2021

Palo Pinto County Hazard Mitigation Action Plan




North Central Texas Council of Governments

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Executive Summary

We cannot control when or where a tornado or other natural hazard will strike, but we can save lives and reduce property damage by understanding the risks and taking action to address those risks. In the process, we can increase resilience in our community, environment, and economy. Participating jurisdictions in the Palo Pinto County Hazard Mitigation Action Plan (HazMAP) are dedicated to the protection of local citizens and their property, and to the improvement of the quality of life for all residents.

Mitigation has been defined as "sustained action to reduce or eliminate long-term risk to human life and property from natural, human-caused, and technological hazards."[1] It is fundamentally a loss-prevention function characterized by planned, long-term alteration of the built environment to ensure resilience against natural and human-caused hazards. This loss-prevention function has been illustrated by the Multi-Hazard Mitigation Council study of the Federal Emergency Management Agency (FEMA) mitigation projects, which shows that for every dollar invested in mitigation, six dollars of disaster losses were avoided.[2]

Mitigation should form the foundation of every emergency management agency's plans and procedures. Emergency management agencies should adopt mitigation practices to reduce, minimize, or eliminate hazards in their community. The Palo Pinto County Hazard Mitigation Action Plan identifies the hazards faced by participating jurisdictions, vulnerabilities to these hazards, and mitigation strategies for the future. The plan fulfills the requirements of the Federal Disaster Mitigation Act as administered by the Texas Division of Emergency Management (TDEM) and the Federal Emergency Management Agency (FEMA).

This plan is not legally binding but, instead, is a tool for the jurisdictions to use to become more resilient to natural hazards. Mitigation actions will be implemented as capabilities and funding allow.

[1] State of Texas Mitigation Handbook, page 1-1.
[2] Natural Hazard Mitigation Saves: 2017 Interim Report, page 1.

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Acronyms

EMC- Emergency Management Coordinator

EOC- Emergency Operations Center

FEMA- Federal Emergency Management Agency

HazMAP- Hazard Mitigation Action Plan

HMPT- Hazard Mitigation Planning Team

LPT- Local Planning Team

N/A- Not Applicable

NCEI- National Centers for Environmental Information

NCTCOG- North Central Texas Council of Governments

NFIP- National Flood Insurance Program

NFPA- National Fire Protection Association

NWS- National Weather Service

OWS- Outdoor Warning Siren

RLP- Repetitive Loss Properties

SRLP- Severe Repetitive Loss Properties

TDEM- Texas Division of Emergency Management

TFS- Texas A&M Forest Service

TPW- Texas Parks & Wildlife Department

TxDOT- Texas Department of Transportation

UTA- University of Texas at Arlington

WUI- Wildland-Urban Interface

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Contents

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Chapter 1: Introduction

1.1 Overview

The Palo Pinto County Hazard Mitigation Action Plan (HazMAP) as written fulfills the requirements of the Disaster Mitigation Act of 2000 (DMA 2000), which is administered by the Federal Emergency Management Agency (FEMA). The Disaster Mitigation Act provides federal assistance to state and local emergency management entities to mitigate the effects of disasters. The HazMAP also encourages cooperation among various organizations across political subdivisions.

This HazMAP is an update of the 2015 FEMA-approved HazMAP. The title was changed from the Local Mitigation Action Plan to Hazard Mitigation Action Plan to clearly specify the intent of the document. With each update, new challenges are identified, new strategies proposed, and when incorporated, the updated plan grows in complexity, but not necessarily in utility.

This HazMAP is the result of two years of study, data collection, analysis, and community feedback. Representatives and citizens from participating jurisdictions attended public meetings to discuss the hazards their communities face and the vulnerabilities those hazards present.

All participants involved in this plan understand the benefits of developing and implementing mitigation plans and strategies. Elected officials, public safety organizations, planners, and many others have worked together to develop and implement this HazMAP, displaying that they have the vision to implement mitigation practices and therefore reduce the loss of life and property in their communities.

Information was collected up to 2018.

1.2 Authority

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended by the Disaster Mitigation Act of 2000, provides the legal basis for state, tribal, and local governments to undertake risk-based approaches to reducing natural hazard risks through mitigation planning. Specifically, the Stafford Act requires state, tribal, and local governments to develop and adopt FEMA-approved hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance.

