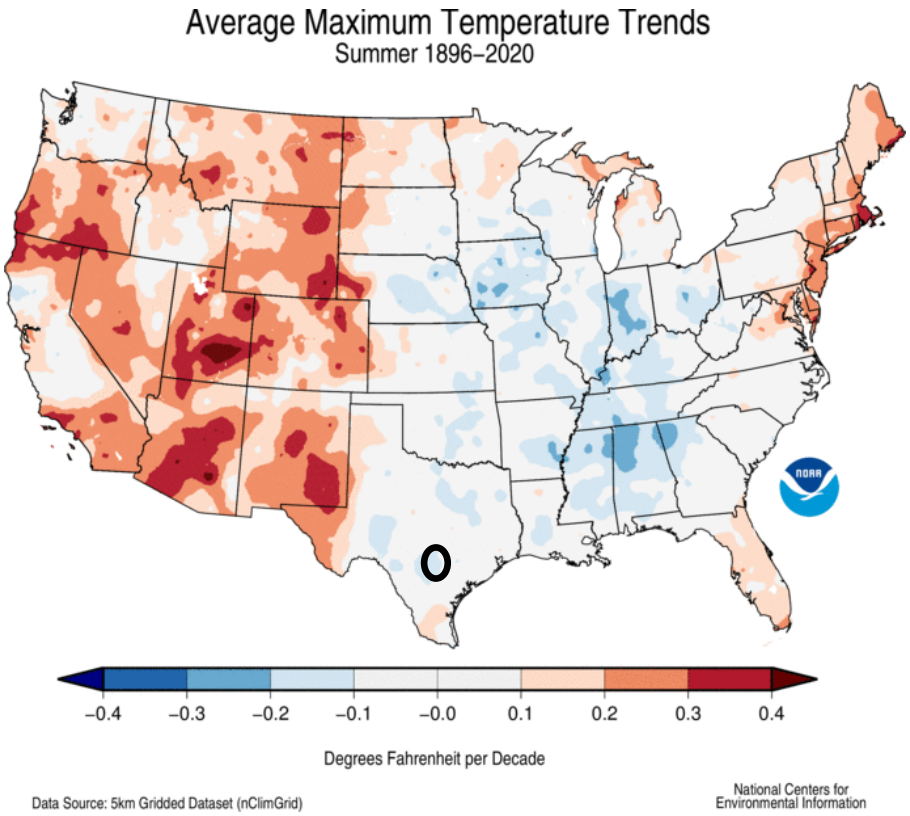


Figure 9-7: Average Maximum Temperature Trends, Summer 1896-2020



https://www.ncdc.noaa.gov/temp-and-precip/us-trends/

Vulnerability and Impacts

Residents of the area, especially vulnerable populations such as children under 5 and those over 65 should exercise caution by staying out of the heat for prolonged periods when a heat advisory or excessive heat warning is in effect. In addition to children and the elderly, the most vulnerable population to heat illnesses and casualties are the 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 so it is important for communities to get to know which immediate neighbors may be at highest risk to health impacts from heat. Those working or remaining outdoors for extended periods of time and overweight individuals are also at higher risk.

It is never safe to leave a baby, child, disabled person, or pet in a locked car. Cars heat up quickly in the sun and this is true even in the winter, the first toddler death due to being left in a locked car in the U.S. in 2018 occurred in February. The graphic in Figure 9-8 below is produced by NOAA with tips on how to practice heat safety in different situations.

Figure 9-8: NOAA Heat safety tips

https://www.weather.gov/safety/heat

Higher heat index values (which combine temperature and humidity to describe perceived temperature) are expected to increase discomfort and aggravate health issues. Conversely, cold spells are expected to decrease. In most locations, scientists expect daily minimum temperatures—which typically occur at night—to become warmer at a faster rate than daily maximum temperatures.[8] This change will provide less opportunity to cool off and recover from daytime heat. As the region continues to warm overall, it will be important to educate the public about strategies to stay cool during extreme heat events and how to recognize and respond to heat-related illnesses.

[8] National Research Council. 2011. Climate stabilization targets: Emissions, concentrations, and impacts over decades to millennia. Washington, DC: National Academies Press

SECTION 10: LIGHTNING

Description

Lightening is sudden charges of electricity that develop from storms or excessive heat. This massive electrostatic discharge can occur between electrically charged regions within clouds, or between a cloud and the Earth's surface. A bolt of lightning, or the visible sparks, can cause air temperatures surrounding the bolt to approach 50,000°F causing rapid air expansion leading to thunder, which often accompanies lightning strikes. Lightning is most often affiliated with severe thunderstorms, and often strikes outside of heavy rain and can occur as far as 10 miles away from any rainfall.

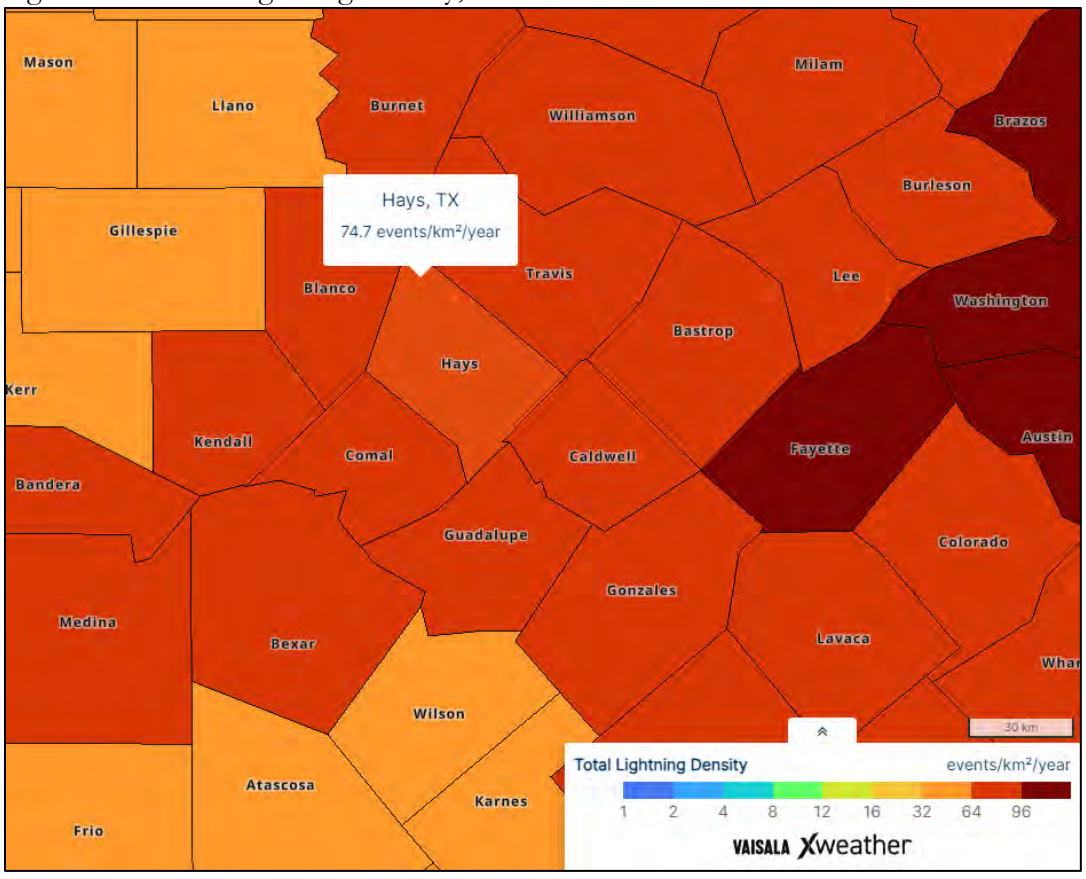
Location

The Hays County planning area is located in a region of the country that is moderately susceptible to lightning strike. Lightning can occur at any location within the entire planning area and it is assumed that all areas within Hays County are uniformly exposed to the threat of lightning due to the consistent geography and terrain found throughout.

Extent

Lightning extents is defined in terms of the frequency of lightning strikes within a defined geographic area and a set time period. The Vaisala's U.S. National Lightning Detection Network lightning flash density map, Figure 10-1, shows the average number of lightning events per km2 per year. According the map below, the Hays County planning area has a total lightning density of 74.7 events/km^2/year for the planning area from 2016-2023.

Figure 10-1. Total Lightning Density, 2016-2023



Source: https://interactive-lightning-map.vaisala.com/

A total lightning density of more than 64 events/km2/year in an area is considered to be a major severity and a total lightning density of more than 96 events/km2/year in an area is considered to be an extreme severity. Any lightning strike that causes death or property damage is likewise considered a major severity. The lightning hazard is considered to be a major severity for the planning area.

Historical Occurrences

While lightning occurs quite frequently in the planning area, the only lightning data contained within NOAA Storm Data are lightning events that result in fatality, injury and/or property and crop damage. There were no lightning events reported for the planning area according to the NOAA National Centers for Environmental Information (NCEI) data. Structural damages resulting from lighting events are considered severe with risk of injury or death representing the greatest risk. There have not been any events recorded past the listed dates.

Table 10-2: Historical Lightning Events in Hays County, NCEI 1997-2023

Location	Date	Time	Deaths	Injuries	Property Damage	Crop Damage
Kyle	5/15/2010	4:00 AM	0	0	$100,000	$0
Buda	6/2/2013	4:30 AM	0	0	$50,000	$0
Fitzhugh	10/31/2013	3:40 AM	0	0	$10,000	$0
Wimberley	10/31/2013	5:40 AM	0	0	$10,000	$0
Wimberley	5/8/2014	1:20 PM	0	0	$5,000	$0

Significant Events

May 15, 2010

The Austin-American Statesman reported that a house caught fire as a result of a lightning strike. The house was destroyed.

Texas A&M Forest Service (Wildfires Caused by Lightning)

Lightning occurrences and damages are not well documented in the NCEI data but other sources and accounts from the Core planning team members indicate that lightning strikes occur frequently in the planning area. The Texas A&M Forest Service maintains a wildfire occurrence database based on state and local reports. The local reports are based on a voluntary online fire department reporting system that is used by both paid and volunteer fire departments. Table 10-3 lists wildfires caused by lightning strikes recorded by the Texas Forest Service from 2005-2021 within the planning area.

Table 10-3: Texas A&M Forest Service (TFS), Wildfire Ignition History 2005-2021

Date	Name	Responder	Cause Name	Area Burned (Acres)
7/6/2005	12711 FM 1826	Driftwood VFD	Lightning	0
5/14/2006	5500 McGregor Lane	Henly VFD	Lightning	1
6/5/2011	11-0000733	Buda Fire Department	Lightning	0.3
8/22/2020	1706	Henly VFD	Lightning	0.01

Source: Texas Wildfire Risk Assessment Portal (TWRAP)

Probability of Future Events

With limited reported incidents in the planning area, the team utilized the most current lightning flash density estimate developed by Vaisala, Figure 10-1, for the risk assessment. The most current lightning flash density estimate indicates a probability of occurrence of approximately 74.7 lightning events per square kilometer per year. Hays County is 680 square miles or 1,800 square kilometers. The Vaisala flash density estimate combined with the total area produces an estimate of approximately 134,460 flashes or strikes per year. With total thunderstorm days for the planning area at 57 events, or 2.28 per year, this gives a flash density of approximately 58,974 per event. A **highly likely** probability of occurrence for future lightning events in the Hays County planning area is supported by this frequency. This means that an event is probable in the next year.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

Vulnerability and Impact

Lighting strikes are random making all property and people within the Hays County planning area vulnerable to the impact of lightning. Lightning can also be responsible for damage to buildings, electrical systems, forest and/or wildfires, and damage to infrastructure such as power transmission lines and communication towers. Lightning is attracted to tall metal structures making water towers, electric power stations, and power poles particularly vulnerable to strikes. Lightning strikes can disrupt communication systems, including telephone and internet services, which can impact emergency response times and communication between businesses and customers. Lightning strikes can cause power outages that can affect large areas and cause disruption to businesses, transportation, and other essential services. The damage caused by lightning strikes can have a significant economic impact on cities, particularly in areas where businesses and tourism are major industries. Damage to buildings and electrical equipment can result in costly repairs and downtime. Lightning strikes can cause fires that can spread quickly and cause extensive damage to buildings and surrounding areas and are a cause of wildfires making agricultural land vulnerable as well. Agricultural losses from this hazard can be extensive.

Lightning strikes can also pose a risk to public safety, particularly in outdoor areas such as parks, sports fields, and other public spaces. The peak lightning season in the State of Texas is from June to August; however, the most fatalities occur in July as fatalities occur most often when people are outdoors, working or participating in some form of recreation. Moving inside will decrease a person's vulnerability to injury or death due to lightning strike.

Communities can take steps to mitigate the impact of lightning strikes by implementing lightning protection systems, maintaining electrical infrastructure, and educating the public on lightning safety measures. Doing so can minimize the risks associated with lightning strikes and ensure the safety and well-being of their residents and visitors.

Historic Lightning Impacts

Below is the summary table, 11-4, for Hays County that shows the 25-year column totals and the average annual (Per Year) losses in these categories. The bottom half of each table

shows per capita dollar loss rates for the total and average annual losses. These rates are important measures for comparing losses between different hazards. The average annual loss estimate of property and crop is $314,952 for Hays County.

Table 10-4: Hays County Loss Summary

Time Period	Fatalities	Injuries	Property Damage	Crop Damage
Loss Summary, Hays County				
25-year Total	0	0	$7,798,800	$100,000
Per Year	0	0	$311,952	$4,000
Per Capita Dollar Losses (2022 American Community Survey)				
25-year Total	0	0	$28.97	$0.37
Per Year	0	0	$1.16	$0.01

Table 11-5 below distributes the countywide impacts presented previously in table 11-4 amongst the various participating jurisdictions based on ratios of populations based on location information when available.

Table 11-5: Windstorm Losses by Jurisdiction 1997-2023

Jurisdiction	Est. Prop. Losses	Est. Crop Losses	Total Est. Losses
Hays County*	$7,459,000	$100,000	$7,459,100
City of Buda	$136,000	$0	$136,000
City of Dripping Springs	$70,000	$0	$70,000
City of Hays	$0	$0	$0
City of Kyle	$121,100	$0	$121,100
City of Mountain City	$0	$0	$0
City of Niederwald	$10,500	$0	$10,500
City of Uhland	$0	$0	$0
City of Wimberley	$2,200	$0	$2,200
City of Woodcreek	$0	$0	$0
Village of Bear Creek	$0	$0	$0
Total	$7,798,800	$100,000	$7,898,000

* County totals include all other jurisdictions not participating in this plan as well as unincorporated areas.

SECTION 11: TORNADO

Description

A tornado is a narrow, violently rotating column of air that extends from the base of a cumulonimbus cloud to the ground. Tornadoes, among the most violent storms on the planet, are capable of tremendous destruction with wind speeds that can reach as high as 250-300mph. Typically, the vortex of air will remain suspended in the atmosphere and be visible as a funnel cloud. If the lower tip of the vortex touches the ground, however, the path of the tornado will often leave destruction in its wake and can be more than one mile wide and 50 miles long. Supercell thunderstorms, created when horizontal wind shears (winds moving in different directions at different altitudes) begin to rotate the storm, can produce the most extreme and powerful tornadoes.

The economic and financial impacts of a tornado event on a community can be devastating depending on the scale of the event and the population density of the area that is hit. The damage caused in the aftermath of a tornado event can be minimized with collaborative preparedness and pre-event planning by government, businesses, and citizens.

Location

Tornadoes do not have any specific geographic boundary and can occur uniformly throughout the planning area. Hays County is located in Wind Zone III along the Texas gulf coast (Figure 11-1), where tornado winds can be as high as 200 mph.

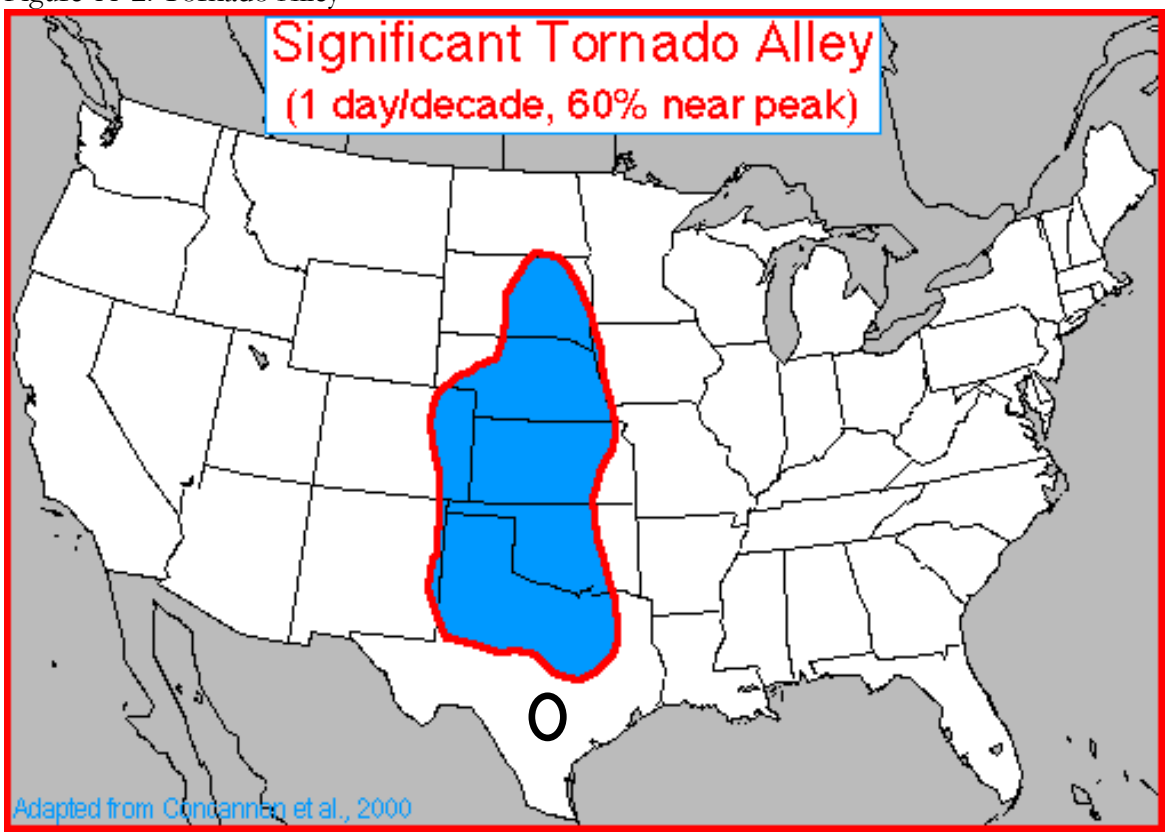
Figure 11-1: United States Wind Zones

www.fema.gov/plan/prevent/saferoom/tsfs02_wind_zones.shtm

Tornado Alley refers to an area in the southern plains of the central United States that experiences a higher-than-normal frequency of tornadoes each year due to weather patterns

and geography. This area extends from central Texas to northern Iowa, and from central Kansas and Nebraska east to Western Ohio (Figure 11-2). Tornadoes in this region typically occur in late spring and occasionally in the early fall. The Hays County planning area is 150-200 miles south of the southern border of Tornado Alley.

Figure 11-2: Tornado Alley



https://www.ncdc.noaa.gov/file/1535

Extent

Tornado events prior to 2007 follow the original Fujita scale, Table 11-1 on the following page. The current measure of the extent of tornado damage is the enhanced Fujita scale and it took effect on February 1st, 2007. The scale ranges from EF0, generally weak tornadoes with the ability to do minor damage, to EF5, tornadoes with winds in excess of 200mph and the ability to do devastating damage to areas they come in contact with. Tornados can range from weak to violent and typically cause the greatest damage to structures of light construction, such as single-family, manufactured, and mobile homes.

Table 11-1: The Fujita Tornado Scale

Scale	Wind speed estimate (mph)	Potential damage	Example of damage
F0	40-72	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.	
F1	73-112	Moderate damage. The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving vehicles pushed off the roads; attached garages may be destroyed.	
F2	113-157	Significant damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; high-rise windows broken and blown in; light-object missiles generated.	
F3	158-206	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forests uprooted; heavy cars lifted off the ground and thrown.	
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.	
F5	261-318	Incredible damage. Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile-sized missiles fly through the air farther than 100 meters (110 yards); trees debarked; steel-reinforced concrete structures badly damaged and skyscrapers toppled	

Source: https://www.spc.noaa.gov/faq/tornado/f-scale.html

Table 11-2: The Enhance Fujita Tornado Scale

Scale	Wind speed estimate (mph)	Potential damage	Example of damage
EF0	65–85	Minor damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.	
EF1	86-110	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.	
EF2	111–135	Considerable damage. Roofs torn off from well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.	
EF3	136–165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.	
EF4	166–200	Devastating damage. Well-constructed and whole frame houses completely leveled; cars and other large objects thrown and small missiles generated.	
EF5	>200	Incredible damage. Strong-framed, well-built houses leveled off foundations are swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations; some cars, trucks, and train cars can be thrown approximately 1 mile (1.6 km).	

Source: https://www.spc.noaa.gov/efscale/ef-scale.html

The Enhanced Fujita Scale has 28 Damage Indicators (DI), or types of structures and vegetation, each with a varying number of Degrees of Damage (DoD). Larger degrees of damage done to the damage indicators correspond to higher wind speeds. Each damage indicator has a unique Degree of Damage scale, summarized in Table 11-3. For example, damage indicator 2, One and Two-family Residences, Degree of Damage Scale is provided as Figure 11-3. For Degree of Damage Scales for the remaining Damage Indicators refer to National Oceanic and Atmospheric Administration website.

Table 11-3: Degrees of Damage Scale

DI No.	Damage indicator (DI)	Degrees of damage (DOD)
1	Small barns or farm outbuildings (SBO)	8
2	One- or two-family residences (FR12)	10
3	Manufactured home – single wide (MHSW)	9
4	Manufactured home – double wide (MHDW)	12
5	Apartments, condos, townhouses [three stories or less] (ACT)	6
6	Motel (M)	10
7	Masonry apartment or motel building (MAM)	7
8	Small retail building [fast-food restaurants] (SRB)	8
9	Small professional building [doctor's office, branch banks] (SPB)	9
10	Strip mall (SM)	9
11	Large shopping mall (LSM)	9
12	Large, isolated retail building [K-Mart, Wal-Mart] (LIRB)	7
13	Automobile showroom (ASR)	8
14	Automobile service building (ASB)	8
15	Elementary school [single-story; interior or exterior hallways] (ES)	10
16	Junior or senior high school (JHSH)	11
17	Low-rise building [1–4 stories] (LRB)	7
18	Mid-rise building [5–20 stories] (MRB)	10
19	High-rise building [more than 20 stories] (HRB)	10
20	Institutional building [hospital, government or university building] (IB)	11
21	Metal building system (MBS)	8
22	Service station canopy (SSC)	6
23	Warehouse building [tilt-up walls or heavy-timber construction] (WHB)	7
24	Electrical transmission lines (ETL)	6
25	Free-standing towers (FST)	3
26	Free-standing light poles, luminary poles, flag poles (FSP)	3
27	Trees: hardwood (TH)	5
28	Trees: softwood (TS)	5

Source: http://www.spc.noaa.gov/faq/tornado/ef-scale.html

Figure 11-3: One and Two-Family Residences Degree of Damage Indicator

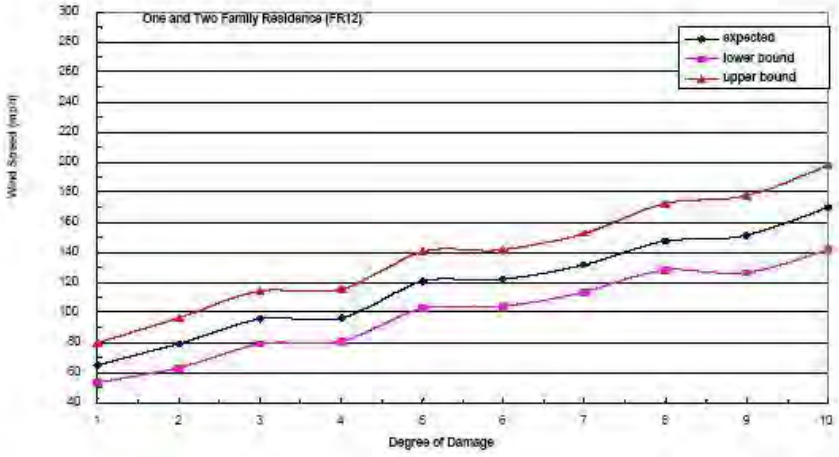
2. ONE-AND TWO-FAMILY RESIDENCES (FR12)
(1000 – 5000 sq. ft.)

Typical Construction

- Asphalt shingles, tile, slate, or metal roof covering
- Flat, gable, hip, mansard, or mono-sloped roof or combinations thereof
- Plywood/OSB or wood plank roof deck
- Prefabricated wood trusses or wood joist and rafter construction
- Brick veneer, wood panels, stucco, EIFS, vinyl, or metal siding
- Wood or metal stud walls, concrete blocks or insulating-concrete panels
- Attached single or double garage

DOD*	Damage description	EXP	LB	UB
1	Threshold of visible damage	65	53	80
2	Loss of roof covering material (<20%), gutters and/or awning; loss of vinyl or metal siding	79	63	97
3	Broken lass in doors and windows	96	79	114
4	Uplift of roof deck and loss of significant roof covering material (>20%); collapse of chimney; garage doors collapse inward; failure of porch or carport	97	81	116
5	Entire house shifts off foundation	121	103	141
6	Large sections of roof structure removed; most walls remain standing	122	104	142
7	Top floor exterior walls collapsed	132	113	153
8	Most interior walls of top story collapsed	148	128	173
9	Most walls collapsed in bottom floor, except small interior rooms	152	127	178
10	Total destruction of entire building	170	142	198

* Degree of Damage



The tornadic events in the Hays County planning area have been between EF0 to an EF1 (Table 11-4). However, because Hays County is in Wind Zone III, the planning area could experience anywhere from an EF0 to an EF4. Therefore, the range of intensity that the planning area would be expected to mitigate is a tornado event that would be a low to severe risk, an EF0 to EF3.

Historical Occurrences

Table 11-4 lists historical tornado events in the planning area from 1997-2023 that were reported to the NCEI or NOAA. The impact of the tornado events in Hays County are listed by date with additional impact information related to the specific jurisdiction of touchdown, magnitude of event, total dollar-losses related to crop and property damage, injuries, and fatalities. There have not been any events recorded past the listed dates.

Table 11-4: Historical Tornado Events by Jurisdiction, 1997 – 2023

Location	Date	Time	Extent: Fujita Scale (pre-2007), Enhanced Fujita Scale (post-2007)	Deaths	Injuries	Property Damage	Crop Damage
Kyle	5/27/1997	4:38 PM	F1	0	0	$5,000	$0
Wimberley	4/8/1998	3:40 AM	F0	0	0	$0	$0
Wimberley	4/8/1998	3:57 AM	F0	0	0	$0	$0
Henly	11/15/2001	9:45 AM	F0	0	1	$50,000	$0
Wimberley	11/15/2001	10:20 AM	F0	0	0	$50,000	$0
Kyle	11/15/2001	3:20 PM	F1	0	3	$500,000	$0
Kyle	11/15/2001	3:21 PM	F1	0	3	$500,000	$0
Driftwood	10/8/2002	10:20 AM	F0	0	0	$70,000	$0
San Marcos	12/30/2002	3:25 PM	F0	0	0	$0	$0
San Marcos	1/13/2007	7:08 AM	F1	0	0	$50,000	$0
Wimberley	3/30/2007	9:03 AM	EF0	0	0	$0	$0
Dripping Springs	3/30/2007	9:25 AM	EF0	0	0	$0	$0
Mt Gaynor	5/23/2015	7:53 PM	EF0	0	0	$0	$0
San Marcos AR	10/30/2015	6:28 AM	EF1	0	0	$0	$0
Wimberley	2/19/2017	11:26 PM	EF1	0	0	$0	$0
Niederwald	2/19/2017	11:48 PM	EF0	0	0	$0	$0

Source: NCEI Storm Events Database

Table 11-5: Historical Tornado Events Magnitude Summary, 1997 - 2006

Number of Events	Magnitude (Fujita Scale)						
	N/A	F0	F1	F2	F3	F4	F5
10	0	6	4	0	0	0	0

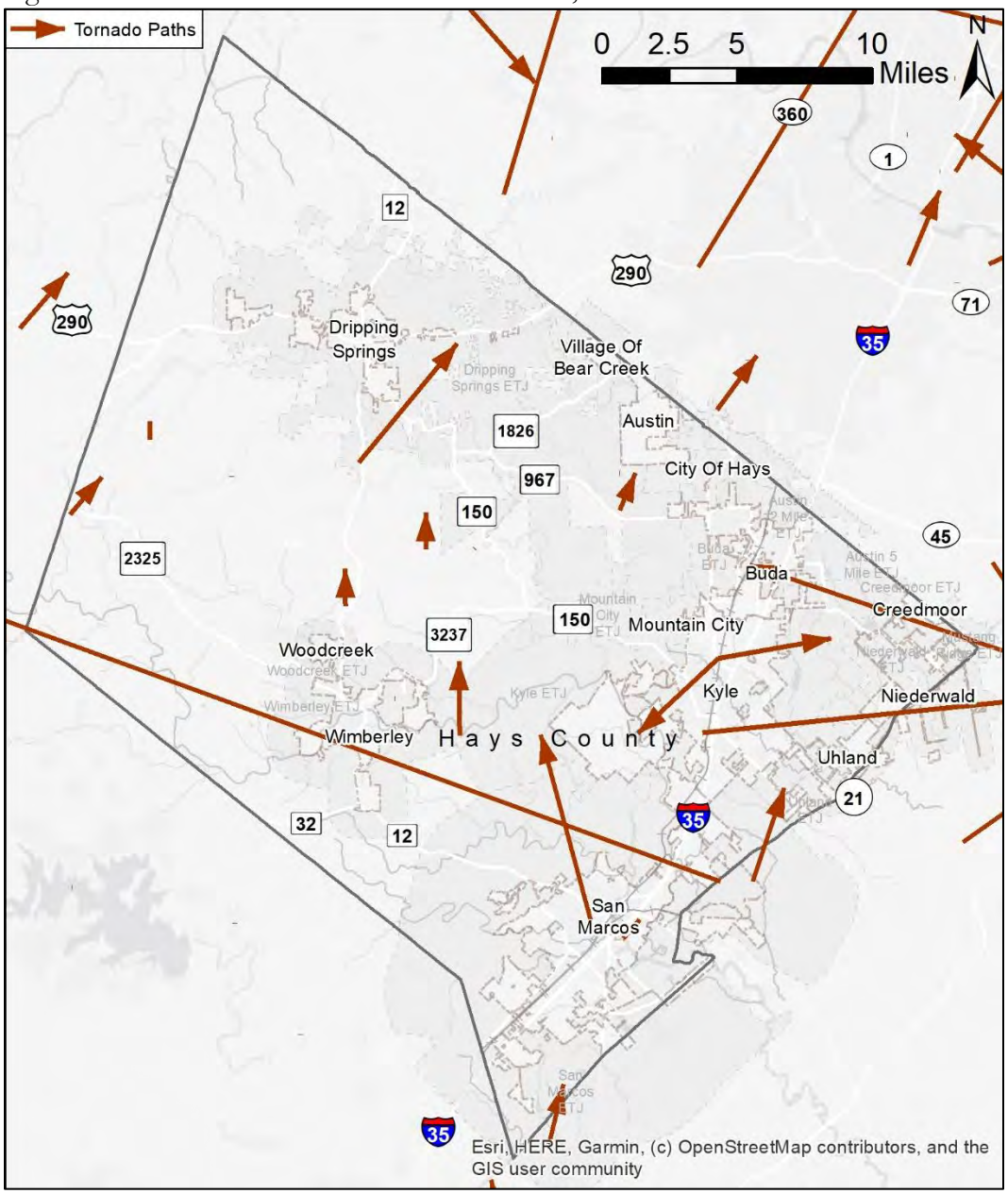
Table 11-6: Historical Tornado Events Magnitude Summary, 2007-2023

Number of Events	Magnitude (Enhanced Fujita Scale)						
	N/A	EF0	EF1	EF2	EF3	EF4	EF5
6	0	4	2	0	0	0	0

The locations of previous occurrences from 1950 through 2017 in the planning area are shown in figure 11-4. This map displays the historic tornado tracks, the distance travelled, and the direction in which they travelled. Only reported tornadoes were plotted and factored

into the risk assessment, however it is likely that several occurrences have gone unreported over the past 67 years.

Figure 11-4: Historic Tornado Tracks 1950-2023, Distance Travelled and Direction



Significant Events

November 15, 2001 – City of Kyle

This first F1 tornado was observed by a Department of Public Safety Trooper as it formed some 2.5 miles north of Kyle. It moved across I-35 between mile markers 215 and 217 to 5 miles northeast of Kyle. The trooper also reported a second tornado that formed in the same vicinity as the first and moved alongside the first for several minutes.

Another F1 formed immediately after the previous F1 tornado that had been observed by a Department of Public Safety Trooper. The two tornadoes continued together for several minutes and caused extensive tree damage along the frontage road with tops of trees sheared

off. Large oak tree branches 5 to 8 inches round were twisted and scattered across the area. Numerous road signs bent over and twisted at the base along with uprooted trees. Some downed trees were pointing south, others were pointing north. The same held true with the bent over highway signs. Power line poles were snapped. They damaged the truck stop at exit #217 sustained extensive damage to the awnings and roof. Several 18-wheelers were knocked over the by tornadoes. A hotel under construction also was damaged along with a restaurant across I-35 from the gas station. The Hays County Independent School District Headquarters building was also damaged. In all, over 100 homes were damaged by the tornadoes and two were destroyed. Almost 20 businesses suffered damage. Repair costs to area roads and bridges were estimated at near 1/2 million dollars.

Probability of Future Events

Tornadic storms are typically more common in the spring months during the late afternoon and evening hours but can occur at any time of year and at any time of day. A smaller, high frequency period can also emerge in the fall during the brief transition between the warm and cold seasons. Table 11-7 provides a general overview of tornado severity, probability, fatality impacts, and defining characteristics.

Table 11-7: Tornado Severity and Probability

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

According to historical records, there were 8 events in a 24-year reporting period in the planning area. This provides a probability of occurrence of approximately once every three years for the Hays County planning area. This frequency supports a **likely** probability of future events for the planning area, including all participating jurisdictions, meaning that an event is probable in the next five years.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

Vulnerability and Impact

All existing and future buildings, facilities and populations in the Hays County planning area are considered to be vulnerable to tornados and could potentially be impacted. High wind velocity, wind-blown debris, lightning, and large hail are typically the cause of damage done by a tornado. The high winds and flying debris can cause roofs to collapse, windows to shatter, and walls to crumble. Tornadoes can also cause significant damage to buildings, roads, bridges, and other infrastructure in cities. First responders and those needing to evacuate an area may encounter blocked roads as a result of the debris rendering some areas inaccessible or inescapable. Tornadoes can have a significant impact on the local economy as well, causing damage to businesses and homes, as well as disrupting transportation and causing productivity losses. The psychological trauma of experiencing a tornado, losing

property or loved ones, or being displaced from one's home can have lasting effects on mental health.

Tornadoes pose a severe threat to communities as they often result in power outages, which could cause health and safety risks to vulnerable populations who rely on electricity for medical necessities, as well as patients in hospitals. Power outages can also disrupt electricity supply to neighborhoods and even entire cities, causing problems with heating, cooling, lighting, and communication. Anyone in the path of a tornado can incur serious injuries or even fatalities. Falling trees, branches, utility lines, poles, and flying debris pose safety risks, and people caught in the open or unable to take adequate cover are at the highest risk of injury or death. Certain buildings and structures are more prone to damage than others from the high wind velocity associated with tornado events. The three most susceptible types of structures to tornado damage are:

1. Manufactured Homes
2. Homes on crawlspaces (more susceptible to lift), and
3. Buildings with large spans, such as shopping malls, gymnasiums, and factories.

The Hays County planning area features mobile and manufactured home parks which are more vulnerable to tornado winds than site-built structures. In addition, manufactured and temporary housing is located sporadically throughout rural portions of the planning area which are also vulnerable to the tornado hazard, but more prone to being isolated from essential needs and emergency services in the event of a disaster. Based on 2022 American Community Survey estimates, there are 101,449 housing units in Hays County of which 4.8%, or 4,872 units, are mobile or manufactured homes. In addition, 8,432 (8.3%) of the housing units in the overall planning area were built before 1980. These structures are likely to have been built to less stringent construction standards than newer construction and could be more susceptible to damages during significant events.

Table 11-8. Structures at Greater Risk by Jurisdiction

Jurisdiction	Total Housing Units	Mobile Homes	Housing units built prior to 1980
Hays County*	101,449	4,872/ 4.8%	8,432/ 8.3%
City of Buda	5,695	49/ 0.9%	177/ 3.1%
City of Dripping Springs	2,044	48/ 2.3%	123/ 6.0%
City of Hays	63	0/ 0%	55/ 87.3%
City of Kyle	17,316	957/ 5.5%	581/ 3.4%
City of Mountain City	240	0/ 0%	28/ 11.7%
City of Niederwald	344	142/ 41.3%	48/ 14.0%
City of Uhland	530	275/ 51.9%	94/ 17.8%
City of Wimberley	1,275	73/ 5.7%	300/ 23.5%
City of Woodcreek	1,128	0/ 0%	162/ 14.4%
Village of Bear Creek	194	1/ 0.5%	15/ 7.7%

*County totals include all jurisdictions in addition to unincorporated areas.
Source: 2022 American Community Survey 5-year estimate, selected housing characteristics

Based on the ACS 2022 data, the City of Hays is at highest risk of damage from tornadoes winds when considering age of residential structures and the higher standard of building

codes enacted after 1980. The City of Uhland is at the highest risk of damage from tornadoes winds when considering number and ratio of manufactured homes.

To mitigate the risks associated with the impacts of tornadoes, it's important to have early warning systems in place, build structures that can withstand high winds, and establish emergency response plans to quickly respond to disasters.

Historic Tornado Impacts

The summary table on the following page, 11-9, shows the 25-year property and crop damage totals as well as the average annual (Per Year) losses summarizing historic tornado impacts. The bottom half of the table shows per capita dollar loss rates for the total and average annual losses. These rates are important measures for comparing losses between different hazards and areas. Since weather varies year-to year, forecasts of specific years are less likely to be true (less reliable) than these totals and averages for the period. The average annual loss estimate of property and crop is $49,000 for Hays County.

Table 11-9, Hays County Loss Summary

Time Period	Fatalities	Injuries	Property Damage	Crop Damage
Loss Summary, Hays County				
25-year Total	0	0	$1,225,00	$0
Per Year	0	0	$49,000	$0
Per Capita Dollar Losses				
25-year Total	0	0	$106.00	$0
Per Year	0	0	$4.24	$0

Table 11-10 below distributes the countywide impacts presented in table 11-9 amongst the various participating jurisdictions based on location information when available.

Table 11-10: Tornado Losses by Jurisdiction 1997-2023

Jurisdiction	Injuries	Est. Prop. Losses	Est. Crop Losses	Total Est. Losses
Hays County*	1	$170,000	$0	$170,000
City of Buda	0	$0	$0	$0
City of Dripping Springs	0	$0	$0	$0
City of Hays	0	$0	$0	$0
City of Kyle	6	$1,005,000	$0	$1,005,000
City of Mountain City	0	$0	$0	$0
City of Niederwald	0	$0	$0	$0
City of Uhland	0	$0	$0	$0
City of Wimberley	0	$50,000	$0	$50,000
City of Woodcreek	0	$0	$0	$0
Village of Bear Creek	0	$0	$0	$0
Total				

* County totals include all other jurisdictions not participating in this plan as well as unincorporated areas.

SECTION 12: HAILSTORMS

Description

Hail is showery precipitation in the form of irregular pellets or balls of ice that typically measures 0.2 inches and 6 inches in diameter. It is a particularly damaging form of frozen participation resulting from thunderstorms with the size of the hail a direct result of the size and severity of the storms. Hail is produced when warm air rapidly rises into the upper atmosphere and the air mass is cooled. Frozen droplets within the cooled air mass accumulate to form ice crystals that then fall to the Earth as precipitation. The strength of the updraft is dependent on heating on the surface of the Earth with larger temperature gradients between the upper atmosphere and the surface responsible for increased suspension time and, therefore, increased hailstone size.

Location

Hailstorms are not confined to any specific geographic location, and can vary greatly in size, location, intensity and duration. As a result, all areas within the Hays County planning area are equally at risk to the hazard of hail.

Extent

The NCEI Intensity Scale, depicted in Table 12-1, shows how the intensity category of a hailstorm depends on hail size and the potential damage it could cause. The intensity scale 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. The National Weather Service (NWS) classifies a storm as "severe" if there is hail one inch in diameter (approximately the size of a quarter) or greater, based on radar intensity or as seen by observers. Based on historical data, hail of up to 4.25 inches has been recorded in the planning area and can be expected in the future.

Table 12-1: Hail Intensity and Magnitude

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 - 1.2	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

Source: NCEI Intensity Scale, based on the TORRO Hailstorm Intensity Scale.

The Hays County area may experience hailstorms ranging from an H0 to an H10 based on previous occurrences for the area discussed further below. The planning area can plan to mitigate storms ranging from hard hail (low risk) to super hailstorms (high risk), the latter potentially leading to widespread destruction of glass, roofs, and potential risk of injuries.

Historical Occurrences

Historical evidence for Hays County suggests that the entire planning area is vulnerable to hail events. Historical events with reported damage, injuries or fatalities are shown in Table 12-2 below. A total of 101 reported historical hail events impacted Hays County during the 25-year period from 1997 through 2023. These reported events may not represent all hail events to have occurred during this time since they were only the events reported to NCEI and NOAA databases. There have not been any events recorded past the listed dates.

Table 12-2: Historical Hail Events

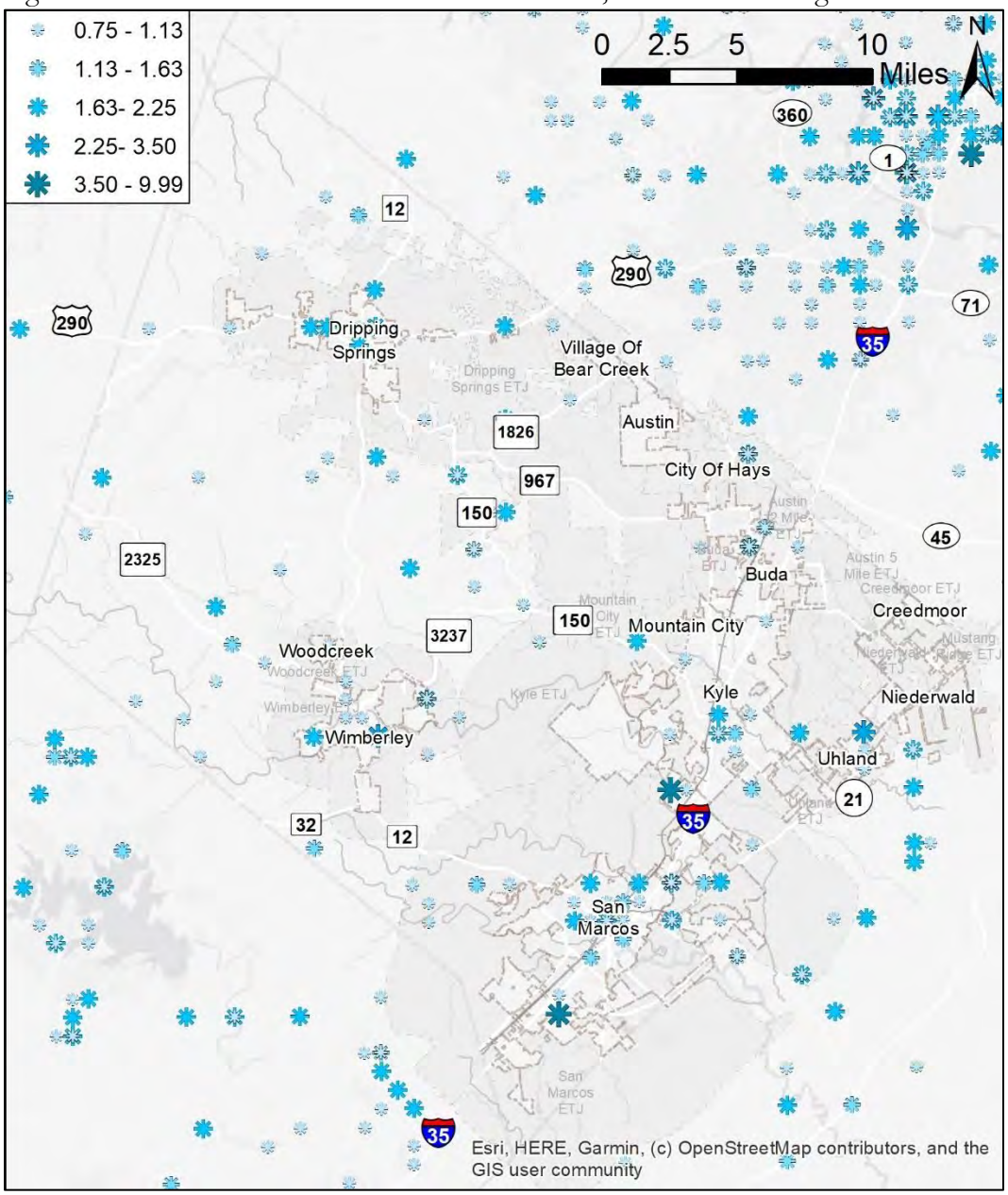
Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Wimberley	3/2/1997	1	0	0	$0	$0
Wimberley	4/4/1997	0.75	0	0	$0	$0
San Marcos	4/20/1997	0.75	0	0	$0	$0
San Marcos	5/15/1997	0.88	0	0	$0	$0
San Marcos	5/27/1997	0.75	0	0	$0	$0
Wimberley	2/25/1998	0.75	0	0	$0	$0
San Marcos	2/26/1998	0.75	0	0	$0	$0
Henly	3/7/1998	0.75	0	0	$0	$0
San Marcos	6/5/1998	0.75	0	0	$0	$0
Dripping Spgs	5/24/1999	1.75	0	0	$0	$0
Buda	5/24/1999	1	0	0	$0	$0
San Marcos	3/16/2000	4.5	0	0	$600,000	$0
Dripping Spgs	4/7/2000	1	0	0	$100,000	$0
Dripping Spgs	5/6/2001	1.75	0	0	$0	$0
Kyle	10/20/2002	0.75	0	0	$0	$0
San Marcos	12/30/2002	1.5	0	0	$0	$0
San Marcos	3/25/2003	0.75	0	0	$0	$0
San Marcos	6/2/2003	0.75	0	0	$0	$0
Dripping Spgs	10/13/2004	1	0	0	$0	$0
Wimberley	5/29/2005	1.75	0	0	$0	$0
San Marcos	4/20/2006	4.25	0	1	$100,000,000	$0

San Marcos	4/20/2006	2	0	0	$0	$0
Wimberley	3/30/2007	0.88	0	0	$0	$0
Kyle	4/13/2007	0.75	0	0	$0	$0
Wimberley	4/25/2008	0.75	0	0	$0	$0
Henly	2/10/2009	1	0	0	$0	$0
Wimberley	2/10/2009	0.75	0	0	$0	$0
Wimberley	5/17/2010	1	0	0	$0	$0
Wimberley	5/17/2010	1	0	0	$0	$0
Driftwood	5/11/2011	1.75	0	0	$0	$0
Mt Gaynor	5/20/2011	0.75	0	0	$0	$0
Driftwood	5/20/2011	1	0	0	$0	$0
Driftwood	5/20/2011	1	0	0	$0	$0
Mt Gaynor	5/20/2011	1	0	0	$0	$0
Driftwood	5/20/2011	1	0	0	$0	$0
Driftwood	5/20/2011	0.88	0	0	$0	$0
San Marcos Lowman Ar	9/29/2011	1	0	0	$0	$0
Fitzhugh	1/24/2012	1	0	0	$0	$0
Buda	4/3/2012	0.88	0	0	$0	$0
Wimberley	4/20/2012	0.88	0	0	$0	$0
Wimberley	4/20/2012	1	0	0	$0	$0
Fitzhugh	3/19/2013	1.5	0	0	$0	$0
San Marcos Lowman Ar	3/19/2013	1	0	0	$0	$0
Wimberley	3/19/2013	1	0	0	$0	$0
San Marcos	3/19/2013	1	0	0	$0	$0
Driftwood	4/27/2013	1.75	0	0	$0	$0
San Marcos	4/29/2013	1	0	0	$2,000	$0
Wimberley	5/9/2013	1	0	0	$0	$0
San Marcos	5/9/2013	0.88	0	0	$0	$0
Wimberley	5/10/2013	0.88	0	0	$0	$0
Driftwood	5/27/2014	1	0	0	$0	$0
Fitzhugh	5/27/2014	0.75	0	0	$0	$0
Kyle	5/27/2014	1.75	0	0	$0	$0
Buda	5/27/2014	1.5	0	0	$0	$0
Kyle	5/27/2014	1	0	0	$0	$0
Kyle	5/27/2014	1.75	0	0	$0	$0
Kyle	5/27/2014	1.5	0	0	$0	$0
Driftwood	4/16/2015	0.88	0	0	$0	$0
San Marcos Lowman Ar	4/16/2015	0.88	0	0	$0	$0
San Marcos	4/16/2015	0.75	0	0	$0	$0
Dripping Spgs	4/18/2015	2	0	0	$0	$0

Wimberley	12/27/2015	0.75	0	0	$0	$0
Wimberley	3/18/2016	1	0	0	$0	$0
Kyle	4/1/2016	0.88	0	0	$0	$0
Wimberley	4/30/2016	0.75	0	0	$0	$0
Wimberley	4/30/2016	0.88	0	0	$0	$0
Wimberley	4/30/2016	1.75	0	0	$0	$0
San Marcos	4/2/2017	0.88	0	0	$0	$0
Dripping Spgs	4/11/2017	1	0	0	$0	$0
San Marcos Lowman Ar	4/11/2017	0.88	0	0	$0	$0
San Marcos Lowman Ar	4/11/2017	0.75	0	0	$0	$0
San Marcos Lowman Ar	4/11/2017	1	0	0	$0	$0
Buda	5/23/2017	1	0	0	$0	$0
Dripping Spgs	6/9/2017	1.75	0	0	$0	$0
Mt Gaynor	6/9/2017	1	0	0	$0	$0
Wimberley	6/9/2017	1	0	0	$0	$0
Wimberley	6/9/2017	1.5	0	0	$0	$0
San Marcos Lowman Ar	4/6/2019	0.75	0	0	$0	$0
San Marcos Lowman Ar	4/6/2019	1	0	0	$0	$0
San Marcos	4/6/2019	1.5	0	0	$0	$0
San Marcos Lowman Ar	4/6/2019	1.25	0	0	$0	$0
San Marcos Lowman Ar	4/6/2019	1.5	0	0	$0	$0
Wimberley	5/9/2019	1.5	0	0	$0	$0
Henly	1/10/2020	0.75	0	0	$0	$0
Buda	5/27/2020	1	0	0	$0	$0
San Marcos Lowman Ar	3/23/2021	0.75	0	0	$0	$0
San Marcos	3/23/2021	1	0	0	$0	$0
San Marcos Lowman Ar	4/28/2021	2	0	0	$0	$0
San Marcos Lowman Ar	4/28/2021	1.75	0	0	$0	$0
Kyle	4/28/2021	1	0	0	$0	$0
San Marcos	5/4/2021	1	0	0	$0	$0
Kyle	5/18/2021	1	0	0	$0	$0
San Marcos Lowman Ar	3/2/2023	1.75	0	0	$0	$0
San Marcos	3/2/2023	1	0	0	$0	$0
San Marcos	3/2/2023	1	0	0	$0	$0
Dripping Spgs	4/26/2023	1.75	0	0	$0	$0
Dripping Spgs	4/26/2023	1.75	0	0	$0	$0
Dripping Spgs	4/26/2023	1.5	0	0	$0	$0
Fitzhugh	6/10/2023	1.75	0	0	$0	$0
Fitzhugh	6/10/2023	1	0	0	$0	$0
Fitzhugh	6/10/2023	1	0	0	$0	$0

Figure 12-2 plots this historical evidence by locating past hail events in the Hays County planning area where latitude and longitude were available.