The Stafford Act authorizes the following grant programs:

- Hazard Mitigation Grant Program (HMGP), which helps communities implement hazard mitigation measures following a Presidential major disaster declaration. This program also funds development and update of hazard mitigation plans.
- Pre-Disaster Mitigation Grant Program (PDM), which awards planning and project grants to assist states, territories, federally-recognized tribes, and local communities in implementing sustained pre-disaster natural hazard mitigation programs. Such efforts may include development or update of hazard mitigation plans.
- Public Assistance Grant Program (PA), which provides assistance to state, tribal, and local governments, and certain types of private nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President.

- Fire Management Assistance Grant Program (FMAG), which provides assistance to state, tribal, and local governments for the mitigation, management, and control of fires on publicly or privately-owned forests or grasslands that threaten such destruction as would constitute a major disaster.

Title 44, Chapter 1, Part 201 (44 CFR Part 201) of the Code of Federal Regulations (CFR) contains requirements and procedures to implement the hazard mitigation planning provisions of the Stafford Act.

The purpose of the Stafford Act, as amended by the Disaster Mitigation Act of 2000, is "to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural disasters." Chapter 322 of the act specifically addresses mitigation planning and requires state and local governments to prepare multi-hazard mitigation plans as a precondition for receiving FEMA mitigation grants.

This Palo Pinto County Hazard Mitigation Action Plan was developed by the Palo Pinto County Hazard Mitigation Planning Team (HMPT) under the direction and guidance of the North Central Texas Council of Governments (NCTCOG) Emergency Preparedness Department. The plan represents collective efforts of citizens, elected and appointed government officials, business leaders, non-profit organizations, and other stakeholders. This plan, and updating the plan, and timely future updates of this plan, will allow Palo Pinto County and participating jurisdictions to comply with the Disaster Mitigation Act of 2000 and its implementation regulations, 44 CFR Part 201.6, thus resulting in eligibility to apply for federal aid for technical assistance and post-disaster hazard mitigation project funding. The update will also prioritize potential risks and vulnerabilities in an effort to minimize the effects of disasters in the participating communities.

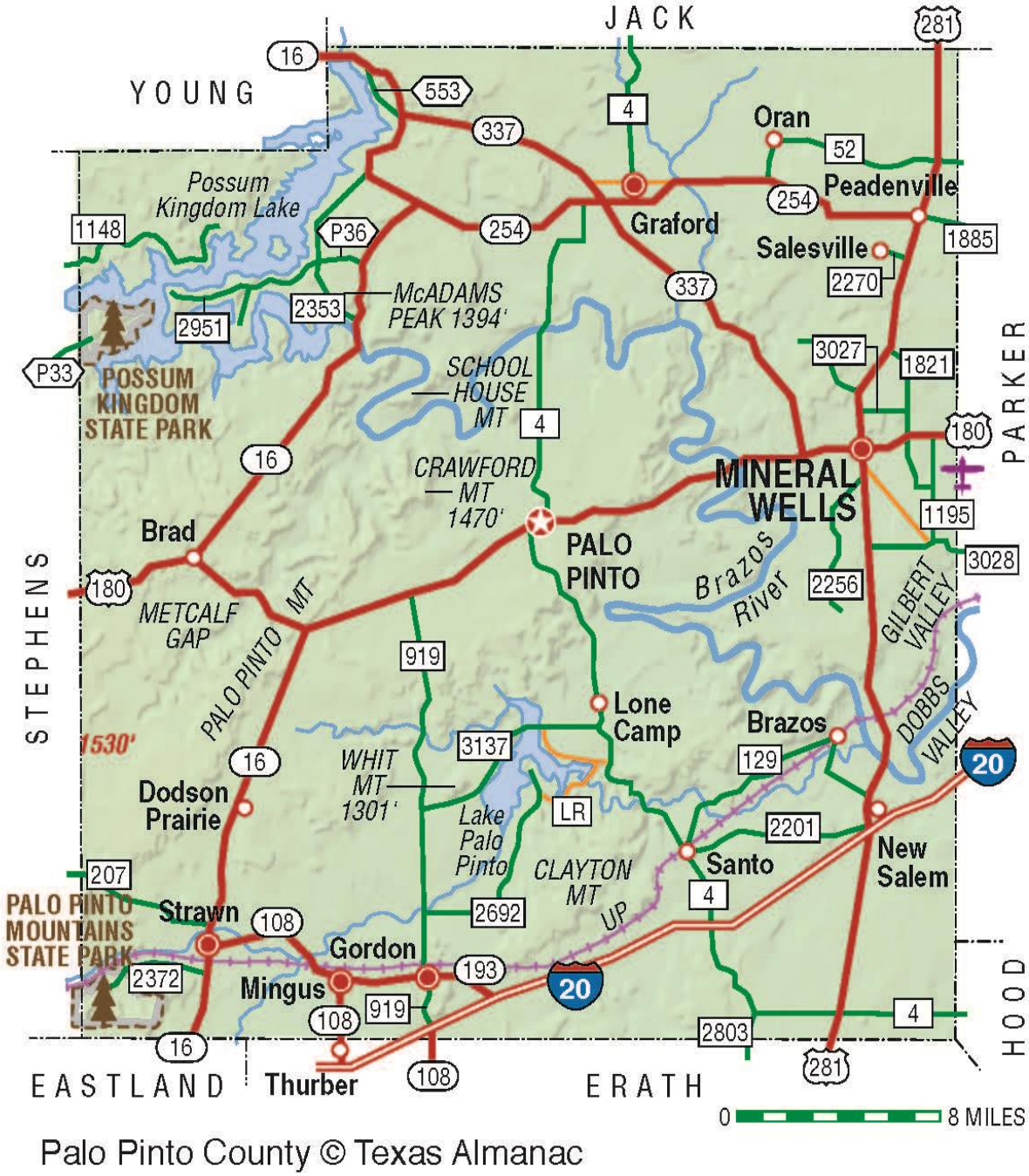
1.3 Scope

The scope of the Palo Pinto County HazMAP encompasses all participating entities in Palo Pinto County. This plan identifies natural and, for some jurisdictions, technological hazards that could threaten life and property in the communities. Assessing technological hazards is not a requirement for this hazard mitigation action plan but select jurisdictions have included these hazards in this plan. The scope of this plan includes both short and long-term mitigation strategies, implementation, strategies, and possible sources of project funding to mitigate identified hazards.

The planning area for this plan is for Palo Pinto County, Texas (marked in red on the Texas map) and includes the following jurisdictions:

- City of Gordon*
- City of Mineral Wells
- City of Mingus*
- City of Strawn*
- Palo Pinto County Unincorporated

**Jurisdictions that did not participate in the 2015 Palo Pinto County HazMAP.*



Source: [Texas State Historical Association]

1.4 Purpose

This HazMAP is intended to enhance and complement federal and state recommendations for the mitigation of natural and technological hazards in the following ways:

- Substantially reduce the risk of loss of life, injuries, and hardship from the destruction of natural and technological disasters.
- Improve public awareness of the need for individual preparedness and building safer, more disaster resilient communities.
- Develop strategies for long-term community sustainability during community disasters.
- Develop governmental and business continuity plans that will continue essential private sector and governmental operations during disasters.

Palo Pinto County is susceptible to a number of different natural hazards that have potential to cause property loss, loss of life, economic hardship, and threats to public health and safety. Occurrence of natural disasters cannot be prevented; however, their impact on people and property can be lessened through hazard mitigation measures.

Mitigation planning is imperative to lessen the impact of disasters in Palo Pinto County. This plan is an excellent method by which to organize Palo Pinto County's mitigation strategies. The implementation of the plan and its components is vital to preparing a community that is resilient to the effects of a disaster. The implementation of this HazMAP can reduce loss of life and property and allow the participating communities to operate with minimal disruption of vital services to citizens. This HazMAP provides a risk assessment of the hazards Palo Pinto County is exposed to and puts forth several mitigation goals and objectives that are based on that risk assessment.

1.5 Mitigation Goals

The goals of the participants' mitigation strategy are to protect life and reduce bodily harm from natural hazards, and to lessen the impacts of natural hazards on property and the community through hazard mitigation. These goals are the basis of this plan and summarize what the Palo Pinto County Hazard Mitigation Planning Team will accomplish by implementing this plan.