Figure 12-2: Historic Hailstorms Events 1950-2021, Location and Magnitude



Significant Events

April 20, 2006 – San Marcos

The team began the survey along IH-35 near Center Point Road. They noted widespread damage to trees and vegetation beginning near that point and continuing northward to the San Marcos Tanger Outlet Mall and Prime Time Outlet Mall. The damage was caused by a combination of large hail and winds gusting 40 to 50 mph. NWS NEXRAD Radar late Thursday afternoon had indicated severe thunderstorms in that area moving toward the northeast.

At the south end of the malls, the parking lot surface was covered with dents and impressions produced by the wind and hail. Hundreds of vehicles had been damaged in this event but only a few remained in the area. Most of these had all of the window glass broken out with hundreds of hail dents in the car bodies. At this part of the malls, damage to store signs was seen only on the north and west sides of buildings. There was no damage to signs on the south and east sides. Therefore, the storm winds had propelled the hail toward the southeast. In addition to the sign damage, hundreds of roof tiles had been broken and cracked, and many of these had fallen into the parking lot during the storm.

As the team drove northward through the mall areas, the same type of damage to building signs and roofs as well as parking surfaces was seen. However, at the north end of the malls, damage to the store signs was confined to the south and west walls of the buildings. In this part of the malls, the damaging winds had propelled the hail toward the northeast.

Thus, the pattern of damage was fan-shaped, with the winds generally blowing the hail toward the west, but with a southeast component of motion on the south end of the malls and a northeast component of motion on the north end of the malls. This type of damage is clearly indicative of straight-line winds, also referred to as downburst winds." One of the NWS staff members was at the malls during the storm. Dents in his vehicle were 4.25 inches in diameter indicating that at some of the hail stones were as large as grapefruits. He had estimated windspeeds to be between 60 and 70 mph.

Probability of Future Events

Based on available records of historic events there were 101 events in a 25-year reporting period for the Hays County planning area. This provides a probability of at least one event every year. This frequency supports a **highly likely** probability of future events meaning that an event is probable somewhere in the planning area in the next year.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

Vulnerability and Impact

Hail can cause significant injury to humans and has been fatal in some circumstances. People could be struck by hail, falling trees, and branches. Also, hail could cause power outages which could cause health and safety risks to more vulnerable populations in the planning area. The most common impacts of hailstorms are to crops, trees, and landscaping since even small hail can tear plants apart in a short amount of time. Vehicles, roofs of buildings and homes, are also commonly damaged by hail. Older structures not built to current codes may be more susceptible to damages from hail than newer structures. HVAC and electrical service systems, particularly those on roofs, at schools, and critical facilities would be vulnerable and could also be damaged.

The Hays County planning area features mobile and manufactured home parks which are more vulnerable to hailstorms than site-built structures. In addition, manufactured and temporary housing is located sporadically throughout rural portions of the planning area which are also vulnerable to the hailstorm hazard and more prone to being isolated from

essential needs and emergency services in the event of a disaster. Also, structures built prior to 1980 are likely to have been built to lower or less stringent construction standards than newer construction and may be more susceptible to damages during significant events.

Based on 2022 American Community Survey estimates, there are 101,449 housing units in Hays County of which 4.8%, or 4,872 units, are mobile or manufactured homes. In addition, 8,432 (8.3%) of the housing units in the overall planning area were built before 1980. These structures are likely to have been built to less stringent construction standards than newer construction and could be more susceptible to damages during significant events.

Table 8-3. Structures at Greater Risk by Jurisdiction

Jurisdiction	Total Housing Units	Mobile Homes	Housing units built prior to 1980
Hays County*	101,449	4,872/ 4.8%	8,432/ 8.3%
City of Buda	5,695	49/ 0.9%	177/ 3.1%
City of Dripping Springs	2,044	48/ 2.3%	123/ 6.0%
City of Hays	63	0/ 0%	55/ 87.3%
City of Kyle	17,316	957/ 5.5%	581/ 3.4%
City of Mountain City	240	0/ 0%	28/ 11.7%
City of Niederwald	344	142/ 41.3%	48/ 14.0%
City of Uhland	530	275/ 51.9%	94/ 17.8%
City of Wimberley	1,275	73/ 5.7%	300/ 23.5%
City of Woodcreek	1,128	0/ 0%	162/ 14.4%
Village of Bear Creek	194	1/ 0.5%	15/ 7.7%

*County totals include all jurisdictions in addition to unincorporated areas.
Source: 2022 American Community Survey 5-year estimate, selected housing characteristics

Based on the ACS 2022 data, the City of Hays is at highest risk of damage from hailstorms when considering age of residential structures and the higher standard of building codes enacted after 1980. The City of Uhland is at the highest risk of damage from hailstorms when considering number and ratio of manufactured homes.

To mitigate the risks associated with the impacts of hailstorms, it's important to have early warning systems in place, build structures that can withstand high velocity impacts from hail, and establish emergency response plans to quickly respond to disasters.

Historic Hailstorm Impacts

The summary table below, 12-4, shows the 25-year property and crop damage totals as well as the average annual (Per Year) losses summarizing historic hailstorm impacts. Since weather varies year-to year, forecasts of specific years are less likely to be true (less reliable) than these totals and averages for the period. The bottom half of the table shows per capita dollar loss rates for the total and average annual losses. These rates are important measures for comparing losses between different hazards and areas. The average annual loss estimate of property and crop is $4,028,080 for Hays County.

Table 12-4, Hays County Loss Summary

Time Period	Fatalities	Injuries	Property Damage	Crop Damage
Loss Summary, Hays County				
25-year Total	0	0	$100,702,000	$0
Per Year	0	0	$4,028,080	$0
Per Capita Dollar Losses				
25-year Total	0	0	$374.04	$0
Per Year	0	0	$14.96	$0

Table 12-8 below distributes the countywide impacts presented in table 12-4 amongst the various participating jurisdictions based on ratios of populations based on the 2022 American Community Survey estimates and location information when available.

Table 12-5: Hailstorm Losses by Jurisdiction 1997-2023

Jurisdiction	Est. Prop. Losses	Est. Crop Losses	Total Est. Losses
Hays County*	$100,602,000	$0	$100,602,000
City of Buda	$0	$0	$0
City of Dripping Springs	$100,000	$0	$100,000
City of Hays	$0	$0	$0
City of Kyle	$0	$0	$0
City of Mountain City	$0	$0	$0
City of Niederwald	$0	$0	$0
City of Uhland	$0	$0	$0
City of Wimberley	$0	$0	$0
City of Woodcreek	$0	$0	$0
Village of Bear Creek	$0	$0	$0
Total	$100,702,000	$0	$100,702,000

* County totals include all other jurisdictions not participating in this plan as well as unincorporated areas.

SECTION 13: WILDFIRE

Description

Source: http://texasforestservice.tamu.edu

Wildfires are an unplanned, unwanted fire burning uncontrolled in a natural area rich with vegetative fuels, like a forest, grassland, or prairie. Meteorological conditions such as high temperatures, low humidity, droughts, and high wind increase wildfire risk. Sparks from agricultural, industrial, or automobile activity are often the cause of a wildfire with humans the most common source of initial ignition. Wildfires can also be naturally ignited by lightning strike as a part of the natural management of forest ecosystems. While wildfires can occur any time of year, they are especially likely over the spring and summer months, when fuel is often dry so flames can move unchecked through a highly vegetative area.

Location

Wildfires are most likely to occur in open grasslands but are not confined to any specific geographic location and can vary greatly in terms of size, location, intensity, and duration. The populated, urban areas of the planning area are less likely to experience large, sweeping fires. The more rural and sparsely populated unincorporated areas of Hays County are more vulnerable to large sweeping wildfire events. The threat to people and property is greatest in the wildland urban interface/intermix, however, the entire planning area of Hays County is at risk for wildfires.

Extent

The likelihood that a wildfire event will occur in the planning area is measured using the Keetch Byram Drought Index (KBDI) and the Texas Forest Service's Fire Intensity Scale (FIS). The KBDI describes the potential for wildfire based upon weather conditions such as daily water balance, precipitation, and soil moisture (Table 13-1). The index ranges from 0-800 with a score of 0 indicating no moisture depletion and a score of 800 representing completely dry conditions.

Table 13-1, Keetch Byram Drought Index (KBDI)

KBDI Score Range	Description
0-200	Soil moisture and large class fuel moistures are high and do not contribute much to fire intensity. Typical of early spring following winter precipitation.
200-400	Fuels are beginning to dry and contribute to wildfire intensity. Heavier fuels will still not readily ignite and burn. This is often seen in late spring or early summer.
400-600	Lower litter and duff layers contribute to fire intensity and will burn actively. Wildfire intensity begins to increase significantly. Larger fuels could burn or smolder for several days. This is often seen in late summer and early fall.
600-800	Often associated with more severe drought with increased wildfire occurrence. Intense, deep-burning fires with extreme intensities can be expected. Live fuels can also be expected to burn actively at these levels.

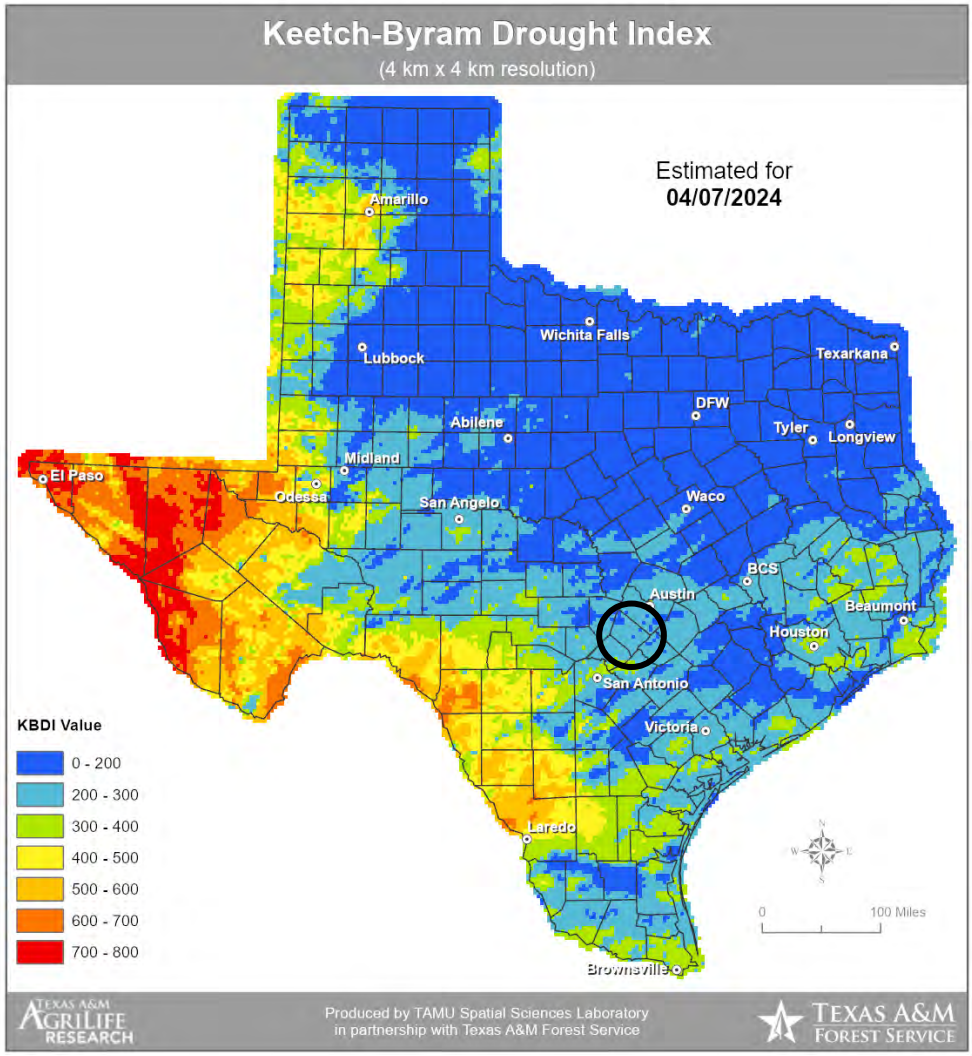
Table 13-2, Hays County Planning Area KBDI Values

	KBDI Mean	KBDI Maximum	KDBI Minimum
Hays	233	274	163

Source: https://twc.tamu.edu/kbdi

The average KBDI values for the planning area is approximately 233 and is the average extent to be mitigated (Table 13-2). Based on figure 13-1 below, the Hays County planning area exhibits values in the 0-300 range throughout its entirety as of the time of this report. At these levels, often associated with more severe drought, fire intensity and occurrence increases significantly and fires readily burn in all directions. The KBDI is a good measure of the readiness of fuels to ignite in the event of a wildfire. Drought or extreme weather conditions have the ability to greatly influence the KDBI in a short period of time so current KBDI should always be monitored to more accurately assess risk. The figure and data below are provided by the Texas Weather Service at Texas A&M Department of Ecosystem Science and Management and the following website can be regularly checked for updated information.

Figure 13-1, KBDI for the State of Texas on 4/7/2024



https://twc.tamu.edu/kbdi

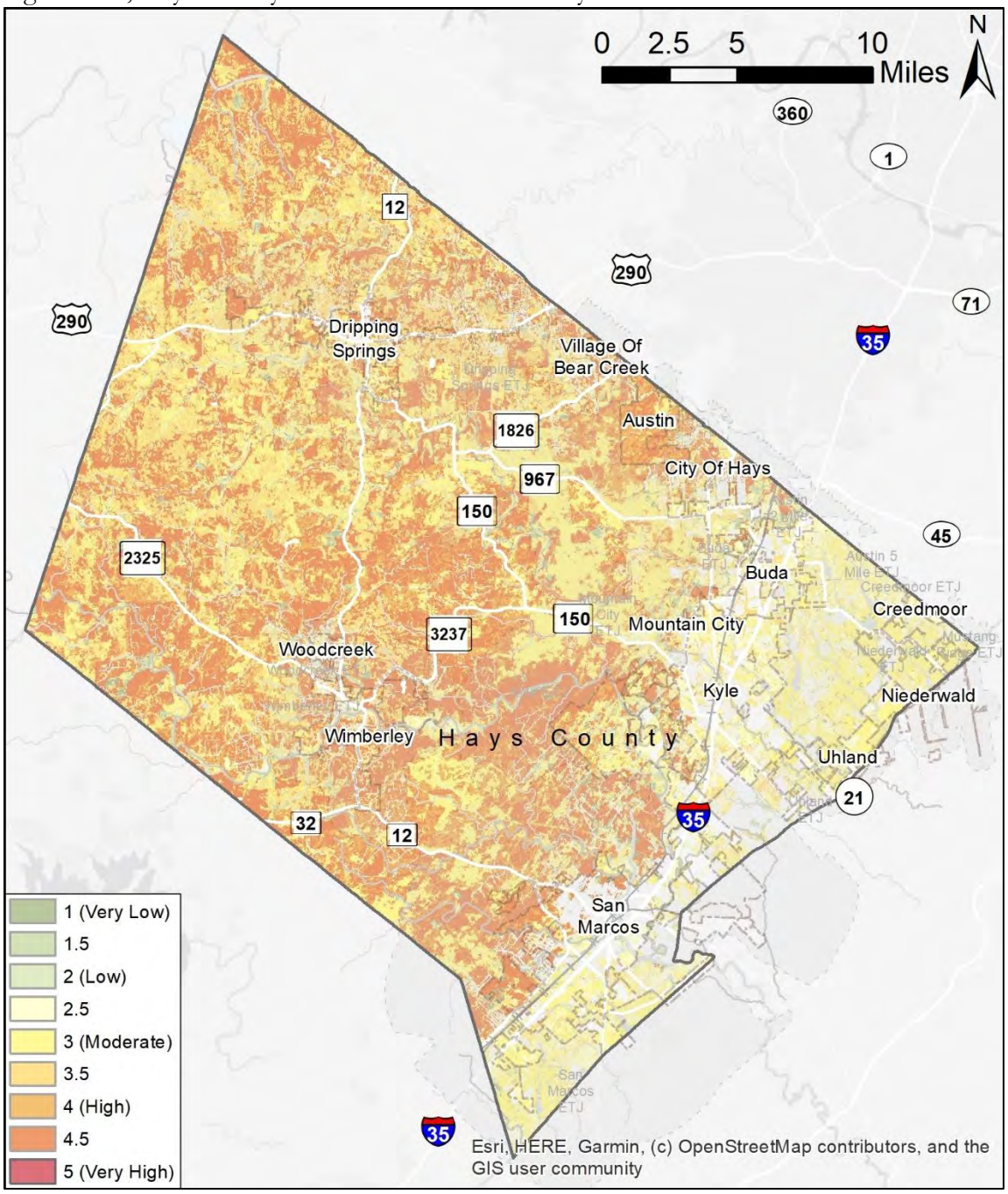
The Texas Wildfire Risk Assessment Portal (TXWRAP) is the primary mechanism for the Texas A&M Forest Service to deploy risk information and create awareness about wildfire issues across the state. www.TexasWildfireRisk.com The tool uses the Fire Intensity Scale (FIS) layer to determine the potential fire intensity for the specified location. FIS quantifies potential fire intensity based on high to extreme weather conditions, fuels, and topography. It is similar to the Richter scale for earthquakes, providing a standard scale to measure potential wildfire intensity by magnitude. FIS consist of 5 classes where the order of magnitude between classes is ten-fold. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 5, represents very high wildfire intensities.

Class 1 (Very Low)	Class 2 (Low)	Class 3 (Moderate)	Class 4 (High)	Class 5 (Very High)

- **Class 1, Very Low:** Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and nonspecialized equipment.
- **Class 2, Low:** Small flames, usually less than two feet long; small amount of very short-range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.
- **Class 3, Moderate:** Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.
- **Class 4, High:** Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property.
- **Class 5, Very High:** Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

The Fire Intensity Scale evaluates the potential fire behavior for an area, regardless if any fires have occurred there in the past. This additional information allows local officials and mitigation planners to quickly identify areas where dangerous fire behavior potential exists in relationship to nearby homes or other valued assets. **The wildfire risk for the Hays County planning area is moderate to high based on the characteristic wildfire intensity scale.**

Figure 13-2, Hays County Characteristic Fire Intensity Scale



Source: https://wrap.texaswildfirerisk.com/Map/Pro/#project-areas

Historical Occurrences

The NCEI storm events database carries limited information on wildfire occurrence information with damage estimates of impacts, injuries, or fatalities in the planning area from 1997-2023. There have not been any events recorded past the listed dates.

Table 13-3, Wildfires in Hays County, 1997- 2023

Location	Date	Name	Deaths	Injuries	Property Damage	Crop Damage
Hays	9/4/2011	Pedernales Bend Wildfire	0	0	$6,000,000	$0
Hays	1/30/2018	2325 Wildland Fire	0	0	$0	$0
Hays	7/6/2022	Gaitlin Creek Wildfire	0	0	$0	$0
Hays	8/2/2022	Smoke Rider Wildfire	0	0	$0	$0
Hays	8/5/2023	Oak Grove Wildfire	0	0	$500,000	$0
Hays	8/5/2023	Fox Fires	0	0	?	?

Significant Events

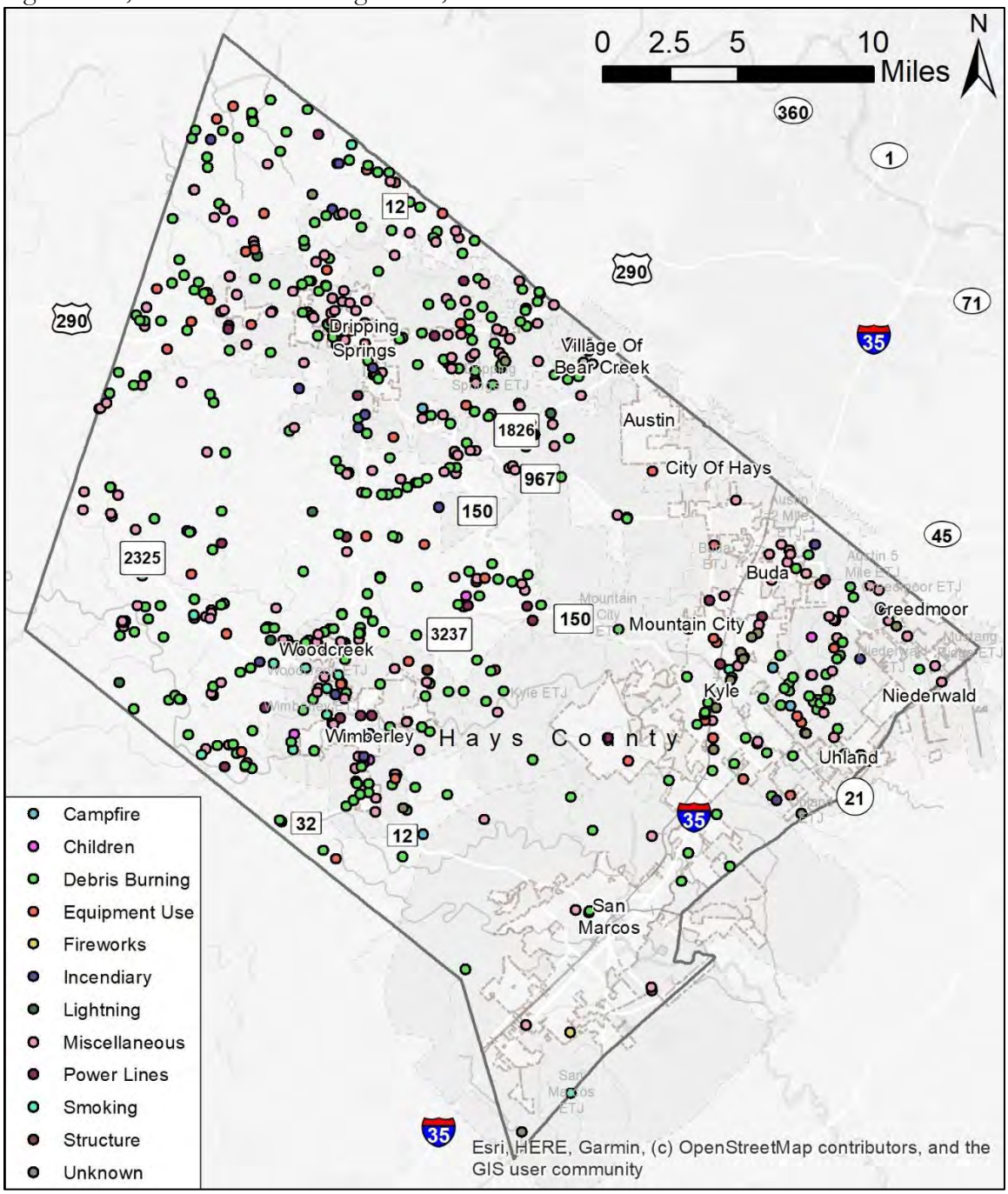
August 4, 2011 – Pedernales Bend Wildfire

The Pedernales Bend Wildfire started in Travis County on September 4 behind Tropical Storm Lee and a cold front that brought strong northerly winds. The peak wind at Austin Bergstrom International Airport was 36 mph. The fire burned into Hays County and eventually consumed 6500 acres and destroyed 67 homes.

Wildfire Ignitions

The Texas Forest Service (TFS), started collecting wildfire data in 1985 and volunteer fire departments started reporting events in 2005. This data does not have estimated impact information, but it does provide a snapshot of historical wildfire occurrence to estimate a future frequency of events. The Texas Forest Service reported 677 wildfire events in the Hays County planning area between 2005 and 2021. Due to a lack of recorded data for wildfire events prior to 2005, frequency calculations are based on the sixteen-year period from 2005 to 2021. The map on the following page shows approximate locations of wildfires in Hays County and the cause of ignitions.

Figure 13-4, Historical Wildfire Ignitions, 2005 – 2021



Source: https://wrap.texaswildfirerisk.com

Table 13-3 below lists the ignition causes for all wildfires in the planning area between 2005-2021, the number of times of each unique ignition cause, and the percent of total ignitions.

Table 13-3, Wildfire ignition causes from 2005-2021

Ignition Cause	Count	% of Total
Campfire	5	0.7%
Children	13	1.9%
Debris burning	311	45.9%

Equipment use	56	8.3%
Fireworks	1	0.1%
Incendiary	25	3.7%
Lightning	6	0.9%
Miscellaneous	209	30.9%
Power Lines	22	3.2%
Smoking	11	1.6%
Structure	1	0.1%
Unknown	17	2.5%
Grand Total	677	100%

Source: Texas Wildfire Risk Assessment Portal (TxWRAP)

Probability of Future Events

Based on reported historical occurrences of wildfire, 677 wildfire ignition events occurred in a 16-year reporting period for Hays County. This data establishes an approximate probability of occurrence of 42 events per year. This frequency supports a **highly likely** probability of future events, meaning a wildfire event is highly probable within the next year. The risk of future wildfires with greater impact to people and property will increase if existing development patterns continue into the wildlands.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

Vulnerability and Impact

Populations and structures that are most susceptible to wildfire risk are located in the wildland urban interface and/or intermix (WUI). WUI fires occur in areas where the built environment, structures and other improvements, meet undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases the risk from wildfire. Natural vegetation provides the fuel for wildfires in natural uninhabited areas, while WUI fires consume both vegetation and materials from the built environment. In Texas nearly 85 percent of wildfires occur within two miles of a community. 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 severity of impact from major wildfire events can be substantial. Such events have caused deaths and injuries, damaged or destroyed property and critical facilities, and disrupted infrastructure and services. Severity of impact is gauged by homes and structures lost, acreage burned, and the number of resulting injuries and fatalities. The vulnerability of the jurisdictions in the planning area to wildfire events is increased where critical facilities are in the WUI as they are more likely to sustain damage from the hazard event. For the Hays County project area, it is estimated that 123,815 people or 79.6% percent of the total project area population (155,550) live within the WUI. Figure 13-6 on the following page shows the wildland urban interface and the threat of wildfire across the Hays County planning area.

Critical facilities located within the WUI of the Hays County planning area are listed in Table 13-4 below.

Table 13-4: Critical Facilities in the Wildland Urban Interface (WUI)

Critical Facilities
All facilities in all participating jurisdictions.

Figure 13-6: Wildland Urban Interface, Hays County

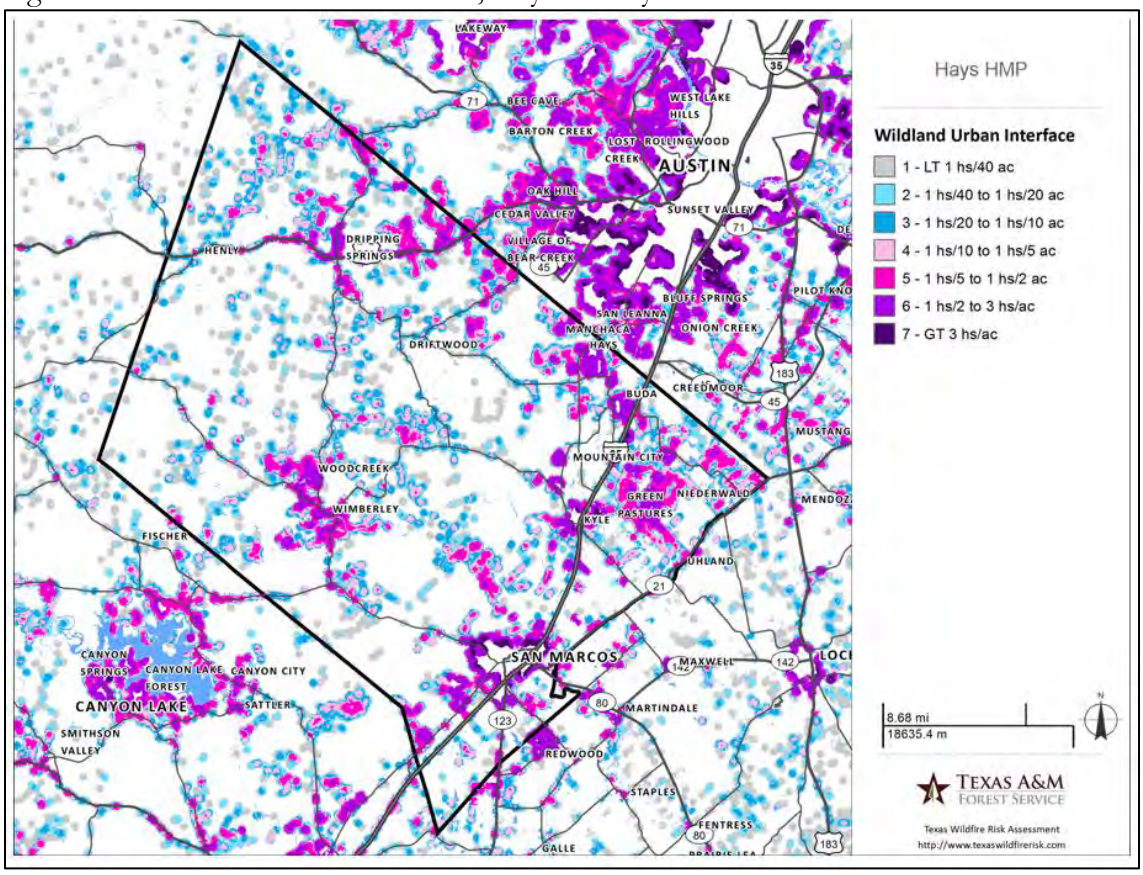


Figure 13-7: Wildland Urban Interface, Dripping springs ISD

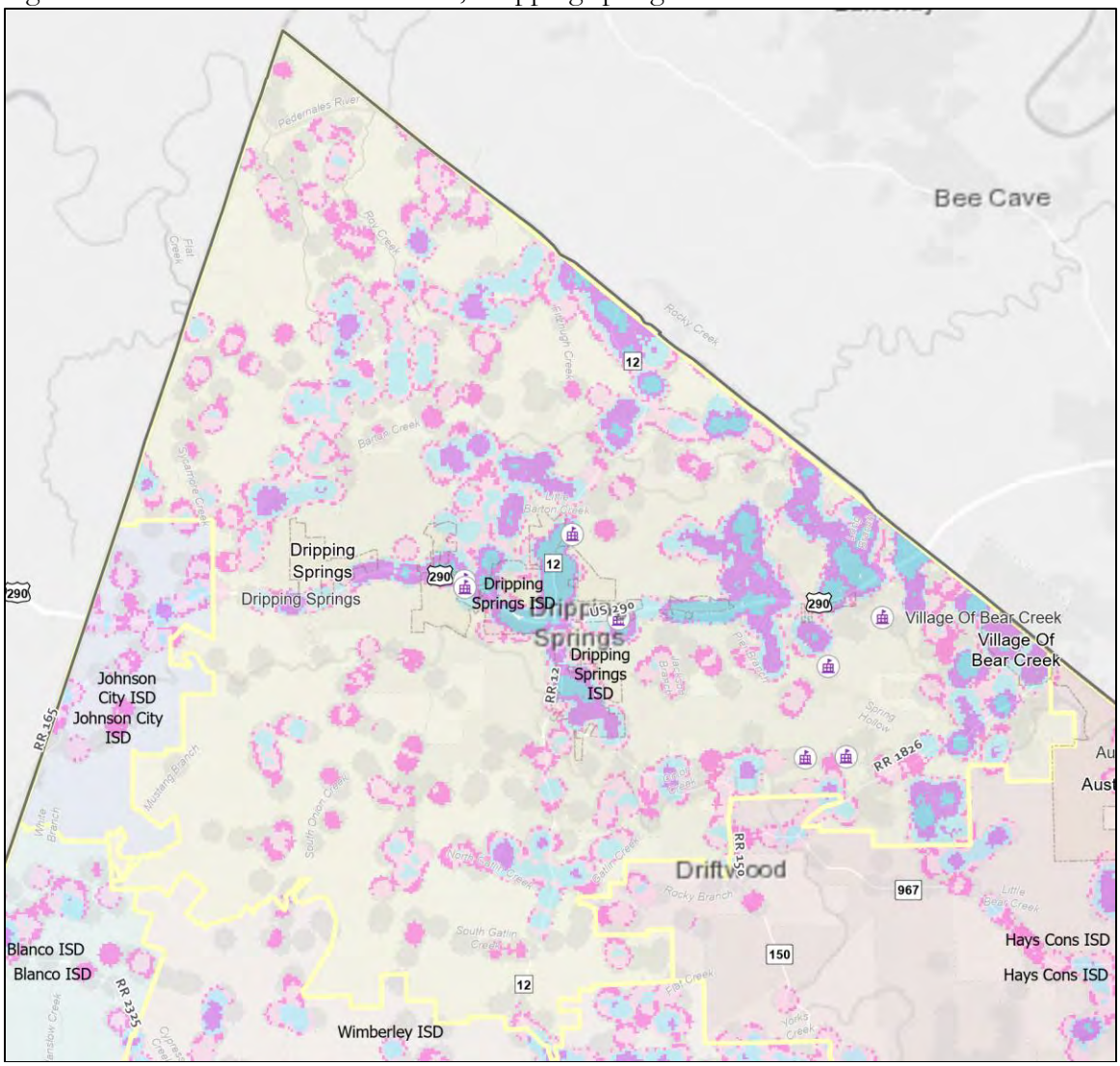


Figure 13-8: Wildland Urban Interface, Hays Consolidated ISD

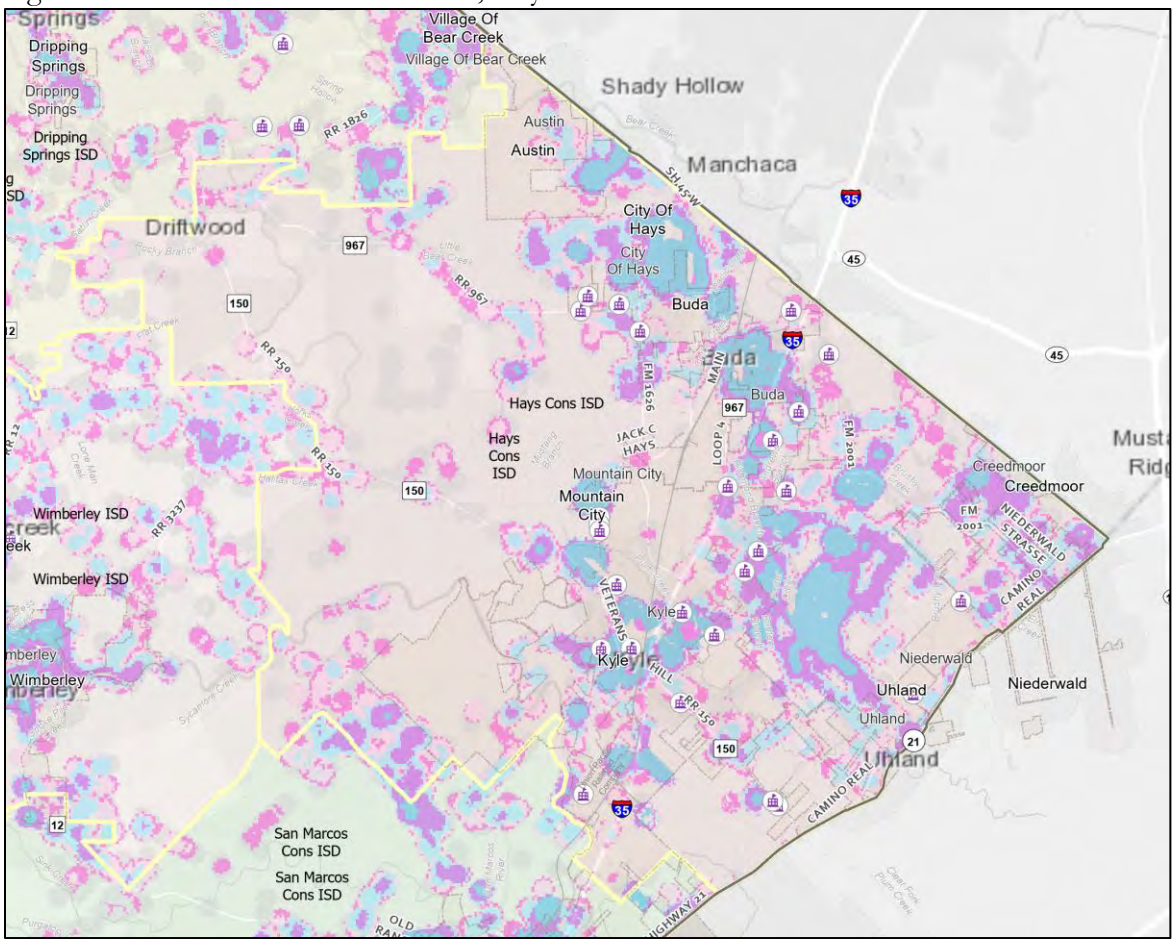


Figure 13-9: Wildland Urban Interface, San Marcos Consolidated ISD

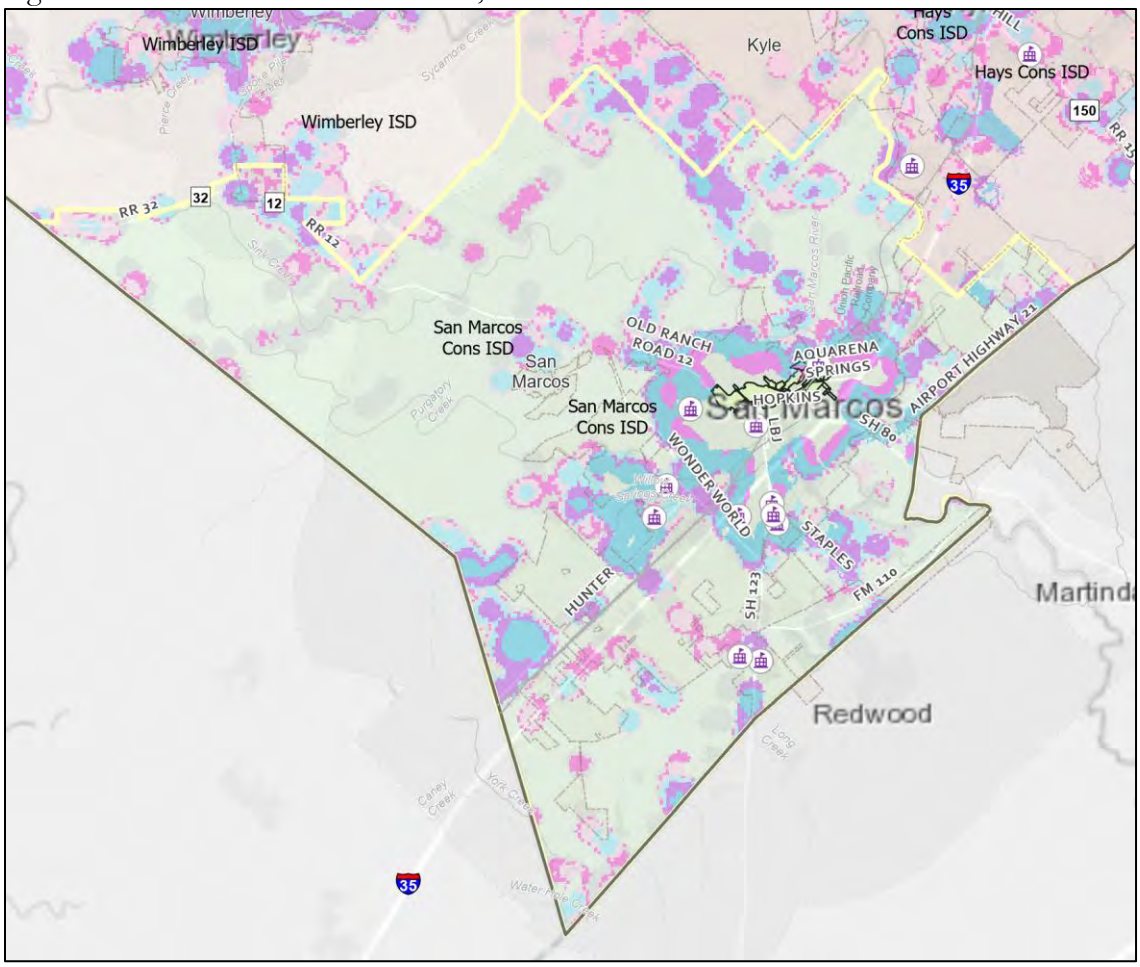


Figure 13-10: Wildland Urban Interface, Wimberley ISD

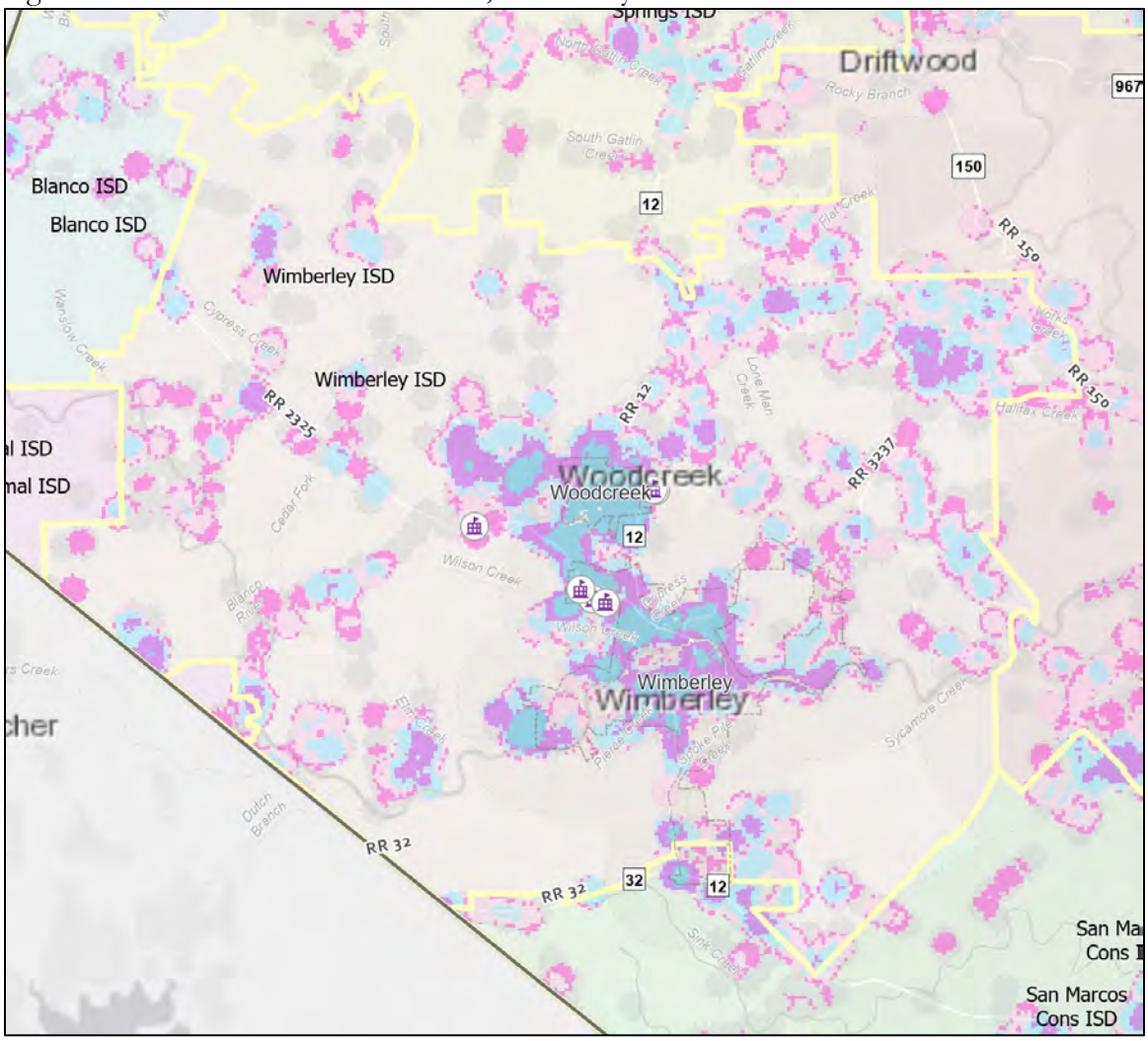
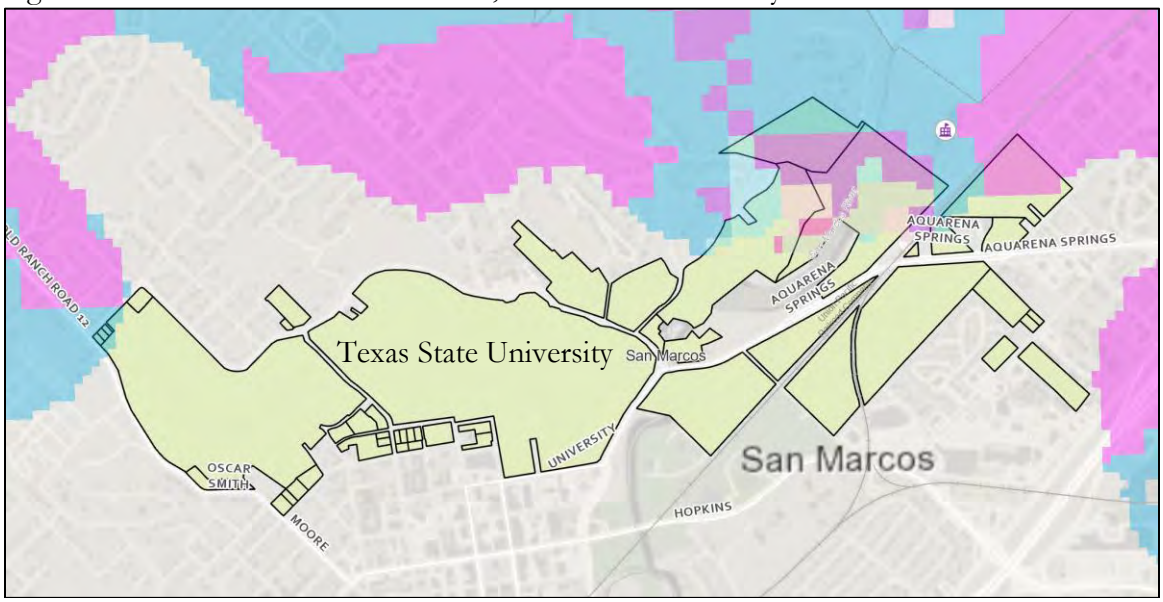


Figure 13-11: Wildland Urban Interface, Texas State University

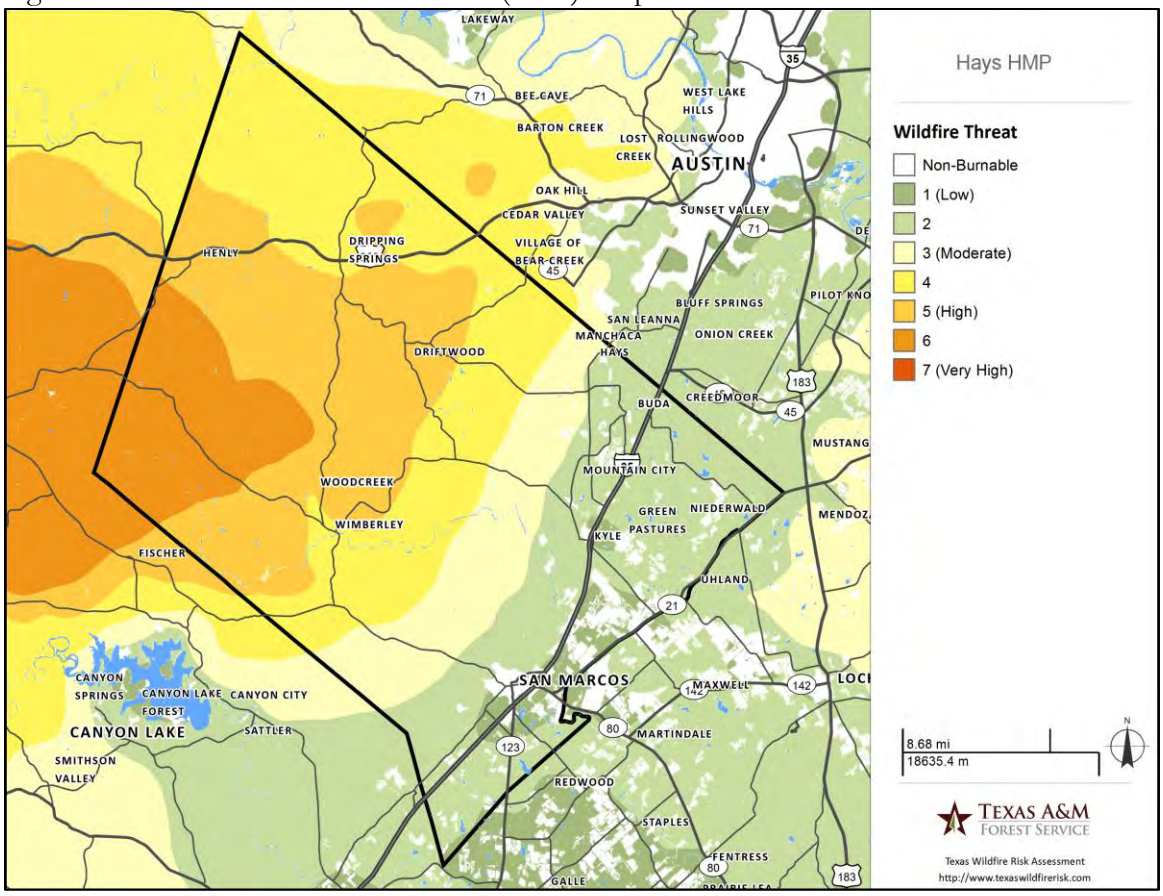


Wildfire Threat is the likelihood of a wildfire occurring or burning into an area. Threat is derived by combining a number of landscape characteristics including surface fuels and canopy fuels, resultant fire behavior, historical fire occurrence, percentile weather derived from historical weather observations, and terrain conditions. These inputs are combined using analysis techniques based on established fire science.