1.6 Plan Organization

This Palo Pinto County HazMAP is organized into five chapters which satisfy the mitigation requirements in 44 CFR Part 201.6, with four appendices providing the required supporting documentation.

Chapter 1: Introduction

Describes the purpose of the Palo Pinto County Hazard Mitigation Action Plan and introduces the mitigation planning process.

Chapter 2: Planning Process

Describes the planning process and organization for each participating jurisdiction, satisfying requirements 201.6(c)(1), 201.6(b)(2), 201.6(b)(1), 201.6(b)(3), 201.6(c)(4)(i), 201.6(c)(4)(ii), and 201.6(c)(4)(iii).

Chapter 3: Hazard Identification and Risk Assessment

Describes the hazards identified, location of hazards, previous events, and jurisdictional profiles, satisfying requirements 201.6(c)(2)(i) and 201.6(c)(2)(ii).

Chapter 4: Mitigation Strategy

Reflects on the mitigation actions previously identified and examines the ability of Palo Pinto County and participating jurisdictions to implement and manage a comprehensive mitigation strategy, satisfying requirements 201.6(c)(1), 201.6(c)(3)(i), 201.6(c)(3)(ii), 201.6(c)(3)(iii), 201.6(c)(3)(iv), 201.6(c)(4)(ii), and 201.6(b)(3).

Chapter 5: Conclusion

Appendix A: Maps & Tables

Appendix B: Capabilities Assessment

Appendix C: NCTCOG Programs

Appendix D: Public Documents

Appendix E: Local Planning Teams

1.7 Palo Pinto County Hazard Mitigation Strategy Maintenance Process

The Palo Pinto County Hazard Mitigation Planning Team, consisting of a representative from each participating jurisdiction, will continue to collaborate as a planning group in coordination with Palo Pinto County Office of Emergency Management. Primary contact will be through emails and conference calls, with strategy meetings to occur at least annually. The points of contact for the county and jurisdictions will jointly lead the plan maintenance and update process by:

- Assisting jurisdictional Local Planning Teams in updating their individual contributions to the county Hazard Mitigation Action Plan.
- Assisting interested Local Planning Teams that would like to begin their mitigation planning process.
- Facilitating Palo Pinto County HazMAP meetings and disseminating information.
- Collaborating on data collections and record keeping.
- Requesting updates and status reports on planning mechanisms.
- Requesting updates and status reports on mitigation action projects.
- Assisting jurisdictions with mitigation grants.
- Assisting jurisdictions with implementing mitigation goals and action projects.
- Providing mitigation training opportunities.
- Maintaining documentation of local adoption resolutions for the Palo Pinto County Hazard Mitigation Action Plan.

1.8 Palo Pinto County Hazard Mitigation Action Plan Adoption

Once the Palo Pinto County Hazard Mitigation Action Plan has received FEMA “Approved Pending Local Adoption” each participating jurisdiction will take the Palo Pinto County HazMAP to their Commissioners Court or city councils for final public comment and local adoption. A copy of the resolution will be inserted into the Palo Pinto County HazMAP and held on file at the North Central Texas Council of Governments.

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Chapter 2: Planning Process

Requirement	
§201.6(b)	An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:
§201.6(b)(1)	An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
§201.6(b)(2)	An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
§201.6(b)(3)	Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.
§201.6(c)(1)	[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.
§201.6(c)(4)(i)	[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle
§201.6(c)(4)(iii)	[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

2.1 Collaborative Process

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and city websites and social media pages.

Each participating jurisdiction gathered their information using a Local Planning Team (LTP), comprised of local staff that could contribute to development of this mitigation plan. The leaders of each of these LPT's comprised the Palo Pinto County Hazard Mitigation Planning Team (HMPT) and other relevant agencies. The HMPT met regularly with the North Central Texas Council of Governments in order to submit individual assessments and data into one multi-jurisdictional mitigation plan.

Stakeholders were invited to participate, via email, by participating jurisdictions.

The North Central Texas Council of Governments was responsible for plan facilitation and coordination with Palo Pinto County HMPT members and stakeholders throughout the process.