The measure of wildfire threat used in the Texas Wildfire Risk Assessment (TWRA) is called Wildland Fire Susceptibility Index, or WFSI. WFSI combines the probability of an acre igniting (Wildfire Ignition Density) and the expected final fire size based on rate of spread in four weather percentile categories. WFSI is defined as the likelihood of an acre burning. Since all areas in Texas have WFSI calculated consistently, it allows for comparison and ordination of areas across the entire state. For example, a high threat area in East Texas is equivalent to a high threat area in West Texas.

To aid in the use of Wildfire Threat for planning activities, the output values are categorized into seven (7) classes. These are given general descriptions from Low to Very High threat. Figure 13-12 below shows Hays County and the threat of wildfire across the planning area and all participating jurisdictions. The highest wildfire threat can be seen in the western most areas of the Hays County Planning area with the participating jurisdictions of Dripping Springs, Wimberley, and Woodcreek exhibiting the highest risk. The school districts and Texas State University exhibit the same overall vulnerability and impacts as the jurisdictions and surrounding areas in which they are coincident. Texas State University exhibits the highest high threat of wildfire in the northeast area of the campus but the impacts are low because these areas have been left undeveloped.

Figure 13-12: Wildland Urban Interface (WUI) Response



Source: https://wrap.texaswildfirerisk.com

Wildfire Ignition Density is 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 1000 acres.

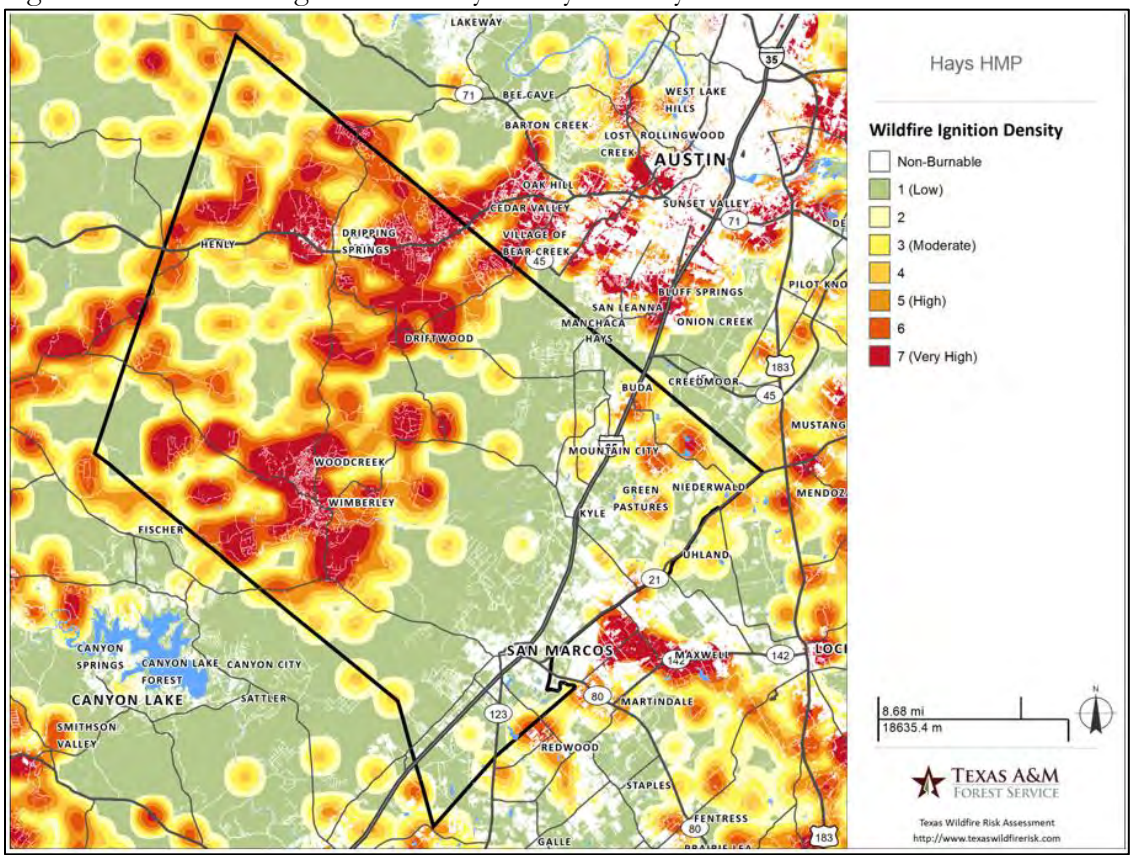
Five years of historic fire report data was used to create the ignition points for all Texas fires. Data was obtained from federal, state and local fire department report data sources for the years 2005 to 2009. The compiled wildfire occurrence database was cleaned to remove duplicate records and to correct inaccurate locations. The database was then modeled to create a density map reflecting historical fire ignition rates.

The measure of wildfire occurrence used in the Texas Wildfire Risk Assessment (TWRA) is called the Wildfire Ignition Density. 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. To aid in the use of Wildfire Ignition Density for planning activities, the output values are categorized into seven (7) classes reflecting average ignition rates. These are given general descriptions from Low to Very High.[9] This Wildfire Ignition Density Map further

[9]Texas Wildfire Risk Summary Report for Hays County, txwrap.com

reinforces the earlier finding that the Cities of Dripping Springs, Wimberley, and Woodcreek generally exhibit the highest wildfire threat in the Hays County Planning area.

Figure 13-13: Wildfire Ignition Density in Hays County



Source: https://wrap.texaswildfirerisk.com

The impacts from a wildfire to the Hays County planning area would be severe based on the overall moderate to high-risk rating. This would include air quality degradation due to the wildfire producing large amounts of smoke and other pollutants. This situation can cause health problems for residents, especially those with respiratory issues. If the wildfire is severe enough, or close enough to populated areas, it can result in the need for evacuations. Evacuating can be a traumatic experience for many people, especially if they must leave their homes and possessions behind, including pets. Wildfires often harm or destroy homes, businesses, and other buildings, leading to significant property damage. They can cause power outages, which can disrupt normal life and can cause economic impacts, especially to places that depend on tourism or agriculture. The loss of power and disruption to normal life can result in financial losses for businesses and individuals.

To reduce these vulnerabilities and impacts, cities can take steps to prepare for wildfires, such as creating evacuation plans, conducting regular fire drills, implementing building codes and other regulations to reduce fire risk, and working with fire departments to improve fire suppression and response capabilities.

SECTION 14: SEVERE WINTER STORMS

Description

A severe winter storm event is when temperatures hover below freezing and precipitation includes freezing ice, snow, and sleet. Strong winds often accompany severe winter storms and combines with freezing precipitation to produce a low wind chill. Severe winter storms may include snowstorms, blizzards, cold waves and ice storms. Snowstorms include four or more inches of snow in a 12-hour period. Blizzards are characterized by low temperatures and strong winds in excess of 35 mph with large amounts of drifting snow. A cold wave is a winter cold front with a drastic drop in temperature. An ice storm occurs when rain falls out of the warm and moist upper layers of the atmosphere into a cold and dry layer near the ground. The rain freezes on contact with the cold ground and accumulates on exposed surfaces. If a half inch of rain freezes on trees and utility wires, damage can occur, especially if accompanied by high winds. Half an inch is used as the criteria before an icing event is categorized as an "ice storm." Winter storm events are generally mild and short-lived in the Central Texas region. Figure 14-1 below lists the types of severe winter storms that can impact the planning area and a description of the winter weather conditions that accompany the severe weather alert issued by the National Weather Service (NWS).

Table 14-1: Extent Scale – Winter Weather Alerts

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.
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 warning	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 warning	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

Severe winter storm events are not confined to specific geographic boundaries and vary in intensity and duration. All existing and future buildings, facilities, and populations in the Hays County planning area are considered to be uniformly exposed to a winter storm hazard and could potentially be impacted.

Extent

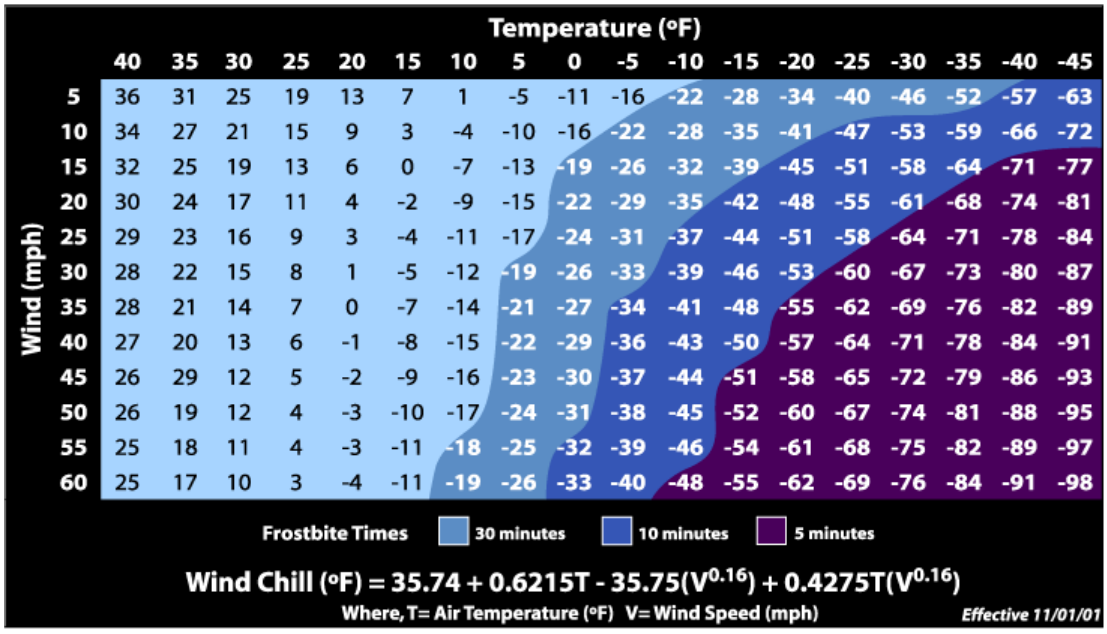
The extent or magnitude of a severe winter storm is measured by on an intensity scale from "Mild" to "Severe" based on temperature ranges and snow accumulation levels. Table 14-1, Magnitude of Severe Winter Storms, is an index developed by the National Weather Service (NWS). This table should be referenced with the wind chill factor, Figure 14-2, to better determine the intensity of a winter storm. Based on past events, the planning area can expect to experience severe winter storms with extreme intensity in the future.

Table 14-2: 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

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 30° day would feel just as cold as a calm day with 0° temperatures. Figure 14-2 is a chart for calculating wind chill using the wind speed and air temperature. Please note that it is not applicable in calm winds or when the temperature is over 50°F.

Figure 14-1: Wind Chill Chart



Source: National Weather Service

Historical Occurrences

Based on NCEI data, from 1997 through August 2023 the Hays County planning area experienced 27 severe winter events in the form of winter storms, winter weather, and heavy snow. No injuries or fatalities were reported for the following severe winter events.

Table 14-3: Historical Occurrences of Severe Winter Weather Events in Hays County

Location	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
Hays	1/7/1997	Winter Storm	0	0	$0	$0
Hays	1/11/1997	Winter Storm	0	0	$0	$0
Hays	12/23/1998	Winter Storm	0	0	$0	$0
Hays	12/12/2000	Winter Storm	0	0	$0	$0
Hays	11/28/2001	Winter Storm	0	0	$0	$0
Hays	2/24/2003	Winter Storm	0	0	$0	$0
Hays	12/7/2005	Winter Storm	0	0	$0	$0
Hays	1/15/2007	Winter Storm	0	0	$125,000	$0
Hays	2/3/2011	Winter Storm	0	0	$0	$0
Hays	11/26/2013	Winter Weather	0	0	$0	$0
Hays	1/23/2015	Winter Weather	0	0	$0	$0
Hays	2/16/2015	Winter Weather	0	0	$0	$0
Hays	12/7/2017	Winter Weather	0	0	$0	$0
Hays	1/16/2018	Winter Storm	0	0	$0	$0
Hays	2/5/2020	Winter Weather	0	0	$0	$0
Hays	1/10/2021	Winter Storm	0	0	$0	$0
Hays	2/11/2021	Winter Storm	0	0	$0	$0

Hays	2/13/2021	Winter Storm	0	0	$0	$0
Hays	2/15/2021	Extreme Cold/Wind Chill	0	0	$0	$0
Hays	2/16/2021	Winter Storm	0	0	$0	$0
Hays	1/11/2022	Winter Weather	0	0	$0	$0
Hays	1/20/2022	Winter Weather	0	0	$0	$0
Hays	2/3/2022	Winter Storm	0	0	$0	$0
Hays	2/12/2022	Winter Weather	0	0	$0	$0
Hays	12/22/2022	Extreme Cold/Wind Chill	0	0	$0	$0
Hays	1/30/2023	Winter Storm	0	0	$0	$0
Hays	2/1/2023	Winter Storm	0	0	$2,400,000	$0

Significant Events

February 1, 2023 – Hays County

A cold front brought a shallow layer of cold air. Warm, moist southeasterly flow above this cold air produced light freezing rain and freezing drizzle for several days. Freezing rain began around 1 PM on January 30 and continued off and on through February 2. By 5:15 PM on January 30 an eighth of an inch of ice had accumulated in Dripping Springs. By the end of the event 0.5 of ice had accumulated in Dripping Springs, 0.38 in Wimberley and Driftwood, and 0.25 in Buda. The ice brought down trees and tree branches in Wimberley and Dripping Springs. The cost of damages was estimated at $2.4 million. The Pedernales Electric Cooperative, headquarters in Johnson City, provides electricity to most of Blanco and Burnet Counties and parts of Edwards, Real, Kerr, Williamson, Travis, Hays, Comal, and Kendall Counties, reported $13 million in damage. This damage is likely included in the damage estimates reported by the counties.

Probability of Future Events

According to historical records the Hays County planning area experiences approximately one winter storm event every year. The probability of a future winter storm event occurring in the planning area is **highly likely**, with a winter storm likely to occur within the next year.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

Vulnerability and Impact

All infrastructure, critical facilities, populations, and buildings in the Hays County planning area are vulnerable to severe winter events. Winter weather such as ice hazards and extremely cold temperatures, as well as snow present a risk to the planning area.

Populations of people and animals are subject to direct health risks from extended exposure to cold air and precipitation. Animals, such as pets and livestock, typically cannot survive the effects of direct exposure to severe winter weather and should be provided shelter. In addition, House fires can occur more frequently during winter storm events due to increased and improper use of alternative heating sources which can cause injury or deaths. Moreover, house fires during winter storms present a greater danger because some areas may not be

easily accessible due to icy roads and water supplies may freeze and impede firefighting efforts. The people most at risk to the effects of severe winter storms are children younger than 5 and older adults over 65. Vulnerable populations are at greater risk of death from hypothermia during these events, especially in the rural areas of the county where populations are sparse, icy roads may impede travel, and there are fewer neighbors to check in on the elderly.

The planning area has a total population of 269,225 according to the 2022 ACS population estimate. Those over the age of 65 represent 12.1% (32,508) of the total population and children under the age of 5 represent 5.8% (15,529) of the total population. The total population of the county that is estimated to be below the poverty level is 10.0% (26,986). Table 7-4 presents the 2022 American Community Survey population and age cohort estimates below.

Table 14-4: Populations at Greater Risk by Jurisdiction

Jurisdiction	Population 65 and Older	Population Under 5	Population Below Poverty Level
Hays County	32,508	15,529	26,986
City of Buda	1,465	993	1,179
City of Dripping Springs	945	313	168
City of Hays	51	4	13
City of Kyle	3,579	3,606	3,457
City of Mountain City	113	71	9
City of Niederwald	165	117	238
City of Uhland	125	143	138
City of Wimberley	673	15	219
City of Woodcreek	815	113	76
Village of Bear Creek	113	26	2

Source: 2022 American Community Survey (Note: County totals include both incorporated and unincorporated areas)

Public and private infrastructure is also vulnerable to severe winter storms. These events can disrupt electric service for long periods of time. In addition, extended periods of freezing temperatures can cause water pipes to freeze and crack. The buildup of ice can cause power lines and tree limbs to break under the weight, potentially causing damage to property or the electric grid. During these times of ice and snow accumulation, response times will increase until public works road crews are able to clear roads of ice, snow, and other obstructions.

Historic Severe Winter Storm Impacts

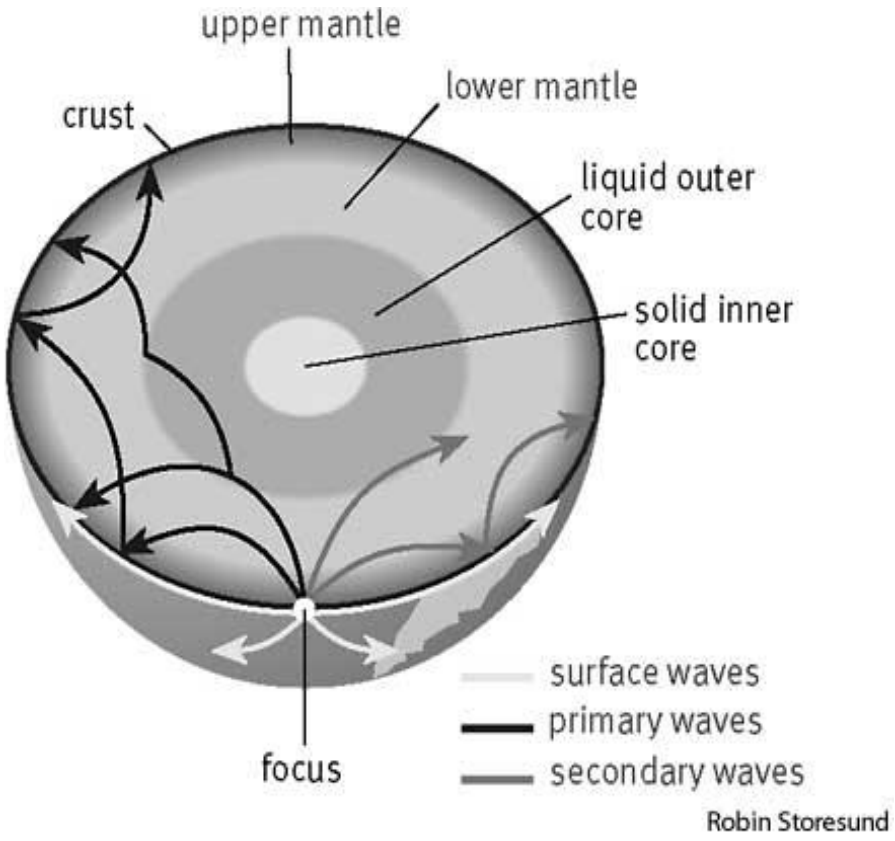
A total of $2,525,000 of property damage was reported over the 25-year period of analysis across the Hays County planning area. Based on historical records and in relation to the loss estimates from other hazards, annual severe winter storm impacts are considered to be High.

SECTION 15: EARTHQUAKES

Description

An earthquake is the shaking of the surface of the Earth resulting from the sudden release of energy created by a movement along fault lines in the earth's crust. Earthquakes can range in size from those that are so weak that they cannot be felt to those violent enough to throw people and destroy whole cities. Most earthquake-related property damage and deaths are caused by the failure and collapse of structures due to ground shaking. The level of damage that results from an earthquake depends on the extent and duration of the shaking. Earthquakes produce three type of energy waves as described in Figure 15-1 below.

Figure 15-1: Energy Waves Caused by Earthquakes



Source: *"earthquake". The American Heritage® Science Dictionary. Houghton Mifflin Company. 20 Oct. 2017. <http://www.dictionary.com/browse/earthquake>.*

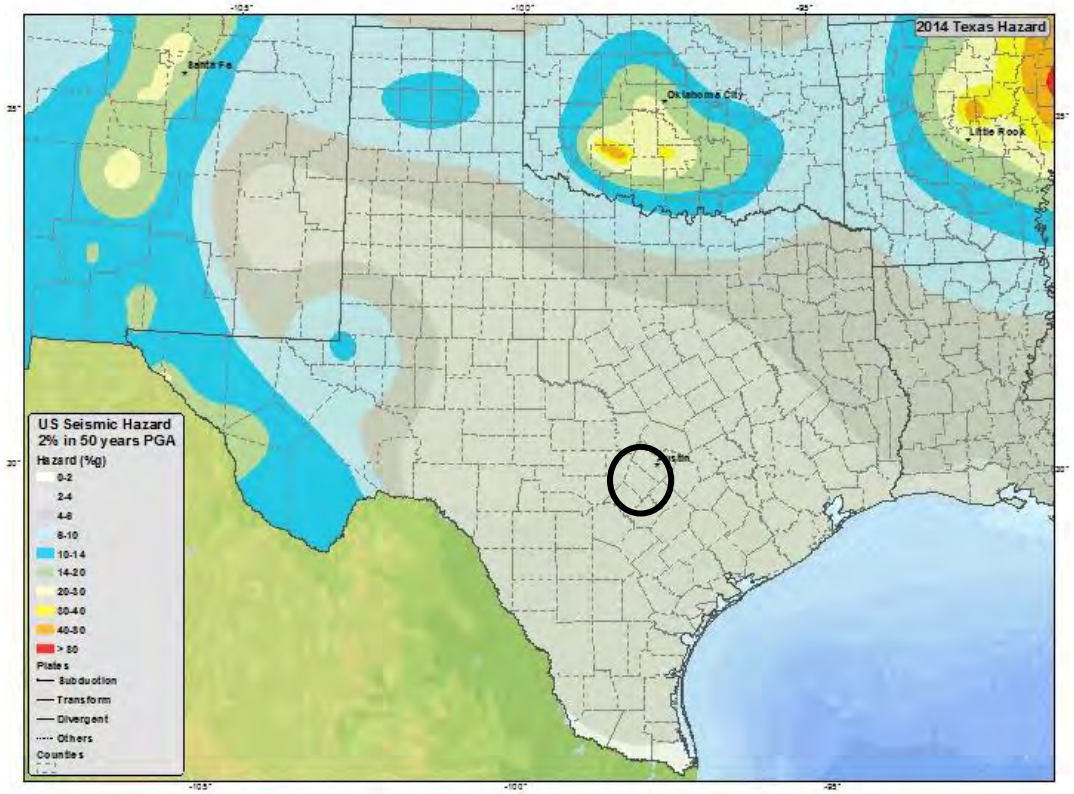
Primary (P) waves have a push-pull type of vibration. Secondary (S) waves have a side-to-side type of vibration. Both P and S waves travel deep into Earth, reflecting off the surfaces of its various layers. S waves cannot travel through the liquid outer core. Surface (L) waves—named after the nineteenth-century British mathematician A.E.H. Love—travel along Earth's surface, causing most of the damage of an earthquake.

Location

Locations in West Texas and the Panhandle experience the highest frequency of earthquakes in the state. Figure 15-2 below shows locations of earthquake hazard with 2% variations in the probability for Peak Ground Acceleration of various intensities over 50 years in Texas.

The map illustrates the generally low risk of earthquakes in Texas with most of the state having less than a 4-8% probability of having a very weak ground shaking event over 50 years. The planning area encompassed by Hays County shares the same probability of 4-8% likelihood of an earthquake over 50 years. Core Planning Team Members have indicated that this frequency is consistent with what they have experienced.

Figure 15-2. USGS Seismic Hazard Risk Map



Source: https://www.usgs.gov/programs/earthquake-hazards

Extent

The magnitude or extent of an earthquake is measured on the Richter Scale. An earthquake's magnitude is determined by the amount of ground motion measured on a seismograph. This measurement is then corrected to compensate for the distance from the epicenter. The scale is a logarithmic or a 'power of ten' scale. For example, if a magnitude 4.8 earthquake caused ground motion of 1 inch at a particular location, a 5.8 would cause ground motion of 10 inches at the same epicenter. Earthquakes above 7 on the Richter scale are considered severe. Table 15-1 provides examples of the effects of earthquakes at different magnitudes. Based on historical evidence, a 4.1 magnitude earthquake is the highest that can be expected in the planning area.

Table 15-1: Earthquake magnitude and corresponding effects

Magnitude	Earthquake Effects
Less than 2.5	Usually not felt, but can be recorded by seismograph
2.5 to 5.4	Often felt, but only causes minor damage
5.5 to 6.0	Slight damage to buildings and other structures
6.1 to 6.9	May cause a lot of damage in very populated areas
7.0 to 7.9	Major earthquake. Serious damage
Greater than 8.0	Great earthquake. Can totally destroy communities near the epicenter

Most of the damage done by an earthquake typically occurs in the areas nearest the epicenter which have the highest intensities. Each earthquake occurrence only has one magnitude rating but different locations experience difference surface intensities since damage will usually become less severe as one moves away from the epicenter.

The Modified Mercalli Intensity (MMI) scale is used by scientists to describe the extent of an earthquake felt in different locations. The MMI uses Roman numerals to avoid confusion with the Richter Scale and is numbered between 1-12. Table 15-2 below provides descriptions of the MMI levels.

Table 15-2: Modified Mercalli Intensity (MMI) scale

MMI	What people feel, or what damage occurs.
I	Not felt except by a very few people under special conditions. Detected mostly by instruments.
II	Felt by a few people, especially those on the upper floors of buildings. Suspended objects may swing.
III	Felt noticeably indoors. Standing automobiles may rock slightly.
IV	Felt by many people indoors, by a few outdoors. At night, some people are awakened. Dishes, windows, and doors rattle.
V	Felt by nearly everyone. Many people are awakened. Some dishes and windows are broken. Unstable objects are overturned.
VI	Felt by everyone. Many people become frightened and run outdoors. Some heavy furniture is moved. Some plaster falls.
VII	Most people are alarmed and run outside. Damage is negligible in buildings of good construction, considerable in buildings of poor construction.
VIII	Damage is slight in specially designed structures, considerable in ordinary buildings, great in poorly built structures. Heavy furniture is overturned.
IX	Damage is considerable in specially designed buildings. Buildings shift from their foundations and partly collapse. Underground pipes are broken.
X	Some well-built wooden structures are destroyed. Most masonry structures are destroyed. The ground is badly cracked. Considerable landslides occur on steep slopes.
XI	Few, if any, masonry structures remain standing. Rails are bent. Broad fissures appear in the ground.
XII	Virtually total destruction. Waves are seen on the ground surface. Objects are thrown into the air.

Source: USGS - https://pubs.usgs.gov/gip/earthq4/severitygip.html

Historical Occurrences

Based on United States Geographical Services (USGS) Earthquake Catalog of events, from 1923 through 2023 the Hays County planning area did not experience any earthquakes. This is consistent with accounts by Core Planning Team Members that earthquakes have not occurred in the past.

Table 15-3 below provides details for each earthquake in or around the planning area with date, locational, and specific magnitude information. There have been no seismic events of sufficient size recorded in the planning area, however, there was one event to the south in Comal County which was recorded in 1982.

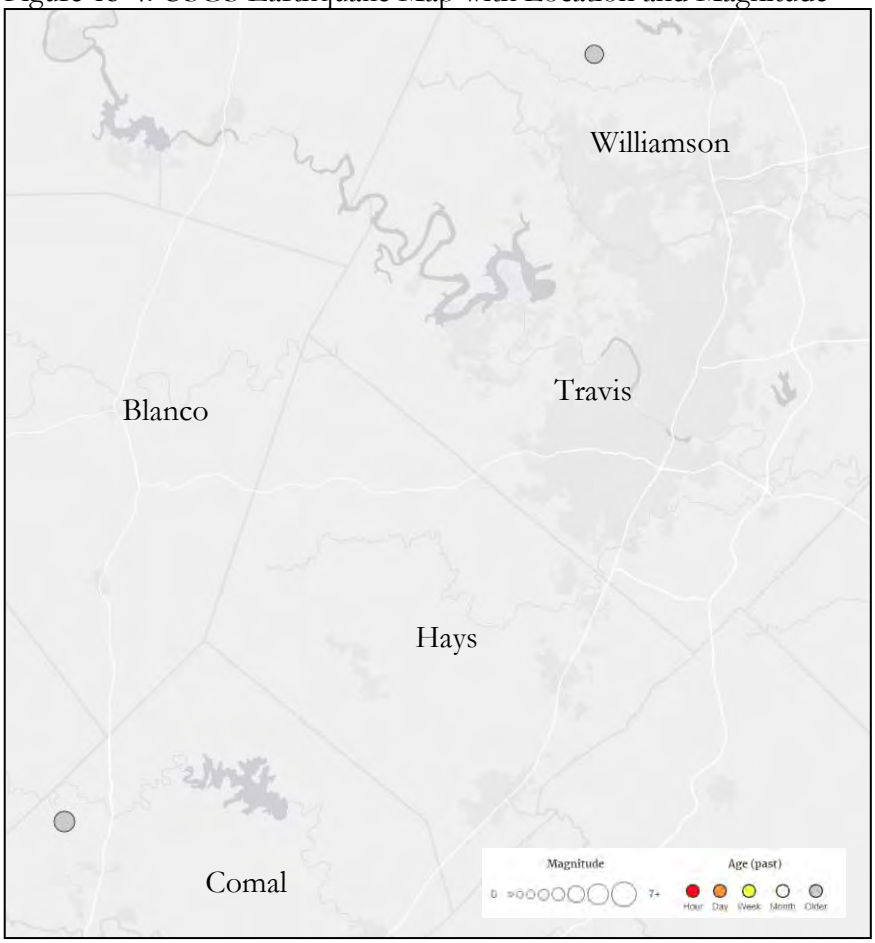
Table 15-3: Historical Occurrences of Earthquakes in and around Hays County

Date	Location	Magnitude
3/28/1982	11 kilometers north of Bulverde (Comal Co)	3.0
9/3/2015	7 kilometers north northeast of Leander (Travis County)	2.9

Source: https://earthquake.usgs.gov/earthquakes

The USGS earthquake map, Figure 15-4, shows the location and magnitude of the earthquakes that have occurred in and around the Hays County planning area.

Figure 15-4: USGS Earthquake Map with Location and Magnitude



Source: https://earthquake.usgs.gov/earthquakes

Significant Events

March 28, 1982 – Comal County

At 6:00 AM on March 28, 1982, a magnitude 3.0 earthquake had its epicenter 11 kilometers North of Bulverde and a depth of 5 kilometers.

Probability of Future Events

Based on the USGS estimates in the seismic hazard risk map provided at the beginning of this section, the planning area has a 4-8% chance of experiencing an earthquake over the next 50 years. Over the 100-year period of USGS data there have been no occurrences of earthquakes in the Hays County planning area. Based on most recent data, the probability of an earthquake occurring somewhere in the planning area in the next year is **unlikely**.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

Vulnerability and Impact

Historical earthquake impacts for the area are 0 for number of deaths, injuries, property damage, and crop damage. This does not mean that there haven't been any impacts due to earthquakes in the planning area, only that there have not been any impacts recorded. All structures, assets, and populations within Hays County, including participating jurisdictions and Water, are vulnerable to the impacts of earthquakes. The recent history of rapidly increasing earthquake activity in the area appears to overlay exactly with the distribution and proliferation of wastewater injection wells associated with oil and gas drilling.

Aside from buildings, roads, and bridges, underground assets like utilities can also be severely affected by earthquakes, depending on their magnitude and epicenter. Subterranean utilities that can be impacted by earthquakes include underground sanitary sewer collection systems, which may rupture or backup, drinking water distribution pipes that can become contaminated if pressure gaps occur, allowing untreated groundwater to enter, and gas and underground power lines that can also be damaged, generating hazardous conditions.

SECTION 16: DAMS

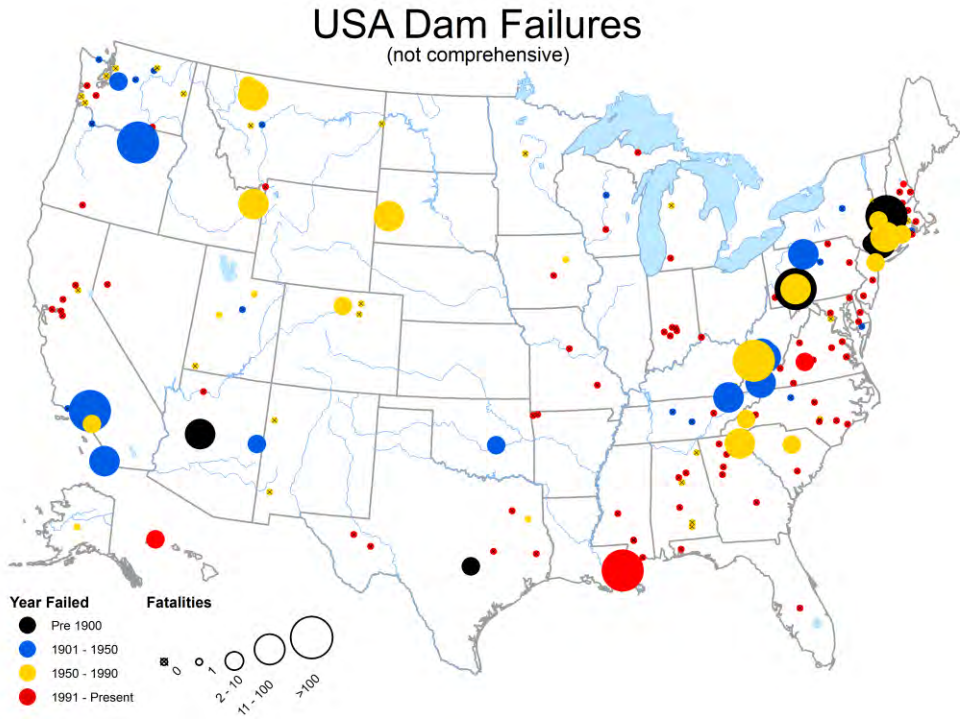
Description

Dams are water storage, control, or diversion structures that impound water upstream in reservoirs. Benefits provided by dams include water supplies for drinking, irrigation, and industrial uses. Dams also provide flood control, hydroelectric power, recreation, and navigation. At the same time, dams also represent a risk to public safety. Dams require ongoing maintenance, monitoring, safety inspections, and sometimes even rehabilitation to continue safe service.

Figure 16-1: Five-Mile Dam

Dam failure can take several forms, including a collapse of or breach in the structure. Hundreds of dam failures have occurred throughout U.S. history. These failures have caused immense property and environmental damages and have taken thousands of lives. As the nation's dams age and population increases, the potential for deadly dam failures grows. No one knows precisely how many dam failures have occurred in the U.S., but they have been documented in every state. From January 2005 through June 2013, state dam safety programs reported 173 dam failures and 587 "incidents" - episodes that, without intervention, would likely have resulted in dam failure. The graphic below depicts the history of dam failures throughout the United States.

Figure 16-2: USA Dam Failures



Source: damsafety.org/dam-failures

In the event of a dam failure, the energy of the water stored behind the dam is capable of causing rapid and unexpected flooding downstream, resulting in loss of life and substantial property damage. A devastating effect on water supply and power generation could be expected as well. The causes of dam failures are many but they are most likely to happen for one of five reasons.

1. **Overtopping** caused by water spilling over the top of a dam. Overtopping of a dam is often a precursor of dam failure. National statistics show that overtopping due to inadequate spillway design, debris blockage of spillways, or settlement of the dam crest account for approximately 34% of all U.S. dam failures. Overtopping can happen after periods of prolonged rainfall and flooding for which the dam was not designed or failure of upstream dams in the same drainage basin.
2. **Foundation Defects**, including settlement and slope instability, cause about 30% of all dam failures.
3. **Cracking** caused by movements like the natural settling of a dam.
4. **Inadequate maintenance and upkeep.**
5. **Piping** is when seepage through a dam is not properly filtered and soil particles continue to progress and form sink holes in the dam. [See an animation of a piping failure.] Another 20% of U.S. dam failures have been caused by piping (internal erosion caused by seepage). Seepage often occurs around hydraulic structures, such as pipes and spillways; through animal burrows; around roots of woody vegetation; and through cracks in dams, dam appurtenances, and dam foundations.

Location

Figures 16-3 and 16-4, provide a summary and illustrate general locations for each dam in the planning area. Currently, there are 50 dams located in the Hays County planning area: 21

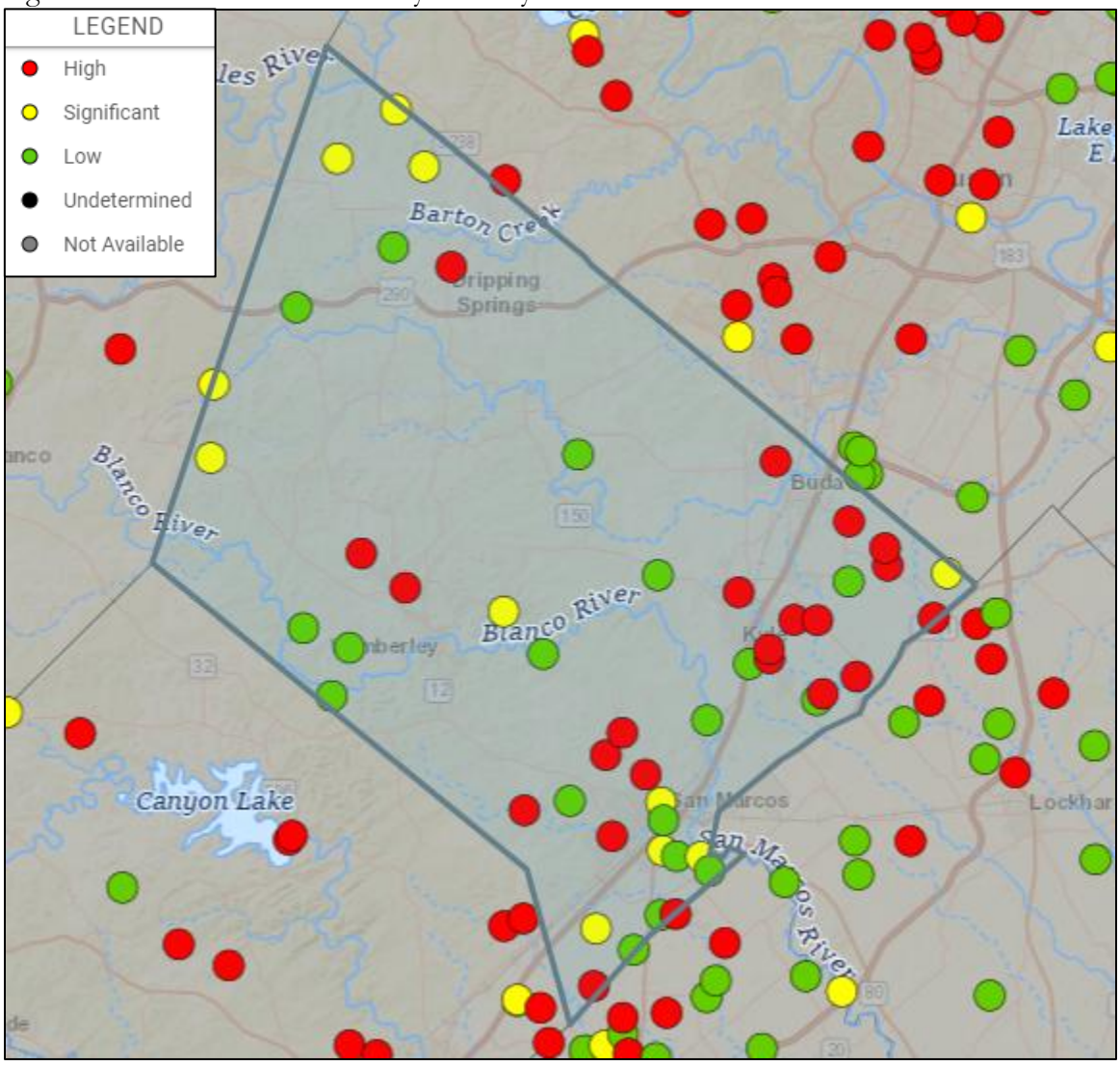
are classified as "high-hazard", 11 as "significant-hazard", 18 as "low-hazard" dams, zero as "undetermined," and zero as "not available."

Figure 16-3: Dam Summary for Hays County, Texas

50 Total Dams	**61 years** Average Dam Age	**90%** High Hazard Potential Dams with an EAP	**0%** Federally Regulated Dams
		0% Dams with Hydropower	**58%** State-Regulated Dams

Source: https://nid.sec.usace.army.mil

Figure 16-4: Dam Locations in Hays County



Source: https://nid.sec.usace.army.mil, NID

The survey of dams within the Hays County planning area is presented in Table 16-1 below. The survey provides the dam's name, the year built, height of dam, normal storage in acre feet of the impoundment, max storage, and the hazard potential.

Table 16-1: Hays County Dam Survey

Dam Name	Year Completed	Height (Ft.)	Normal Storage (Acre Ft.)	Max Storage (Acre Ft.)	Hazard Potential
Hays County Park Lake Dam	1964	8	60	584	Low
Upper San Marcos River WS SCS Site 4		101	183	54	High
Upper San Marcos River WS SCS Site 2	1985	51	93	347	High
Upper San Marcos River WS SCS Site 1	1983	80	304	250	High
Plum Creek WS SCS Site 11 Dam	1962	32	247	345	High
Plum Creek WS SCS Site 4 Dam	1962	34	93	100	High
Plum Creek WS SCS Site 7 Dam	1975	36	86	584	High
Plum Creek WS SCS Site 6 Dam	1967	34	156	54	High
Plum Creek WS SCS Site 10 Dam	1963	36	183	347	High
Upper San Marcos River WS SCS Site 3	1991	60	127	250	High
Plum Creek WS SCS Site 12 Dam	1963	28	197	345	High
Plum Creek WS SCS Site 16 Dam	1975	41	199	100	High
York Creek WS SCS Site 5 Dam	1963	41	587	584	High
Upper San Marcos River WS NRCS Site 5 Dam	1989	73.5	161	54	High
Lake Laurel Dam	1977	16.3	47	347	High
River Oaks Ranch Dam		25	101	250	Significant
Plum Creek WS SCS Site 3 Dam	1962	26	72	345	High
Plum Creek WS SCS Site 1 Dam	1966	33	180	100	High
Plum Creek WS SCS Site 2 Dam	1969	38	199	584	High
Plum Creek WS SCS Site 5 Dam	1963	42	197	54	High
Little Barton Creek Dam		14	37	347	High
Pierce Lake Dam	1974	37	209	250	Low
Brown Ranch Dam	1962	24	100	345	Low
Parkers Pond Dam	1970	21	96	100	Significant
Reeves Lake Dam	1962	20	55	584	Low
Solar Bliss Dam		22	35	54	Significant
Purola Lake Dam	1967	37	156	347	Significant
Larsen Dam		20.5	13	250	Significant

Clear Lake Dam	1952	17	60	345	Low
Barron Lake Dam	1967	25	130	100	Low
Scrutchin Lake Dam	1958	30	154	584	Low
Webster Lake Dam	1958	20	120	54	Low
Lone Man Dam		13	17.5	347	Significant
McAlister Ranch Dam No. 4	1975	17	31	250	Significant
Commings Dam	1905	10	194	345	Significant
Sycamore Creek Dam		29	56	100	Low
Boy Scout Dam	1957	11	123	584	Low
Md Heatly Dam	1965	18	52	54	Low
Lutringer Lake Dam	1970	26	108	347	Low
Seven H Ranch Lake Dam	1963	21	39	250	Significant
John F Baugh Dam	1955	15	100	345	Low
Centerpoint Dam		25	0	100	Low
Aquarena Dam	1849	7	132	584	Significant
San Marcos State Fish Hatchery	1948	21	43	54	Significant
Boes Ski Lake Dam	2012	34.5	18	347	Low
Rio Vista Dam	1904	8	61	250	Low
Cottonwood Creek Detention Dam		13	650	345	Low
Alexander Lake Dam	1973	20	18	100	Low
Cullen Country Lake Dam		16	25	345	High
Hog Creek Dam	1974	15.3	9	100	High

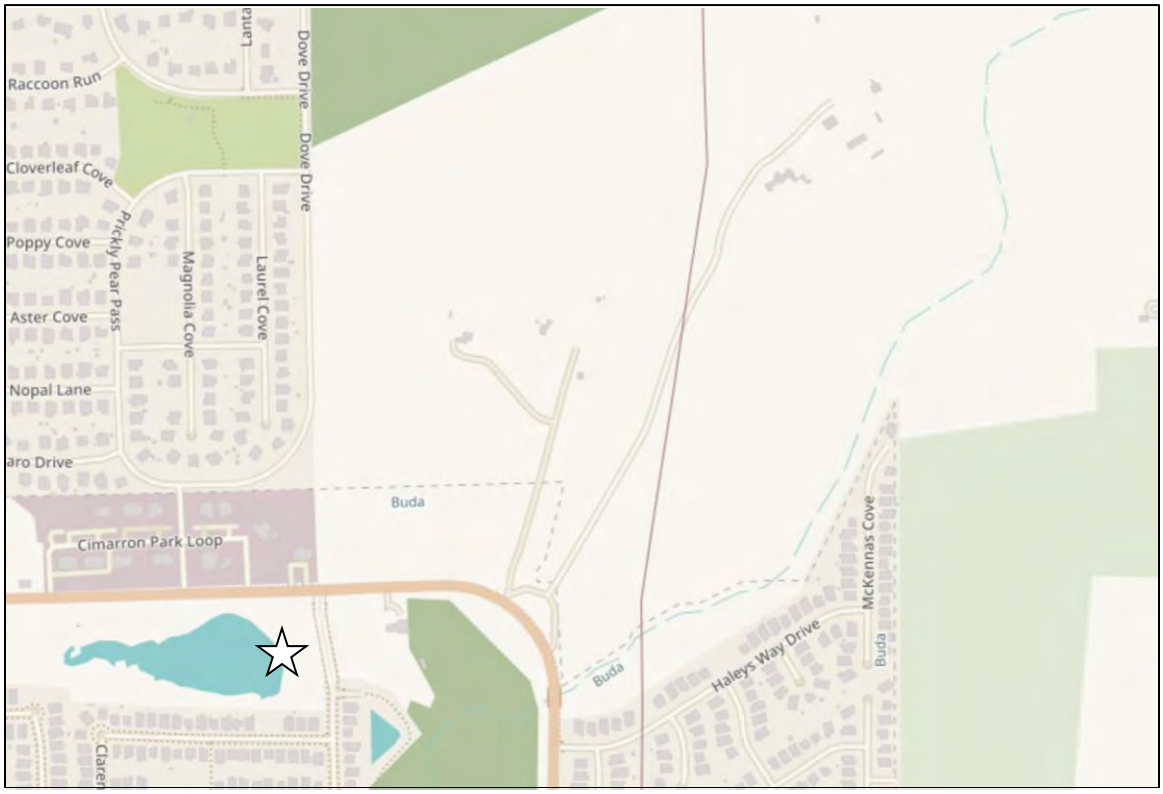
Source: https://nid.sec.usace.army.mil, NID

All census blocks within five miles of a dam with a maximum storage capacity of 100,000 acre-feet or more are considered at risk of potential dam failure hazards. For dams with a maximum storage capacity between 10,000- and 100,000-acre feet, all census blocks within three miles are considered to be at risk to potential dam failure hazards. For dams with a maximum storage capacity of less than 10,000 acre-feet, all census blocks within one mile are considered to be at risk from potential dam failure hazards.

For this Hazard Mitigation Plan, the planning team coordinated with local dam owners so that the impacts of dam failure to downstream communities could be more fully understood. The Hays County Office of Emergency Services also continues to collaborate annually or as the need arises with Natural Resources Conservation Services (NRCS), Hays County Soil and Water Conservation District, Upper San Marcos Watershed Reclamation FCD, and Plum Creek Conservation District and other dam owners. This is done to review and update emergency action plans based on results of inspection reports or as new data

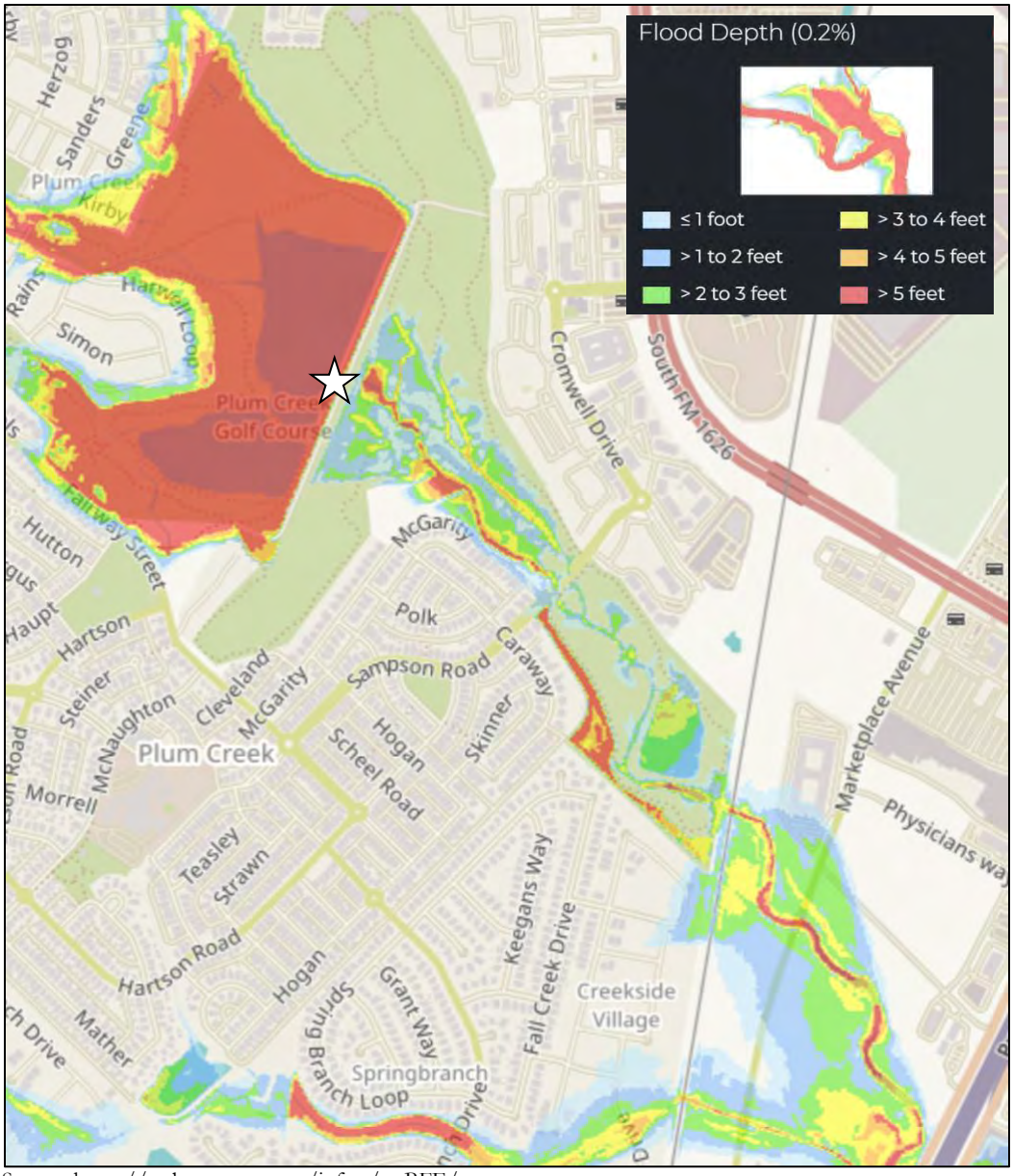
becomes available. The Upper San Marcos River Watershed Emergency Action Plan includes inundation maps for SCS Sites #1-5 and this data was used to help determine the extent and location of flooding in the event of dam failure. No other detailed studies or inundation maps could be made available to determine precise extent and location data as well as impact to downstream populations for this plan and this data deficiency has been addressed in the mitigation strategy section as action item 16 for Hays County in Section 17, titled Mitigation Strategy.