2.1.1 Points of Contacts

The following are members of the Palo Pinto County Hazard Mitigation Planning Team (HMPT). These HMPT members were also the point(s) of contact for their respective jurisdiction during this plan update.

Palo Pinto County HMPT Members

Jurisdiction	Job Title	Role in the HMPT
City of Gordon	City Secretary	Jurisdictional information and LPT Lead
City of Mineral Wells	Fire Chief	Jurisdictional information and LPT Lead
City of Mingus	City Secretary	Jurisdictional information and LPT Lead
City of Strawn	City Secretary	Jurisdictional information and LPT Lead
Palo Pinto County Unincorporated	Emergency Management Officer	Jurisdictional information and LPT Lead

Each HMPT member led a Local Planning Team (LPT) in their respective jurisdictions. The LPT members are listed in Appendix E.

2.1.2 Stakeholders

Stakeholders were invited to participate in the planning process, via email, and included local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, and neighboring communities.

Stakeholders

Organization Represented	Position
Tarrant County	Emergency Management Coordinator
Denton County	Emergency Management Coordinator
Wise County	Emergency Management Coordinator
Parker County	Emergency Management Coordinator
Hood County	Emergency Management Coordinator
Johnson County	Emergency Management Coordinator
U.S. Army Corps of Engineers	Director – Civil Works
Dams in Participating Jurisdictions	Owners
Independent School Districts of Participating Jurisdictions	Superintendents
Texas Department of Transportation	Emergency Operations
Utility Providers	Emergency Operations
Local Emergency Planning Committee	Emergency Management Coordinator
Texas Division of Emergency Management	District Coordinator, Field Response
Texas Division of Emergency Management	Hazard Mitigation Planner
State Fire Marshal's Office	District 6, Inspector

Organization Represented	Position
National Weather Service – Fort Worth	Warning & Coordination Meteorologist
NCTCOG's Emergency Preparedness Planning Council	Chair
NCTCOG's Regional Emergency Preparedness Advisory Council	Chair
Local City Councils	Local elected officials
Brazos River Authority	Project Manager

2.1.3 Public Involvement

NCTCOG hosted a public meeting on behalf of jurisdictions on August 8, 2019 at the Palo Pinto County Extension Office. The jurisdictions who used this opportunity to reach the public were in attendance and advertised the meeting within their jurisdiction.

The supporting documentation, advertisements, and details of this meeting and other meetings or outreach strategies are documented within Appendix D of this HazMAP. There were no public comments made during the meeting.

Public participation will remain an active component of this plan, even after adoption, to ensure citizens understand what the community is doing on their behalf, and to provide a chance for input on community vulnerabilities and mitigation activities that will inform the plan's content. Public involvement is also an opportunity to educate the public about hazards and risks in the community, types of activities to mitigate those risks, and how these activities impact them. Involvement will be sought in a multitude of ways, including but not limited to periodic presentations on the plan's progress to elected officials, schools, or other community groups; annual questionnaires or surveys; public meetings; and postings on social media and interactive websites.

2.2 Existing Data and Plans

Existing hazard mitigation information and other relevant Hazard Mitigation Action Plans were reviewed during the development of this plan. Data was gathered through numerous sources, including Geographic Information Systems (GIS). The intent of reviewing existing material was to identify existing data and information, shared objectives, and past and ongoing activities that can help inform the mitigation plan. It also helps identify the existing capabilities and planning mechanisms to implement the mitigation strategy. The table below outlines the sources used to collect data for the plan:

Data Source	Data Incorporation	Purpose
County appraisal data, census data, city land use data	Population and demographics	Population counts, parcel data, and land use data
National Centers for Environmental Information (NCEI)	Hazard occurrences	Previous event occurrences and mapping for hazards