Cullen Country Lake Dam



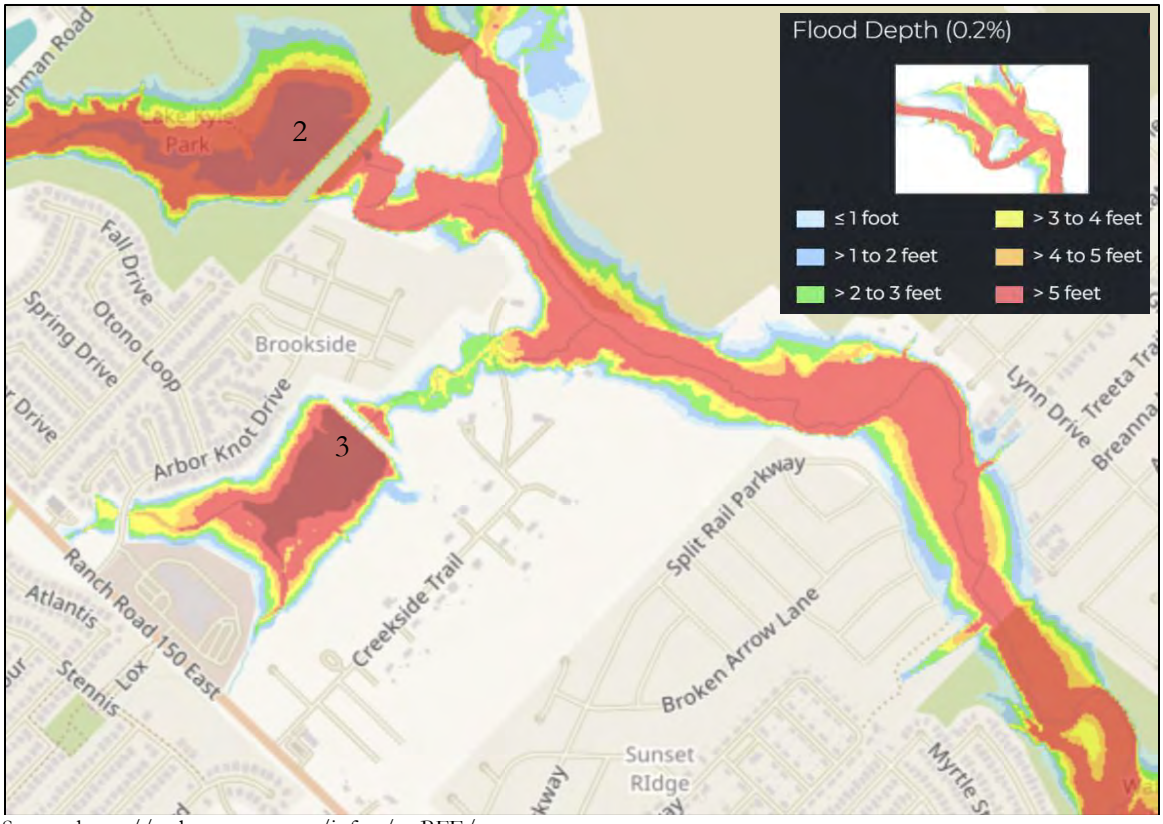
Source: https://webapps.usgs.gov/infrm/estBFE/

Plum Creek WS SCS Site 1 Dam



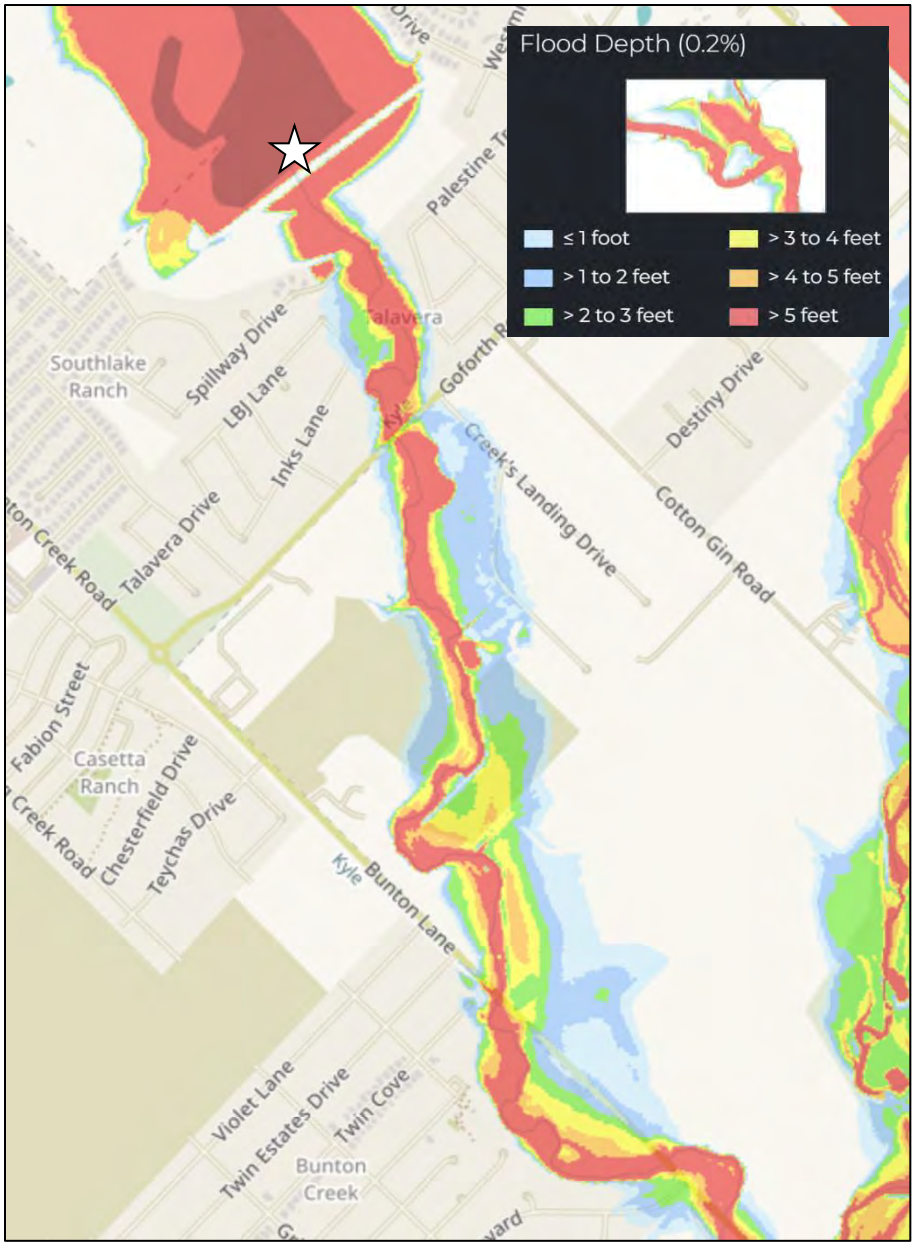
Source: https://webapps.usgs.gov/infrm/estBFE/

Plum Creek WS SCS Sites 2 &3 Dams



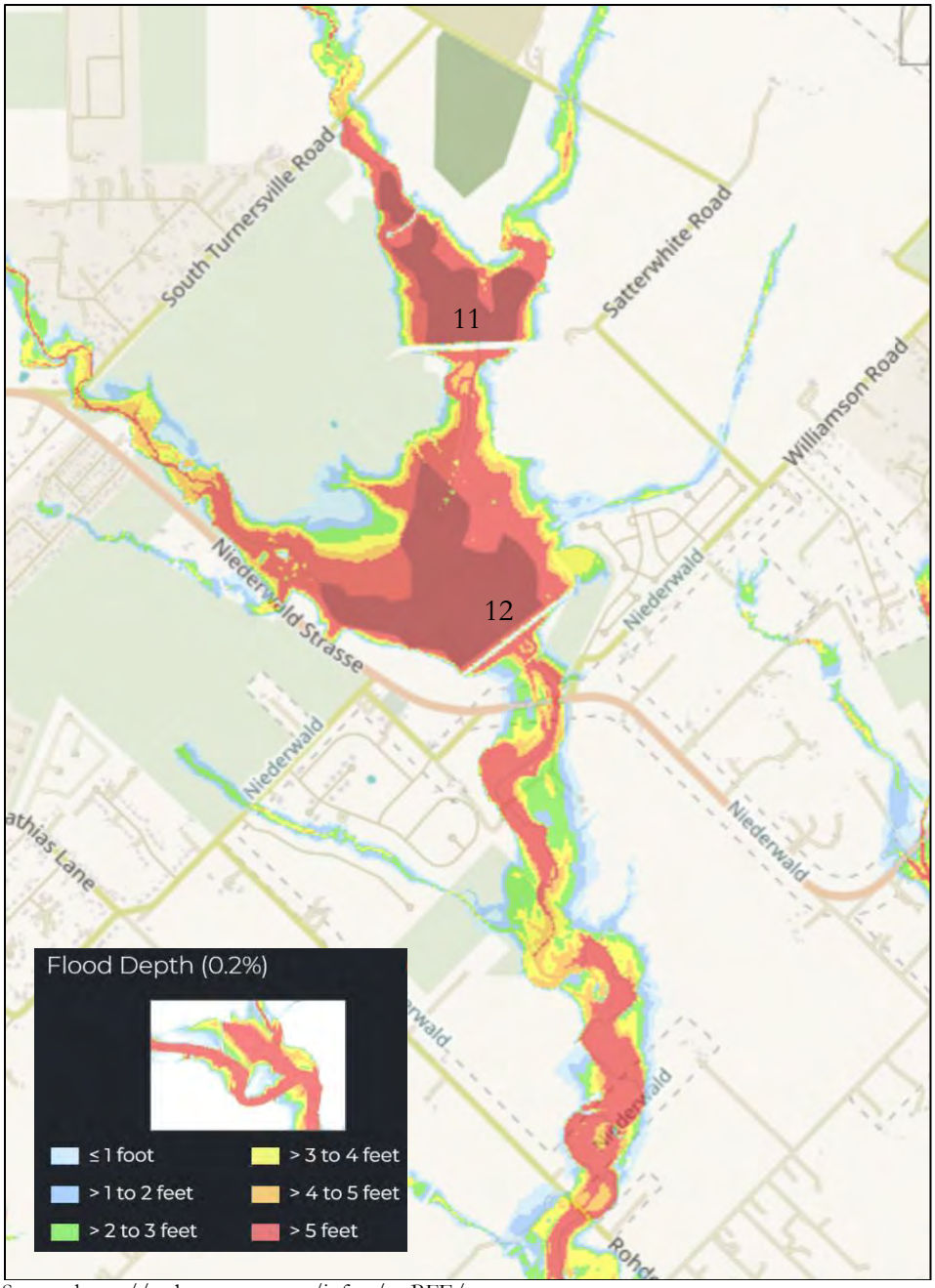
Source: https://webapps.usgs.gov/infrm/estBFE/

Plum Creek WS SCS Site 5 Dam



Source: https://webapps.usgs.gov/infrm/estBFE/

Plum Creek WS SCS Sites 11 & 12 Dams

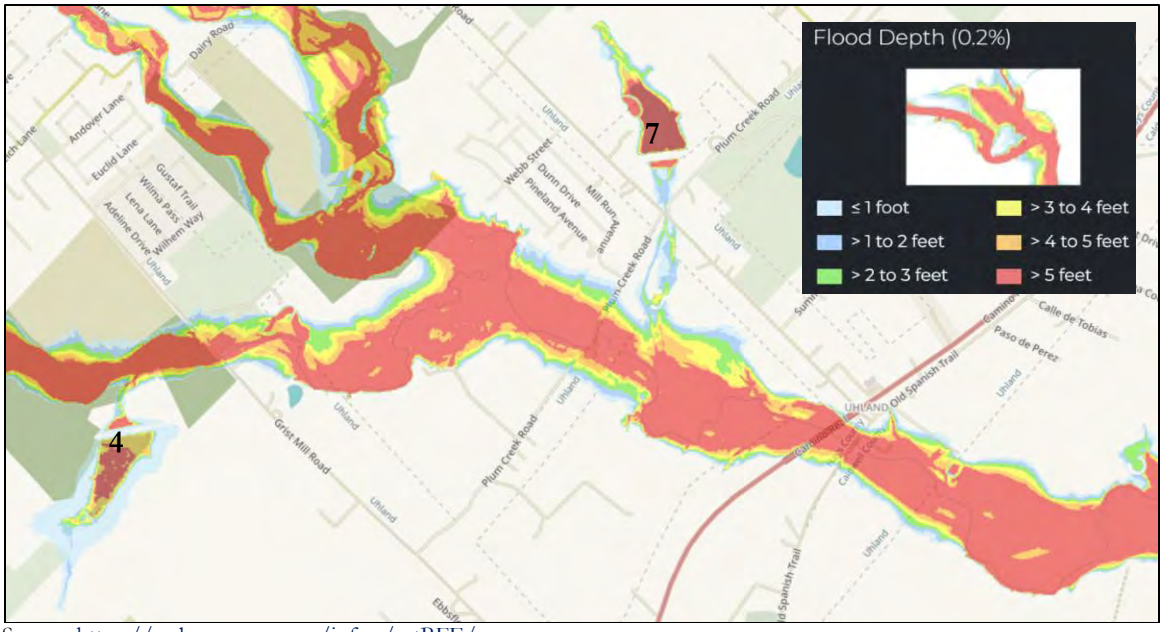


Source: https://webapps.usgs.gov/infrm/estBFE/

Plum Creek WS SCS Site 16 Dam

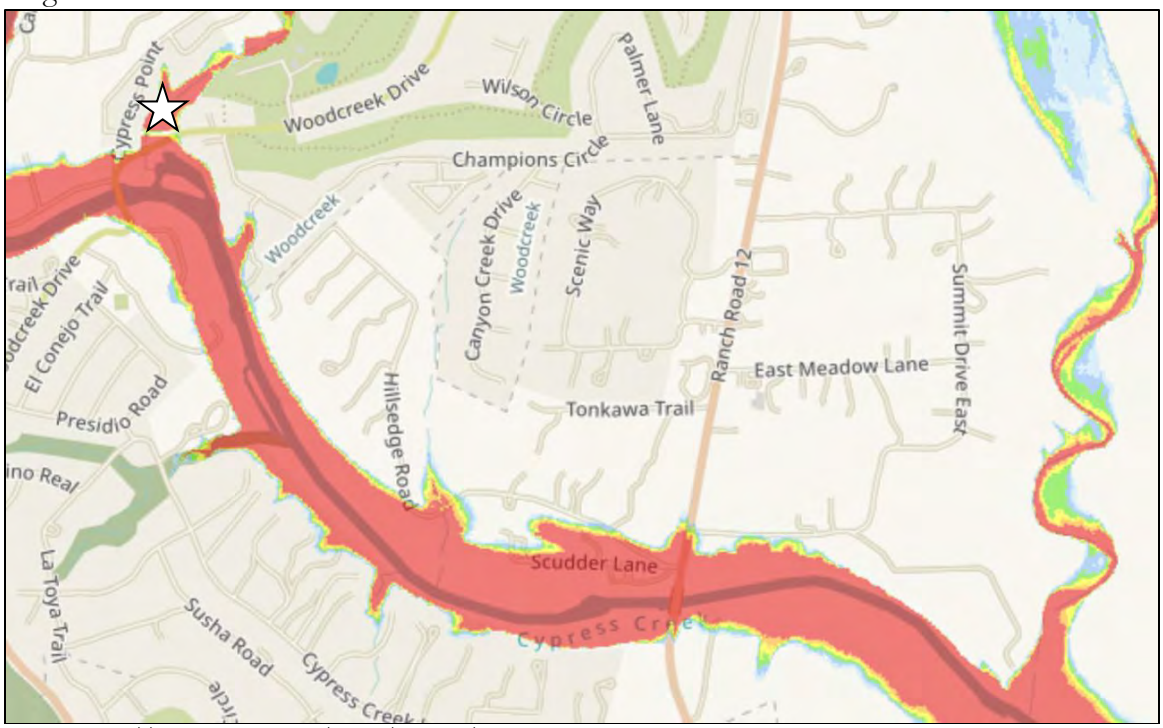
Source: https://webapps.usgs.gov/infrm/estBFE/

Plum Creek WS SCS Sites 4 & 7 Dams



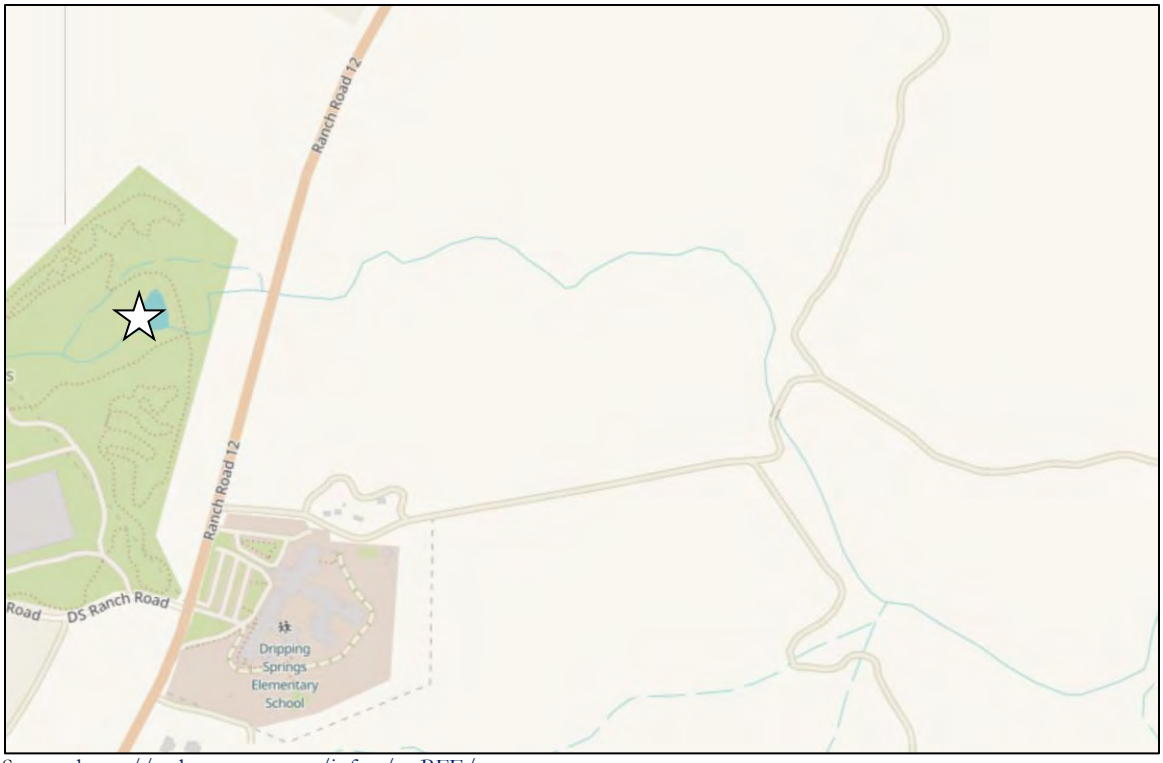
Source: https://webapps.usgs.gov/infrm/estBFE/

Hog Creek Dam



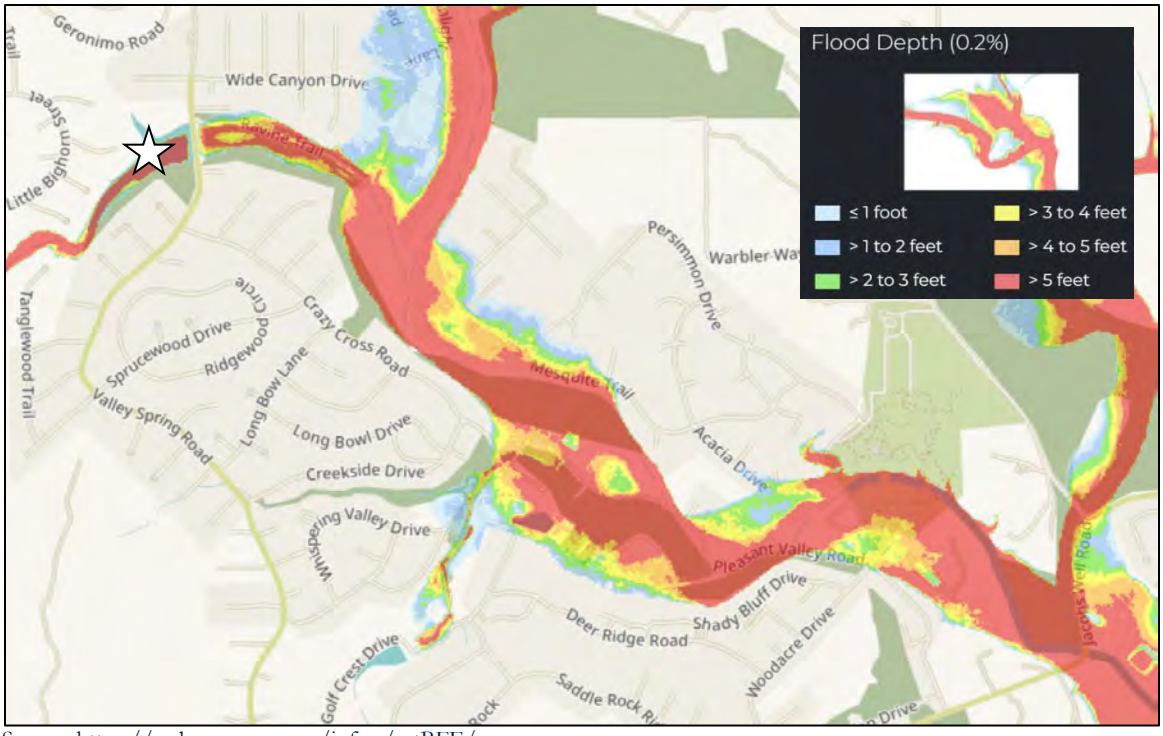
Source: https://webapps.usgs.gov/infrm/estBFE/

Little Barton Creek Dam



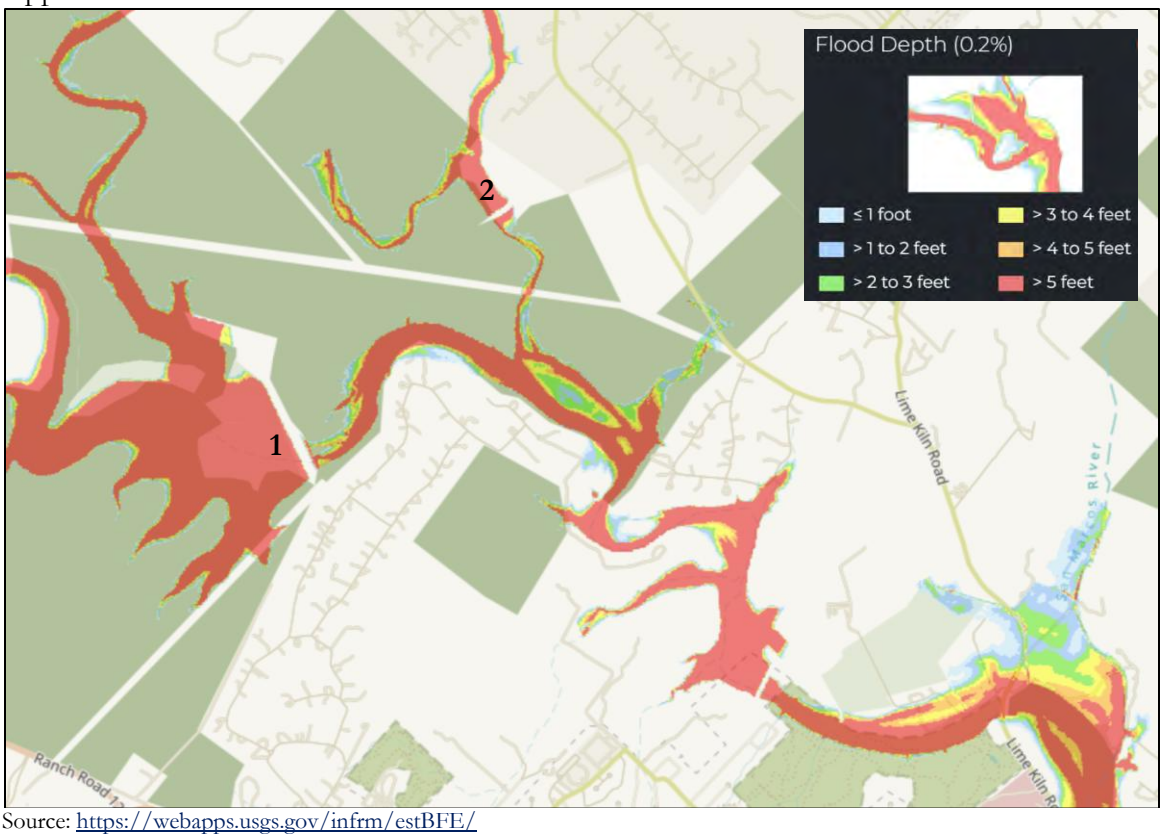
Source: https://webapps.usgs.gov/infrm/estBFE/

Lake Laurel Dam



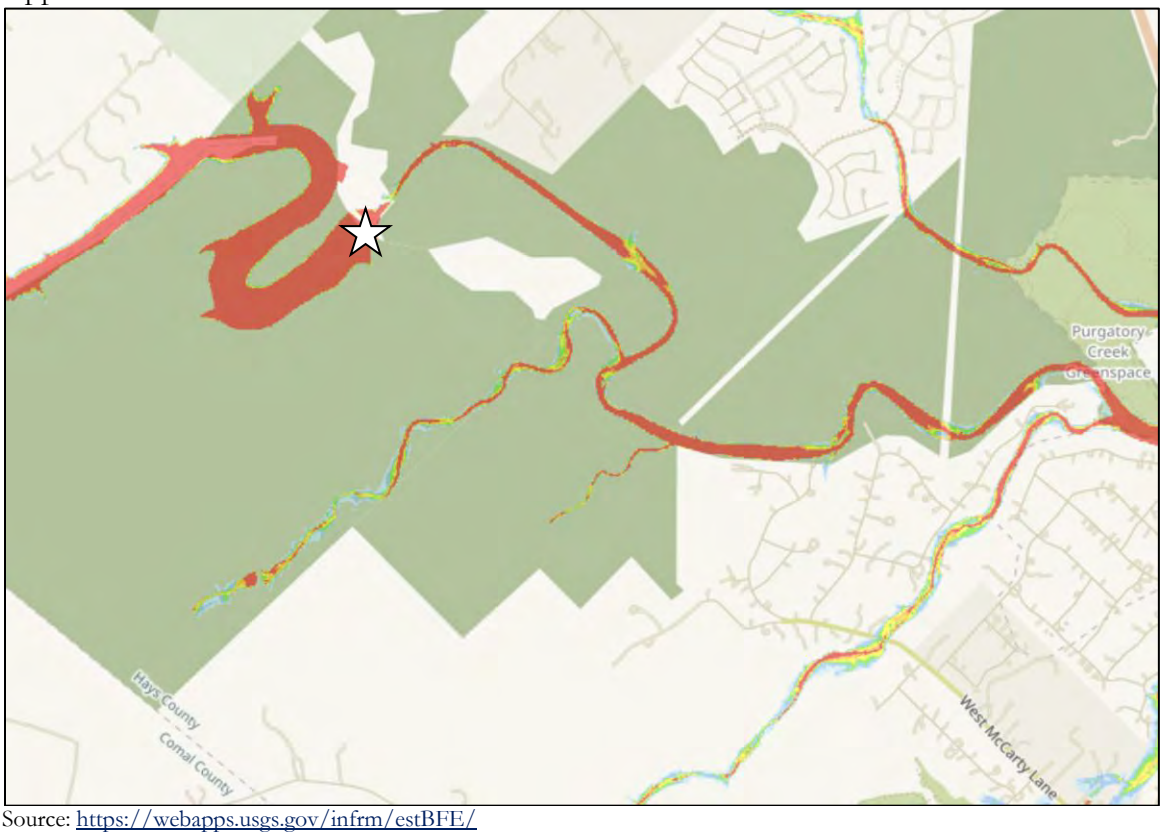
Source: https://webapps.usgs.gov/infrm/estBFE/

Upper San Marcos River WS SCS Sites 1 & 2 Dams



Source: https://webapps.usgs.gov/infrm/estBFE/

Upper San Marcos River WS SCS Site 4



Source: https://webapps.usgs.gov/infrm/estBFE/

Extent

The extent or magnitude of a dam failure event is described in terms of the classification of damages that could result from a dam's failure; not the probability of failure. The National Interagency Committee on Dam Safety defines high hazard dams as those where failure or mis-operation would cause loss of human life. Low hazard potential dams are those at which failure or mis-operation probably would not result in loss of human life but would cause limited economic and/or environmental losses. Losses would be limited mainly to the owner's property. Classifications for dam failure extent are found in Table 16-2 below.

Table 16-2: Extent Classifications

Hazard Potential Classification	Loss of Human Life	Dam Storage Capacity
Low	None Expected	Less than 10,000 acre-feet
Significant	Probable (1 to 6)	Between 10,000 and 100,000 acre-feet
High	Loss of Life Expected (7 or More)	100,000 acre-feet or more

Table 16-3 represents the extent or magnitude of a dam failure event that could be expected for the Hays County planning area as well as participating jurisdictions. The 'Extent Classification' column was determined by assessing max volume storage capacity, elevation, history of failure, classification information, condition, and potential severity based on population downstream. Low threat of dam failure suggests that there is a low number of dams in the area, the distance from population centers is high and/or the dams represented have a relatively small water storage area. A high hazard potential dam represents a structure that impounds a large amount of water, greater than 100,00- acre-feet or more, and is upstream of a developed area or areas. Loss of life is expected and economic loss is significant in the event of a catastrophic dam failure.

Table 16-3: Extent for Hays County and Participating Jurisdictions

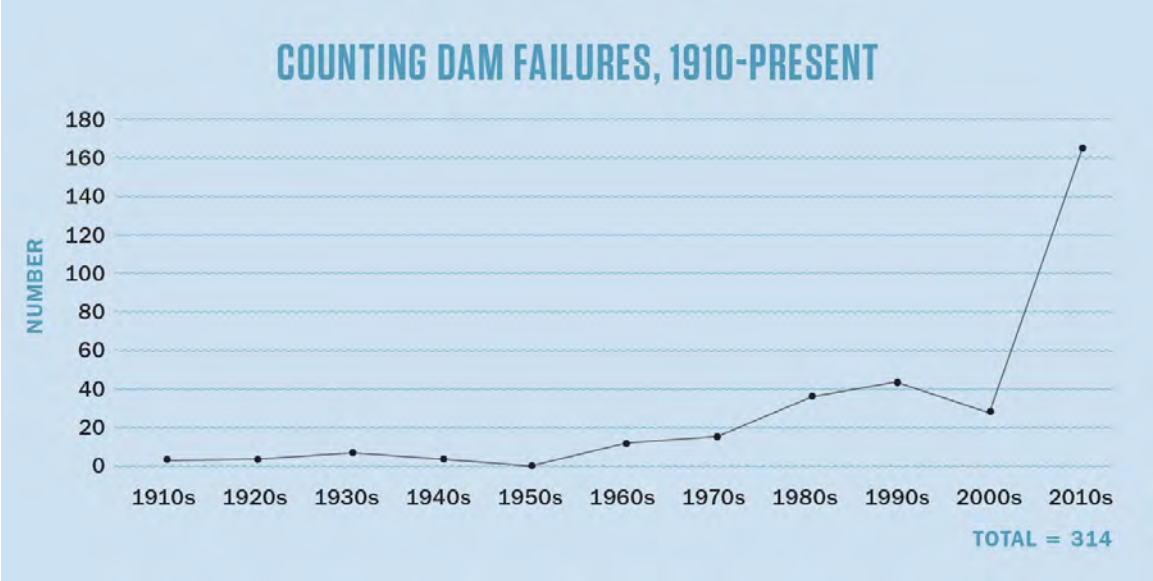
Jurisdiction	Number of High Hazard Dams	Extent Classification	Dam Names
Hays County	14 – High	High	Little Barton Creek Dam, Cullen Country Lake Dam, Lake Laurel Dam, Hog Creek Dam, Plum Creek WS SCS Sites 4-7, 10-12 & 16 Dams, Upper San Marcos River WS SCS Sites 1, 2, and 4.
City of Buda	1 - High	High	Cullen Country Lake Dam
City of Dripping Springs	None	Low	
City of Hays	None	Low	
City of Kyle	4 – High	High	Soil Conservation Service Sites 1-3 and 5 Dams
City of Mountain City	None	Low	
City of Niederwald	3 – High	High	Plum Creek WS SCS Sites 11 & 12 Dams, Plum Creek WS SCS Site 16 Dam
City of Uhland	2 – High	High	Plum Creek WS SCS Sites 4 & 7 Dams
City of Wimberley	1 – High	High	Hog Creek Dam

City of Woodcreek	1-High	High	Hog Creek Dam
Village of Bear Creek	None	Low	
Dripping Springs ISD	None	Low	
Hays CISD	None	Low	
San Marcos ISD	1-High	High	Upper San Marcos Dam Site 1 (Per Action Plan[10], 1 elementary school)
Wimberley ISD	None	Low	
Texas State University	1-High	High	Upper San Marcos Dam Site 1 (Per Action Plan, 12 university buildings, 1 arena, 2 ballparks, 1 track and field stadium, and 1 student housing complex)

Historical Occurrences

Texas dams earn a "D" grade from the American Society of Civil Engineers. Of the approximately 300 dam failures in Texas since 1910, half have occurred in the last nine years.

Figure 16-5: Texas Dam Failures, 1910-Present



Source: Texas Observer

Many of the dams in the planning area are classified as small dams and their failure has the capacity to cause physical and economic harm. A federal study found that from 1960-1998 dam failures accounted for 300 fatalities that occurred nationally and more than 85 percent were caused by dams less than 50 feet in height. In Texas, almost half of all dams are considered too small to regulate, and they are exempt from inspections and oversight.

Based on an investigation by the Texas Observer,

> "This investigation found that the vast majority of failures in Texas involve dams that impound less than 1,000 acre-feet. Despite their size, many small dams are ticking time

[10] Upper San Marcos River Watershed, Emergency Action Plan, February 5, 2021, Updated 2024

bombs, according to safety experts. Big dams are usually owned by government agencies such as river authorities, which have money for upgrades and are regulated by TCEQ. Small dams are typically owned by individuals, homeowners' associations and cash-strapped counties that can't afford expensive improvements." [11]

Significant Events

There have been no significant dam failure events in the Hays County planning area.

Table 16-4 on the following page represents a list of all the dams in the county with their last inspection date, condition assessment, the date of the condition assessment, whether and Emergency Action Plan is required, and the date of the last EAP revision if there is one. Dam Owners are listed as well.

Table 16-4: Dam Inspections, Condition Assessments, and EAP Revisions

Dam Name	Last Inspection Date	Condition Assessment	Condition Assessment Date	EAP Required	Date of Last EAP Revision	Dam Owner	Owner Type
Hays County Park Lake Dam		Not Rated	6/18/2014	Not Required		Hays County	Local Government
Upper San Marcos River WS SCS Site 4	10/13/20	Satisfactory	4/29/2021	Yes	3/15/21	City Of San Marcos; Hays County; Hays County SWCD; Upper San Marcos WS Recl FCD	Local Government
Upper San Marcos River WS SCS Site 2	10/15/20	Satisfactory	8/5/2021	Yes	3/15/21	City Of San Marcos; Hays County; Hays County SWCD; Upper San Marcos WS Recl FCD	Local Government
Upper San Marcos River WS SCS Site 1	10/13/20	Satisfactory	8/5/2021	Yes	3/15/21	City Of San Marcos; Hays County; Hays County SWCD; Upper San Marcos WS Recl FCD	Local Government
Plum Creek WS SCS Site 11 Dam	10/13/20	Fair	5/28/2021	No		Hays County SWCD; Plum Creek Conservation District	Local Government
Plum Creek WS SCS Site 4 Dam	10/3/18	Fair	6/18/2014	Yes	11/10/22	Hays County SWCD; Plum Creek Conservation District	Local Government
Plum Creek WS SCS Site 7 Dam	6/27/23	Not Rated	4/17/2021	Yes	11/10/22	Hays County SWCD; Plum Creek Conservation District	Local Government
Plum Creek WS SCS Site 6 Dam	9/27/18	Satisfactory	11/30/2018	Yes	11/10/22	Hays County SWCD; Plum Creek Conservation District	Local Government
Plum Creek WS SCS Site 10 Dam	8/4/15	Not Rated	8/4/2020	Yes	11/10/22	Hays County SWCD; Plum Creek Conservation District	Local Government
Upper San Marcos River WS SCS Site 3	10/13/20	Satisfactory	8/5/2021	Yes	3/15/21	City Of San Marcos; Hays County; Hays County SWCD; Upper San Marcos WS Recl FCD	Local Government
Plum Creek WS SCS Site 12 Dam	8/4/15	Not Rated	8/4/2020	Yes	11/10/22	Hays County SWCD; Plum Creek Conservation	Local Government

[11] Sadasivam, Naveena. *Dammed to Fail.* The Texas Observer. April, 1 2019.

						District	
Plum Creek WS SCS Site 16 Dam	10/13/20	Satisfactory	12/22/2020	Yes	11/10/22	Hays County SWCD; Plum Creek Conservation District	Local Government
York Creek WS SCS Site 5 Dam	10/13/20	Fair	1/29/2021	Yes	2/22/21	Hays County SWCD	Local Government
Upper San Marcos River WS NRCS Site 5 Dam	10/15/20	Satisfactory	4/30/2021	Yes	3/15/21	City Of San Marcos; Hays County; Hays County SWCD; Upper San Marcos WS Recl FCD	Local Government
Lake Laurel Dam	10/17/17	Not Rated	10/17/2022	Yes	8/1/14	Hays County	Local Government
River Oaks Ranch Dam	10/30/20	Fair	4/29/2021	Yes	12/16/10	Hays County; River Oaks Ranch Development Corporation	Local Government; Private
Plum Creek WS SCS Site 3 Dam	10/3/18	Fair	6/18/2014	Yes	11/10/22	Hays County SWCD; Plum Creek Conservation District	Local Government
Plum Creek WS SCS Site 1 Dam	5/24/23	Not Rated	5/5/2021	Yes	11/10/22	Hays County SWCD; Plum Creek Conservation District	Local Government
Plum Creek WS SCS Site 2 Dam	10/3/18	Fair	6/18/2014	Yes	11/10/22	Hays County SWCD; Plum Creek Conservation District	Local Government
Plum Creek WS SCS Site 5 Dam	4/19/18	Not Rated	4/19/2023	Yes	11/10/22	Hays County SWCD; Plum Creek Conservation District	Local Government
Little Barton Creek Dam	10/17/17	Not Rated	10/17/2022	Yes	12/2/14	City Of Dripping Springs	Local Government
Pierce Lake Dam	12/1/83	Not Rated	6/18/2014	Not Required		Lewis Pierce	Private
Brown Ranch Dam		Not Rated	6/18/2014	Not Required		Je Brown	Private
Parkers Pond Dam	7/21/11	Not Rated	7/21/2016	Yes	12/15/17	Ryan Thomason	Private
Reeves Lake Dam		Not Rated	6/18/2014	Not Required		Roy Reeves	Private
Solar Bliss Dam	3/8/16	Not Rated	3/8/2021	Not Required		Wilda Campbell	Private
Purola Lake Dam	11/2/09	Not Rated	11/2/2014	Yes	7/1/11	William Keyes	Private
Larsen Dam	8/7/09	Not Rated	8/7/2014	Not Required		Mike Larsen	Private
Clear Lake Dam	5/6/74	Not Rated	6/18/2014	Not Required		Newton Thompson	Private
Barron Lake Dam	7/21/98	Not Rated	6/18/2014	Not Required		Frank C Barron Et Al	Private
Scrutchin Lake Dam		Not Rated	6/18/2014	Not Required		Theodora Scrutchin	Private
Webster Lake Dam		Not Rated	6/18/2014	Not Required		TE Webster	Private
Lone Man Dam	7/13/09	Not Rated	7/13/2014	Yes	1/18/11	Red Hawk Rd Association	Private
Mcalister Ranch Dam No 4	3/31/09	Not Rated	6/18/2014	Yes	6/13/11	Longhorn River Ranch Ltd	Private
Cummings Dam	7/17/08	Not Rated	6/18/2014	Not Required		Pecan Farms and Cattle Co	Private
Sycamore Creek Dam	5/28/13	Not Rated	5/28/2018	Not Required		Needmore Ranch II Ltd	Private

Boy Scout Dam	2/2/99	Not Rated	6/18/2014	Not Required		Sam Houston Area Boy Scouts of America	Private
Md Heatly Dam		Not Rated	6/18/2014	Not Required		Wd Heatly	Private
Lutringer Lake Dam		Not Rated	6/18/2014	Not Required		Larry Lutringer Trustee	Private
Seven H Ranch Lake Dam	7/13/09	Not Rated	7/13/2014	Yes	1/3/11	Geoffrey Hoese	Private
John F Baugh Dam		Not Rated	6/18/2014	Not Required		Barbara Morrison	Private
Centerpoint Dam		Not Rated	11/12/2018	Not Required		Lazy Oaks Ranch LP	Private
Aquarena Dam	6/8/23	Not Rated	4/11/2018	Yes	10/1/12	Texas State University	State
San Marcos State Fish Hatchery	6/8/23	Not Rated	7/12/2021	Yes	9/13/23	Texas Parks And Wildlife Department	State
Boes Ski Lake Dam	7/6/12	Not Rated	6/18/2014	Not Required			Not Listed
Rio Vista Dam	5/16/06	Not Rated	6/18/2014	Yes	1/4/11	City Of San Marcos	Local Government
Cottonwood Creek Detention Dam		Not Rated	4/20/2017	Not Required		City Of San Marcos	Local Government
Alexander Lake Dam		Not Rated	6/18/2014	Not Required		Bobby Alexander	Private
Cullen Country Lake Dam	4/3/18	Not Rated	4/3/2023	No		Cullen Country Homeowners Association	Private
Hog Creek Dam	10/17/17	Not Rated	10/17/2022	Yes	12/21/11	Wimberley Spring Partners	Private

Source: National Inventory of Dams (NID)

Probability of Future Events

According to historical records, from 1997-2023 the Hays County planning area has experienced 0 dam failures. The probability of a dam failure event occurring in the planning area is **unlikely**, with a dam failure event possible in the next 10 years.

Frequency of Occurrence	
Highly likely:	Event probable in next year.
Likely:	Event probable in next 3 years.
Occasional:	Event possible in next 5 years.
Unlikely:	Event possible in next 10 years.

Vulnerability and Impact

All areas that are directly downstream of one of the several dams in the planning area are vulnerable to a breach. As the size of the dam increases and the proximity to the public and/or critical infrastructure increases, the probability of damage to the economy increases as well. The impact of dam failure to the majority of the Hays County planning area is **"Low,"** however, there are pockets of developments that could be impacted by a high hazard catastrophic dam failure. Areas of Hays County as well as the Cities of Buda, Kyle, Niederwald, Uhland, Wimberley and Woodcreek receive an impact of **"High"** due to areas within their city limits being located downstream of one or more high hazard potential dam(s). Dripping Springs ISD, Hays Consolidated ISD, and Wimberley ISDs do not exhibit any vulnerability to dam failure in the planning area. Based on the Upper San Marcos Emergency Action Plan, San Marcos Consolidated ISD as well as Texas State University are vulnerable to a dam failure. The population at risk for San Marcos ISD and Texas

State University for a daytime dam breach would be the entire student body, staff and teachers that would typically be in those buildings, based on time of year. The student housing at Texas State would be fully at risk of a dam breach 24 hours a day. The specific impacts of a dam breach on the Upper San Marcos River have been made available in **Appendix G** (12).

The extent of the impact is dependent on the severity of the dam failure, the size of the storage area, dam height, rain/flood conditions, and a host of other factors. Eighteen (18) of the dams in the planning area are considered low hazard dams based on their size, but as discussed in this section, low hazard dam failures have caused extensive loss of life and significant economic impact in the past.

There are 21 dams rated as a high hazard and any individual dam has a very specific area that will be impacted by a catastrophic failure. The dams identified can directly threaten the lives of people and animals in the inundation zone below the dam. If a dam failure is extensive, a large amount of water would enter the downstream waterways forcing them out of their banks. The impact from any catastrophic failure would be like that of a flash flood with loss of life possible and injuries from debris carried by the flood. There may also be significant environmental effects, resulting in flooding that could disperse debris and hazardous materials downstream that can damage local ecosystems. If the event is severe, debris carried downstream can block traffic flow, cause power outages, disrupt local utilities, such as water and wastewater, and could result in school closures. The following is an excerpt from the American Society of Civil Engineers' 2017 Infrastructure Report Card detailing the importance of public safety and proper maintenance:

> "In order to improve public safety and resilience, the risk and consequences of dam failure must be lowered. Progress requires better planning for mitigating the effects of failures; increased regulatory oversight of the safety of dams; improving coordination and communication across governing agencies; and the development of tools, training, and technology. Dam failures not only risk public safety, they also can cost our economy millions of dollars in damages. Failure is not just limited to damage to the dam itself. It can result in the impairment of many other infrastructure systems, such as roads, bridges, and water systems. When a dam fails, resources must be devoted to the prevention and treatment of public health risks as well as the resulting structural consequences."

Dam safety inspections fall to the Dam Safety Program managed by the Texas Commission on Environmental Quality (TCEQ). The Commission currently focuses its inspection program of existing dams primarily on high and significant hazard dams as required by rule in 30 TAC §299.42(a)(2). According to the rule, high and significant hazard dams and large, low hazard dams are scheduled to be inspected every five years, while small and intermediate dams, and low hazard dams, are only to be inspected at the request of an owner, as a result of a complaint, at the request of someone other than the owner, following an emergency such as a flooding event, or, for determining the hazard classification.

[12] Upper San Marcos River Watershed, Emergency Action Plan, February 5, 2021, Updated 2024

SECTION 17: MITIGATION STRATEGY

The overall mitigation strategy is to reduce and eliminate the long-term risk of loss of life and property damage from the full range of disasters affecting the planning area. The success of this strategy is dependent on three main components: mitigation goals, mitigation actions, and an action plan for implementation. These building blocks provide the framework to identify, prioritize, and implement actions to reduce risk to hazards. The goals describe long term outcomes the communities want to achieve. Objectives are broad but more measurable and connect goals with the actual mitigation actions. The actions are specific actions that the local government will take to reduce risk to hazards, and the action plan describes how the action items will be prioritized and implemented. Each jurisdiction involved in this multi-jurisdictional plan update had the opportunity to prioritize and implement action plans based on their priorities and vulnerabilities.

Because the State Hazard Mitigation Plan provides the State's overall strategy for reducing risk and allocating resources, the team chose to align the plan's goals to the State plan's vision, objectives and plan goal to better integrate the two. An excerpt from the 2018 State of Texas Hazard Mitigation states that,

> The successful implementation of the Texas Hazard Mitigation Strategy requires a strong partnership between many partners at all levels of government, public, private-sector, and non-governmental organizations. Effective hazard mitigation begins with individual citizens who are ultimately responsible for making risk-informed decisions regarding their personal safety and the safety of their family and home. Local governments work to identify hazards and understand the vulnerabilities and risk associated with these hazards. This work by local governments informs the citizenry and local officials so that they may develop effective strategies and policies to reduce or eliminate the long-term risk these hazards present to their communities. The state must also work to identify hazards and understand the collective vulnerability and risk these hazards present to Texas communities in order to craft effective strategies, public policy, and programs that support local government in risk management. Ultimately, the state's success at implementing an effective hazard mitigation program that reduces the long-term risk for natural hazards in Texas depends on the success of local government, as this is where the impacts of hazards are most acutely experienced. Therefore, helping local governments achieve success with their mitigation strategies is the primary focus of the Texas Hazard Mitigation Program.[13]

The following objectives and plan goal from the Texas State Hazard Mitigation Plan were also considered.

Objectives

- Implement an effective comprehensive statewide hazard mitigation plan
- Support local and regional mitigation projects and priorities
- Increase public and private sector awareness to increase support for hazard mitigation in Texas
- Support mitigation initiatives and policies that protect the state's cultural, economic, and natural resources

Plan Goal

The objective of SHMP is to establish a framework for the state of Texas to administer an effective mitigation program to prevent catastrophic impact to people and property from natural hazards.

The Planning Team mitigation strategy also included a review of the goals and objectives from the 2016 Hays County Hazard Mitigation Action Plan Update. This was an opportunity to evaluate the previous goals and reaffirm or change them based on current conditions and priorities in each community. Two Mitigation Workshops were held for the 2024 Hays County Mitigation Action Plan Update. The first was held during the second Core Planning Team at the Hays County Emergency Management Conference Room and the second was held virtually and via e-mail correspondence with each of the participating jurisdictional sub-teams. The goals and objectives from the 2016 Hays County Hazard Mitigation Action Plan Update were reviewed and found to be still applicable for this plan update. The motion to adopt the following goals and objectives passed by unanimous consent at these workshops.

[13] State of Texas Hazard Mitigation Plan 2018, Texas Division of Emergency Management (TDEM)

Mitigation Goals

Hazard mitigation goals and objectives for the Hays County Hazard Mitigation Action Plan update are presented below.

Goal #1: Enhance the abilities of Hays County and the communities within its boundaries to provide protection of life, property, economy and natural systems from natural hazards.

Goal #2: Protect existing and new properties.

Goal #3: Incorporate measures that assist with the improvement of water conservation efforts in Hays County.

SECTION 18: MITIGATION ACTIONS

The mitigation actions developed by Core Team, Jurisdictional sub-teams, and community stakeholders are presented in this section for Hays County and all participating jurisdictions. Core Team members and Jurisdictional sub-team members met for two mitigation workshops in July 2023 and September 2023 to develop mitigation actions for each of the natural hazards described in the Plan; Sections 5-16.

This began with a review of mitigation actions from the prior 2016 Hays County Hazard Mitigation Plan to assess whether they had been completed and if not, whether they were still relevant. The Action items with a "N" in the New Action column are those that have been carried over from the previous plan and have not begun or have been implemented.

New actions were developed with unique insight from planning team members, community and regional plans, capital improvement plans, and mitigation ideas developed by FEMA and the Texas Department of Emergency Management (TDEM) and those are listed with a "Y".

Based on local input, the following action items from the previous 2016 plan were completed and those that were not carried forward from that plan were discarded due to lack of continued relevance. The actions below were listed in the prior 2016 Hays County Hazard Mitigation Plan and are listed as completed or removed due to no longer being applicable.

Hays County	
ACTION Upgrade to interoperability and safety band	
Action Completed	Band has been upgraded.
ACTION: Storm Ready designation for Hays County	
Action Completed	Received Designation on 2/22/2024
ACTION: Expansive soils mitigation measures training	
Action Completed	Training program is now in place
City of Buda	
ACTION: Reduce flood losses in Houston Street Drainage Project Area	
Action Completed	Project Completed
ACTION: Reduce flood losses in Oxbow Subdivision Drainage Project Area	
Action Completed	Project Completed
ACTION: Reduce flood losses through construction of a permanent Flood Early Warning System (FEWS) installation at the Onion Creek Bridge on RM 967	
Action Completed	Project Completed
ACTION: Reduce flood losses through the construction of a permanent Flood Early Warning System (FEWS) installation at Cole Springs Road and RM 967	
Action Completed	Project Completed
ACTION: Reduce flood losses through the construction of a permanent Flood Early Warning System (FEWS) installation at Garlic Creek Culvert on RM 967	
Action Completed	Project Completed
ACTION: Reduce flood losses through the construction of a permanent Flood Early Warning System (FEWS) installation on Bluff Street south of RM 967	
Action Removed	Project Cancelled
ACTION: Reduce flood losses through construction of a permanent Flood Early Warning System (FEWS) installation at Main Street Ann Bradfield Park (Culvert Improved as part of Main Street Reconstruction)	
Action Completed	Project Completed
ACTION: Provide training for local floodplain administrators and Certified Floodplain Managers	
Action Completed	Project Completed

City of Dripping Springs	
ACTION: Flood ordinance higher standards	
Action Completed	Project Completed
ACTION: Improve emergency communication/ warning systems	
Action Completed	Project Completed
ACTION: Fans and bottled water distribution	
Action Completed	Project Completed
ACTION: Increase public awareness of hazard mitigation	
Action Completed	Project Completed
ACTION: Adopt Firewise hazard information from Hays County for mitigation activities	
Action Completed	Project Completed
ACTION: Adding water conservation to ordinances	
Action Completed	Project Completed
ACTION: Cooling plan for reducing the impacts of extreme heat to vulnerable populations	
Action Completed	Project Completed
ACTION: Sanding contract research/ plan development	
Action Completed	Project Completed
ACTION: Fire mitigation ordinance enhancements	
Action Completed	Project Completed
ACTION: Continue work to repair little Barton Creek Dam	
Action Completed	Project Completed
ACTION: Evacuation plans/ alternate road consideration	
Action Completed	Project Completed
ACTION: Campaign to encourage drought resistant vegetation and xeriscaping	
Action Completed	Project Completed
ACTION: Flash flood risk awareness campaign	
Action Completed	Project Completed
ACTION: Signage at high-risk roadway flood areas	
Action Completed	Project Completed
ACTION: Adoption of soil compaction standards for road construction and residential recommendation	
Action Completed	Project Completed
City of Hays	
ACTION: Cooling plan for reducing the impacts of extreme heat to vulnerable populations	
Action Completed	Project Completed (City Hall is open to residents without A/C)
ACTION: Annual brush clean-up event marketing	
Action Completed	Project Completed
ACTION: Adding water conversation to ordinances/ institution of drought contingency plan as part of operations	
Action Completed	Project Completed
City of Kyle	
ACTION: Code Red Registration Drive	
Action Completed	Project Completed - Phase I complete-Transitioned to CAPCOG Warn Central Texas platform for community notification
ACTION: Storm Ready Designation for City of Kyle	
Action Completed	Project Completed - Designation granted January 2024
ACTION: Adoption of Firewise hazard mitigation information in partnership with Hays County mitigation activities	
Action Completed	Project Completed - Phase I adoption complete.
ACTION: Energy prioritization/restoration collaboration with local electric cooperative	
Action Completed	Project Completed - Complete-PEC Medical Necessity Program.
ACTION: Engineering review of new Public Safety Center CIP to ensure resiliency	

Action Completed	Project Completed - Complete-2021
ACTION: Addressing expansive soil	
Action Completed	Project Completed - Phase I complete.
ACTION: Drainage Crew	
Action Completed	Project Completed - Complete 2018
ACTION: Water improvements: Pumphouse RD-Melinda LN CIP 41	
Action Completed	Project Completed - Removed from CIP as part of larger water distribution master plan.
ACTION: Monarch Water System interconnect	
Action Completed	Project Completed
ACTION: Engineering and Easement Project-Lehman RD	
Action Completed	Project Completed
ACTION: Engineering and Easement Project-N. Burleson RD	
Action Completed	Project Completed
City of Niederwald	
ACTION: Residential development permit enhancement for flood mitigation	
Action Completed	This action has been implemented
ACTION: Adopt Firewise hazard information from Hays County for mitigation activities	
Action Cancelled	Hays County provides this information
ACTION: Energy prioritization collaboration with electric cooperative	
Action Cancelled	No resources or time to implement
ACTION: Creation of social media accounts for the City of Niederwald	
Action Completed	This action has been implemented
ACTION: Dam safety evacuation tabletop exercise	
Action Cancelled	Hays County provides dam safety awareness
ACTION: Expansive soil mitigation measures	
Action Cancelled	No longer applicable
City of Uhland	
ACTION: CFM training and CFM certification	
Action Completed	The city has retained a CFM consultant
ACTION: Promote flood insurance in the community	
Action Completed	Information and Flood Related resources have been advertised/posted on The City of Uhland's Website
ACTION: Water ordinance update/ SUD water conservation web page	
Action Completed	CLUSD regularly posts updates on their webpage
City of Wimberley	
ACTION: Hidden Valley at Blanco River	
Action Completed	The Low Water Crossing was replaced at a cost of $1,613,888.37
Village of Bear Creek	
ACTION: Application preparation and submittal for Storm Ready designation from National Weather Service	
Action Removed	No longer applicable
ACTION: Watershed review program for encroachments	
Action Removed	Ensure compliance with updated maps
ACTION: Low Water Crossing Mitigation	
Action Removed	Not Feasible
ACTION: ERCOT app download event	
Action Removed	PEC notification systems in place, add encouragement to use/download ERCOT app on VILBC.ORG website
ACTION: Purchase and install weather radios for all public facilities	
Action Removed	No VOBC public facilities

Village of Woodcreek	
ACTION: Emergency communications plan/ coordination	
Action Completed	Project Completed
ACTION: Cooling Plan Creation	
Action Completed	Project Completed
ACTION: Adopt wildfire maps from Hays County Firewise Project	
Action Completed	Project Completed
ACTION: Drought monitoring program and contingency plan creation/ implementation	
Action Completed	Project Completed
ACTION: Generator purchase and installation for City Hall	
Action Completed	Project Completed
ACTION: Evacuation plans/ alternate road consideration	
Action Completed	Project Completed
ACTION: 2- way radio purchase for City Hall	
Action Completed	Project Completed
ACTION: Sanding contract research/ plan development	
Action Removed	No longer applicable

The Core Planning Team then took the draft mitigation actions back to their respective departments to get feedback and develop them further with input from local staff and officials responsible for their implementation. The goals listed in Section 17 were used as guidance while considering such factors as existing and future growth, the hazard risk assessments, individual community priorities, critical facilities, and unique community vulnerabilities. Mitigation action types include *Local plans and regulations, Structural projects, Natural systems protection, and Education programs*. Additional information provided for each mitigation action includes the jurisdictional department responsible for implementation, estimated cost, potential funding sources, timeline for implementation, and benefit to the community based on the cost and resources to implement the action.

An action that is ranked as "High" indicates that it will be implemented as soon as funding is made available from both local budgets and through grants. A "Medium" action is one that may not be implemented right away depending on the cost and how well or how many community members are served. A "Low" action is one whose benefit is hard to quantify in relation to the cost but is still considered of value to the community and is to be implemented when funds and resources are available.

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
Hays County											
1	Attend advanced local floodplain management courses	Send members of the staff or elected official to training in order to receive advanced training modules in floodplain administration.	Hurricane, Flood, Dam Failure		G1	N	Hays Floodplain Administrator	Existing Staff/ In-Kind Services, cost of accommodations for FEMA session	*Local Budget, FEMA, TDEM, TWDB, GLO*	6	Low
2	Increase public awareness of hazard mitigation	Increasing public awareness of natural hazards and hazardous areas; distributing public awareness information regarding hazards and potential mitigation measures. Promotional sources would include County website, social media and public education programs. Provide mitigation outreach through HaysInformed. com	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	Hays County Office of Emergency Services	Existing Staff/ In-Kind Services	*Local Budget, FEMA, TDEM, TWDB, GLO*	6	Low
3	Continue to promote Firewise	Continuation of activities for purposes of mitigating wildfire risk and planning activities for adding neighborhoods into the Firewise program.	Drought, Extreme Heat, Wildfire		G1, G2	N	Hays County Fire Marshall	Existing Staff/ In-Kind Services	*Local Budget, FEMA, TDEM, TWDB, GLO*	12	Medium
4	Monitor drought conditions	Use HaysInformed.com to provide links to National Drought Monitor for daily drought report availability for the public.	Drought, Extreme Heat, Wildfire		G1, G3	N	Hays County Office of Emergency Services	Existing Staff/ In-Kind Services	*Local Budget, FEMA, TDEM, TWDB, GLO*	6	Medium
5	Installation of mitigation features for new public facilities to ensure soundness against natural hazards	Ensure new structures are structurally reinforced against natural hazards. To include, low-flow water units for drought, flood-proofing (if needed), wind resistant doors and windows, freeboard, bracing and bolting of sill plates, higher levels of soil compaction and proper perimeter drainage systems, impact resistant films for glass, foundation supports, increased insulation and grounding systems.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1, G2	N	Hays County Development Services	Unknown	*Local Budget, HMGP, PDM, HMA Grants*	48	High
6	Equipping critical building (beyond fire departments) with back-up generators	Continuing the purchase and installation of emergency generators for back-up power at critical buildings in Hays County.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G2	N	Hays County Office of Emergency Services	$25k-$50k	*Local Budget, HMGP, PDM, HMA Grants*	24	High
7	Additional stream and rain gauge and flood warning systems	Next phase in an ongoing effort to increase the number of gages along high velocity flood areas and flood warnings at High Hazard Dams.	Hurricanes, Floods, Dam Failure		G1, G2	N	Hays County Office of Emergency Services	$200,000	*Local Budget, HMGP, PDM, HMA Grants*	24	Medium

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
Hays County											
8	Continue to improve emergency warning capabilities	Research and possible implementation of systems for redundancy in notifications through use of AM/FM radio and satellites.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	Hays County Office of Emergency Services	Existing Staff/ In-Kind Services, until appropriate measures identified	*Local Budget, FEMA, TDEM, TWDB, GLO*	12	Medium
9	Minimize the loss of life at low water crossing	Continue efforts to improve and expand upon existing low water crossing alert systems, and road blocking systems. Also make structural improvements to low water crossings to decrease vulnerability and protect residents.	Hurricanes, Floods, Dam Failure		G1	N	Hays County Office of Emergency Services	$700,000	*Local Budget, FEMA, TDEM, TWDB, GLO*	48	High
10	Fuel reduction project	Identify and complete a vegetative fuel reduction project in order to lessen the risk of wildfire, in addition to existing Firewise planned activities	Drought, Extreme Heat, Wildfire		G2	N	Hays County Office of Emergency Services	Existing Staff/ In-Kind Services, until appropriate measures identified	*Local Budget, FEMA, TDEM, TWDB, GLO*	12	Low
11	Communication Plan Implementation	Coordinate communication with all partners	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1, G2	Y	Hays County Office of Emergency Services	Existing Staff/ In-Kind Services, until appropriate measures identified	*Local Budget, FEMA, TDEM, TWDB, GLO*	24	Low
12	R.R. 967 @ Little Bear	Upgrade Low Water Crossing at R.R. 967 and Little Bear Creek. Identified as the highest risk structure in the 2013 Report title "Analysis of Major Structures for all Studies Watersheds."	Hurricanes, Floods, Dam Failure		G1, G2	Y	Hays County Engineering & Public Works	$500,000	*Local Budget, FEMA, TDEM, TWDB, GLO*	36	High
13	Development Code updates awareness campaign	Develop and advocate for an educational and awareness initiative on the advantages of thoughtfully planned built environment. (Hays community health assessment and improvement plan)	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	Y	Development Services	Existing Staff/ In-Kind Services, until appropriate measures identified	*Local Budget, FEMA, TDEM, TWDB, GLO*	12	Low
14	Flood insurance information campain	Promote the flood insurance program to lessen the number of structures uninsured from flood loss by providing citizens access to brochures about the NFIP at the County Government Center and adding links to resources on the County website.	Hurricane, Flood, Dam Failure		G1, G2	N	Hays Floodplain Administrator	Free NFIP materials from FEMA publication warehouse	*Existing Staff/ In-Kind Services*	6	Medium

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
Hays County											
15	Evacuation plans/ alternate road consideration	Documentation of an evacuation plan that includes multiple exits. Possible construction of new roads to provide alternate routes for evacuation for areas that have limited or hazardous points of ingress/egress.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	Hays County Office of Emergency Services	Cost of Land Buyouts, Staff time	*Local Budget, HMGP, PDM, HMA Grants*	18	Medium
16	Dam inundation maps	Work with TCEQ to continue to develop inundation maps for all High Hazard dams.	Hurricanes, Floods, Dam Failure		G1, G2	N	Hays Floodplain Administrator	Contractual Services	*Local Budget, HMGP, PDM, HMA Grants*	12	High
17	Community Rating System application and Community Rating System participation benefit report for jurisdictions	The County will pursue a CRS rating in order to provide discounts to flood policy holders. With varying levels of benefit from CRS program insurance premium discount benefits at the incorporated jurisdiction level, the benefit/cost of the administration of a CRS application and program may cost a jurisdiction more than it saves them. A County-coordinated assessment of the number of policies that are in the SFHA in the communities, with a listing of their potential for savings would assist with determining if they would benefit from participation.	Hurricanes, Floods, Dam Failure		G1, G2	N	Hays Floodplain Administrator	Existing Staff/ In-Kind Services	*Local Budget* with FEMA/TWDB support	24	High
18	Construct needed water system improvements to Lower Colorado Region K and South Central Region L	Construction of projects needed to improve the water system in 2 regions. (May need some research to determine if completed, at a minimum, the Lower Colorado Project can likely be removed.)	Drought, Extreme Heat		G2	N	Hays County Commissioners Court	$47.2M (South Central Texas Region), $256M (Lower Colorado Region)	*Local Budget,* TWDB, GBRA, LCRA	?	Medium
19	Drainage project along Willow Springs Creek between McCarty Lane and Hunter Road	Channel improvement and/or property acquisition project to reduce flood damages along Willow Springs Creek from McCarty Lane to Hunter Road.	Hurricanes, Floods, Dam Failure		G2	N	Hays County Development Services	$8M (TBD through further analysis)	*Local Budget, HMGP, PDM, HMA Grants*	36	High
20	Drainage project along Willow Springs Creek between Hunter Rd and the Railroad	Detention project to reduce flood damages along Willow Springs Creek from Hunter Road to the railroad.	Hurricanes, Floods, Dam Failure		G2	N	Hays County Development Services	$12M (TBD through further analysis)	*Local Budget, HMGP, PDM, HMA Grants*	36	High
21	Property acquisition in southeastern Hays County	Property acquisition project to mitigate repetitive loss flooding where drainage projects were analyzed and deemed ineffective for cost/ benefit reasons.	Hurricanes, Floods, Dam Failure		G1, G2	N	Hays County Commissioners Court/ Development Services	$8M (TBD through further analysis)	*Local Budget, HMGP, PDM, HMA Grants*	36	Medium

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
Hays County											
22	Institute development code updates to better prepare the built environment to hazard events	Promote policy reforms that foster the development of a well-designed built environment. (Hays community health assessment and improvement plan)	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1, G2	Y	Hays County Commissioners Court/ Development Services	$50,000	*Local Budget, FEMA, TDEM, TWDB, GLO*	36	High
23	Acquisition or elevation of repetitive loss structures	Action to mitigate 38 identified properties with a total of 88 losses claimed for a total of $4 million from the NFIP.	Hurricanes, Floods, Dam Failure		G2	N	Hays County Grants Administrator, Emergency Management Coordinator, Floodplain Administrator	$15M to acquire/ $6.4M to elevate	*Local Budget*, FEMA, TDEM, TWDB, GLO	60	Low

Legend:

Structure and Infrastructure
Natural System Protection
Local Plans and Regulations
Education and Awareness Programs
Emergency Preparation and Response

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Buda											
1	Reduce flood losses in Lifschutz Headwaters Drainage Project Area	Voluntary, targeted buyouts for 1 or more affected properties.	Hurricane, Flood, Dam Failure		G1, G2	N	Planning and Engineering Department	TBD	*Local Budget, HMGP, PDM, HMA Grants*	48	High
2	Review plans and resources to address risk posed by severe weather events	Continuing update of City's current plans and resources to address the risks posed by severe weather hazards focusing on potentially at-risk populations in the community. Include - local plans to be developed	Hurricane, Flood, Tornado, Hailstorms, Wildfire, Severe Winter Storms		G2	N	Planning and Engineering Department and Public Works Department	Esisting staff resources/ in-kind	*Local Budget, Existing Staff, TDEM, FEMA*	24	Low
3	Promote flood insurance coverage	Up-sizing existing culverts at Remuda Trail, Oxbow Trail, and Bullwhip Pass; and up-sizing the existing channel from upstream of Bullwhip Pass to upper limits of Coves at Cimarron Pond. Include - Communications plan	Hurricane, Flood, Dam Failure		G1, G2	N	Planning and Engineering Department and Public Information Office	Esisting staff resources/ in-kind	*Local Budget, FEMA*	24	Low
4	Reduce flood losses in West Goforth Rd, Buda Fire Station/FM 2770, and Bluff St Drainage Project Area.	Up-sizing and improving existing channel and culverts along West Goforth Road and the Union Pacific Railroad line; constructing a relief channel from Buda Fire Station under FM 2770 to the Onion Creek main channel stem. Phase 1A Completed. Phase 1B Delayed. Pending permit approval from UPRR	Hurricane, Flood, Dam Failure		G1, G2	N	Planning and Engineering Department	$4,522,000	*Local Budget, HMGP, PDM, HMA Grants*	36	High
5	Increase community tree canopy on streets and public spaces	Maintain certification as a Tree City USA community and seek funding and partnerships to plant trees that will increase the community's tree canopy, reduce temperature on streets and public spaces, and provide for wildlife habitat (Comp Plan)	Drought, Extreme Heat		G1	Y	Public Works Department	$100,000	*Local Budget, Existing Staff, TDEM, FEMA*	36	Low
6	Develop various mitigation actions to reduce wildfire risk	Informing property owners of appropriate actions, clearing vegetation, and monitoring antecedent fire hazard conditions. Include - Working with ESD 8 Buda Fire	Drought, Extreme Heat, Wildfire		G2	N	Planning and Engineering Department and Public Works Department	Esisting staff resources/ in-kind	*Local Budget, Texas A&M Forest Service, TDEM*	24	Low

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Buda											
7	Update the development code to enhance conservation-oriented regulatory provisions.	Facilitate the implementation of the Innovative Development standards in the UDC, Low Impact Development (LID) standards, and other conservation-oriented regulatory provisions of City codes and ordinances (Comp Plan)	Drought, Extreme Heat		G2	Y	Planning and Engineering Department	$80,000	*Local Budget, Existing Staff, TDEM, FEMA*	24	Medium
8	Study sources of new water supply and implement findings.	Ensure a long-term water supply sufficient to handle growth projections along with greater conservation efforts that will diversify sources and alleviate pressure on the sensitive and variable Edwards Aquifer (Comp Plan)	Drought, Extreme Heat		G1, G3	Y	Planning and Engineering Department and Public Works Department	$150,000	*Local Budget, Existing Staff, TDEM, FEMA*	48	Medium
9	Expand Water Reuse Program	Expand the City's water reuse program and conservation measures for developments and buildings in addition to public spaces and rights of way (Comp Plan)	Drought, Extreme Heat		G1, G3	Y	Planning and Engineering Department and Public Works Department	$300,000	*Local Budget, Existing Staff, TDEM, FEMA*	36	Medium
10	Create a Consolidated Resiliency Plan	Create a Consolidated Resiliency Plan to address water quality, water conservation, drought mitigation, flooding impacts, wildfire threat, electric grid overload mitigation, and urban heat effect (Comp Plan)	Hurricane, Flood, Drought, Extreme Heat, Wildfire, Dam Failure		G2	Y	Emergency Management	$100,000	*Local Budget, HMGP, PDM, HMA Grants*	24	Low
11	Promote awareness of evacuation plans	Promoting the importance of flood insurance as a part of the development permitting process; promoting the NFIP through brochure distribution, City website, and press releases.	Hurricane, Flood, Wildfire, Dam Failure		G1	N	Public Works Department	Esisting staff resources/ in-kind	*Local Budget, FEMA*	12	Low
12	Minimize dam failure risk	Ensuring structural and nonstructural measures are implemented to protect the integrity of the earthen fill dams; requiring that repairs are performed under the guidance of a qualified design professional.	Hurricane, Flood, Dam Failure		G1, G2	N	Planning and Engineering Department	Esisting staff resources/ in-kind	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
13	Implement Watershed Protection Pilot Project	Bradfield Park / Onion Creek Watershed Protection Pilot Project (CIP D10)	Hurricane, Flood, Dam Failure		G1, G2	Y	Planning and Engineering Department and Public Works Department	$200,000	*Local Budget, Existing Staff, TDEM, FEMA*	36	Low

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Buda											
14	Garlic Creek Culvert CIP	Garlic Creek Culvert (CIP D16)	Hurricane, Flood, Dam Failure		G1, G2	Y	Planning and Engineering Department and Public Works Department	$2,100,000	*Local Budget, Existing Staff, TDEM, FEMA*	24	High
15	Garlic Creek Tributary CIP	Garlic Creek Tributary Under RM 967 CIP D03)	Hurricane, Flood, Dam Failure		G1, G2	Y	Planning and Engineering Department and Public Works Department	$320,000	*Local Budget, Existing Staff, TDEM, FEMA*	24	High
16	Sequoyah Drainage Improvements CIP	Sequoyah Drainage Improvements (CIP D15)	Hurricane, Flood, Dam Failure		G1, G2	Y	Planning and Engineering Department and Public Works Department	$2,000,000	*Local Budget, Existing Staff, TDEM, FEMA*	24	High

Legend:

Structure and Infrastructure
Natural System Protection
Local Plans and Regulations
Education and Awareness Programs
Emergency Preparation and Response

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Dripping Springs											
1	Flood insurance information campaign	Promote the flood insurance program to lessen the number of structures uninsured from flood loss by providing citizens access to brochures about the NFIP at the local City Hall and links to resources on website.	Hurricane, Flood		G1	N	Emergency Planning	Existing staff resources/ in-kind services	*Local Budget, FEMA*	12	Medium
2	Attend local floodplain management courses to receive certification	Send additional members of the staff or elected officials to training in order to become a Certified Floodplain Manager. Send existing Floodplain Administrator to advanced floodplain management courses.	Hurricane, Flood		G1, G2	N	Emergency Planning	Existing staff resources/ in-kind services	*Local Budget, FEMA*	24	Low
3	Storm Ready designation for Dripping Springs	Application preparation and submission for StormReady designation from the National Weather Service that attests to the community's level of preparedness for severe storms.	Hurricane, Flood, Windstorms, Lightning, Tornado, Hailstorms, Severe Winter Storms		G1, G2	N	Emergency Planning	Existing staff resources/ in-kind services	*Local Budget, FEMA, TWDB*	24	Medium
4	Conversion to rainwater collection systems	Converting existing water systems into rainwater collection systems to reduce dependence on underground and piped in sources of water in public facilities. Also creation of tax incentives for citizens to create their own rainwater collection systems.	Drought, Extreme Heat		G1, G2, G3	N	City Council	Varies	*Local Budget, HMGP, PDM, HMA Grants*	36	Medium
5	Installation of mitigation features for new public facilities to ensure soundness against natural hazards	Ensure new structures are structurally reinforced against natural hazards. To include, low-flow water units for drought, flood-proofing (if needed), wind resistant doors and windows, freeboard, bracing and bolting of sill plates, higher levels of soil compaction and proper perimeter drainage systems, impact resistant films for glass, foundation supports, increased insulation and grounding systems.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1, G2	Y	Planning Department	Unknown	*Local Budget, HMGP, PDM, HMA Grants*	48	High

Structure and Infrastructure
Natural System Protection
Local Plans and Regulations
Education and Awareness Programs
Emergency Preparation and Response

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Hays											
1	Attend certified floodplain management training	Attend FEMA based training for floodplain management administration	Hurricane, Flood		G1	N	City Hall	less than $100 for local training registration, fuel	*Local Budget, HMGP, PDM, HMA Grants*	36	Medium
2	Promote flood insurance	Using FEMA resources that are available for free for promoting flood insurance through National Flood Insurance Program pamphlets placed in City Hall.	Hurricane, Flood		G1	N	City Hall	Existing staff resources/ in-kind services	*Local Budget, FEMA*	12	Low
3	Creation of community evacuation plans	Create evacuation plans for quick exit from the community.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G1	N	City Hall	$85,000	*Local Budget, HMGP, PDM, HMA Grants*	36	High
4	Rain harvesting information promotion	Creating and distributing information sheets to public that encourage and provide guidance on how to build rain water harvesting systems on their home structures	Drought, Extreme Heat		G3	N	City Hall	Existing staff resources/ in-kind services	*Local Budget, FEMA*	12	Low
5	Flooplain/ Floodway audit	Quarterly efforts to ensure that unauthorized encroachments, such as private dams, are not allowed in the floodway	Hurricanes, Flood		G1	N	City Hall	$150,000	*Local*	48	Medium
6	Energy prioritization collaboration with Pedernales Electric Cooperative	Working with PEC to create a citizen registration system for requesting prioritization for power restoration according to special need or circumstance during hazards that could affect access to electricity.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G2	N	City Hall	Existing staff resources/ in-kind services	*Local*	24	Low
7	Public information campaign on natural hazards	Creating resource page on City of Hays website to promote information about the hazards that exist in the community and how to take mitigation actions at the individual level	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G1	N	City Hall	Existing staff resources/ in-kind services	*Local Budget, FEMA*	12	Low

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Hays											
8	Storm Ready designation for community	Applying for National Weather Service as a community that has taken preparedness actions to ensure the community is able to receive emergency notifications.	Hurricanes, Flood, Tornado, Hailstorms		G2	N	City Hall	Existing staff resources/ in-kind services	*Local Budget*	24	High
9	Improve emergency communication capabilities through the installation of weather radio in City Hall	Installation of permanent weather radio system and weather station at City Hall with back-up power source.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G1	N	City Hall	$500	*Local Budget*	12	High
10	Sanding plans for roads	The establishment of preparatory plans and publication of agreements for private sanding of roads in order to protect citizens and maintain access to emergency responders.	Hailstorms, Severe Winter Storms		G2	N	City Hall	Existing staff resources/ in-kind services	*Local*	24	Medium
11	Adoption of soil compaction standards for road construction	Adopting procedures to mitigate against expansive soils when constructing future roads within the community through higher level of soil compaction.	Hurricanes, Flood, Severe Winter Storm		G1	N	City Hall	Existing staff resources/ in-kind services	*Local*	12	Medium
12	Installation of mitigation features for new public facilities to ensure soundness against natural hazards	Ensure new structures are structurally reinforced against natural hazards. To include, low-flow water units for drought, flood-proofing (if needed), wind resistant doors and windows, freeboard, bracing and bolting of sill plates, higher levels of soil compaction and proper perimeter drainage systems, impact resistant films for glass, foundation supports, increased insulation and grounding systems.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G1, G2	Y	Planning Department	Unknown	*Local Budget, HMGP, PDM, HMA Grants*	48	High

Legend:

- Structure and Infrastructure
- Natural System Protection
- Local Plans and Regulations
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Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Kyle											
1	Adoption of City Engineering Design Manual	The City of Kyle adopted by ordinance, the City of Austin Design Standard Specification Manual, as amended from time to time; the City of Austin Standards Manual, as amended from time to time; the City of Austin Transportation Criteria Manual, as amended from time to time; the City of Austin Drainage Criteria Manual, as amended from time to time; the City of Austin Environmental Criteria Manual, as amended from time to time, and the City of Austin Utilities Criteria Manual, to enhance development requirements within the City of Kyle.	Hurricane, Flood, Dam Failure		G2	N	City of Kyle Engineer	Existing City staff and in-kind services	*Local Budget*	12	This project is a low-cost programming methodology ensuring that new development and substantial improvements in the City of Kyle jurisdiction are executed with a risk reduction model for flood and expansive soil remediation
2	Floodplain Administration Continuing Education Project	Ensure the City of Kyle Floodplain Administrator receives continuing education related to their floodplain management training as required FEMA. Funding is dedicated to continuing education.	Hurricane, Flood, Dam Failure		G1	N	City of Kyle Engineer	Existing City staff and in-kind services, cost of travel and training.	*Local Budget, FEMA*	24	The cost of attending Floodplain Administrator continuing education courses as required by FEMA, is minimal. The benefit of an informed floodplain administrator would help both new and existing residents and developments through guidance, mitigating flood damages to development.
3	Increase public awareness of hazard mitigation	Increasing public awareness of natural hazards and hazardous areas, distributing public awareness information regarding hazards and potential mitigation measures. Promotional sources would include City website, social media and public education programs. Provide link to HaysInformed.com.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	City of Kyle Communications City of Kyle Emergency Management	Existing staff resources/ in-kind services	*Local Budget, FEMA*	6	Low cost enhancement to the City's existing webpages provides for high volumes access and distribution to the community
4	Installation of generators for city-owned facilities and procedures for providing temporary sheltering	Back-up electrical power available to City structures to ensure continuity of government operations and to also provide temporary sheltering for vulnerable populations in the City.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G2	N	City of Kyle City Council	TBD	*Local Budget, HMGP, PDM, HMA Grants*	60	Based on available grant funding opportunities the community would benefit from the identification and resiliency of critical infrastructure in support of continuity of government.

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Kyle											
5	Street prioritization procedure for sanding	Creation of a plan that provides established procedures and prioritization for sanding efforts. (Phase I complete. Ongoing audit process based on growth and usage.)	Severe winter weather		G2	N	City of Kyle Public Works	Existing staff/in-kind services.	*Local Budget*	36	This low-cost planning activity will ensure that careful consideration is made for road prioritization for sanding activities that will benefit many residents and visitors.
6	Coordination of limb and large item pick-up day for wildfire mitigation	Cross-marketing of the existing brush collection efforts with the city's Texas Disposal Systems contract with the City of Kyle to promote mitigation. (Phase I complete. Ongoing audit process based on growth and usage.)	Wildfire, Severe Winter Weather		G2	N	City of Kyle Communications Private contractors	Existing staff/in-kind services, refuse disposal provider	*Local Budget*	36	At the cost of staff for coordination, the community cross-marketing with Texas Disposal Systems collecting/accepting brush to promote brush pickup and dead tree removal to decrease fuel for wildfire and potential debris that could fall on power lines during freezing conditions or ignite during lightning strikes. This will benefit the whole community.
7	Evacuation plans/ alternate road consideration	Development and adoption of all hazard plan and/or annex that encompasses preparedness, mitigation, response , and recovery aspects associated with mass evacuation. (Phase I development underway)	Flood, Tornadoes, Windstorm, Hurricanes/ Tropical Storms, Hailstorms		G2	N	City of Kyle Emergency Management	Existing staff resources/ in-kind services. Undetermined cost of roadway improvements option.	*Local Budget*	24	Plan development and programming is vital to establishing processes to evacuate specific or general community population groups. Area growth should be considered during planning and development stages to enhance roadway design and access.
8	Plum Creek Conservation District Evacuation Planning	Coordination of dam coalition to provide the City with disaster information/ procedures and evacuation plans associated with PCCD dam failure. (In development)	Hurricane, Flood, Dam Failure		G2	N	Partnership with Plumb Creek Conservation District (PCCD)	US Army Corps of Engineers Plum Creek Conservation District	*Local Budget, USACE*	24	Request for information from damn cooperative benefits community at large, specifically residents downstream of existing infrastructure. PCCD owns and maintains subject damns and levees in the City of Kyle jurisdiction.
9	WaterWise campaign	Promotion of the Waterwise Conservation Program for the City of Kyle.	Drought		G3	N	City of Kyle Communications City of Kyle Water Utility	Nominal cost for commercial production, associated internal costs	*Local Budget, TWDB*	36	Promoting this existing programming impacts water usage and conservation within the community.

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Kyle											
10	Drought monitoring program	Provide information on the City of Kyle's homepage that provides the latest US Drought Monitor conditions for the day during times of drought.	Drought		G3	N	City of Kyle Communications City of Kyle Water Utility	Existing staff/in-kind services	*Local Budget, US Drought Monitor*	24	This low-cost monitoring and inclusion of drought water conservation measures will take more time than money to institute and could reap the community dividends during a water shortage. All residents that use the water source would benefit.
11	Riparian Zone Signage	Enhancement on existing Parks programs that identify riparian zones using signage in areas where parkland vegetation is left natural. Signs are placed in those riparian zones letting residents and visitors to the parks know and understand the benefits of having Riparian zones.	Floods, Drought		G1	N	City of Kyle Parks & Recreation Department	Existing staff/in-kind services	*Local Budget*	24	The identification of riparian zones assists with a better understanding of the zone area and their beneficial impact to city programming in greenspace areas.
12	Update Drainage Master Plan	Update to the existing City of Kyle's Drainage Master Plan	Hurricanes, Floods, Drought		G1, G2	N	City of Kyle Engineering Department	$300,000 funding: Storm Drainage & Flood Risk Utility Fee	*Local Budget, HMGP, PDM, HMA Grants*	24	The City of Kyle's initial Drainage Master Plan was completed in November 2018. The city has plans to update the Drainage Master Plan which is proposed within the City's next 5-year's CIP list of priorities.
13	Water improvements-line upgrades and replacements	An existing CIP project to provide necessary repairs, line replacements/improvements, upgrades of existing water distribution infrastructure. These are needed to maintain adequate flows and pressure to provide necessary compliance with TCEQ regulations.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G2	N	City of Kyle Utilities	$2.5 MIL funding from Water Impact Fees phased over 5 years.	*Local Budget, HMGP, PDM, HMA Grants*	24	Existing CIP projects to provide necessary repairs, line replacements/improvements, upgrades of existing water distribution infrastructure. These are needed to maintain adequate flows and pressure to provide necessary compliance with TCEQ regulations.
14	Water improvements: ARWA Take Point 3	3rd Take-Point with Alliance on West side of 35. This needs to include cost of participating in upsizing Alliance water line, design of pump station and construction cost of pump station. This pump station will move water from PP#2 into PP#3 into the 12" waterline along Stagecoach. 3 Acre minimum property size.	Drought, Wildfires		G2	Y	City of Kyle Water Utilities City of Kyle Engineering	$40MIL from Water Impact Fees	*Local Budget, HMGP, PDM, HMA Grants*	FY 25-FY29	This is aprioritized project with the CIP and has obligated funding

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City of Kyle											
10	Drought monitoring program	Provide information on the City of Kyle's homepage that provides the latest US Drought Monitor conditions for the day during times of drought.	Drought		G3	N	City of Kyle Communications City of Kyle Water Utility	Existing staff/in-kind services	*Local Budget, US Drought Monitor*	24	This low-cost monitoring and inclusion of drought water conservation measures will take more time than money to institute and could reap the community dividends during a water shortage. All residents that use the water source would benefit.
11	Riparian Zone Signage	Enhancement on existing Parks programs that identify riparian zones using signage in areas where parkland vegetation is left natural. Signs are placed in those riparian zones letting residents and visitors to the parks know and understand the benefits of having Riparian zones.	Floods, Drought		G1	N	City of Kyle Parks & Recreation Department	Existing staff/in-kind services	*Local Budget*	24	The identification of riparian zones assists with a better understanding of the zone area and their beneficial impact to city programming in greenspace areas.
12	Update Drainage Master Plan	Update to the existing City of Kyle's Drainage Master Plan	Hurricanes, Floods, Drought		G1, G2	N	City of Kyle Engineering Department	$300,000 funding: Storm Drainage & Flood Risk Utility Fee	*Local Budget, HMGP, PDM, HMA Grants*	24	The City of Kyle's initial Drainage Master Plan was completed in November 2018. The city has plans to update the Drainage Master Plan which is proposed within the City's next 5-year's CIP list of priorities.
13	Water improvements-line upgrades and replacements	An existing CIP project to provide necessary repairs, line replacements/improvements, upgrades of existing water distribution infrastructure. These are needed to maintain adequate flows and pressure to provide necessary compliance with TCEQ regulations.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G2	N	City of Kyle Utilities	$2.5 MIL funding from Water Impact Fees phased over 5 years.	*Local Budget, HMGP, PDM, HMA Grants*	24	Existing CIP projects to provide necessary repairs, line replacements/improvements, upgrades of existing water distribution infrastructure. These are needed to maintain adequate flows and pressure to provide necessary compliance with TCEQ regulations.
14	Water improvements: ARWA Take Point 3	3rd Take-Point with Alliance on West side of 35. This needs to include cost of participating in upsizing Alliance water line, design of pump station and construction cost of pump station. This pump station will move water from PP#2 into PP#3 into the 12" waterline along Stagecoach. 3 Acre minimum property size.	Drought, Wildfires		G2	Y	City of Kyle Water Utilities City of Kyle Engineering	$40MIL from Water Impact Fees	*Local Budget, HMGP, PDM, HMA Grants*	FY 25-FY29	This is aprioritized project with the CIP and has obligated funding

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Kyle											
15	Gerator Pad Site Improvements (Previously Quick Connect Power Ports-Pump Stations CIP 38)	Add 9 new stand-by diesel generators and 2 portable diesel generators to existing lift stations(L/S), remote water wells, water plants, and booster pump stations (BPSs). Includes Leham BPS, Yarrington BPS, Well No. 3 BPS, Well Nos. 1&5 BPS, Well No. 2, Masonwood L/S, Kensington Trails L/S, Well No.4, 1626 Pump Station, Wastewater Treatment Plant, and City Hall.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G2	N	City of Kyle Water Utilities	$2.6MIL from Water Impact Fees	*Local Budget, HMGP, PDM, HMA Grants*	CIP FY 25-FY29	This project will provide more reliable water service abilities during natural disasters or other critical emergencies where normal power has been disrupted. This CIP project has funding.
16	Water Improvements (revised): Opal Street	Design and installation of new waterline in ROW, replacing undersized distribution line that has reached capacity. Provides for fire water connectivity for protection to area.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G3	N	City of Kyle Water Utilities City of Kyle Engineering Department	Water Impact Fee Funding	*Local Budget, HMGP, PDM, HMA Grants*	12	Project targeting in-house to reduce costs. Current CIP line item.
17	Design and implementation of prairie/woodland restoration project at select Kyle City Park location(s)	Identification and restoration of municipal park space to a natural grassland or woodland buffer.	Hurricane, Flood, Dam Failure		G2	N	City of Kyle Parks	Undetermined Parks funding.	*Local Budget, TPWD*	36	Parks Master Plan project(s) with associated funding model.
18	Acquisition plan for floodplain and non-floodplain land parcels for greenbelt interconnect project	For improved drainage and public recreation, the City has acquired land through purchase and/or the dedication of greenbelts to interconnect a trail system that connects across Kyle.	Hurricane, Flood, Dam Failure		G2	N	City of Kyle Parks & Recreation Department	Park funding-undetermined	*Local Budget, Bond*	24	City staff/in-kind services with Park Department.
19	Flood insurance information campaign	Promote the flood insurance program to reduce the number of structures uninsured from flood loss through a targeted campaign providing citizen access to flood informational multimedia related to the National Flood Insurance Program (NFIP).	Hurricane, Flood, Dam Failure		G1	N	City of Kyle Stormwater Division, City of Kyle Communications City of Kyle, Emergency Management	Existing City staff and in-kind services	*Local Budget and complementary NFIP materials provided by the FEMA publications warehouse.*	3	This project would directly benefit Kyle residents in need of flood hazard information at no cost.

Legend:

- Structure and Infrastructure
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Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Mountain City											
1	StormReady designation for Mountain City	Application preparation and submission for StormReady designation from the National Weather Service that attests to the community's level of preparedness for severe weather	Hurricane, Flood, Windstorms, Lightning, Tornado, Hailstorms, Severe Winter Storms		G1	N	City Secretary	Existing City staff and in-kind services	*Local Budget*	12	Medium
2	Cooling plan for vulnerable members of the community during periods of extreme heat that result in power loss	Documented plan for how to provide cool accommodations for vulnerable populations during periods of extreme heat when electrical power is interrupted.	Extreme Heat		G1, G2	N	City Council	Existing City staff and in-kind services/ free brochures from FEMA	*Local Budget, FEMA*	24	Low
3	Monitor drought conditions	Provide widget on Mountain City homepage that provides the latest US Drought Monitor conditions for the day, in addition to monitoring local water levels	Drought, Extreme Heat		G2, G3	N	City Council	Existing City staff and in-kind services	*Local Budget*	Ongoing	Medium
4	Installation of mitigation features for new public facilities to ensure soundness against natural hazards	Ensure new structures are structurally reinforced against natural hazards. To include, low-flow water units for drought, flood-proofing (if needed), wind resistant doors and windows, freeboard, bracing and bolting of sill plates, higher levels of soil compaction and proper perimeter drainage systems, impact resistant films for glass, foundation supports, increased insulation and grounding systems.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1, G2	Y	Planning Department	Unknown	*Local Budget, HMGP, PDM, HMA Grants*	48	High

Legend:

- Structure and Infrastructure
- Natural System Protection
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Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Neiderwald											
1	Flood insurance information campaign	Promote the flood insurance program to lessen the number of structures uninsured from flood loss by providing citizens access to brochures about the NFIP at the local City Hall and links to resources on website	Hurricane, Flood, Dam Failure		G1, G2	N	City Administrator	Existing staff/ in-kind services	*Local, TDEM, GLO, FEMA*	12	Low
2	Floodplain management courses to receive certification	Send member of the staff or elected official to training in order to become a Certified Floodplain Manager to ensure the County is equipped to address risks and actions related to flooding issues.	Hurricane, Flood, Dam Failure		G1	N	City Administrator	$500/ Existing staff/ in-kind services	*Local, TDEM, GLO, FEMA*	12	Low
3	Increase public awareness of hazard mitigation	Creating a resource page on City website to promote information about the hazards that exist in the community and how to take mitigation actions at the individual level and in coordination with Special Utility District information on water conservation. Provide link to Haysinformed on local page.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1, G2	N	City Administrator	Existing staff/ in-kind services	*Local, TDEM, GLO, FEMA*	12	Medium
4	Evacuation plans/ alternate road consideration	Documentation of an evacuation plan that includes multiple exits.	Hurricane, Flood, Tornado, Wildfire, Dam Failure		G1	N	City Administrator	Existing staff/ in-kind services	*Local, TDEM, GLO, FEMA*	24	Low
5	Construct Emergency Operations Center/Warming & Cooling Station	Provide a safe shelter for citizens during winter storms or extreme heat; operate emergency response activities	Extreme Heat, Severe Winter Storms		G1	Y	City Hall, City Administrator	$500,000/ Contracted Project	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
6	Purchase a generator for Fire Station	To remain operable during an event	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1, G2	Y	City Hall, City Administrator	$12,000	*Local Budget, HMGP, PDM, HMA Grants*	36	High
7	Purchase a generator for new EOC	To remain operable during an event	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1, G2	Y	City Hall, City Administrator	$12,000	*Local Budget, HMGP, PDM, HMA Grants*	36	High
8	StormReady designation for Niederwald	Application preparation and submission for StormReady designation from the National Weather Service that attests to the community's level of preparedness for severe storms.	Hurricane, Flood, Windstorms, Lightning, Tornado, Hailstorms, Severe Winter Storms, Dam Failure		G1	N	Emergency Planning	Existing staff/ in-kind services	*Local, NWS, FEMA*	24	Medium

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Neiderwald											
9	De-icing contract research/ plan development	Creation of a plan that provides established procedures and negotiated service providers and rates for ice removal for the 2 City streets.	Severe Winter Storms		G1	N	City Administrator	Existing staff/ in-kind services	*Local, County*	12	Low
10	Coordination of new limb and large item pick-up day for wildfire mitigation	Cross marketing of existing brush collection efforts from new trash vendor in order to promote mitigation.	Drought, Extreme Heat, Lightning, Wildfire		G1, G2	N	City Administrator	Local, Disposal Provider	*Local, Disposal Provider*	12	Medium
11	Engineering review of City Hall (modular building) to ensure soundness against natural hazards	Contract a consultation from an engineer to review the new City Hall building to ensure its resiliency (modular building that holds community documents and archives)	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G2	N	City Hall, City Administrator	$20,000 Contract Support/ Existing staff/ in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	24	Low
12	Create and implement a plan to landscape public facilities with draught-resistant plants.	Mitigate damage from extreme heat and draught and to stability the soil against erosion	Drought, Extreme Heat		G3	Y	City Administrator	Existing staff/ in-kind services	*Local, TWDB*	24	Low
13	Emergency communication - weather radio installation at public buildings and phone tree development	Installation of permanent weather radio and weather station at City of Niederwald structures, with back-up power source. Create phone tree with volunteer responsibilities for non-critical hazard call down messaging, such as drought alerts	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	City Administrator	$1,000/ Existing staff/ in-kind services	*Local, TDEM, GLO, FEMA*	24	Low
14	Adding water conservation to ordinances/ institution of drought contingency plan as part of operations	Adding drought conservation levels to ordinance to increase resiliency to drought conditions and also provide a method for monitoring drought trends on a local, regional and Statelevel through a drought contingency plan.	Drought, Extreme Heat, Wildfire		G3	N	City Administrator	Existing staff/ in-kind services	*Local, County*	12	Low

Legend:

- Structure and Infrastructure
- Natural System Protection
- Local Plans and Regulations
- Education and Awareness Programs
- Emergency Preparation and Response

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit	Notes
City of Uhland												
1	Emergency communications - weather radios in all public facilities and phone tree/ coordination	Purchase of permanent weather radio and weather station equipment for all public facilities with back-up power source. Establishment of a community phone tree to be the manual process for reaching residents for times that standard technology fails. This will supplement a plan that Uhland will coordinate with CAPCOG for utilizing available emergency communications resources available at the regional and County levels.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	City Administrator	$1,000	*Local Budget, HMGP, PDM, HMA Grants*	12	Medium	City Administrator Access to ESD radio at Uhland Community Center as well as Police Radio's within Police Department which provide alerts to The City regarding Hazards & Natural Disasters within the surrounding area. This would be beneficial to keep included as the City continues to grow and the number of Public offices rise to keep everyone informed
2	StormReady designation from the national weather service	Application for designation that classifies community's level of preparedness for severe weather and storms.	Hurricane, Flood, Windstorms, Lightning, Tornado, Hailstorms, Severe Winter Storms		G1, G2	N	City Hall	Existing staff/ in-kind services	*Local, NWS, FEMA*	24	Medium	Continue to Develop a plan for future uses, currently rely on weather alerts sent to our smart phones/home phones via National Weather Service/other weather emergency alerts
3	Cooling plan for vulnerable members of the community during periods of extreme heat that result in power loss	Documented plan for how to provide cool accommodations for vulnerable populations during periods of extreme heat when electrical power is interrupted.	Extreme Heat		G1	N	City Hall	Existing staff/ in-kind services	*Local, TDEM, GLO, FEMA*	12	Low	The state of Texas suffers from extreme heat for up to 8 months out of the year and many heat related injuries and death occur. Natural Disasters can wipe out power for several weeks and that paired with the heat is unbearable. We should invest into a cooling plan or program to provide resources to our community of Uhland during times of extreme heat that results in power loss. Examples could be: Notices from local grocery stores willing to discount a portion of new groceries, local food drives, keeping an emergency supply of water for emergencies, investing in more efficient shade methods, and increasing the number of splash pads/water fountains.
4	Increase publid awareness of hazard mitigation	Increasing public awareness of natural hazards and hazardous areas; distributing public awareness information regarding hazards and potential mitigation measures. Promotional sources would include City website, and public education programs. Provide link to HaysInformed on local page	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1, G3	N	City Administrator	Existing staff/ in-kind services, free brochures from FEMA	*Local, TDEM, GLO, FEMA*	12	Medium	It would be beneficial to provide forms or notices at the community center regarding Flood Hazard Mitigation as well as promoting awareness of hazard mitigation on the city's social media channels.
5	Adopt wildfire maps from Hays County Firewise project	Formally adopt the maps created through the Hays County application for Firewise designation in order to begin to control development in accordance with the avoidance of hazard areas, or development with consideration of proper mitigation.	Wildfires		G1, G2	N	City Hall, County Fire Marshall	Existing staff/ in-kind services	*Local, County*	12	Low	Status Updates regarding wildfires within the area are posted by the ESD, local news outlets, as well as social media.
6	Coordination of marketing large item pick-up day for wildfire mitigation	Enhancement of existing large item pick-up to emphasize the wildfire mitigation benefits of cleaning brush and overgrown lots.	Wildfires, Lightning, Windstorms, Tornadoes		G2	N	City Administrator, Disposal Service Provider	Existing staff/ in-kind services	*Local, Disposal Provider*	6	Low	The Uhland Community Dumpster is located at Uhland City Hall and this will be better advertised. Look into reinstating bulk drop off days throughout the year in which several 40 yard dumpsters are dropped off in various locations for residents to drop off their bulk items in the dumpster. Also continue to advertise this on city social media sites and continue to promote that to residents whom set up their Trash & Recycling Service with The City of Uhland.

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City of Uhland												
7	Extreme temperature help hot-line	Provides residents with a phone number to call to report special needs during extreme temperatures if they do not have access to heating or cooling.	Extreme Heat, Severe Winter Storms		G1	N	City Administrator	Existing staff/ in-kind services	*Local*	18	Low	A great resource for individuals within the community
8	Energy prioritization collaboration with electric cooperative	Identification and documentation of members of the community who depend on electricity for survival (medical).	Extreme Heat, Severe Winter Storms, Lightning, Windstorms, Tornadoes, Hurricanes		G1	N	City Administrator	Existing staff/ in-kind services	*Local, PEC*	6	Low	The two main Energy Providers are PEC (Pedernales) and Bluebonnet and they provide updates to the community regarding integrity of the electrical grid.
9	Generator purchase and installation for City Hall/ Community Center	Installation of back-up electrical power to City Hall/Community Center to ensure continuity of government operations and to also provide temporary sheltering for vulnerable populations in the City.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	City Hall	$10,000	*Local Budget, HMGP, PDM, HMA Grants, CDBG*	18	High	It would be beneficial for Uhland City Hall to invest in a generator especially in the event that a natural disaster or a flooding event takes place as it would be helpful to charge devices, utilize tools, and allow for messages to come through from Emergency Services and weather alerts.
10	Watershed review tour for private dams	Plan for how to enforce flood damage prevention ordinance against encroachments in the floodway by inspecting for private dams that are not authorized and requirement of no-rise study when they are found to ensure neighbors are not at risk to be negatively impacted.	Hurricane, Flood, Dam Failure		G1, G2	N	City Engineer	Existing staff/ in-kind services, contracted professionals	*Local, HMGP, TWDB*	12	Low	City Administrator participated in a meeting regarding the Plum Creek Watershed Partnership in Lockhart Texas in 2023. The City of Uhland is wanting to increase it's communication and partnership with the Water/Wastewater company, especially since water is such an expensive resource within Uhland.
11	Evacuation plans/ alternate road consideration	Documentation of an evacuation plan that includes multiple exits for leaving the community. There are only 2 points of entry/ exit and all 3 flood	Hurricane, Flood, Wildfire, Dam Failure		G1	N	City Hall	Existing staff/ in-kind services	*Local, County*	18	Medium	This would be Beneficial for all members of the community when heavy rains take place, especially those that are located within the flood plain. The City of Uhland closes areas of high water crossings during flooding events however it is frustrating to residents whom are essentially trapped and by having signs placed of alternative routes due to high levels of water could help ease some of that frustration. Additionally it would help members of Emergency Managment Services be able to assist the community quickly if a road were to become blocked/closed.
12	Adoption of soil compaction standards and recommendations	Adopting procedures to mitigate against expansive soils when constructing future roads within the community through higher levels of soil compaction. Recommendation for higher level of soil compaction to lessen the possible effects of expansive soils to accompany existing slab requirements for manufactured and mobile homes.	Hurricane, Flood, Drought, Extreme Heat, Earthquakes		G2	N	City Hall	Existing staff/ in-kind services, contracted professionals	*Local*	6	Low	Soil Testing Kits for Agricultural Uses Plum Creek Watershed offered in 2016, continue to adopt this as new soil compaction standards and recommendations should be amended based on any new research.

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City of Wimberely											
1	Emergency Siren System	Installation of 3 Emergency Siren System	Hurricane, Flood, Windstorms, Lightning, Tornado, Hailstorms, Wildfire, Earthquakes, Dam Failure		G1	N	City Council	$1.0M	*Local Budget, HMGP, PDM, HMA Grants*	48	High
2	Promote flood insurance in the community	Placing National Flood Insurance Program information brochures in City Hall.	Hurricane, Flood, Dam Failure		G2	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	12	Low
3	Adopt higher standards for flood damage prevention ordinance	Adopt 2 foot freeboard in existing ordinance for new development and substantial repairs.	Hurricane, Flood, Dam Failure		G2	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	24	Medium
4	Attend advanced local floodplain management courses to receive certification	Send certified member of staff to advanced courses.	Hurricane, Flood, Dam Failure		G1	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	12	Low
5	Improve emergency/ communication warning systems	Purchasing equipment and training personnel to improve local and Countywide emergency communication. Utilize system to provide information on hazards and community guidance on accessing emergency resources (such as cooling center locations for extreme heat)	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	City Council	$620,000	*Local Budget, HMGP, PDM, HMA Grants*	60	High
6	StormReady designation from National Weather Service	Application for designation that classifies community's level of preparedness for severe weather and storms.	Hurricane, Flood, Dam Failure		G1	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	24	Low
7	Increaes public awareness of hazard mitigation	Increasing public awareness of natural hazards and hazardous areas; distributing public awareness information regarding hazards and potential mitigation measures. Promotional sources would include City website, social media, and public education programs. Provide link to HaysInformed on local page.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	12	Low
8	Adopt wildfire maps from Hays County Firewise project	Formally adopt the maps created through the Hays County application for Firewise designation in order to begin to control development in accordance with the avoidance of hazard areas, or development with consideration of proper mitigation.	Drought, Extreme Heat, Wildfire		G1	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	12	Medium

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Wimberely											
9	Coordination of marketing large item pick-up day for wildfire mitigation	Enhancement of existing large item pick-up to emphasis the wildfire mitigation benefits of cleaning brush and overgrown lots.	Drought, Extreme Heat, Wildfire		G2	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	24	Medium
10	Drought monitoring program	Provide widget on City homepage that provides the latest US Drought Monitor conditions for the day.	Drought, Extreme Heat		G1	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	12	Low
11	Watershed review tour for private dams	Plan for how to enforce flood damage prevention ordinance against encroachments in the floodway by inspecting for private dams that are not authorized and requirement of no-rise study when they are found to ensure neighbors are not at risk to be negatively impacted.	Dam Failure		G1	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	24	Low
12	Evacuation plan/ alternate road consideration	Documentation of an evacuation plan that includes multiple exits for leaving the community	Hurricane, Flood, Tornado, Wildfire, Dam Failure		G1	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	24	Low
13	Soil compaction requirement for roads and recommendation for residential	Requirement for higher level of soil compaction for new road development. Recommendation for soil compaction to lessen the possible effects of expansive soils to accompany existing slab requirements for manufactured and mobile homes.	Drought, Extreme Heat, Earthquake		G2	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	12	Low
14	De-icing contract research/ plan development	Creation of a plan that provides established procedures and negotiated service providers and rates for ice removal for the city streets.	Severe Winter Storms		G2	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	12	Low
15	Develop water use public awareness campaign to ensure water for firefighting, provision of drinking water and reduction of groundwater depletion	Develop public information campaign to inform the public of water conservation practices.	Drought, Extreme Heat		G3	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	24	Medium
16	Windstrap requirement on temporary structures	Ordinance update to require windstrap installation on all temporary structures to lessen the impacts of wind as well as the occurrence debris.	Windstorms		G2	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	24	Low

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City of Wimberely											
17	Restriction on development along Blanco River	Specific ordinance that limits development along the river in an effort to mitigate loss of life and property	Hurricane, Floods, Dam Failure		G2	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	12	Medium
18	Enhance water conservation ordinance	Enhancement of existing ordinance in order to place more measures that would further protect the water supply for the community, through the promotion of rainwater collection and xeriscape through the incentives of permit fee waivers.	Drought, Exreme Heat		G4	N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	12	Medium
19	Seismic building code provisions	Review and possible incorporation of seismic building code provisions from International Building Codes.	Earthquakes			N	City Council	Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	24	Low
20	Acquisition or elevation of repetitive loss properties	As of 09/2016, Wimberley has 12 repetitive loss properties that need mitigation to reduce the over $1.7 Million in payments that have been made.	Hurricane, Flood, Dam Failure		G2	N	City Council	$2.0M	*Local Budget, HMGP, PDM, HMA Grants*	36	High
21	FM 1492 at Blanco River	Replace low water crossing.	Hurricane, Flood, Dam Failure		G2	N	City Council	$1.2M/ Existing Staff - in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	36	High
22	Little Arkansas at Blanco River	Replace low water crossing.	Hurricane, Flood, Dam Failure		G2	N	City Council	$1.0M	*Local Budget, HMGP, PDM, HMA Grants*	36	High
23	Valley Drive at Pierce Creek	Replace low water crossing.	Hurricane, Flood, Dam Failure		G2	N	City Council	$500,000	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
24	Flite Acres Road	Replace low water crossing.	Hurricane, Flood, Dam Failure		G2	N	City Council	$500,000	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
25	FM 1492 at Pierce Creek	Replace low water crossing.	Hurricane, Flood, Dam Failure		G2	N	City Council	$250,000	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
26	Wilson Creek at River Road	Replace low water crossing.	Hurricane, Flood, Dam Failure		G2	N	City Council	$200,000	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
City of Wimberely											
27	Green Acres Dr. at Fire Station	Replace low water crossing.	Hurricane, Flood, Dam Failure		G2	N	City Council	$250,000	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
28	Leveritt's Loop	Replace low water crossing.	Hurricane, Flood, Dam Failure		G2	N	City Council	$150,000	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
29	Spoke Hollow Dr. at Spoke Pile Creek	Replace low water crossing.	Hurricane, Flood, Dam Failure		G2	N	City Council	$150,000	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
30	River Road at Western City Limits	Replace low water crossing.	Hurricane, Flood, Dam Failure		G2	N	City Council	$200,000	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
31	Paradise Hills	Replace low water crossing.	Hurricane, Flood, Dam Failure		G2	N	City Council	$90,000	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
32	River Road	Reconstruct Roadway along Blanco River.	Hurricane, Flood, Dam Failure		G2	N	City Council	$850,000	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
33	Little Ranches at Panther Creek	Reconstruct Low Water Crossing & Roadway.	Hurricane, Flood, Dam Failure		G2	N	City Council	$1.0M	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium
34	Hoots Holler	Reconstruct low water crossing & roadway.	Hurricane, Flood, Dam Failure		G2	N	City Council	$1.0M	*Local Budget, HMGP, PDM, HMA Grants*	48	Medium

Legend:

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Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
Village of Bear Creek											
1	Development and implementation of flood insurance information campaign	Promote the flood insurance program to lessen the number of structures uninsured from flood loss by providing citizens access to brochures about the NFIP at the local Volunteer Fire Department.	Hurricane, Flood, Dam Failure		G1	N	Village Secretary	Existing City staff and in-kind services	*Local Budget, FEMA, TDEM*	60	Medium
2	Flood ordinance higher standards	Create higher standards to increase protection of development in/near the floodplain, increasing freeboard. Based on updated flood maps as appropriate.	Hurricane, Flood, Dam Failure		G1	N	Commissioners	Existing City staff and in-kind services	*Local Budget, TDEM*	12	High
3	Local FPA floodplain management training plan development and implementation	Implement traning plan attendance at Texas Water Development Board or Texas Floodplain Management Association classes.	Hurricane, Flood, Dam Failure		G1	N	Secretary/ Commissioners	Existing City staff and in-kind services	*Local Budget, FEMA, TDEM*	Ongoing	Medium
4	Energy restore priority effort	Plan that provides the energy provider with data on the highest priority energy users who need their power recovered first, due to medical dependencies on power.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G2	N	Staff, PEC, Hay County EOC	Existing City staff and in-kind services	*Local Budget*	12	Low
5	Development and implementation of natural hazard mitigation awareness program	Publication of hazard mitigation awareness materials for residents from Haysinformed.com refereednced on Village of Bear Creek Website. Links to Hays informed information will be updated	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	Secretary	Existing City staff and in-kind services	*Local Budget, FEMA, TDEM*	12	Low
6	Development, adoption, and implementation of drought contingency plan	Update drought contingencty plan to document activities to institute drought stage triggers for water preservation enforcement.	Drought, Extreme Heat		G3	N	Secretary/ Commissioners	Existing City staff and in-kind services	*Local Budget, HMGP, PDM, HMA Grants*	36	Low
7	Sanding contract research/ plan development	Creation of a plan that provides established procedures and negotiated service providers and rates for sanding. (Verify with City Engineering - Contractor)	Severe Winter Storms		G2	N	Secretary/ Commissioners	Existing City staff and in-kind services	*Local Budget, TDEM*	12	Low
8	Enhancement of large item pick-up event to promote brush clean-up	Marketing effort to encourage brush cleanup during existing Large-Item Pickup Event hosted by trash service. Ongoing Row Clearance.	Extreme Heat, Lightning, Wildfire		G2	N	Village Secretary	Existing City staff and in-kind services	*Local Budget, TDEM*	24	Low

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
Village of Bear Creek											
9	Low water crossing protection plan	Documented project plan to define low water crossings that need to be reparied, retrofitted and establish maintenance schedule/procedures.	Hurricane, Flood, Dam Failure		G2	N	Commissioners, Secretary, Contracted Engineers	Existing staff/in-kind services, cost of engineering support	*Local Budget, HMGP, PDM, HMA Grants*	36	Medium
10	Adoption of procedure for instituting rainwater harvesting systems for future public structure construction	Although the Village has no public structures, the community will adopt procedures to incorporate Rainwater Harvesting systems to future public structures.	Drought, Extreme Heat		G3	N	Commissioners	Existing City staff and in-kind services	*Local Budget, TWDB*	36	Medium
11	Enhancement and adoption of enhanced driveway ordinance	Enhancement to the existing minimum standards for driveway construction guidelines for higher soil compaction levels.	Hurricane, Flood, Drought, Extreme Heat, Dam Failure		G2	N	Commissioners, Contracted Engineers	Existing staff/in-kind services, cost of engineering support	*Local Budget*	24	Low
12	Development and implementation of emergency communications - phone tree plan document	Manual call-down procedures and data for this small town to do emergency messaging to residents in cases during which County resources aren't available to do so for them.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	Secretary/ Commissioners	Existing City staff and in-kind services/ Volunteers	*Local Budget*	12	Low

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Village of Woodcreek											
1	Promote flood insurance in the community	Placing National Flood Insurance Program information brochures in City Hall.	Hurricane, Flood, Dam Failure		G2	N	City Administrator	Existing staff/ in-kind services	*Local, FEMA, TDEM*	12	Low
2	Public awareness campain for the reduction of groundwater depletion	Develop public information campaign to inform the public of water conservation practices.	Drought, Extreme Heat		G3	N	City Administrator	Existing staff/ in-kind services	*Local, FEMA, TDEM*	12	Medium
3	Increase public awareness of hazard mitigation	Increasing public awareness of natural hazards and hazardous areas; distributing public awareness information regarding hazards and potential mitigation measures. Promotional sources would include City website, social media and public education programs. Provide link to HaysInformed.com	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	City Administrator	Existing staff/ in-kind services	*Local, FEMA, TDEM*	24	Low
4	Coordination of marketing large item pick-up day for wildfire mitigation	Enhancement of existing large item pick-up to emphasize the wildfire mitigation benefits of cleaning brush and overgrown lots.	Drought, Windstorms, Extreme Heat, Lightning, Tornado, Wildfire		G2	N	City Administrator/ Waste Disposal Provider	Existing staff/ in-kind services	*Local, FEMA, TDEM*	12	Low
5	Energy prioritization collaboration with electric cooperative	Identification and documentation of members of the community who depend on electricity for survival (medical).	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1, G2	N	City Administrator	Existing staff/ in-kind services	*Local*	12	Medium
6	Watershed review tour for private dams	Plan for how to enforce flood damage prevention ordinance against encroachments in the floodway by inspecting for private dams that are not authorized and requirement of no-rise study when they are found.	Hurricane, Flood, Dam Failure		G1	N	City Administrator	Existing staff/ in-kind services, Consultant Services	*Local Budget, HMGP, PDM, HMA Grants*	36	Low
7	CFM training and CFM certification	Send designated floodplain administrator to attend floodplain management courses and to test for certification as a Certified Floodplain Manager.	Hurricane, Flood, Dam Failure		G1	N	City Hall	Existing staff/ in-kind services	*Local, FEMA, TDEM*	12	Medium
8	StormReady designation from National Weather Service	Application for designation that classifies community's level of preparedness for severe weather and storms.	Hurricane, Flood, Dam Failure		G2	N	City Hall	Existing staff/ in-kind services	*Local, FEMA, TDEM*	12	Medium

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
Village of Woodcreek											
9	Adoption of soil compaction standards and recommendations	Road techniques that require soil compaction to mitigate Expansive Soils. Recommendation documents for soil compaction to lessen the possible effects of shrinking and swelling to do flooding and drought to accompany existing slab requirements for manufactured and mobile homes.	Hurricane, Flood, Drought, Extreme Heat, Dam Failure		G2	N	City Hall	Existing staff/ in-kind services, Consultant Services	*Local, FEMA, TDEM*	24	Low
10	Installation of mitigation features for new public facilities to ensure soundness against natural hazards	Ensure new structures are structurally reinforced against natural hazards. To include, low-flow water units for drought, flood-proofing (if needed), wind resistant doors and windows, freeboard, bracing and bolting of sill plates, higher levels of soil compaction and proper perimeter drainage systems, impact resistant films for glass, foundation supports, increased insulation and grounding systems.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1, G2	Y	Planning Department	Unknown	*Local Budget, HMGP, PDM, HMA Grants*	48	High

Legend:

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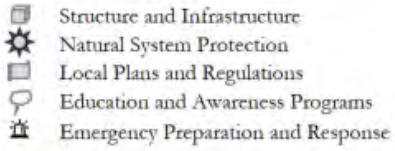
Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
Texas State University											
1	Develop a hazard awarenes week for implementation in cooperation with the county.	This awareness campaign is linked to the National Weather Service education program, including a library section on preparedness and information on County's website with links to preparedness programs. Publish, distribute and disseminate hazard information brochures to student community.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	Administration	Existing Staff/ In-Kind Services	Local Budget, State and Federal Grants	12	Medium
2	Acquire and install generators at all critical facilities	Aquire and install generators with hard wired quick connections at all critical facilities	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G2	N	Engineering	>$100,000	Local Budget, State and Federal Grants	36	Medium
3	Harden facilities and assets	Harden facilities and assets against the full range of natural hazards	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G2	N	Engineering	>$100,000	Local Budget, State and Federal Grants	36	Medium
4	Study existing student shelter needs and modify and upgrade as necessary	The ability of current shelter locations to function as short or long term shelters will be determined with the appropriate upgrades made.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	Administration	Existing Staff/ In-Kind Services	Local Budget, State and Federal Grants	24	Low
5	Update Campus Master Drainage Plan	Update the Campus Master Drainage Plan to more accurately reflect current climate conditions based on the update Atlas 14 rainfall data.	Hurricane, Flood		G1, G2	N	Engineering	>$100,000	Local Budget, State and Federal Grants	24	High

Legend:

- Structure and Infrastructure
- Natural System Protection
- Local Plans and Regulations
- Education and Awareness Programs
- Emergency Preparation and Response

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
Dripping Springs ISD											
1	Develop a hazard awarenes week for implementation in cooperation with the county.	This awareness campaign is linked to the National Weather Service education program, including a library section on preparedness and information on County's website with links to preparedness programs. Publish, distribute and disseminate hazard information brochures to student community.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G1	Y	Administration	Existing Staff/ In-Kind Services	Local Budget, State and Federal Grants	12	Medium
2	Acquire and install generators at all critical facilities	Aquire and install generators with hard wired quick connections at all critical facilities	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G2	Y	Engineering	To be Determined	Local Budget, State and Federal Grants	36	Medium
3	Harden facilities and assets	Harden facilities and assets against the full range of natural hazards	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G2	Y	Engineering	To be Determined	Local Budget, State and Federal Grants	36	Medium
4	Study existing student shelter needs and modify and upgrade as necessary	The ability of current shelter locations to function as short or long term shelters will be determined with the appropriate upgrades made.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G1	Y	Administration	Existing Staff/ In-Kind Services	Local Budget, State and Federal Grants	24	Low

Legend:



Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
Hays ISD											
1	Develop a hazard awarenes week for implementation in cooperation with the county.	This awareness campaign is linked to the National Weather Service education program, including a library section on preparedness and information on County's website with links to preparedness programs. Publish, distribute and disseminate hazard information brochures to student community.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G1	Y	Administration	Existing Staff/ In-Kind Services	Local Budget, State and Federal Grants	12	Medium
2	Acquire and install generators at all critical facilities	Aquire and install generators with hard wired quick connections at all critical facilities	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G2	Y	Engineering	To be Determined	Local Budget, State and Federal Grants	36	Medium
3	Harden facilities and assets	Harden facilities and assets against the full range of natural hazards	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G2	Y	Engineering	To be Determined	Local Budget, State and Federal Grants	36	Medium
4	Study existing student shelter needs and modify and upgrade as necessary	The ability of current shelter locations to function as short or long term shelters will be determined with the appropriate upgrades made.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G1	Y	Administration	Existing Staff/ In-Kind Services	Local Budget, State and Federal Grants	24	Low

Legend:

Structure and Infrastructure
Natural System Protection
Local Plans and Regulations
Education and Awareness Programs
Emergency Preparation and Response

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
San Marcos Consolidated ISD											
1	Develop a hazard awarenes week for implementation in cooperation with the county.	This awareness campaign is linked to the National Weather Service education program, including a library section on preparedness and information on County's website with links to preparedness programs. Publish, distribute and disseminate hazard information brochures to student community.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	Administration	Existing Staff/ In-Kind Services	Local Budget, State and Federal Grants	12	Medium
2	Acquire and install generators at all critical facilities	Aquire and install generators with hard wired quick connections at all critical facilities	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G2	N	Engineering	To be Determined	Local Budget, State and Federal Grants	36	Medium
3	Harden facilities and assets	Harden facilities and assets against the full range of natural hazards	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G2	N	Engineering	To be Determined	Local Budget, State and Federal Grants	36	Medium
4	Study existing student shelter needs and modify and upgrade as necessary	The ability of current shelter locations to function as short or long term shelters will be determined with the appropriate upgrades made.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes, Dam Failure		G1	N	Administration	Existing Staff/ In-Kind Services	Local Budget, State and Federal Grants	24	Low

Legend:

- Structure and Infrastructure
- Natural System Protection
- Local Plans and Regulations
- Education and Awareness Programs
- Emergency Preparation and Response

Ranking	Mitigation Action Title	Description	Hazards Mitigated	Action Type	Applicable Goals	New Action	Responsible Department	Estimated Cost	Potential Funding Sources	Timeline (Months)	Benefit
Wimberley ISD											
1	Develop a hazard awarenes week for implementation in cooperation with the county.	This awareness campaign is linked to the National Weather Service education program, including a library section on preparedness and information on County's website with links to preparedness programs. Publish, distribute and disseminate hazard information brochures to student community.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G1	Y	Adiministration	Existing Staff/ In-Kind Services	Local Budget, State and Federal Grants	12	Medium
2	Acquire and install generators at all critical facilities	Aquire and install generators with hard wired quick connections at all critical facilities	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G2	Y	Engineering	To be Determined	Local Budget, State and Federal Grants	36	Medium
3	Harden facilities and assets	Harden facilities and assets against the full range of natural hazards	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G2	Y	Engineering	To be Determined	Local Budget, State and Federal Grants	36	Medium
4	Study existing student shelter needs and modify and upgrade as necessary	The ability of current shelter locations to function as short or long term shelters will be determined with the appropriate upgrades made.	Hurricane, Flood, Drought, Windstorms, Extreme Heat, Lightning, Tornado, Hailstorms, Wildfire, Severe Winter Storms, Earthquakes		G1	Y	Adiministration	Existing Staff/ In-Kind Services	Local Budget, State and Federal Grants	24	Low

Legend:

- Structure and Infrastructure
- Natural System Protection
- Local Plans and Regulations
- Education and Awareness Programs
- Emergency Preparation and Response

Mitigation Action Plan

The mitigation action plan is a method to prioritize mitigation actions and assign departmental responsibility, ensuring a higher rate of successful action implementation and administration. Each jurisdiction has multiple authorities to implement the mitigation strategy including, but also limited to, local planning and zoning, public works efforts, emergency management, tax authority, building codes and ordinances, and legislative and managerial.

All of the mitigation actions, both new and old, in this section were prioritized primarily based on FEMA's Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLE+E) criteria. These criteria are considered necessary for successful and enduring implementation of each action. Each participating jurisdiction in the plan had an opportunity to discuss and consider each of the criteria as they related to each individual action and rate them from 1 to 5. The total scores from the STAPLE+E exercises were then used to assign an overall priority to each mitigation action for each of the participating jurisdictions. In addition to the STAPLE+E exercise, jurisdictions analyzed each action in terms of which department or agency will be responsible for administration of the action, action timeline, potential funding sources, and the overall costs, measuring whether the potential benefit to be gained from the action outweighed the costs associated with it.

SECTION 19: PLAN MAINTENANCE

This section describes how Hays County, including participating jurisdictions, will implement the Plan and continue to evaluate and enhance it over time. As indicated in the previous section, each action has been assigned to a specific department within the jurisdiction. In order to ensure that the Plan remains current and relevant, the following plan maintenance procedures will be addressed:

1. Ensure the mitigation strategy remains current and that actions are implemented according to the timeline.

2. Develop an ongoing mitigation program throughout the community for each participating jurisdiction and work together at the county level to update and review the plan.

3. Integrate short and long-term mitigation objectives into community officials' daily roles and responsibilities.

4. Continue public involvement and maintain momentum with education programs and materials, routine publication of accomplishments, and briefings to decision-makers of the Plan's progress.

Table 20-1 indicates the department or title responsible for this action. Each participating jurisdiction determines the department or title of personnel responsible for implementation of mitigation strategies and the development of procedures.

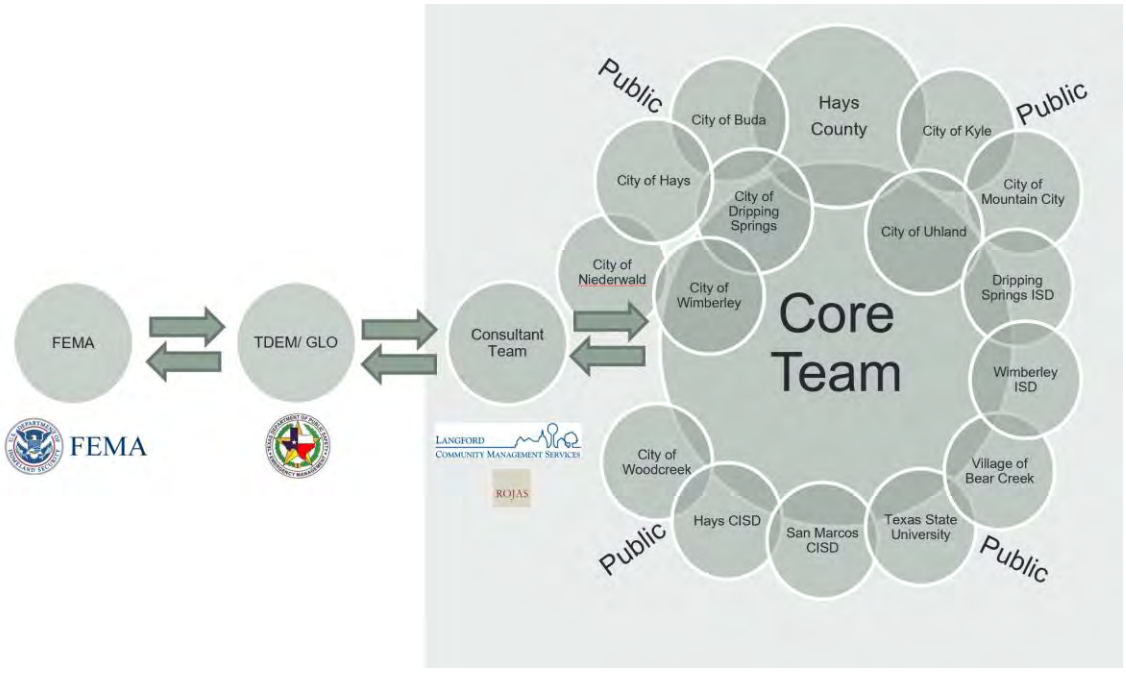


Table 20-1: Team Members Responsible for Plan Maintenance

Jurisdiction/Entity	Title
Hays County	Emergency Management Coordinator
City of Buda	City Manager
City of Dripping Springs	City Manager
City of Hays	City Manager
City of Kyle	City Manager
City of Mountain City	City Manager
City of Niederwald	City Manager
City of Uhland	City Manager
City of Wimberley	City Manager
City of Woodcreek	City Manager
Village of Bear Creek	General Manager
Dripping Springs ISD	Superintendent
Hays CISD	Superintendent
San Marcos Consolidated ISD	Superintendent
Wimberley ISD	Superintendent
Texas State University	Emergency Management Officer

Incorporation

Elements of the prior plan have been incorporated into existing and new county and city planning mechanisms of the participating jurisdictions.

Following adoption and approval of the Plan, Hays County, including participating jurisdictions, will implement actions they have developed and prioritized in the plan based on funding availability and continuing public input. A timeline is provided with each action and is used to assess whether actions are being completed on time based on the date of plan adoption. Potential funding sources are also listed for each action in Section 18, and described in more detail below. Additional funding sources can include federal disaster declarations and other non-federal grant sources.

Local Funding: This is funding that the community can allocate in the budget process and with other local funding mechanisms such as impact fees and drainage utility fees. This funding can be used entirely for specific hazard mitigation activities and projects or can be used as a match to leverage federal and state funding.

BRIC (or other similar public funding entity): The Building Resilient Infrastructure and Communities (BRIC) grant program supports states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The program's guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large infrastructure projects; maintaining flexibility; and providing consistency.

CWDG: The Community Wildfire Defense Grant Program, or CWDG, is intended to help at-risk local communities and Tribes plan for and reduce the risk of wildfire. This program, which was authorized by the Bipartisan Infrastructure Law, prioritizes at-risk communities in an area identified as having high or very high wildfire hazard potential, are low-income, or have been impacted by a severe disaster that affects the risk of wildfire. More details on

these three priorities can be found in the Notices of Funding Opportunity (NOFOs) below. The program provides funding to communities for two primary purposes:

- Develop and revise Community Wildfire Protection Plans (CWPP).
- Implement projects described in a Community Wildfire Protection Plan that is less than ten years old.

The CWDG Grant Program also helps communities in the wildland urban interface (WUI) implement the three goals of the National Cohesive Wildland Fire Management Strategy.

HMGP: The purpose of Hazard Mitigation Grant Programs is to help communities implement hazard mitigation measures following a Presidential Major Disaster Declaration in the areas of the state, tribe, or territory requested by the Governor or Tribal Executive. The key purpose of this grant program is to enact mitigation measures that reduce the risk of loss of life and property from future disasters.

PDM: The Pre-Disaster Mitigation Grant Program is designed to provide technical and financial assistants to States and local governments for cost-effective pre-disaster hazard mitigation activities that complement a comprehensive mitigation program. The goal is to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding in future disasters. This program awards planning and project grants and provides opportunities for raising public awareness about reducing future losses before disaster strikes. Mitigation planning is a key process used to break the cycle of disaster damage, reconstruction, and repeated damage.

Methods of Incorporation of the Plan

Once per year at a minimum, participating Core team members will conduct a review of plans and policies in place and analyze the need for amendments based on the approved plan. Team members will incorporate any mitigation policies and actions into these plans and policies as appropriate, then seek approval from Commissioners Court and/or City Councils, as appropriate. The plans and policies that will require review include emergency operations or management plans, capital improvement plans, comprehensive land use and future growth plans, transportation plans, annual budgeting, and any building codes that guide and control development in a way that will contribute to the goals of this mitigation plan to reduce long-term risk to life and property from all hazards.

A list of regulatory and planning capabilities currently available to the jurisdictions can be found in **Appendix A**. In the process of integrating the mitigation actions into new and existing planning mechanisms, the participating jurisdictions will do the following:

- Hays County – Actions will be presented to Commissioner's Court by the responsible department. Upon approval by Commissioner's Court, approved actions will be acted upon and/or integrated into existing planning mechanisms.
- Municipalities, Texas State University and ISDs – Actions will be presented to City Councils, governing bodies and School Boards by the responsible department. Upon approval by City Council or the Board, approved actions will be acted upon and/or integrated into existing planning mechanisms.

Grant Applications	Hazard mitigation grant funding will be sought as a way to fund eligible action items as the funding is awarded. If a need for additional action items is presented, an amendment will be necessary to include the action in the plan.

Annual Budget Review	The Plan and mitigation actions will be reviewed annually to determine any funding needs to be included during the budget process and will involve various departments and team members that participated in the planning process. Local funds match requirements for grants will be considered by the appropriate department such as engineering, planning, code enforcement, and others to achieve the mitigation action based on the timeline.
Floodplain Management Plans and Watershed Studies	These types of plans include preventative and corrective actions to address the flood hazard.
Regulatory Plans and Future Growth Plans	Hays County, including participating jurisdictions, have regulatory plans in place are in need of updating from time to time. This Hazard Mitigation Action Plan Update will be consulted when County and City departments review or revise their current regulatory planning mechanisms and growth plans such as land development and building codes, comprehensive plans, and capital improvement plans.

Periodic annual tracking of the Plan is required to ensure that the mitigation actions are implemented over the 5-year cycle and that the Plan is kept current based on the latest information about hazards and their impacts. The team members designated by department and jurisdiction in Table 18-1 are responsible for monitoring, evaluating, and updating the Plan for their participating jurisdiction. The planning team will convene on an annual basis or when other plans are being developed, reviewed or updated. In addition to annual monitoring, the Plan will be similarly reviewed immediately after extreme weather events including but not limited to state and federally declared disasters.

Monitoring

The Plan in its entirety, will be monitored, including but not limited to continued public participation, plan evaluation method, plan update methods, action prioritization, administration of identified mitigation actions, risk assessment, and incorporation into other planning mechanisms. Responsibilities of annual monitoring include working with various city and county departments to ensure that the identified mitigation actions get incorporated into existing plans and policies and that mitigations actions that are funded by City Councils and the County Commissioners' Court get implemented. These mitigation action status updates will include a feasibility assessment for implementation and funding for the remaining time left in the 5-year mitigation action planning cycle.

Planning team meetings for *monitoring* the plan will include a **sign-in sheet** to record attendance and a **brief report** that identifies policies and actions in the plan that have been successfully implemented since its adoption. The report will also document the steps to be followed to develop action items into a policy or project that have not yet been completed and how the plan has been incorporated into other planning mechanisms.

Evaluation

As part of the annual tracking of the Plan, Core Planning Team members will evaluate changes in risk and hazard data associated with the planning area to determine if there are any needed changes to mitigation action timelines, prioritization, or if any action needs to be amended, added, or deleted. This is an opportunity to detect if there are any new obstacles to the implementation of actions such as funding, political, legal, or coordination within departments such as changes in departmental programs and goals that may affect mitigation priorities.

The Plan evaluation is also an opportunity to review the effectiveness of public participation and outreach efforts and to update or expand upon those efforts. The effectiveness of public participation can be measured with surveys, number of website hits, number of people in attendance, and number of materials printed. The annual evaluation process is necessary to make any necessary amendments to the plan to keep the plan relevant and most effective in mitigating the identified hazards in the Plan. Team meetings for *evaluating* the plan will include a **sign-in sheet** to record attendance and a **brief report** that identifies any changes to the Plan or to the local jurisdiction's implementation process needed for continued success.

Updating

The designated Core Planning Team member from each community evaluating the Plan will prepare annual reports that will be used to keep the Plan updated and keep them on file. Major changes to mitigation actions or the overall direction of the Plan or the policies contained within the Plan are subject to formal adoption by each city and the amendment will be submitted to TDEM. To determine whether to recommend approval or denial of a Plan amendment request, each County, City, or School District will consider the following factors:

- Changes in information, data, or assumptions from those on which the Plan was based.
- New issues or needs that were not adequately addressed in the Plan.
- Errors or omissions made in the identification of issues or needs during the preparation of the Plan.

This annual Plan Maintenance process enables Hays County, including participating jurisdictions, to keep their Hazard Mitigation Plan relevant based on the latest information, capabilities, needs, and community input. The process also provides an opportunity to ensure that mitigation actions are meeting the goals in this Plan and that they are implemented in the manner they were intended. This is a valuable opportunity to identify mitigation actions in the annual report that were not successful and to recommend removal of those that are no longer needed.

Five Year Review and Update

The Plan will be thoroughly reviewed by Planning Team members at the end of three years from the approval date to determine whether there have been any significant changes in the area that may require updating, amending, or deleting parts of the Plan. It is wise to begin considering plan updates in advance of the five-year deadline due to the timelines for grant funding, Plan reviews, and to ensure eligibility. Oftentimes, the timelines for grant and planning cycles can be in excess of a year to apply and receive funding.

The 5-year Plan review allows for evaluating successful and unsuccessful mitigation actions, documenting losses avoided, and considering factors affecting the Plan. Necessary revisions will be summarized and integrated into the existing plan or reserved for the 5-year plan update. The revised or new Plan will be submitted to TDEM and FEMA for final review and approval.

Continued Public Involvement

Input from the stakeholders and public was an integral part of the preparation of this Plan and will continue as the Plan is reviewed, revised, and updated. This Plan will be posted on the websites of Hays County, and participating jurisdictions, where the public will be invited to review and provide feedback via e-mail. Core Planning Team members are tasked with notifying stakeholders and community members when the annual review of the plan is undertaken.

The Planning team may also develop a voluntary citizen/stakeholder advisory group comprised of members from throughout the planning area to provide feedback on an annual basis. It is vital that the public and stakeholders maintain a vested interest in the Plan in order to keep the Plan relevant as it relates to the broader community's sustained health, safety, and welfare. Media such as websites, social media, local newspaper, and radio stations will be used to notify the public of any maintenance or periodic review activities taking place.

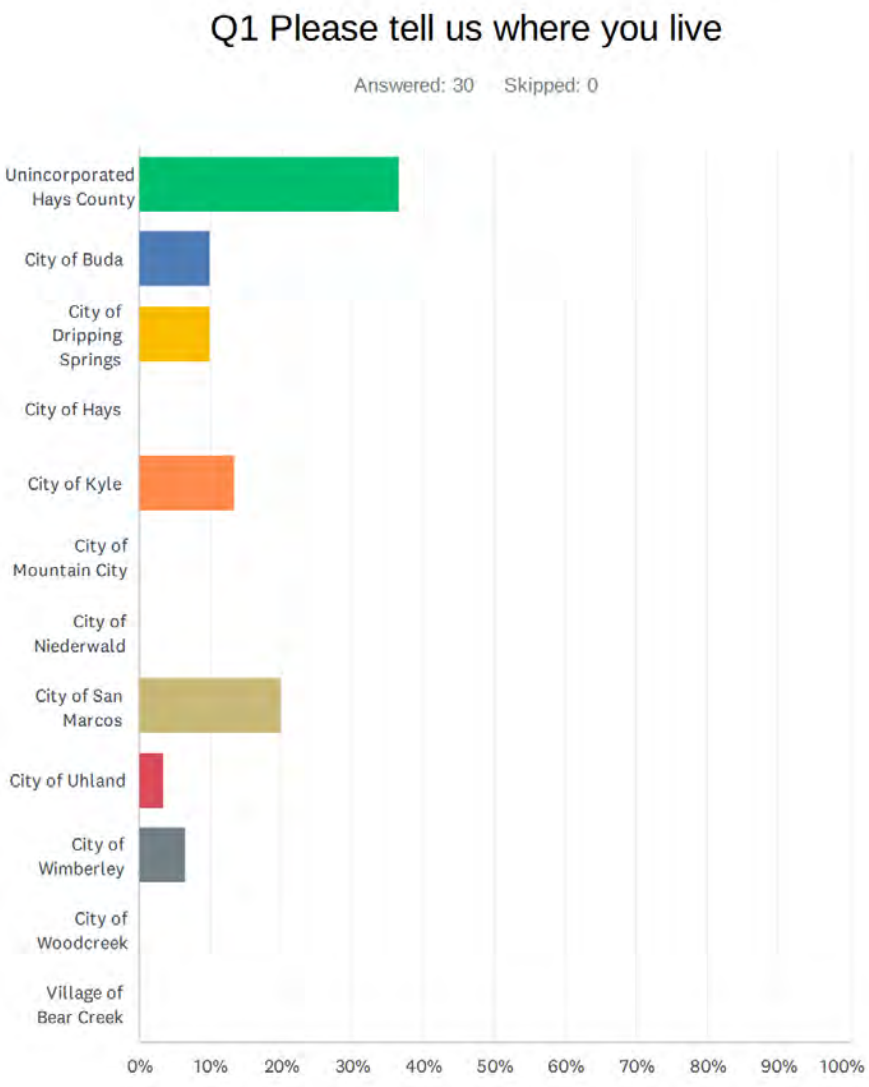
Public participation is critical to creating a plan that is enduring and one that has meaning to the community. The direct involvement of local officials and the public has been and will continue to be sought during the development, implementation, and maintenance phases of this Hays County Hazard Mitigation Plan Update.

APPENDIX A: CAPABILITY ASSESSMENT

	Capabilities	Hays County	City of Buda	City of Dripping Springs	City of Hays	City of Kyle	City of Mountain Creek	City of Neiderwald	City of Uhland	City of Wimberley	City of Woodcreek	Village of Bear Creek	Dripping Springs ISD	Hays CISD	San Marcos CISD	Wimberley ISD	Texas State University	
Planning and Regulatory	Comprehensive Plan	X	X	X		X				X							X	The planning and regulatory mechanisms that guide growth and development and emergency plans
	Economic Development Plan	X	X	X		X				X								
	Transportation Plans	X	X	X		X				X							X	
	Emergency Operation Plans	X	X	X		X				X							X	
	Continuity of Operations Plan	X	X	X		X				X							X	
	Stormwater Management Plan	X	X	X		X				X							X	
	NFIP Participant	X	X	X	X	X	X	X	X	X	X	X						
	CRS Community																	
	Zoning ordinances		X	X		X		X	X	X	X							
	Building Codes	X	X	X	X	X	X	X	X	X	X							
	Subdivision Ordinance	X	X	X		X		X		X	X	X						
	Floodplain Ordinance	X	X	X	X	X	X	X	X	X	X	X						
Administrative and Technical	Engineers	X	X	X		X	X	X	X	X	X	X					X	This refers to staff, skills, and tools a community has. So provide staff numbers and any credentials or certificate trainings in reference to hazard mitigation
	Planners	X	X	X		X				X							X	
	GIS Analysts	X	X			X												
	Building inspectors	X	X	X		X				X								
	Emergency managers	X	X	X		X				X								
	Grant writers	X	X	X		X				X								
	Chief Building Official	X	X	X		X				X								
	Floodplain Administrator	X	X	X	X	X	X	X	X	X	X	X						
Financial	CDBG	X		X		X				X								The resources that a jurisdiction has access to or is eligible to use to fund mitigation efforts
	Capital Improvement Program	X	X	X		X												
	Stormwater utility fees																	
	Development impact fees	X	X															
Education and Outreach	School programs	X											X	X	X	X	X	The programs and methods already in place that could be used to implement mitigation activities
	Firewise communities	X																
	Storm Ready communities																	
	Hazard awareness campaigns	X	X	X		X				X					X			
	Public Information Officer	X	X														X	
	Community newsletter	X	X	X		X				X				X	X	X	X	

Planning and regulatory capabilities are identified as the most impactful to how a municipality or utility can plan and develop in a way that is disaster resilient. The most critical capabilities related to planning and development such as Capital Improvement Programs, subdivision ordinances, comprehensive plans, transportation plans and zoning codes are already in place for the cities of Buda, Dripping Springs, and Kyle. As is typical of smaller communities, many critical municipal functions and roles are carried out by people that are required to wear "many hats" as part of their job description. This strategy can be cost-effective for cash strapped municipalities but it often leads to roles being carried out by those that may be experts in one area or field and not necessarily the secondary and tertiary roles they are needed for. This also leads to the requirement to contract with outside consultants who may be experts in specific areas but don't always have the local knowledge and background that can be critical to success. This would require local focus on these items such as hiring planning, GIS, and building official personnel or developing these capabilities with grants and other means. Studies also need to be conducted to thoroughly identify gaps in capabilities and comparisons made with other communities of similar size and economy. The communities throughout the planning area currently utilize engineering and grant writing consultants that are meeting these capability needs. Fiscal mechanisms to fund growth also need to be explored throughout the planning area such as drainage utility fees and impact fees. Lastly, educational programs and literature related to hazard mitigation should be strengthened within all municipalities which includes close coordination with the local school districts.

APPENDIX B: PUBLIC SURVEY

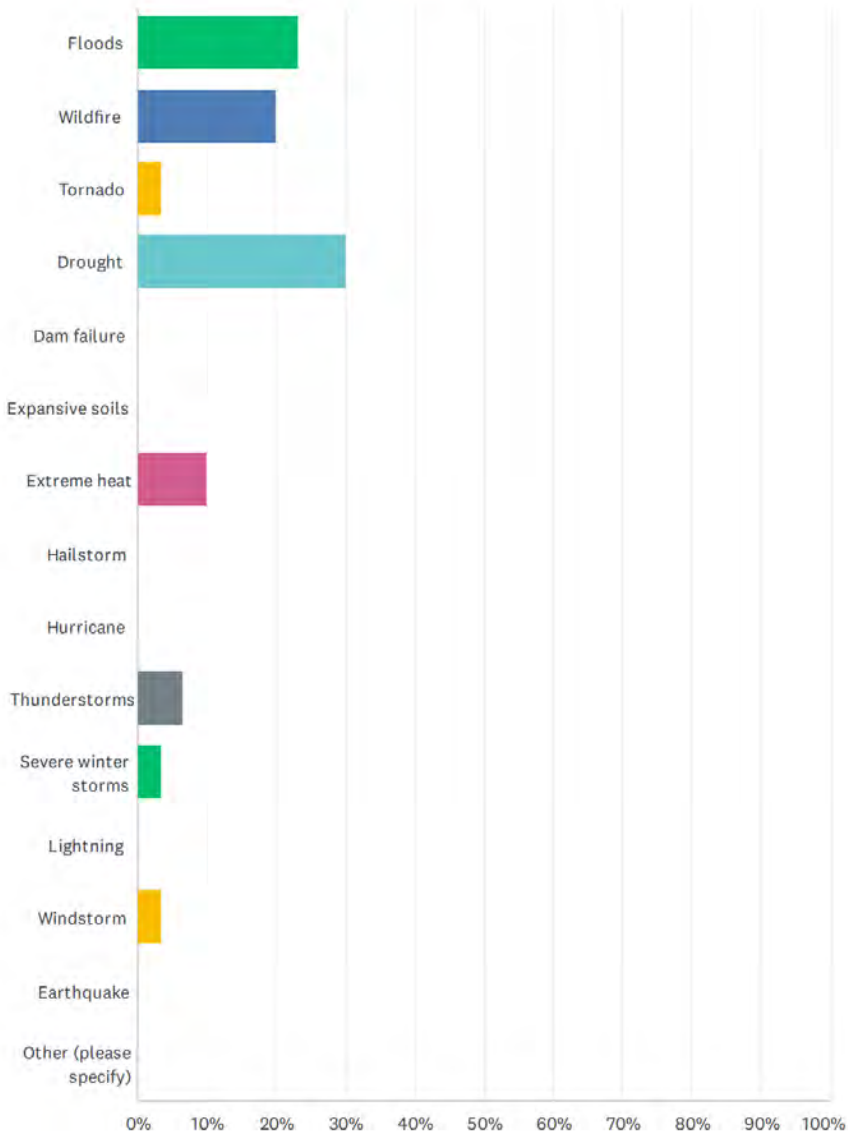


Hays County Hazard Mitigation Plan Update

ANSWER CHOICES	RESPONSES	
Unincorporated Hays County	36.67%	11
City of Buda	10.00%	3
City of Dripping Springs	10.00%	3
City of Hays	0.00%	0
City of Kyle	13.33%	4
City of Mountain City	0.00%	0
City of Niederwald	0.00%	0
City of San Marcos	20.00%	6
City of Uhland	3.33%	1
City of Wimberley	6.67%	2
City of Woodcreek	0.00%	0
Village of Bear Creek	0.00%	0
TOTAL		30

Q2 Please select the natural hazard you think is the highest threat to you, your business and/or your community. (Please check only one)

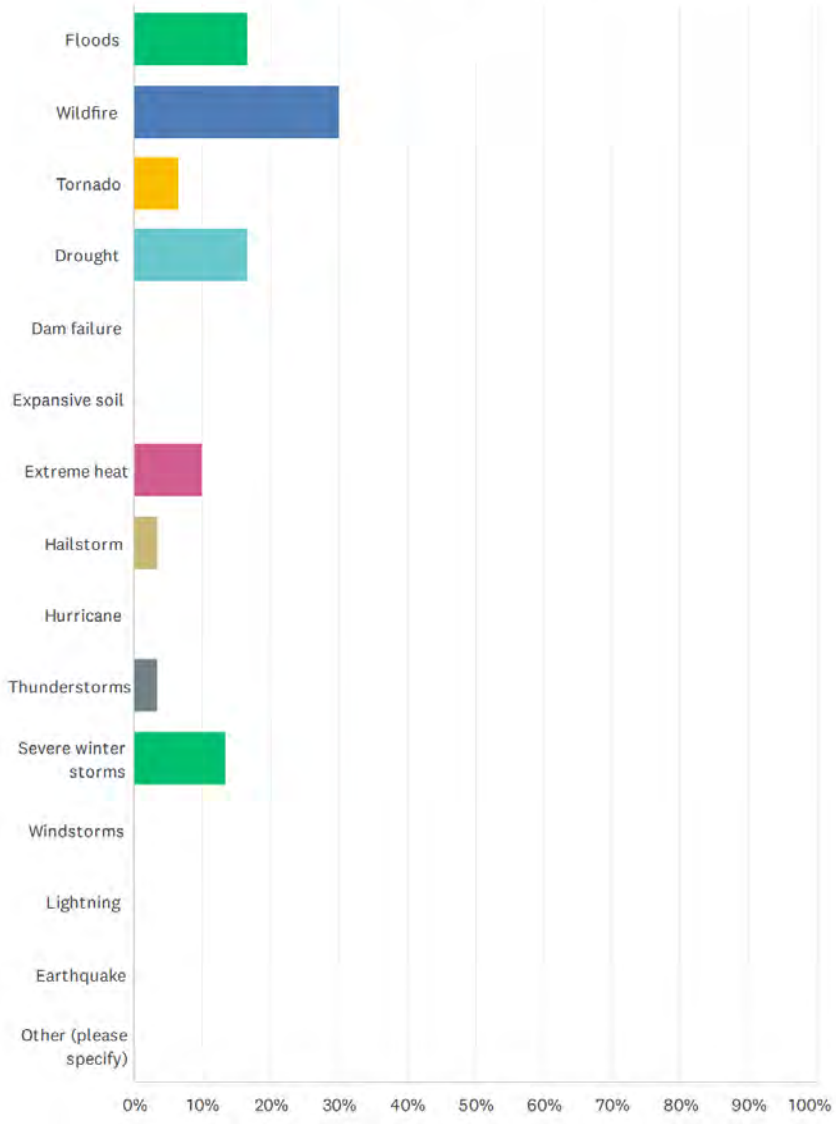
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Floods	23.33%	7
Wildfire	20.00%	6
Tornado	3.33%	1
Drought	30.00%	9
Dam failure	0.00%	0
Expansive soils	0.00%	0
Extreme heat	10.00%	3
Hailstorm	0.00%	0
Hurricane	0.00%	0
Thunderstorms	6.67%	2
Severe winter storms	3.33%	1
Lightning	0.00%	0
Windstorm	3.33%	1
Earthquake	0.00%	0
Other (please specify)	0.00%	0
TOTAL		30

Q3 Please select the natural hazard you think is the second highest threat to you, your business and/or your community. (Please check only one)

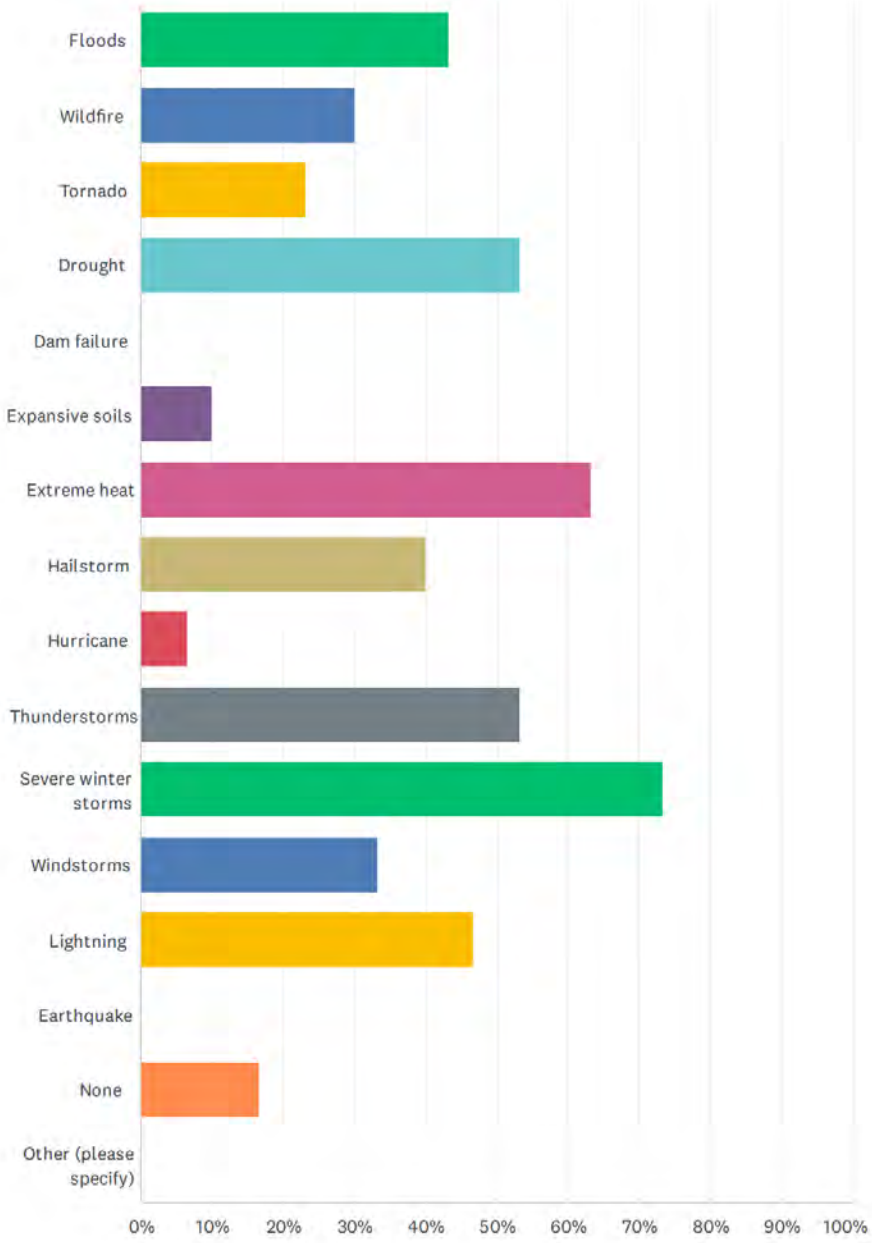
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Floods	16.67%	5
Wildfire	30.00%	9
Tornado	6.67%	2
Drought	16.67%	5
Dam failure	0.00%	0
Expansive soil	0.00%	0
Extreme heat	10.00%	3
Hailstorm	3.33%	1
Hurricane	0.00%	0
Thunderstorms	3.33%	1
Severe winter storms	13.33%	4
Windstorms	0.00%	0
Lightning	0.00%	0
Earthquake	0.00%	0
Other (please specify)	0.00%	0
TOTAL		30

Q4 While living here in Hays County, have you experienced a disaster? (please check all that apply)

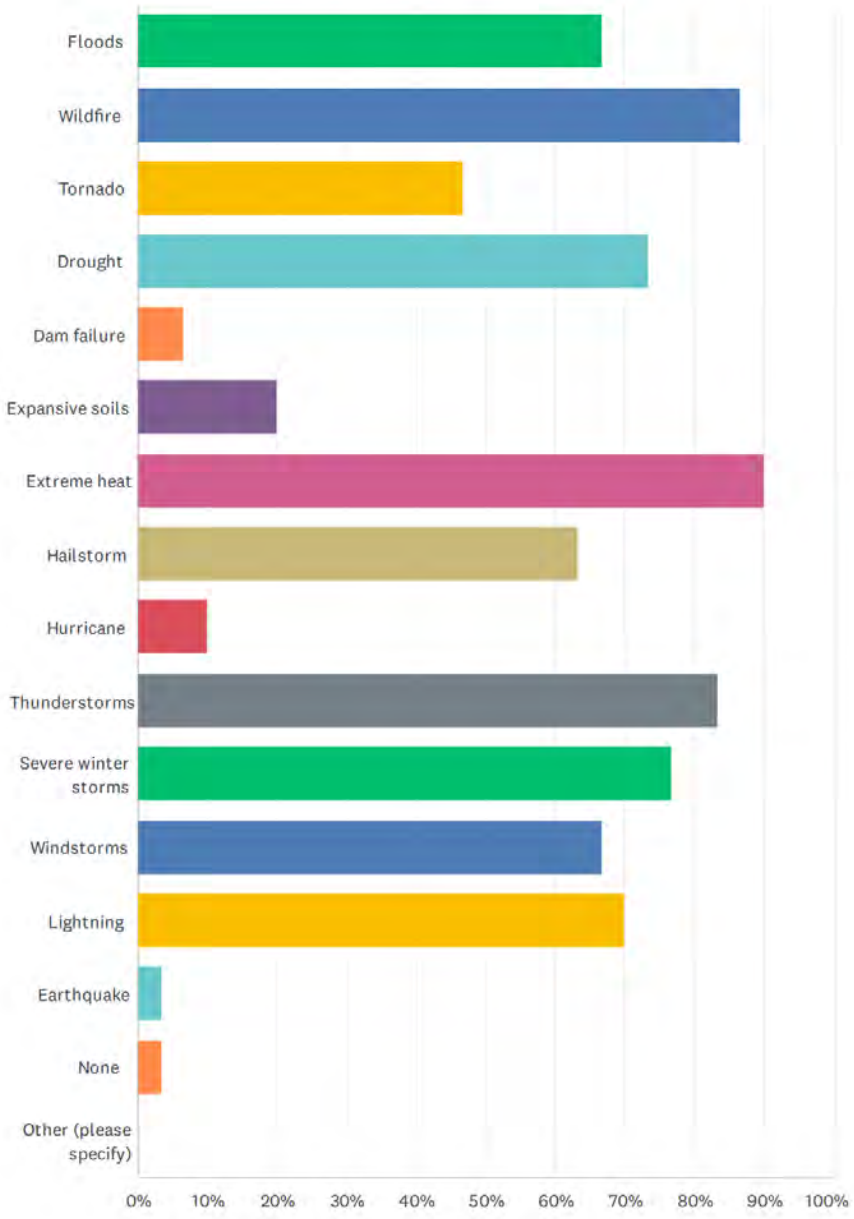
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Floods	43.33%	13
Wildfire	30.00%	9
Tornado	23.33%	7
Drought	53.33%	16
Dam failure	0.00%	0
Expansive soils	10.00%	3
Extreme heat	63.33%	19
Hailstorm	40.00%	12
Hurricane	6.67%	2
Thunderstorms	53.33%	16
Severe winter storms	73.33%	22
Windstorms	33.33%	10
Lightning	46.67%	14
Earthquake	0.00%	0
None	16.67%	5
Other (please specify)	0.00%	0
Total Respondents: 30		

Q5 Which of the following are likely to occur in your area at least once in your lifetime? (please check all that apply)

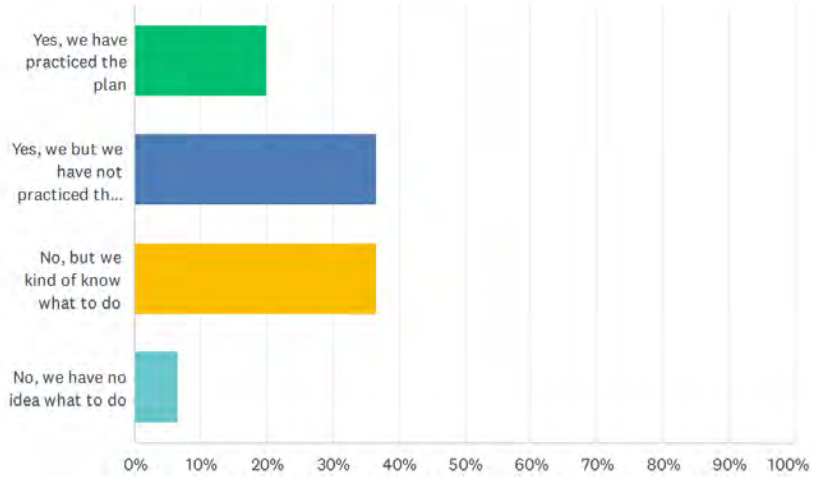
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Floods	66.67%	20
Wildfire	86.67%	26
Tornado	46.67%	14
Drought	73.33%	22
Dam failure	6.67%	2
Expansive soils	20.00%	6
Extreme heat	90.00%	27
Hailstorm	63.33%	19
Hurricane	10.00%	3
Thunderstorms	83.33%	25
Severe winter storms	76.67%	23
Windstorms	66.67%	20
Lightning	70.00%	21
Earthquake	3.33%	1
None	3.33%	1
Other (please specify)	0.00%	0
Total Respondents: 30		

Q6 My household has a plan in the event of a disaster such as a flood, tornado, etc.

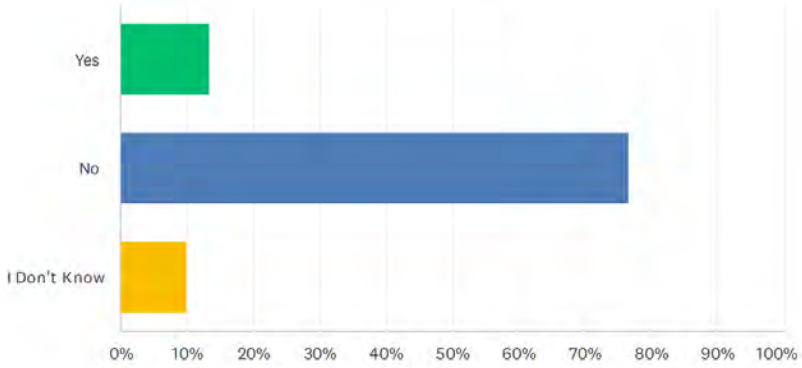
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes, we have practiced the plan	20.00%	6
Yes, we but we have not practiced the plan	36.67%	11
No, but we kind of know what to do	36.67%	11
No, we have no idea what to do	6.67%	2
TOTAL		30

Q7 Is your home located in a floodplain?

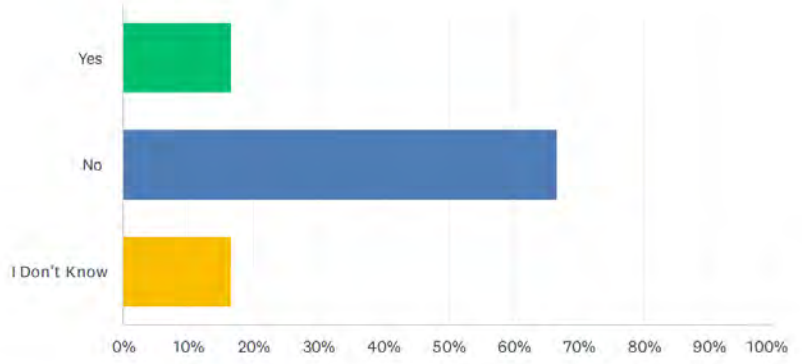
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	13.33%	4
No	76.67%	23
I Don't Know	10.00%	3
TOTAL		30

Q8 Do you have flood insurance?

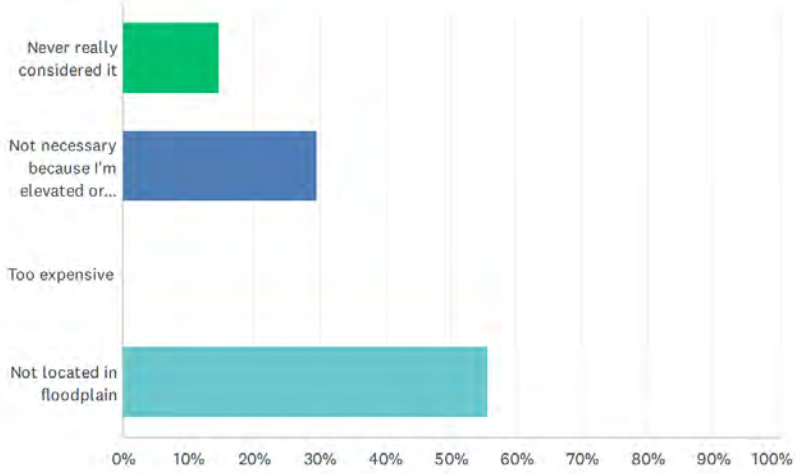
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	16.67%	5
No	66.67%	20
I Don't Know	16.67%	5
TOTAL		30

Q9 If you do not have flood insurance, why not?

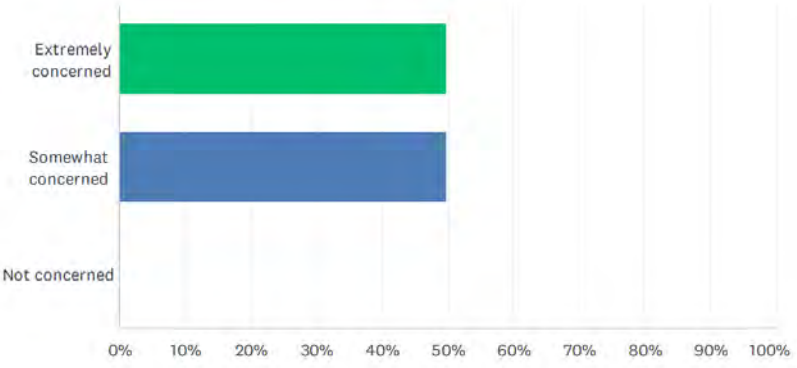
Answered: 27 Skipped: 3



ANSWER CHOICES	RESPONSES	
Never really considered it	14.81%	4
Not necessary because I'm elevated or otherwise protected	29.63%	8
Too expensive	0.00%	0
Not located in floodplain	55.56%	15
TOTAL		27

Q10 How concerned are you about the possibility of you or your community being impacted by a disaster?

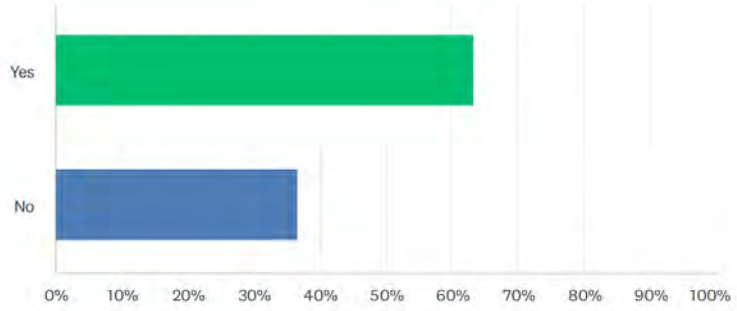
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Extremely concerned	50.00%	15
Somewhat concerned	50.00%	15
Not concerned	0.00%	0
TOTAL		30

Q11 Have you taken any actions to make your home, business and/or community more resistant to hazards?

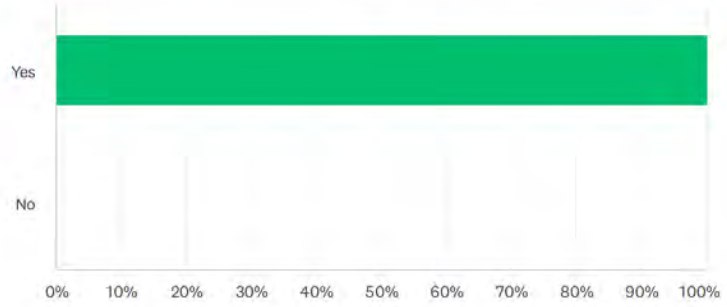
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	63.33%	19
No	36.67%	11
TOTAL		30

Q13 Are you interested in making your home, business and/or community more resistant to hazards?

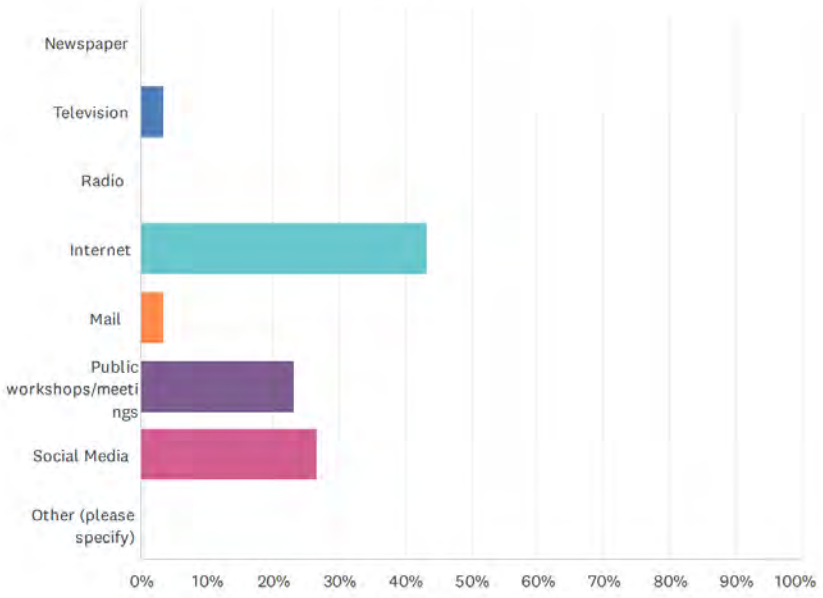
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	100.00%	30
No	0.00%	0
TOTAL		30

Q14 What is the most effective way for you to receive information about how to make your home, business and/or community more resistant to hazards?

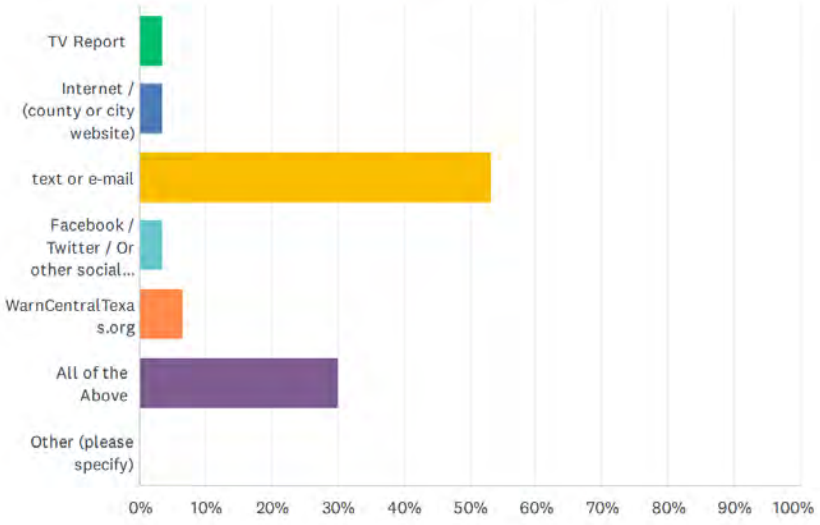
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Newspaper	0.00%	0
Television	3.33%	1
Radio	0.00%	0
Internet	43.33%	13
Mail	3.33%	1
Public workshops/meetings	23.33%	7
Social Media	26.67%	8
Other (please specify)	0.00%	0
TOTAL		30

Q15 Which of the following would be the best way to alert you and your household to an imminent disaster?

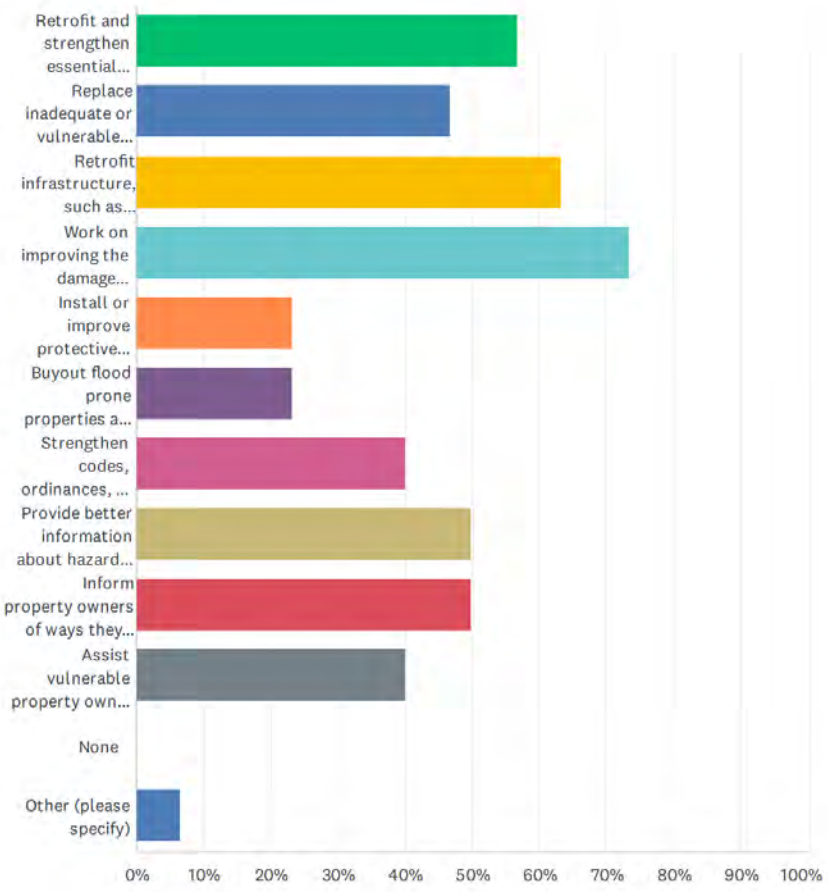
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
TV Report	3.33%	1
Internet / (county or city website)	3.33%	1
text or e-mail	53.33%	16
Facebook / Twitter / Or other social media	3.33%	1
WarnCentralTexas.org	6.67%	2
All of the Above	30.00%	9
Other (please specify)	0.00%	0
TOTAL		30

Q16 Which of the following mitigation activities do you believe your local government should employ to reduce or eliminate the risk of future hazard damages in your neighborhood and/or community. (Please check all that apply)

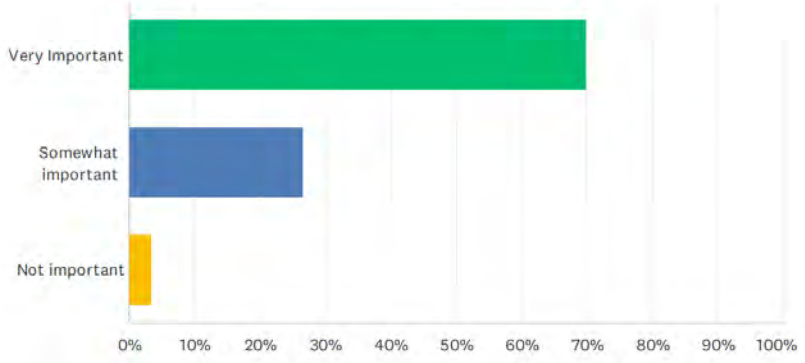
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Retrofit and strengthen essential facilities such as police, fire, emergency medical services, hospitals, schools, etc.	56.67%	17
Replace inadequate or vulnerable bridges and roads.	46.67%	14
Retrofit infrastructure, such as elevating roadways and improving drainage systems.	63.33%	19
Work on improving the damage resistance of utilities (electricity, communications, water / wastewater facilities, etc.).	73.33%	22
Install or improve protective structures, such as floodwalls and levees or individual/community saferooms.	23.33%	7
Buyout flood prone properties and maintain as open-space.	23.33%	7
Strengthen codes, ordinances, and plans to require higher hazard risk management standards.	40.00%	12
Provide better information about hazard risk and high-hazard areas.	50.00%	15
Inform property owners of ways they can mitigate damage to their properties.	50.00%	15
Assist vulnerable property owners with securing funding to mitigate impacts to their property(s).	40.00%	12
None	0.00%	0
Other (please specify)	6.67%	2
Total Respondents: 30		

Q18 Prevention of Hazards is any administrative or regulatory action that influences the way land is developed and buildings are built. Some examples include planning and zoning, building codes, open space prevention, and flood plain regulation. How important do you believe it is for your community to pursue the prevention of hazards?

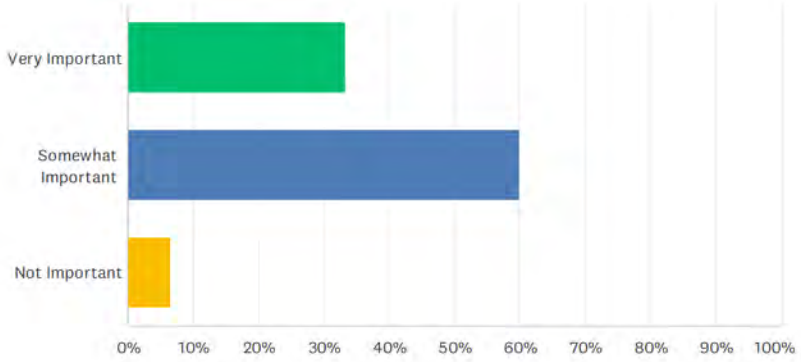
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Very Important	70.00%	21
Somewhat important	26.67%	8
Not important	3.33%	1
TOTAL		30

Q19 Reducing community risks from hazards can also include property protection. This involves actions that involve the modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include acquisition, relocation, elevations, structural retrofits and storm shutters. How important is it that your community pursue property protection?

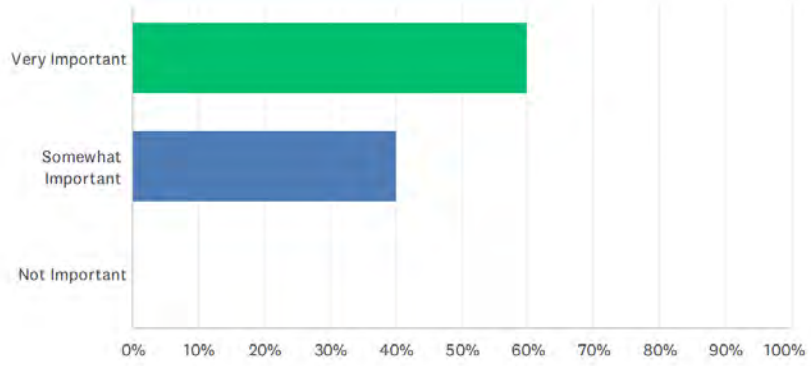
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Very Important	33.33%	10
Somewhat Important	60.00%	18
Not Important	6.67%	2
TOTAL		30

Q20 Reducing community risks from hazards can also include natural resource protection. This kind of protection is in addition to minimizing hazard losses, preserve or restoring the functions of natural systems. Some examples include floodplain protection, habitat preservation, slope stabilization, riparian buffers and forest management. How important is it that your community pursue natural resource protection?

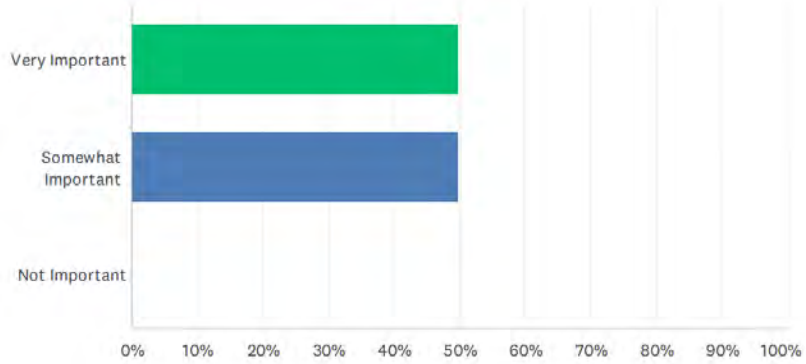
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Very Important	60.00%	18
Somewhat Important	40.00%	12
Not Important	0.00%	0
TOTAL		30

Q21 Structural Projects can also help to reduce hazards. These actions are 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 modifications, retaining walls and storm sewers. How important is it that your community pursue structural projects?

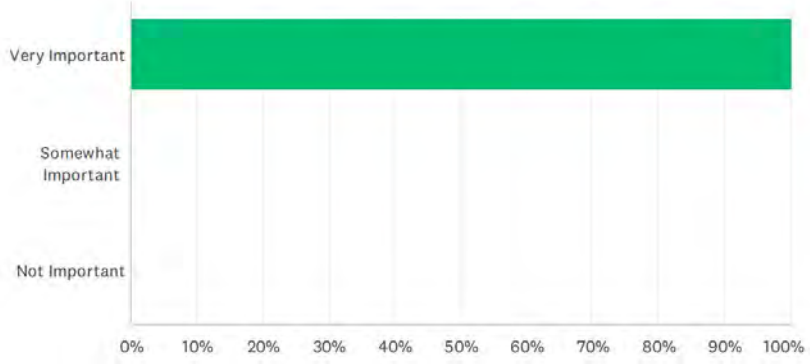
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Very Important	50.00%	15
Somewhat Important	50.00%	15
Not Important	0.00%	0
TOTAL		30

Q22 Emergency Services are actions that protect people and property during and immediately after a hazard event . Some examples include warning systems, evacuation planning, emergency planning, emergency response training and protection of critical emergency facilities/system. How important is that your community pursue emergency services?

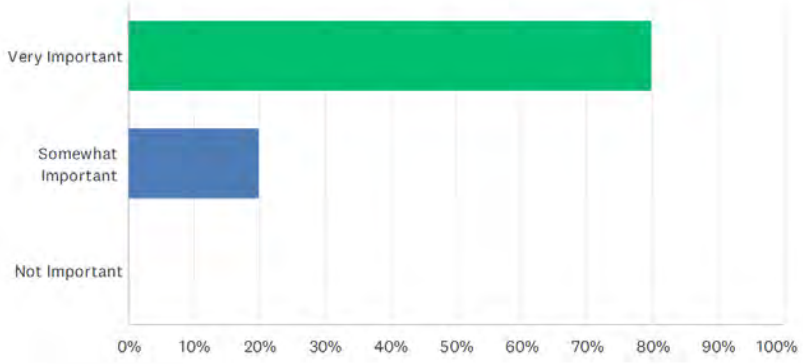
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Very Important	100.00%	30
Somewhat Important	0.00%	0
Not Important	0.00%	0
TOTAL		30

Q23 Public Education and Awareness are actions to inform citizens about hazards and the techniques they can use to protect themselves and their property. Examples include outreach projects, school education programs, library materials and demonstration events. How important is it that your community pursue public education and awareness?

Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Very Important	80.00%	24
Somewhat Important	20.00%	6
Not Important	0.00%	0
TOTAL		30

APPENDIX C: PRIORITY RANKING FORMS

Hays County

STAPLEE Ranking - Hays County

The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.

(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes	TOTAL SCORE	TIMEFRAME
1	Flood insurance information campaign	4	5	4	5	5	5	5	14	33	I
2	Attend advanced local floodplain management courses	5	5	5	5	5	5	5	1	35	I
3	Increase public awareness of hazard mitigation	5	5	5	5	5	5	5	2	35	I
4	Continue to promote Firewise	5	5	5	5	5	5	5	3	35	I
5	Monitor drought conditions	5	5	5	5	5	5	5	4	35	I
6	Installation of mitigation features for new public facilities to assure soundness against natural hazards	5	5	5	5	5	5	5	5	35	S
7	Evacuation plans/ alternate road consideration	3	3	3	3	3	3	3	15	21	I
8	Dam inundation maps	3	3	3	3	3	3	3	16	21	I
9	Equipping critical building (beyond fire departments) with back-up generators	5	5	5	5	5	5	5	6	35	I
10	Acquisition or elevation of repetitive loss structures	1	1	1	1	1	1	1	23	7	I
11	Additional stream and rain gauge and flood warning systems	5	5	5	5	5	5	5	7	35	N
12	Community Rating System application and Community Rating System participation benefit report for jurisdictions	3	3	3	3	3	3	3	17	21	N
13	Continue to improve emergency warning capabilities	5	5	5	5	5	5	5	8	35	I
14	Minimize the loss of life at low water crossing	5	5	5	5	5	5	5	9	35	N
15	Fuel reduction project	5	5	5	5	5	5	5	10	35	N
16	Construct needed water system improvements to Lower Colorado Region K and South Central Region L	3	3	3	3	3	3	3	18	21	S
17	Drainage project along Willow Springs Creek between McCarty Lane and Hunter Road	3	3	3	3	3	3	3	19	21	N
18	Drainage project along Willow Springs Creek between Hunter Rd and the Railroad	3	3	3	3	3	3	3	20	21	N
19	Property acquisition in southeastern Hays County	3	3	3	3	3	3	3	21	21	S
20	Communication Plan Implementation	5	5	5	5	5	5	5	11	35	I

STAPLEE Ranking - Hays County

The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.

(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes	TOTAL SCORE	TIMEFRAME
21	R.R. 967 @ Little Bear	5	5	5	5	5	5	5	12	35	S
22	F.M. 1625 @ Little Bear								completed		C
23	R.R. 1826 @ Bear Tributary 1.1								completed		C
24	Development Code updates awareness campaign	5	5	5	5	5	5	5	13	35	N
25	Institute development code updates to better prepare the built environment to hazard events	3	3	3	3	3	3	3	22	21	N

City of Buda

STAPLEE Ranking - City of Buda
The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.
(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes	TOTAL SCORE	TIMEFRAME
1	Reduce flood losses at West Goforth Rd, Buda Fire Station/FM 2770, and Bluff St Drainage Project Area	5	4	5	5	5	4	5	4	31	N
2	Reduce flood losses at Lifschutz Headwaters Drainage Project Area	5	5	5	5	5	5	5	1	35	S
3	Promote flood insurance coverage	5	4	3	5	5	5	5	3	32	I
4	Promote awareness of evacuation plans	5	3	1	5	5	3	4	11	26	N
5	Minimize dam failure risk	5	3	1	5	5	3	4	12	26	L
6	Ordinance to mandate engineered slabs and proper building inspections										
7	Review plans and resources to address risk posed by severe weather events	5	5	5	5	5	5	5	2	35	I
8	Develop various mitigation actions to reduce wildfire risk	5	3	2	5	5	5	5	6	30	N
9	Study sources of new water supply and implement findings	5	3	5	4	5	4	4	8	28	I
10	Create a Consolidated Resiliency Plan	5	3	2	3	5	4	5	10	27	S
11	Expand Water Reuse Program	4	3	3	4	5	4	5	9	28	N
12	Increase community tree canopy on streets and public spaces	5	4	4	4	5	4	5	5	31	I
13	Update the development code to enhance conservation-oriented regulatory provisions	4	4	4	4	5	4	5	7	30	N
14	Implement Watershed Protection Pilot Project	4	4	2	3	5	3	5	13	26	S

STAPLEE Ranking - City of Buda
The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.
(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes	TOTAL SCORE	TIMEFRAME
15	Gaulc Creek Tributary CIP	4	2	2	3	5	3	4	15	23	L
16	Gaulc Creek Culvert CIP	4	4	3	4	5	3	4	14	26	L
17	Sequoyah Drainage Improvements CIP	4	2	2	2	5	3	4	16	22	L

City of Dripping Springs

STAPLEE Ranking - City of Dripping Springs
The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.
(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes	TOTAL SCORE	TIMEFRAME
1	Flood insurance information campaign	3	3	3	3	4	3	3		22	S
2	Attend local floodplain management courses to receive certification	2	3	4	3	2	3	3		20	S
3	Storm Ready designation for Dripping Springs	2	3	3	3	3	3	3		20	N
4	Conversion to rainwater collection systems	3	3	3	3	3	3	3		21	S

City of Hays

STAPLEE Ranking - City of Hays

The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.

(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes	TOTAL SCORE	TIMEFRAME
1	Attend certified floodplain management training	5	5	5	5	5	5	5	I 35		
2	Improve emergency communication capabilities through the installation of weather radio in City Hall	2	4	4	5	5	3	4	N 27		
3	Storm Ready designation for community	5	3	3	5	5	3	4	N 28		
4	Promote flood insurance	5	5	5	5	5	5	5	I 35		
5	Public information campaign on natural hazards	5	4	4	4	5	4	5	N 31		
6	Rain harvesting information promotion	5	5	5	5	5	5	5	I 35		
7	Energy prioritization collaboration with Pedernales Electric Cooperative	5	5	5	5	5	5	5	I 35		
8	Sanding plans for roads	2	1	2	2	5	2	4	S 18		

Prepared by Harley Davis, Mayor

City of Kyle

STAPLEE Ranking - City of Kyle

The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.

(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes	TOTAL SCORE	TIMEFRAME
1	Flood insurance information campaign	3	5	5	5	5	5	5		33	I
2	Adoption of City Engineering Design Manual	5	5	5	5	5	5	5		35	I
3	Floodplain Administration Continuing Education Project	5	5	5	5	5	5	5		35	I
4	Increase public awareness of hazard mitigation	5	5	5	5	5	5	5		35	I
5	Installation of generators for city-owned facilities and procedures for providing temporary sheltering	5	5	5	5	5	5	5		35	N
6	Street prioritization procedure for sanding	5	5	5	5	5	5	5		35	I
7	Coordination of limb and large item pick-up day for wildfire mitigation	5	5	5	5	5	5	5		35	I
8	Evacuation plans/ alternate road consideration	5	5	5	5	5	5	5		35	I
9	Plum Creek Conservation District Evacuation Planning	5	5	5	5	5	5	5		35	N
10	WaterWise campaign	5	5	5	5	5	5	5		35	I
11	Drought monitoring program	5	5	5	5	5	5	5		35	I
12	Riparian Zone Signage	5	5	5	5	5	5	5		35	I
13	Update Drainage Master Plan	5	5	5	5	5	5	5		35	I
14	Water improvements-line upgrades and replacements	5	5	5	5	5	5	5		35	I

STAPLEE Ranking - City of Kyle

The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.

(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes	TOTAL SCORE	TIMEFRAME
15	Water improvements: ARWA Take Point 3	5	5	5	5	5	5	5		35	I
16	Gerator Pad Site Improvements(Previously Quick Connect Power Ports-Pump Stations CIP 38)	5	5	5	5	5	5	5		35	I
17	Water Improvements (revised): Opal Street	5	5	5	5	5	5	5		35	I
18	Design and implementation of prairie/woodland restoration project at select Kyle City Park location(s)	5	5	5	5	5	5	5		35	I
19	Acquisition plan for floodplain and non-floodplain land parcels for greenbelt interconnect project	5	5	5	5	5	5	5		35	N

City of Mountain City

STAPLEE Ranking - City of Mountain City

The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.

(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes	TOTAL SCORE	TIMEFRAME
1	StormReady designation for Mountain City								Cancelled		L
2	Cooling plan for vulnerable members of the community during periods of extreme heat that result in power loss								Cancelled		L
3	Monitor drought conditions	5	5	5	5	5	5	5	The city receives BSEAD monthly newsletters. Ongoing		I

City of Niederwald

STAPLEE Ranking - City of Niederwald

The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.

(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years -> Immediate (I)
2-3 years -> Near (N)
3-5 years -> Short (S)
More than 5 years -> Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes	TOTAL SCORE	TIMEFRAME	
1	Flood insurance information campaign	5	5	5	5	5	5	5		35	N	1
2	Floodplain management courses to receive certification	5	5	5	5	5	5	5		35	N	2
3	Emergency communication - weather radio installation at public buildings and phone tree development	5	1	1	1	1	1	1		11	N	13
4	StormReady designation for Niederwald	5	3	3	5	5	4	5		30	N	8
5	Increase public awareness of hazard mitigation	5	5	5	5	5	5	5		35	S	3
6	Adding water conservation to ordinances/ institution of drought contingency plan as part of operations	1	1	1	1	1	1	1	NOT CITY WATER	7		14
7	Decining contract research/ plan development	5	1	1	5	5	1	5		23	S	9
8	Coordination of new brush and large item pick-up day for wildfire mitigation	5	1	1	5	5	1	5		23	S	10
9	Engineering review of City Hall (modular building) to ensure soundness against natural hazards	5	1	1	5	5	1	5		23	S	11
10	Construct Emergency Operations Center/Warming & Cooling Station	5	5	5	5	5	5	5		35	S	4
11	Evacuation plans/ alternate road consideration	5	5	5	5	5	5	5		35	I	5
12	Create and implement a plan to landscape public facilities with drought-resistant plants.	5	1	1	5	5	1	5		23	S	12
13	Purchase a generator for Fire Station	5	5	5	5	5	5	5		35	L	6
14	Purchase a generator for new EOC	5	5	5	5	5	5	5		35	N	7

1-17-25 Carri Wood, mayor

City of Uhland

City of Wimberley

STAPLEE Ranking - City of Wimberley

The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.

(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes City of Wimberley does not have a property tax	TOTAL SCORE	TIMEFRAME
1	FM 1492 at Blanco River	3	3	1	3	1	1	1	L - No Funding	13	
2	Hidden Valley at Blanco River	3	3	1	3	1	1	1	L - No Funding	13	
3	Little Arkansas at Blanco River	3	3	1	3	1	1	1	L - No Funding	13	
4	Valley Drive at Pierce Creek	3	3	1	3	1	1	1	L - No Funding	13	
5	Flite Acres Road	3	3	1	3	1	1	1	L - No Funding	13	
6	FM 1492 at Pierce Creek	3	3	1	3	1	1	1	L - No Funding	13	
7	Wilson Creek at River Road	3	3	1	3	1	1	1	L - No Funding	13	
8	Green Acres Dr. at Fire Station	3	3	1	3	1	1	1	L - No Funding	13	
9	Leveritt's Loop	3	3	1	3	1	1	1	L - No Funding	13	
10	Spoke Hollow Dr. at Spoke Pile Creek	3	3	1	3	1	1	1	L - No Funding	13	
11	River Road at Western City Limits	3	3	1	3	1	1	1	L - No Funding	13	
12	Paradise Hills	3	3	1	3	11	11	1	L - No Funding	13	
13	River Road	3	3	1	3	1	1	1	L - No Funding	13	
14	Little Ranches at Panther Creek	3	3	1	3	1	1	1	L - No Funding	13	

STAPLEE Ranking - City of Wimberley

The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.

(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes City of Wimberley does not have a property tax	TOTAL SCORE	TIMEFRAME
30	De-icing contract research/ plan development	5	5	1	5	5	1	1	1 - Hays County / TxDOT	23	
31	Develop water use public awareness campaign to ensure water for firefighting, provision of drinking water and reduction of groundwater depletion	5	5	1	5	5	1	1	1 - COW	23	
32	Windstrap requirement on temporary structures	5	5	1	5	5	1	1	1 - COW	23	
33	Restriction on development along Blanco River	5	5	1	5	5	1	1	1 - COW / Hays County	23	
34	Enhance water conservation ordinance	5	5	1	5	5	1	1	1 - COW	23	
35	Seismic building code provisions	5	5	1	5	5	1	1	1 - COW	23	

City of Woodcreek

STAPLEE Ranking - City of Woodcreek
The project was evaluated based on STAPLEE criteria on a scale of 1 to 5 indicating the extent to which this action satisfies each consideration.
(1= Does Not Satisfy 3 = Moderately Satisfies 5 = Strongly Satisfies)

Timeframe Values: Within next 2 years --> Immediate (I)
2-3 years --> Near (N)
3-5 years-->Short (S)
More than 5 years-->Long (L)

ID	Mitigation Action	Socially Acceptable	Technically Feasible	Administratively Possible	Politically Acceptable	Legal	Economically Sound	Environmentally Sound	Notes	TOTAL SCORE	TIMEFRAME
1	CFM training and CFM certification	5	1	2	5	5	1	5	may be possible in future No staff currently able	24	S
2	StormReady designation from National Weather Service	3	1	2	3	5	1	5	NWS says not required- City too small	20	L
3	Promote flood insurance in the community	5	5	5	5	5	5	5	In the works	35	I
4	Increase public awareness of hazard mitigation	5	5	5	5	5	4	5	In the works	34	I
5	Coordination of marketing large item pick-up day for wildfire mitigation	5	5	5	5	5	3	5	Good idea	33	N
6	Energy prioritization collaboration with electric cooperative	5	2	2	5	5	3	5	Not sure how	27	N
7	Watershed review tour for private dams	5	3	4	2	3	3	5	Not sure	25	N
8	Adoption of soil compaction standards and recommendations	2	2	2	3	2	2	5	Difficult in our small city	18	L
9	Sanding contract research/ plan development	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	—	—
10	Public awareness campain for the reduction of groundwater depletion	5	5	5	5	5	5	5	Continuous	35	I

Village of Bear Creek

Dripping Springs ISD

Hays ISD

San Marcos CISD

Wimberley CISD

Texas State University

At the time of submission for TDEM and FEMA review, the STAPLEE forms from some of these entities are still pending. When they are provided, they will be inserted into the Plan.

APPENDIX D: CRITICAL FACILITIES

The list and location of critical and vulnerable facilities will be kept and maintained by the Emergency Management Coordinators for Hays County. This list is provided in the form of an ArcGIS geodatabase and a Microsoft Excel spreadsheet with location and contact information. The table below is a summary of critical facilities subject that are vulnerable to hazards based on location and magnitude.

Critical Facility Summary by Jurisdiction:

Hays County
1 County Courthouse, 1 County Government Center, 1 Emergency Operations Center, 13 Fire Stations, 2 EMS Centers, 1 County Nursing and Rehabilitation Center, 1 Juvenile Detention Center, 5 Sheriff's Offices, 5 County Constable Offices, 1 JP Office, 16 Communication Towers, 2 Private Schools, 1 Assisted Living, 4 Electrical Substations, 2 Pharmacies, 1 water storage
City of Buda
1 Hospital, 4 Communication Towers, 6 Public Schools, 1 Higher Education, 2 k-12 Private Schools (1 shelter), 1 City Hall, 1 Police Station, 3 VFD Stations, 1 Pump Station, 2 Water Towers, 1 Wastewater Plant, 3 Water Wells, 1 Water Treatment Facility, 4 Assisted Living Centers
City of Dripping Springs
1 City Hall, 1 Police Station, 2 Volunteer Fire Department Stations, 6 Public Schools, 1 Private School, 1 Shelter, 10 Communication Towers, 3 Assisted Living Facilities,
City of Hays
1 Communication Tower, 1 Shelter, 1 Volunteer Fire Department Station, 2 Water Wells
City of Kyle
1 City Hall, 3 Police Stations, 1 Fire Department Station, 3 Volunteer Fire Department Stations, 1 Jail, 12 Public Schools, 2 Private Schools, 1 PEC Substation, 3 Medical Centers, 8 Communication Towers, 3 Assisted Living Facilities
City of Mountain City
City of Niederwald
1 City Hall, 1 School
City of Uhland
1 City Hall, 1 Police Department, 1 VFD, 1 Communication Tower
City of Wimberley
1 EMS, 1 VFD, 4 Public Schools, 1 Private School, 1 Assisted Living, 1 Communication Tower,
Village of Bear Creek

Village of Woodcreek
1 City Hall, 1 VFD, 1 Assisted Living

Critical Facility Table:

ID	Name	Address	City	Symbol
1	SPECTRASITE COMMUNICATIONS, LLC THROUGH AMERICAN TOWERS, LLC.	3906 BLISS SPILLAR RD. (310252)	Austin	Communication
2	VISTA TELECOM LTD	0.9 MI EAST OF NUTTY BROWN RD. OFF SIGNAL HILL RD.	Austin	Communication
3	VISTA TELECOM LTD	0.9 MI EAST OF NUTTY BROWN RD. OFF SIGNAL HILL RD.	Austin	Communication
4	DALLAS MTA, LP	10930-B SINGNAL HILL RD	Austin	Communication
5	Ledgestone Senior Living	13150 Four Star Blvd	Austin	Assisted Living
6	Tom Green Elementary School	1301 Old Goforth Road	Buda	School
7	Baylor Scott and White Medical Center - Buda	5330 Overpass Rd, Suite 110	Buda	Medical
8	Olympia Hills University Charter	2122 Green Meadows	Buda	School
9	AMERICAN TOWERS, LLC	1340 FM 2001 (BUDA 4043)	Buda	Communication
10	Hays County Constable's Office Precinct 5	500 Jack C Hays Trail	Buda	Police
11	Hays County Sheriff's Office Buda Substation	500 Jack C Hays Trail	Buda	Police
12	T-MOBILE WEST CORPORATION	2121 SOUTH LOOP 4	Buda	Communication
13	Dahlstrom Middle School	3600 Farm to Market 967	Buda	School
14	Elm Grove Elementary School	801 Farm to Market Road 1626	Buda	School
15	IMPACT Center	4125 Farm to Market 967	Buda	School
16	Carpenter Hill Elementary School	4410 Farm to Market Road 967	Buda	School
17	Johnson High School	4260 Farm to Market Road 967	Buda	School
18	Buda Volunteer Fire Department Station 3	3502 Farm to Market Road 967	Buda	Fire
19	T-MOBILE WEST CORPORATION	135 BEACON HILL RD. (AU1412B)	Buda	Communication
20	Buda Volunteer Fire Department Station 1	209 Farm to Market Road 2770	Buda	Fire
21	Buda Elementary School	1060 Old San Antonio Road	Buda	School
22	Buda City Hall	405 East Loop Street	Buda	Government
23	Buda Police Department	405 East Loop Street	Buda	Police
24	Buda Volunteer Fire Department Station 2	151 Farm to Market Road 2001	Buda	Fire
25	CELLTEX SITE SERVICES, LTD.	941 OLD SAN ANTONIO ROAD	Buda	Communication
26	Plum Creek WS SCS Site 10 Dam	BRUSHY CREEK	Buda	Dam
27	Cullen Country Lake Dam	UNNAMED TRIBUTARY OF GARLIC CREEK	Buda	Dam
28	Alliance Pump Station		Buda	Water
30	Sunfield Elementary		Buda	School
31	Water Tower		Buda	Water

32	Buda Oaks Assisted Living		Buda	Assisted Living
33	Santa Cruz School - Shelter		Buda	School
34	Wastewater Plant		Buda	Wastewater
35	Buda Public Works - Water Treatment Facility		Buda	Government
36	Creekside Villas		Buda	Assisted Living
37	Provident Memory Care		Buda	Assisted Living
38	Onion Creek Senior Living		Buda	Assisted Living
39	Buda Water Tower		Buda	Water
40	ASR/Trinity #2 & 3		Buda	Water
41	ASR / Trinity Well #1		Buda	Water
42	Dripping Springs Elementary School	29400 Ranch Road 12	Dripping Springs	School
43	Walnut Springs Elementary School	300 Sportsplex Drive	Dripping Springs	School
44	Dripping Springs City Hall	511 Mercer Street	Dripping Springs	Government
45	AMERICAN TOWERS, LLC	700 HWY. 290 EAST (009247)	Dripping Springs	Communication
46	CROWN CASTLE GT COMPANY, LLC	1950 EAST HIGHWAY 290	Dripping Springs	Communication
47	Sycamore Springs Middle School	14451 Sawyer Ranch Rd	Dripping Springs	School
48	AMERICAN TOWERS, LLC	14117 TROUTWINE RD (DRIPPING SPRINGS 4082)	Dripping Springs	Communication
49	North Hays County Fire and Rescue Driftwood Station	15840 Farm to Market Road 1826	Dripping Springs	Fire
50	AMERICAN TOWERS, LLC	17800 RR 1826	Dripping Springs	Communication
51	LOWER COLORADO RIVER AUTHORITY - Cedar Valley Radio (NHaySimulcast) - LMR Coverage	14384 WEST HWY 290	Dripping Springs	Communication
52	Burke Center for Youth Pathfinder's Ranch	20800 Farm to Market Road 150 West	Dripping Springs	School
53	NEW CINGULAR WIRELESS PCS, LLC	20200 FM 150 WEST	Dripping Springs	Communication
54	BMP AUSTIN LICENSE COMPANY, L.P.	14117 TRAUTWEIN RD.	Dripping Springs	Communication
55	Friendship Creekside Fellowship - Shelter	14455 FM 1826	Dripping Springs	Shelter
56	SBA MONARCH TOWERS I, LLC	13671 RR 1826	Dripping Springs	Communication
57	Rooster Springs Elementary School	4631 1001 Belterra Drive	Dripping Springs	School
58	Hays County Sheriff's Office Dripping Springs Substation	195 Roger Hanks Parkway	Dripping Springs	Police
59	Hays County Constable's Office Precinct 4	195 Roger Hanks Parkway	Dripping Springs	Police
60	North Hays County Fire and Rescue Station 1	400 Sportsplex Drive	Dripping Springs	Fire
61	North Hays Emergency Medical Services	111 Ems Drive	Dripping Springs	Medical
62	Dripping Springs Middle School	111 Tiger Lane	Dripping Springs	School
63	Dripping Springs High School	940 Highway 290 West	Dripping Springs	School
64	SBA MONARCH TOWERS II, LLC	5315 BELL SPRINGS RD	Dripping Springs	Communication
65	Little Barton Creek Dam	LITTLE BARTON CREEK	Dripping Springs	Dam
66	Brown Ranch Dam	TR-ONION CREEK	Dripping Springs	Dam
67	Boes Ski Lake Dam		Dripping Springs	Dam
68	Hill Country Nursing and Rehab	1505 US 290	Dripping Springs	Assisted Living

69	Lavender Springs Assisted Living	13701 Trautwein Rd	Dripping Springs	Assisted Living
70	Neurorestorative	3035 US 290	Dripping Springs	Assisted Living
71	Drippings Springs Radio (NHaySimulcast) - LMR Coverage		Dripping Springs	Communication
72	Manchaca VFD Station 6	2900 Chaparral Road	Hays	Fire
73	SBA MONARCH TOWERS II, LLC	401 HARDIN LOOP	Hays	Communication
74	Hays Hills		Hays	Shelter
75	Water Well		Hays	Water
76	water well		Hays	Water
77	STC FIVE, LLC	INT CR 158 & CR 134	Kyle	Communication
78	CROWN CASTLE GT COMPANY, LLC	1066 FT SW OF CR 158 & 95 FT NW OF CR 140	Kyle	Communication
79	R C Barton Middle School	4950 Jack C Hays Trail	Kyle	School
80	Hays County Sheriff 's Department Kyle Sub - Station	5458 Farm to Market Road 2770	Kyle	Police
81	CLEAR CHANNEL BROADCASTING, INC	5 KM SOUTH OF BUDA, TEXAS ON FM ROAD 2770	Kyle	Communication
82	Kyle Fire Department Station 21	210 West Moore Street	Kyle	Fire
83	Fuentes Elementary School	901 Philomena Drive	Kyle	School
84	Kyle Police Department	111 North Front Street	Kyle	Police
85	Kyle City Hall	100 West Center Street	Kyle	Government
86	Texas Department of Criminal Justice Kyle Correctional Center	23001 Interstate 35	Kyle	Jail
87	Wallace Middle School	1500 West Center Street	Kyle	School
88	Negley Elementary School	5940 McNaughton	Kyle	School
89	Kyle Elementary School	500 West Blanco Street	Kyle	School
90	IDEA Public Schools - Kyle	640 Philomena Drive	Kyle	School
91	Kyle ER and Hospital	5615 Kyle Center Drive	Kyle	Medical
92	UNION PACIFIC RAILROAD	212 N OLD HIGHWAY 81	Kyle	Communication
93	CROWN COMMUNICATION, LLC	291 ROLAND LANE	Kyle	Communication
94	Pfluger Elementary School	4951 Marsh Lane	Kyle	School
95	McCormick Middle School	5700 Dacy Lane	Kyle	School
96	Tobias Elementary School	1005 Farm to Market Road 150	Kyle	School
97	ENTERPRISE PRODUCTS OPERATING, LLC	ON COUNTY ROAD, 1.5 MI SOUTH OF IH35	Kyle	Communication
98	Kyle Volunteer Fire Department Station 2	150 Bunton Creek Road	Kyle	Fire
99	Lehman High School	1700 Lehman Road	Kyle	School
100	Science Hall Elementary School	1510 Bebee Road	Kyle	School
101	Chapa Middle School - Shelter 250	3311 Dacy Lane	Kyle	School
102	Warm Spring Rehabilitation Hospital of Kyle	5980 Kyle Parkway	Kyle	Medical
103	Ascension Seton Hays	6001 Kyle Parkway	Kyle	Medical
104	GLOBAL TOWER, LLC	COUNTY ROAD 122 4.5 KM NE	Kyle	Communication
105	Chisholm Trail Fire and Rescue Station 1	8811 Niederwald Strasse	Kyle	Fire
106	Kyle Volunteer Fire Department Station 3	100 High Road	Kyle	Fire

107	T-MOBILE WEST CORPORATION	790 HIGH RD, UNIT B (AU01587B)	Kyle	Communication
108	Hemphill Elementary School	3995 East Farm to Marker Road 150	Kyle	School
109	Simon Middle School	3839 East Farm to Market Road 150	Kyle	School
110	Plum Creek WS SCS Site 11 Dam	TR-BRUSHY CREEK	Kyle	Dam
111	Plum Creek WS SCS Site 4 Dam	TR-PLUM CREEK	Kyle	Dam
112	Plum Creek WS SCS Site 5 Dam	BUNTON BRANCH	Kyle	Dam
113	Plum Creek WS SCS Site 6 Dam	PORTER CREEK	Kyle	Dam
114	Plum Creek WS SCS Site 3 Dam	TR-PLUM CREEK	Kyle	Dam
115	Md Heatly Dam	PECAN SPRINGS	Kyle	Dam
116	Sycamore Creek Dam	SYCAMORE CREEK	Kyle	Dam
117	Plum Creek WS SCS Site 1 Dam	PLUM CREEK	Kyle	Dam
118	Barron Lake Dam	TR-BRUSHY CREEK	Kyle	Dam
119	Plum Creek WS SCS Site 2 Dam	TR-PLUM CREEK	Kyle	Dam
120	Alexander Lake Dam	TR-PLUM CREEK	Kyle	Dam
121	Legend Oaks Rehabilitation and Healthcare	1640 Fairway	Kyle	Assisted Living
122	New Haven Assisted Living and Memory Care of Kyle	107 Creekside Trail	Kyle	Assisted Living
123	Orchard Park of Kyle	4701 Ratcliffe Dr	Kyle	Assisted Living
124	ACC Police Academy		Kyle	Police
125	PEC Substation		Kyle	Electric
126	Kyle Public Safety Center		Kyle	Police
127	Boy Scout Dam	BLANCO RIVER	Martindale	Dam
128	Jack C Hays High School	4800 Jack C Hays Trail	Mountain City	School
129	Academy at Hays	4950 Jack C Hays Trail	Mountain City	School
130	Mountain City Town Hall	101 Mountain City Drive	Mountain City	Government
131	DALLAS MTA, LP - Mountain City Radio (SHaysSimulcast) - LMR Coverage	4415 FM 150 W	Mountain City	Communication
132	Lutringer Lake Dam	TR-BOONS CREEK	Mountain City	Dam
133	Plum Creek WS SCS Site 12 Dam	BRUSHY CREEK	Niederwald	Dam
134	Camino Real Elementary School	170 Las Brisas Boulevard	Niederwald	School
135	Hays County Sheriff's Office Niederwald Substation	13851 Camino Real	Niederwald	Police
136	Niederwald City Hall	8807 Niederwald Strasse	Niederwald	Government
137	Plum Creek WS SCS Site 16 Dam	ELM CREEK	Niederwald	Dam
138	Larsen Dam	UN TR-ELM CREEK	Niederwald	Dam
139	NEW CINGULAR WIRELESS SERVICES, INC	2700 N IH 35	San Marcos	Communication
140	San Marcos High School	2601 East McCarty Lane	San Marcos	School
141	Bowie Elementary School	4020 Monterrey Oak	San Marcos	School
142	John H Wood Jr Charter School Hays County Juvenile Detention Center	2250 Clovis R Barker Road	San Marcos	School
143	HAYS CO JUVENILE CENTER	2250 CLOVIS BARKER ROAD	San Marcos	Jail
144	CROWN CASTLE GT COMPANY, LLC	2100 SOUTH HIGHWAY 123	San Marcos	Communication

145	South Hays Fire Department Station 13	3300 Hilliard Road	San Marcos	Fire
146	CENTURYTEL OF SAN MARCOS, INC	3125 RANCH RD 12 2.25 MI WNW	San Marcos	Communication
147	San Marcos Academy	2801 Branch Rd 12	San Marcos	School
148	DALLAS MTA, LP	SUMMER BREEZE RD	San Marcos	Communication
149	Rodriguez Elementary	1481 Esplanade PKWY	San Marcos	School
150	CROWN COMMUNICATION, LLC	1107 QUAIL RUN	San Marcos	Communication
151	Blanco Vista Elementary School	2951 Blanco Vista Boulevard	San Marcos	School
152	Texas Preparatory School	400 Uhland Road	San Marcos	School
153	Travis Elementary School	1437 Post Road	San Marcos	School
154	UNION PACIFIC RAILROAD	2.8 MI NE SAN MARCOS ON HAYS CTY HWY 140 POST RD	San Marcos	Communication
155	De Zavala Elementary School	621 De Zavala Drive	San Marcos	School
156	Goodnight Middle School	1301 State Highway 123	San Marcos	School
157	San Marcos - Hays County Emergency Medical Service	101 Uhland Rd Ste 208	San Marcos	Medical
158	San Marcos Fire Department Station 4	404 Broadway Street	San Marcos	Fire
159	NEW CINGULAR WIRELESS SERVICES, INC	1301 CRYSTAL RIVER PARKWAY	San Marcos	Communication
160	Hernandez Elementary School	333 Stagecoach Trail	San Marcos	School
161	Miller Middle School	301 Foxtail Run	San Marcos	School
162	South Hays Fire Department Station 11	3528 Hunter Road	San Marcos	Fire
163	San Marcos Fire Department Station 3	2420 Hunter Road	San Marcos	Fire
164	T-MOBILE WEST CORPORATION	2911 HUNTER ROAD	San Marcos	Communication
165	San Marcos Fire Department Station 5	100 Carlson Circle	San Marcos	Fire
166	LOWER COLORADO RIVER AUTHORITY	CANYON SUBSTATION W. SIDE OF IH35 AT BLANCO RIVER CROSSING	San Marcos	Communication
167	Central Texas Medical Center	1301 Wonder World Drive	San Marcos	Medical
168	San Marcos Police Department	2300 South Interstate Highway 35	San Marcos	Police
169	Hays County Constable's Office Precinct 1	712 South Stagecoach Trail	San Marcos	Police
170	San Marcos Fire Department Station 4	1404 Wonder World Drive	San Marcos	Fire
171	Hays County Government Center	712 South Stagecoach Trail	San Marcos	Government
172	Medez Elementary	1805 Peter Garza	San Marcos	School
173	LOWER COLORADO RIVER AUTHORITY	LCRA REDWOOD SUBSTATION INT OF FM123 AND REDWOOD ROAD	San Marcos	Communication
174	GLOBAL TOWER, LLC	3231 RR 12 ESN 131	San Marcos	Communication
175	DALLAS MTA, LP	2220 0.5 STAPLES ROAD	San Marcos	Communication
176	SM RADIO, INC	SE SAN MARCOS ON HIGHWAY 21, 0.9 KM FROM INTERSECTION W/ HIGHWAY 80	San Marcos	Communication
177	SM RADIO, INC	SE SAN MARCOS ON HIGHWAY 21 - 0.9KM FROM INTERSECTION W/ HIGHWAY 80	San Marcos	Communication
178	CELLTEX SITE SERVICES, LTD.	228 SESSOM DRIVE	San Marcos	Communication

179	Hays County Law Enforcement Center Sheriff's Office	1307 Uhland Road	San Marcos	Police
180	Hill Country Christian School	1401 Davis Lane	San Marcos	School
181	HAYS COUNTY	1307 UHLAND ROAD	San Marcos	Communication
182	DALLAS MTA, LP	1305 RIVER ROAD	San Marcos	Communication
183	Texas Department of Public Safety Troopers Office	1400 North Interstate Highway 35	San Marcos	Police
184	Wellbridge Hospital of San Marcos	1106 N IH 35	San Marcos	Medical
185	NEW CINGULAR WIRELESS PCS, LLC	939 HWY 80	San Marcos	Communication
186	Crockett Elementary School	1300 Girard Street	San Marcos	School
187	Advent Ridge Academy	1523 Old Ranch Road 12	San Marcos	School
188	Wonderland School	302 Country Estates Dr	San Marcos	School
189	TOWERCO II, LLC	1523 RANCH ROAD 12	San Marcos	Communication
190	San Marcos Fire Department Station 2	1314 Academy Street	San Marcos	Fire
191	ATC OUTDOOR DAS, LLC	ACADEMY & SPECK ST. (346120)	San Marcos	Communication
192	Texas State University San Marcos	601 University Drive	San Marcos	School
193	Texas State University Police Department	615 North L B J Drive	San Marcos	Police
194	San Marcos Marshal's Office	630 East Hopkins Street	San Marcos	Police
195	San Marcos Treatment Center and School	120 Bert Brown Road	San Marcos	School
196	San Marcos Fire Department Station 1	114 East Hutchison Street	San Marcos	Fire
197	San Marcos City Hall	630 East Hopkins Street	San Marcos	Government
198	San Marcos Activity Center - Shelter 500	501 E Hopkins St	San Marcos	Shelter
199	ATC OUTDOOR DAS, LLC	STATE ST. (346123)	San Marcos	Communication
200	ATC OUTDOOR DAS, LLC	STUDENT REC. CENTER (346121)	San Marcos	Communication
201	ATC OUTDOOR DAS, LLC	VISTA ST.& NORTH ST. (346122)	San Marcos	Communication
202	Hays County Park Lake Dam	BLANCO RIVER	San Marcos	Dam
203	Upper San Marcos River WS SCS Site 2	SINK CREEK	San Marcos	Dam
204	York Creek WS SCS Site 5 Dam	TR-YORK CREEK	San Marcos	Dam
205	Upper San Marcos River WS SCS Site 4	PURGATORY CREEK	San Marcos	Dam
206	Upper San Marcos River WS SCS Site 1	SINK CREEK	San Marcos	Dam
207	Upper San Marcos River WS NRCS Site 5 Dam	PURGATORY CREEK	San Marcos	Dam
208	Upper San Marcos River WS SCS Site 3	SINK CREEK	San Marcos	Dam
209	San Marcos State Fish Hatchery	OFF CH-SAN MARCOS RIVER	San Marcos	Dam
210	Aquarena Dam	SAN MARCOS RIVER	San Marcos	Dam
211	Scrutchin Lake Dam	TR-SAN MARCOS RIVER	San Marcos	Dam
212	John F Baugh Dam	TR-SAN MARCOS RIVER	San Marcos	Dam
213	Centerpoint Dam		San Marcos	Dam
214	Webster Lake Dam	TR-LONG CREEK	San Marcos	Dam
215	Cummings Dam	SAN MARCOS RIVER	San Marcos	Dam
216	Rio Vista Dam	SAN MARCOS RIVER	San Marcos	Dam

217	Cottonwood Creek Detention Dam		San Marcos	Dam
218	Broodale San Marcos North	1720 Old Ranch Rd 12	San Marcos	Assisted Living
219	Brookdale San Marcos South	1401 Wonder World Dr	San Marcos	Assisted Living
220	Hays Nursing and Rehabilitation Center	1900 Medical Pkwy	San Marcos	Assisted Living
221	Cypress Healthcare and Rehabilitation	1351 Sadler Drive	San Marcos	Assisted Living
222	ResCare Premier, Hutchison Location	545 W Hutchison Street	San Marcos	Assisted Living
223	San Marcos Rehabilitation & Health Care	1600 N I35 Road	San Marcos	Assisted Living
224	Smith House - San Marcos Community Living Program	119 Smith Lane	San Marcos	Assisted Living
225	Sodalis Senior Living	1921 Corporate Dr Suite 101	San Marcos	Assisted Living
226			San Marcos	Communication
227	Power Plant		San Marcos	Electric
228	Electric Substation		San Marcos	Electric
229	City of San Marcos Wastewater Treatment		San Marcos	Wastewater
230	San Marcos Regional Animal Shelter		San Marcos	Shelter
231	Hays County Emergency Operations Center - Hays County PSAP - Dispatch Center		San Marcos	Government
232	San Marcos Radio - LMR Coverage		San Marcos	Communication
233	McCarty Lane Substation - Transport Hub		San Marcos	Electric
234	Uhland Elementary School	2331 High Road	Uhland	School
235	Uhland Volunteer Fire Department	8950 Camino Real Road	Uhland	Fire
236	DALLAS MTA, LP	98 S OLD SPANISH TRAIL	Uhland	Communication
237	Uhland Police Department		Uhland	Police
238	Uhland City Hall		Uhland	Government
239	Wimberley Volunteer Fire Department Central Station	111 Green Acres Drive	Wimberley	Fire
240	Wimberley Emergency Medical Service Systems	220 Twilight Trail	Wimberley	Medical
241	Katherine Anne Porter School	515 Farm to Market Road 2325	Wimberley	School
242	Wimberley High School	100 Carney Lane	Wimberley	School
243	Danforth Junior High School	200 Texan Boulevard	Wimberley	School
244	Scudder Primary School	400 Green Acres Drive	Wimberley	School
245	Hays County Sheriff's Office - Wimberley Substation	14306 Ranch Road 12	Wimberley	Police
246	Wimberley City Hall	221 Stillwater Road	Wimberley	Government
247	Hays County Constable Precinct 3	200 Stillwater Road	Wimberley	Police
248	CROWN CASTLE GT COMPANY, LLC - Wimberley Radio - LMR Coverage	1171-B CR 1492	Wimberley	Communication
249	DALLAS MTA, LP	11751 RANCH RD 12	Wimberley	Communication
250	STC FIVE, LLC	10701 RR 12 SOUTH / AU33XC233.B	Wimberley	Communication
251	South Hays Fire Department Station 12	8301 Ranch Road 12	Wimberley	Fire
252	Saint Stephen's Episcopal School	6000 Farm Market 2337	Wimberley	School
253	Wimberley Montessori School	45 La Buena Vista Drive	Wimberley	Daycare
254	Lone Man Dam	LONE MAN CREEK	Wimberley	Dam

255	Deer Creek Nursing and Rehab	555 Ranch Rd 3237	Wimberley	Assisted Living
256	Wimberley Volunteer Fire Department Jacobs Well Station	Pleasant Valley Road and Jacobs Well Road	Woodcreek	Fire
257	Woodcreek City Hall	41 Champions Circle	Woodcreek	Government
258	Hog Creek Dam	HOG CREEK	Woodcreek	Dam
259	Wimberley Life Care	845 Summit Dr E	Woodcreek	Assisted Living
260	Parkers Pond Dam	TR-YORK CREEK	Zorn	Dam
261	DALLAS MTA, LP	21550 RR 12		Communication
262	CROWN CASTLE GT COMPANY, LLC	19700 RANCH ROAD 12		Communication
263	NEW CINGULAR WIRELESS PCS, LLC	3MI SOUTH OF HIGHWAY 290 WEST		Communication
264	SPECTRASITE COMMUNICATIONS, LLC THROUGH AMERICAN TOWERS, LLC.	6830 RANCH ROAD 12 (FM 12 309149)		Communication
265	SPECTRASITE COMMUNICATIONS, LLC THROUGH AMERICAN TOWERS, LLC.	21500 RANCH RD. 12 (DRIFTWOOD 309202)		Communication
266	Henly Volunteer Fire Department Station 3	7520 Creek Road		Fire
267	STC FIVE, LLC	7501 HWY. 290 WEST		Communication
268	DALLAS MTA, LP	310 OLD PARK ROAD		Communication
269	AMERICAN TOWERS, LLC	OFF OF HWY 12/CR 183 (LONE MAN MOUNTAIN 89172)		Communication
270	SPECTRASITE COMMUNICATIONS, LLC THROUGH AMERICAN TOWERS, LLC.	8500 FM 3257 (HAYS CITY 309968)		Communication
271	AMERICAN TOWERS, LLC	5501 W. HWY 290 (BTF 192/PRYOR 92088)		Communication
272	AUSTIN, CITY OF	220-B LAKESHORE DRIVE		Communication
273	Wimberley Volunteer Fire Department Rolling Oaks Station	103 Limestone Lane	Wimberley	Fire
274	LOWER COLORADO RIVER AUTHORITY - Rutherford Repeater - Transport Hub	10300 FM 967		Communication
275	DALLAS MTA, LP	6323B FM 967		Communication
276	North Hays County Volunteer Fire Department North Station	16716 Fitzhugh Road		Fire
277	T-MOBILE WEST CORPORATION	16714-B FITZHUGH ROAD (AU01432D)		Communication
278	NEW CINGULAR WIRELESS PCS, LLC - West Hays Radio - LMR Coverage	6930 RR 2325		Communication
279	Jacobs Well Elementary	3470 RM 2325		School
280	SBA MONARCH TOWERS II, LLC	501 JACOBS WELL ROAD		Communication
281	Lake Laurel Dam	TR-CYPRESS CREEK		Dam
282	River Oaks Ranch Dam	FITZHUGH CREEK		Dam
283	Pierce Lake Dam	TR-BLANCO RIVER		Dam
284	Solar Bliss Dam	UNNAMMED TRIB. OF HAMILTON CREEK		Dam
285	Reeves Lake Dam	MILLSEAT BRANCH		Dam
286	Purola Lake Dam	TR-PEDERNALES RIVER		Dam
287	Clear Lake Dam	PINOAK CREEK		Dam
288	Seven H Ranch Lake Dam	TR-WANSLOW CREEK		Dam

289	Mcalister Ranch Dam No 4	ONION CREEK		Dam
290				Communication
291	Doral Academy			School
292				Assisted Living
293	Strahan Arena - Texas State University	106 Charles Austin Dr, San Marcos, TX 78666	San Marcos	University Building
294	Bobcat Ballpark - Texas State University	349 Charles Austin Dr, San Marcos, TX 78666	San Marcos	University Building
295	Bobcat Track and Field Stadium - Texas State University	1100 Aquarena Springs Dr, San Marcos, TX 78666	San Marcos	University Building
296	Jim Wacker Field - Texas State University	1100 Aquarena Springs Dr, San Marcos, TX 78666	San Marcos	University Building
	Bobcat Village Apartments - Texas State University	1301 Aquarena Springs Dr, San Marcos, TX 78666	San Marcos	Student Housing
	Meadows Center for Water and the Environment – Texas State University	211 San Marcos Springs Dr, San Marcos, TX 78666	San Marcos	University Building

APPENDIX E: MEETING DOCUMENTATION

Public Outreach Meeting Notice

Hays County Multi-jurisdictional

Hazard Mitigation Plan

Hays County, along with the Cities of Dripping Springs, Wimberly, Kyle, Buda, Mountain City, Niederwalk, Woodcreek, and the Village of Bear Creek, will be offering two open house meetings to solicit public input on the updated Hazard Mitigation Plan. No reservations are needed to attend.

The first meeting will be held in Kyle at City Hall on Wednesday, January 24, 2024, from 6 pm to 8 pm. The address is 100 W. Center St., Kyle, TX 78640.

The second meeting will be held in Dripping Springs at City Hall on Thursday, January 25, 2024, from 6 pm to 8 pm. The address is 511 Mercer St., Dripping Springs, TX 78620.

The Hazard Mitigation Plan is a comprehensive document for communities to engage in effective planning that can reduce long-term risks to life and property from natural hazards, such as floods, droughts, hurricanes, tornados, winter storms, and wildfires. The Hays County updated plan has been in development for approximately one year, and public input must take place at this time to complete the plan.

Once the 2024 plan is complete, it will be reviewed by the Texas Department of Emergency Management and then by FEMA. Once FEMA approval is given, the plan will be accepted by resolution in each participating jurisdiction, and they will be eligible to apply for FEMA hazard mitigation grant funding.

Hays County Multi-jurisdictional Hazard Mitigation Plan Update
Core Meeting #1 – Kickoff Meeting
April 24, 2023
10:00 – 11:30 am

Agenda

- Introductions
- Overview of the Hazard Mitigation Planning Process
- Hazards review from the prior plan
- Review of goals from the prior plan
- Community Capabilities Worksheet
- Actions completed from the prior plan
- Next Steps
- Adjourn

Hays County Hazard Mitigatin Plan Update
Hazard Ranking Worksheet

Jurisdiction:

Please rank the hazards based on perceived level of risk, frequency of occurrence, and potential impact. (1) highest - (13) lowest	Hazard	Description
	Drought	A deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people.
	Flood	Flooding is a general or temporary condition of partial or complete inundation of water, usually floodplains. The floodplain is an area of land susceptible to being inundated by floodwater from any source.
	Extreme Heat	Extreme Heat is a condition when temperatures hover above local excessive heat criteria combined with high humidity levels.
	Hailstorm	Hail is showery precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter.
	Hurricanes, Tropical Storms, and Depressions	A hurricane is a large rotating storm with high-speed winds that forms over warm waters in tropical areas. Hurricanes have sustained winds of at least 74 miles per hour and an area of low air pressure in the center called the eye. Hurricanes, tropical storms, and depressions are associated with heavy rainfall and inland flooding, storm surge, and high winds.
	Lightning	These are sudden charges of electricity that develop from storms or excessive heat.
	Severe Winter Storms	A condition when temperatures hover below freezing and can include ice, snow, and sleet.
	Tornado	A tornado is a narrow, violently rotating column of air that extends from the base of a thunderstorm to the ground.
	Windstorms	Severe wind storms can occur alone, or when accompanied by severe thunderstorms. Flying debris can cause major damage to utilities, infrastructure, and property.
	Earthquake	Any sudden shaking of the ground caused by the passage of seismic waves through Earth's rocks. Seismic waves are produced when some form of energy stored in Earth's crust is suddenly released, usually when masses of rock straining against one another suddenly fracture and "slip."
	Expansive Soils	Expansive Soils expand when water is added that shrink when they dry out. This movement can cause homes, buildings, parking lots, driveways, and roads to move unevenly and crack.
	Wildfire	Wildfires are an unplanned, unwanted fire burning in a natural area, like a forest, grassland, or prairie. Buildings and human development that are susceptible for wildfires are considered the wildland urban interface.
	Dam Failure	Dam Failure can occur with little warning from intense storms, flash flooding, or engineering failures. 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.

4/24/2023

HAYS COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE

Jurisdictional Sub-Team Meeting #1

Including City of Buda, City of Dripping Springs, City of Hays, City of Kyle, City of Mountain City, City of Niederwald, City of Uhland, City of Wimberley, City of Woodcreek, Dripping Springs ISD, Hays CISD, San Marcos CISD, Texas State University, Village of Bear Creek, and Wimberley ISD.

Hays County Office of Emergency Services Main Conference Room, 810 S. Stagecoach Trail

Wednesday, September 13, 2023, 10:00am - 11:30am

Today's Agenda

- Attendance Noted
  - Document sub-jurisdictional teams with name, title, participating jurisdiction, and contact info for each team member.
- Create an Outreach Strategy
  - Meetings (Project Schedule)
    - 2 Jurisdictional Sub-Team Meetings
    - 2 Public Hearings
  - Discussion of On-line/Paper Citizen Survey
    - Review of draft questions by team members.
    - Who needs to be part of this discussion that isn't?
    - How do we reach vulnerable populations?
  - Other outreach methods: social media, website options, newspaper etc.
  - Review and document stakeholder engagement. Who did we talk to or who do we still need to talk to?
- Review prior plans and capabilities and update
  - Review of plans, policies, codes and ordinances that have been developed or updated since the last hazard mitigation plan.
    - How will these be incorporated into this plan update based on how they relate to hazard mitigation?
    - Look at plan and update.
- Review and Discussion of the Base Maps
  - Did we identify all critical facilities, infrastructure, and at-risk populations?
  - Where are the growth areas in each community?
  - Are facilities unique to ISDs and utility districts accurately represented on the map?

Use this worksheet to identify partner organizations to invite to participate on the planning team. Some organizations do not need to be involved in every decision of the planning process but are stakeholders that require outreach and involvement during the planning process. Revise the list of general partners below to reflect the organizations in your community. Mark which organizations will be invited to participate on the planning team and which will be involved through stakeholder outreach activities.

Planning Team – The core group responsible for making decisions, guiding the planning process, and agreeing upon the final contents of the plan

Stakeholders – Individuals or groups that affect or can be affected by a mitigation action or policy

Partner Organization	Planning Team	Stakeholder	Notes
Local Agencies			
Building Code Enforcement			
City Management/County Administration			
Emergency Management			
Fire Department/District			
Floodplain Administration			
Geographic Information Systems			
Parks and Recreation			
Planning/Community Development			
Public Works			
Stormwater Management			
Transportation (Roads and Bridges)			
City Council/Board of Commissioners			
Planning Commission			
Planning/Community Development			
Regional/Metropolitan Planning Organization(s)			
City/County Attorney's Office			
Economic Development Agency			
Local Emergency Planning Committee			
Police/Sheriff's Department			
Sanitation Department			
Tax Assessor's Office			
Special Districts and Authorities			
Airport, Seaport Authorities			
Fire Control District			
Flood Control District			
School District(s)			
Transit Authority			
Utility Districts			

Hays County Hazard Mitigation Plan Update 2024
CORE Team Meeting #2
April 10, 2024/10:00 a.m.
Office of Emergency Services, 810 S. Stagecoach Trl.
San Marcos, TX 78666

PURPOSE: To develop appropriate hazard mitigation actions, we will provide shared experience, capability, and problem discussion related to known natural hazards, drawing on expertise and observation.

- Attendance Noted

- Review/Discuss Need for Public Input
  - Online citizen survey results
  - Public input from open house
  - Public comment prior to Plan submission

- Hazard Risk Assessment
  - Review materials and risk assessments provided
  - Note any data gaps – places where we need more information
  - Synthesis/Major observations

- Mitigation Actions
  - Review past mitigation actions and progress
  - Review mitigation action goals
  - Discuss mitigation action worksheets

- Other items

Thank you for Coming

Please Sign In

HAYS CO. - SUB-J. #1,
SEPTEMBER 12, 2023/1:30 PM
OFC. OF EMERGENCY SVC.
810 S. STAGECOACH TRL.

Name	Representing	Email	Phone
Simone Corprew	Hays County	simone.corprew@co.hays.tx.us	512 749 1161
Will Baumann	Hays OES GIS	will.baumann@co.hays.tx.us	817 584 7455
Ashton Perin	Hays County	ashton.perin@co.hays.tx.us	830 765 9113
Blake Neffendorf	City of Buda	bneffendorf@budatx.gov	512-523-1079
Alex Fernandez	City of Buda	Afernandez@budatx.gov	737-233-6008
Laurie Taylor	Hays Co OES	LaurieTaylor@co.hays.tx.us	512938-2114
Clay Huckaby	Buda Fire & EMS / Hays Co. ESD8	chuckaby@budafire.org	512-295-2232
Rob Fitch	San Marcos	rfitch@sanmarcostx.gov	512-618-6830
Cynthia McCall	City of Hays	cmccall@cityofhays.org	~~903-316-9088~~ 512-295-4792
Sirenna Cumberland	Dripping Springs ISD	sirenna.cumberland@dsisdtx.us	(512) 738-0783
Roz Simmons	WISD	roz.simmons@wimberleyisd.net	512 585 0811
Al Brushwood	Village of Bear Creek	ALBRUSHWOOD@gmail.com	979-864-9618
Candy Lopie	Hays OES	candy.lopie@co.hays.tx.us	[illegible] 512-393-[illegible]
James Frye	TXST University	jf32@txstate.edu	512 245 4129
Mackenzie Pfahl	TXST University	m_m760@txstate.edu	512-245-3616
Mike Jones	HOES	mike.jones@co.hays.tx.us	512 618 0302
Craig Rice	City of Dripping Springs	CRice@cityofdrippingsprings.com	512 858 4725
Dillon Polk	North Hays County Fire/Rescue	dpolk@northhaysfire.com	512-781-8172
Justin Rucker	Kyle Fire Department	jrucker@kylefire.com	737-265-9773
Will PT	City of Kyle	wpaiztabash@cityofkyle.com	
THOMAS N. TURK, P.E.	CITY OF UHLAND	TTURK@FREELANDTURK.COM	830-322-6208

Will Paiz-Tabash, EMC, 737-248-6724
wpaiztabash@cityofkyle.com

Thank you for Coming

Please Sign In

HAYS CO. - PUBLIC MTG.1
JANUARY 24, 2024
CITY OF KYLE, CITY HALL
KYLE, TX 78640

Name	Representing	Email	Phone
Yvonne Lee Harris	City Council, Kyle	central50@msn.com	817-705-7101
Jane Hughson	City of San Marcos - Mayor	jhughson@sanmarcostx.gov	512 393 8085
Alyssa Ramirez		ALYSSARENEEMPH@gmail.com	832-514-4413
Mike Jones	HAY OES	mike.jones@co.hays.tx.us	512 618 0302
Alex Villalobos	Hays County Chief of Staff	Alex.Villalobos@co.hays.tx.us	512-787-5194
Andy Way	KXAN	andrew.way@kxan.com	512-589-0705
Jerry Hendrix	City of Kyle	jhendrix@cityofkyle.com	512-694-3974
Will Paiz-Tabash	City of Kyle	wpaiz-tabash@cityofkyle.com	737-248-6724

Hays County Office of Emergency Services
810 S. Stagecoach Trail STE #1200
San Marcos, TX 78666

MEETING SIGN-IN SHEET Sub-J Meeting

Project:	Hazard Mitigation Plan	Meeting Date:	9/13/2023, 10am
Facilitator:	Langford	Room:	EOC

Name	Title	Company	Phone	E-Mail
Cody Feagan	Sgt.	Constable Pct 5	512-695-3030	cody.feagan@co.hays.tx.us
John Ellen	Constable	Constable Pct 5	512-295-3030	john.ellen@co.hays.tx.us
Don Montague	Constable	Pct 3	512-971-1014	don.montague@co.hays.tx.us
Taylor Holliday	CLO	TDEM	737-303-2284	Taylor.holliday@tdem.texas.gov
Mike Jones	Director	HOES	512-680-3002	Mike.Jones@co.hays.tx.us
Ashton Perna	Grants	CWOP	8307655627	ashton.perna@co.hays.tx.us
Will Baumann	GIS Specialist	HCOES	8175817455	will.baumann@co.hays.tx.us
Gabe Rojas	Consultant	Rojas Planning	5124684995	grcity@gmail.com
Simone Corprew	Grant writer	Hays Co	512 749 1101	simone.corprew@co.hays.tx.us
[illegible] Norris	Engineer			
T.J. Bowden	Asst. Dir	Hays	2147070652	thomas.bowden@co.hays.tx.us
Cody Lorie	Spec Ops Coord.	Hays OES	512-781-2088	Cody.lorie@co.hays.tx.us
Laurie Taylor	Planner	Hays OES	512-938-2114	laurie.taylor@co.hays.tx.us
Todd Riffe	Lt	Hays SO	512-393-7786	triffe@co.hays.tx.us

Thank you for Coming

Please Sign In

HAYS CO. Core Team #2
April 10, 2024/10a-12 noon
OFC. OF EMERGENCY SVC.
810 S. STAGECOACH TRL.

Name	Representing	Email	Phone
Clay Huckaby	Buda Fire • EMS	chuckaby@budafire.org	512-513-3112
Kyle Taylor	Kyle FD	ktaylor@kylefire.com	512-657-0238
Taylor Holliday	TDEM	Taylor.Holliday@dem.texas.gov	737-303-2284
Laurie Taylor	HCOES	LaurieTaylor@co.hays.tx.us	512 938-2114
Steve Sedig	Hay CO Fire Marshal	Steve.Sedig@co.Hays.Tx.us	(512) 395-7323
Mike Jones	HCOES	mike.Jones@co.hays.tx.us	512 668 0302

Thank you for Coming

Please Sign In

HAYS CO. - PUBLIC MTG.2
JANUARY 25, 2024
DRIPPING SPRINGS, CITY HALL

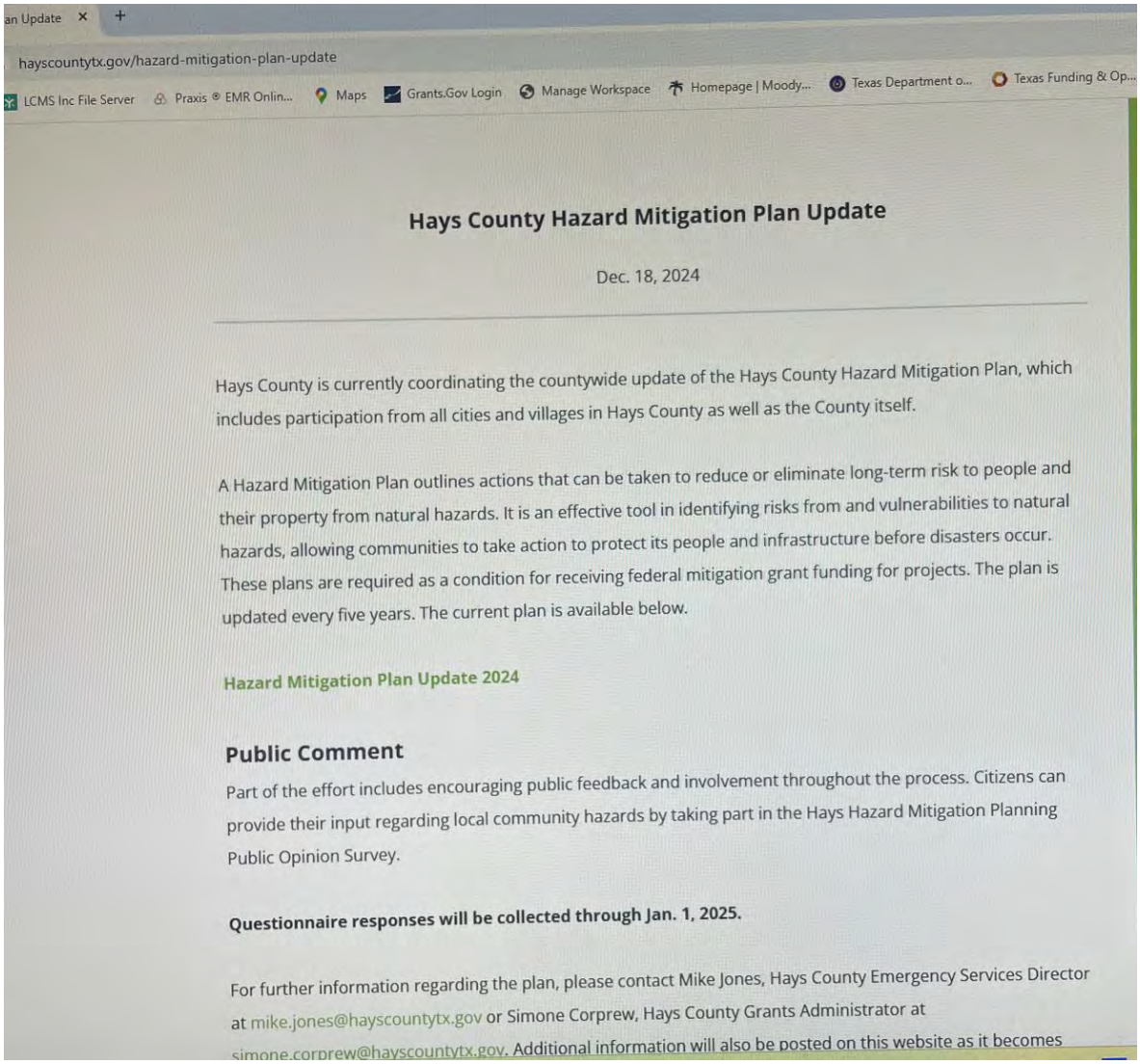
Name	Representing	Email	Phone
Sirenna Cumberland		Sirenna.cumberland@dsisd.tx.us	(512) 738-0723
MIM JAMES	D. S. PLNG & ZONING		
TAMARIE WILLIAMSON	D.S. PLANNING & ZONING		512-768-0129
Eugene Foster	"	fosters.fay@gmail.com	512 [illegible] 2066
Sherrie Parks	DS City Council	Sparks@cityofdrippingsprings.com	972.698.5744
[illegible]	[illegible]	[illegible]	512 [illegible] 1005
Roman Salgado	City of Dripping Springs		(701) 737-9584
Ray Sanchez	City of Dripping Springs	rsanchez@cityofdrippingsprings.com	7706887067
Mike Jones	HCOES	Mike.Jones@co.hays.tx.us	512 668 0302
Roz Simmons	WISD	roz.simmons@wimberleyisd.net	512 585 0811

Thank you for Coming

Please Sign In

HAYS CO. - CORE MTG. #1,
APRIL 14, 2023/10:00 AM
OFC. OF EMERGENCY SVC.
810 S. STAGECOACH TRL.

Name	Representing	Email	Phone
Mike Jones	HCOES	Mike.Jones@co.hays.tx.us	512 618 0302
Simone Corprew	Hays County	simone.corprew@co.hays.tx.us	512 749 1161
Ashton Pecina	Hays County	ashton.pecina@co.hays.tx.us	970 215 9623
Laurie Taylor	Hays County OES	Laurie.taylor@co.hays.tx.us	512-938-2114
Taylor Holliday	TDEM	Taylor.Holliday@tdem.texas.gov	737-303-2284
Roz Simmons	WISD	roz.simmons@[illegible]	512 585 0811
Cody Feagan	Hays County Constable 5	Cody.Feagan@co.hays.tx.us	512-210-4137
Sienna Cumberland	Dripping Springs ISD	sienna.cumberland@dsisdtx.us	
Kathy Roecker for [illegible]	City of Kyle	kroecker@cityofkyle.com	~~[illegible]~~ 512-618-82[illegible]
Allen Brushwood	Village of Bear Creek	[illegible]	979 864 8618
Stan Standridge	San Marcos PD	sstandridge@sanmarcostx.gov	512-753-2100
Debbie Ingalsbe	Hays County	debbie[illegible]@co.hays.tx.us	512-393-2241
Wendy McCoy	Texas State Uni	wendy.mccoy@txstate.edu	512-245-3616
[illegible]	TXST	[illegible]	830 [illegible]
[illegible]	Hays Co. Constable	[illegible]	512 [illegible]
T. S. Brander	Hays OES	[illegible]@co.hays.tx.us	[illegible]-707-0852
Dillon Polk	North Hays County Fire/Rescue	dpolk@northhaysfire.com	512-781-8122
Kristen Jones	HCOES	Kristen.Jones@co.hays.tx.us	512-393-7339
Alex Villalobos	Hays County	Alex.Villalobos	512-787-5784
Todd Riffe	HCSO	triffe@co.hays.tx.us	512-393-7786
Micah Grau	C of Buda	micah.grau@budatx.gov	512-523-1074
Wendy L Smith	City of Buda	wendy.smith@budatx.gov	
Alex Fernandez	City of Buda	AFernandez@budatx.gov	512-~~[illegible]~~ 523-1045
Daniel C. Law	Pct. 1 Constables office	daniel.law@co.hays.tx.us	512-618-8698


an Update
hayscountytx.gov/hazard-mitigation-plan-update
LCMS Inc File Server
Praxis ® EMR Onlin...
Maps
Grants.Gov Login
Manage Workspace
Homepage | Moody...
Texas Department o...
Texas Funding & Op...
Hays County Hazard Mitigation Plan Update
Dec. 18, 2024
Hays County is currently coordinating the countywide update of the Hays County Hazard Mitigation Plan, which includes participation from all cities and villages in Hays County as well as the County itself.
A Hazard Mitigation Plan outlines actions that can be taken to reduce or eliminate long-term risk to people and their property from natural hazards. It is an effective tool in identifying risks from and vulnerabilities to natural hazards, allowing communities to take action to protect its people and infrastructure before disasters occur. These plans are required as a condition for receiving federal mitigation grant funding for projects. The plan is updated every five years. The current plan is available below.
Hazard Mitigation Plan Update 2024
Public Comment
Part of the effort includes encouraging public feedback and involvement throughout the process. Citizens can provide their input regarding local community hazards by taking part in the Hays Hazard Mitigation Planning Public Opinion Survey.
Questionnaire responses will be collected through Jan. 1, 2025.
For further information regarding the plan, please contact Mike Jones, Hays County Emergency Services Director at mike.jones@hayscountytx.gov or Simone Corprew, Hays County Grants Administrator at simone.corprew@hayscountytx.gov. Additional information will also be posted on this website as it becomes

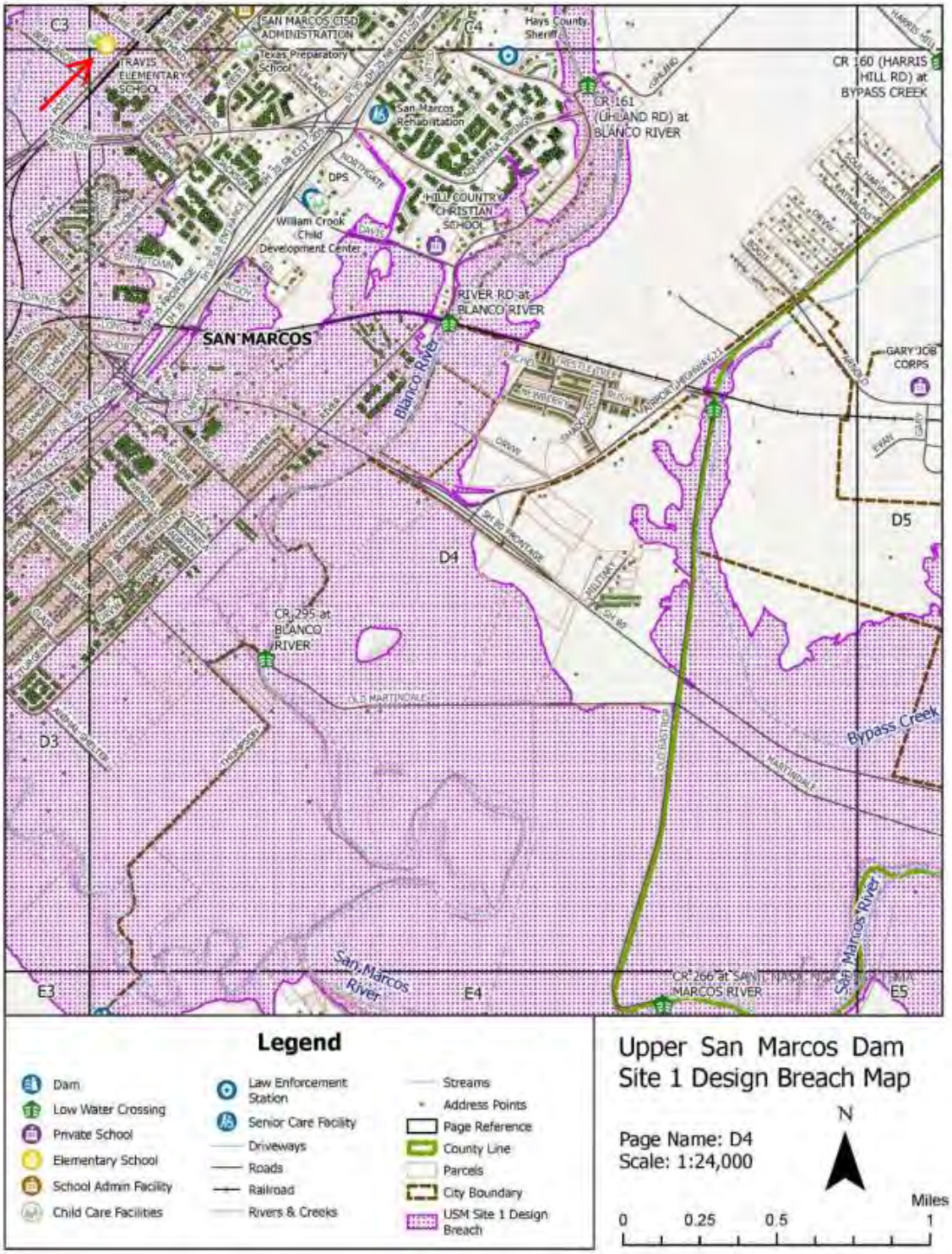
APPENDIX F: ADOPTION RESOLUTION

APPENDIX G: UPPER SAN MARCOS ACTION PLAN DAM BREACH MAPS (CONFIDENTIAL)

This section contains **Dam Breach Inundation Maps** that are considered sensitive and **confidential** under applicable federal and state security guidelines. Distribution is restricted to authorized personnel only. Unauthorized disclosure, duplication, or dissemination of this information is strictly prohibited.

Access to this information is governed by applicable regulations and is intended solely for official use in emergency planning, response, and infrastructure protection.

San Marcos Consolidated ISD
Affected Facility - Travis Elementary School



Texas State University Impacts:
Affected Facilities - Department of Theater and Dance, Performing Arts Center, Butler Hall, J.C. Kellam Administration Building, East Chill Plant, EARDC Laboratory, Live Oak Hall, Tennis Center, Bobcat Tennis Complex, Spring Lake Hall, Meadows Center for Water and the Environment, Jowers Center, Strahan Arena, Bobcat Ballpark, Bobcat Stadium, Bobcat Track and Field Stadium, Bobcat Village Apartments.