Data Source	Data Incorporation	Purpose
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire threat and urban interface	Mapping and wildfire vulnerability
U.S. Army Corps of Engineers National Dam Inventory	Dam information	Dam list
Federal Emergency Management Agency (FEMA) Digital Flood Insurance Rate Map (DFIRM) Flood Zones, National Flood Insurance Program (NFIP) studies	Flood zone maps and NFIP information	GIS mapping of flood zones and NFIP data
October 2017 NFIP Flood Insurance Manual Change Package	NFIP Information	Repetitive Loss Properties and Community Rating System (CRS) ratings
State of Texas Hazard Mitigation Plan, 2013 and 2018 editions	Hazards and mitigation strategy	Support the goals of the state
2015 Palo Pinto County HazMAP	All Chapters	This is an update of that plan
Hazard Mitigation: Integrating Best Practices into Planning	Planning process	Use proven techniques in developing the HazMAP
Environmental Protection Agency (EPA) Superfund National Priority List	Protected sites	Risk assessment- identify critical areas
National Register of Historic Places	Historic districts	Risk assessment
Texas Parks & Wildlife List of Rare Species	Endangered or protected species	Risk assessment
Texas Water Development Board	Lake information	Vulnerabilities
U.S. Department of Agriculture	Soil type	Expansive Soils description

2.3 Timeframe

The planning process for the update of the Palo Pinto County Hazard Mitigation Action Plan was approximately two years. The table below is the timeline followed.

Activity	Time Period
Kickoff meeting	November, 2018
Created planning teams	November-December, 2018
Capabilities assessment	January-March 2019
Hazard identification & risk assessment	January-March 2019
Public outreach	July-August 2019
Mitigation strategy (goals & action items)	August-December 2019
Review HazMAP draft	January, 2020
Update plan as needed	February, 2020
Final draft review	March, 2020

Activity	Time Period
Send HazMAP to TDEM/make revisions as needed	To be determined
Send to FEMA/ make revisions as needed	To be determined
Adoption & signatures	Once “Approved Pending Adoption” designated received.

Activities were either led or monitored by the North Central Texas Council of Governments (NCTCOG) and public outreach strategies were conducted by the participating jurisdictions. The details of these activities are provided in the individual annexes of the jurisdictions.

2.4 Planning Meetings

During the planning process, the Hazard Mitigation Planning Team met to discuss relevant information from the jurisdiction and to review objectives and progress of the plan. The goals of these meetings were to gather information and to provide guidance for the jurisdictions throughout the planning stages.

The following meetings were hosted by the North Central Texas Council of Governments for the HazMAP participants and do not represent all the meetings that were conducted throughout the process by the Local Planning Teams.

Date	Meeting
November 14, 2018	HazMAP Kickoff Meeting
January 30, 2019	Hazard Identification, Risk Assessment, and Capabilities Assessment Conference Call
February 7, 2019	Hazard Identification, Risk Assessment, and Capabilities Assessment Conference Call
August 8, 2019	Public meeting and mitigation workshop

2.5 Plan Implementation

The Palo Pinto County Hazard Mitigation Action Planning process was overseen by the North Central Texas Council of Governments (NCTCOG). The plan was submitted to the Texas Division of Emergency Management (TDEM) and the Federal Emergency Management Agency (FEMA) for approval. It is expected that all participating jurisdictions will formally adopt the plan by resolution once the “Approved Pending Adoption” designation is received by FEMA, in accordance with the Disaster Mitigation Act of 2000.

Each jurisdiction participating in this plan is responsible for implementing specific mitigation actions as prescribed in the mitigation strategies. In each mitigation strategy, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the county-wide plan. The separate adoption of locally-specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process.

The Palo Pinto County Emergency Management Coordinator or their designee is the lead position for plan implementation and will work with the Palo Pinto County Hazard Mitigation Planning Team (HMPT) to ensure mitigation actions are implemented into jurisdictional planning procedures. Each participating jurisdiction will implement the plan and their individual mitigation actions in the timeframe appropriate for their planning processes. As necessary, the HMPT will seek outside funding sources to implement mitigation projects in both the pre-disaster and post-disaster environments. When applicable, potential funding sources have been identified for proposed actions listed in the mitigation strategies.

2.6 Multijurisdictional Strategy and Considerations

The Palo Pinto County Office of Emergency Management will lead activities for mitigation planning county-wide. Although The Palo Pinto County Office of Emergency Management will be responsible for maintaining this plan, including the documentation of in-progress and completed action items, each participating jurisdiction is responsible for reporting hazards, their costs, and a status report on mitigation actions to the North Central Texas Council of Governments (NCTCOG) for recording in the plan.

Each jurisdiction is responsible for completing mitigation activities by providing the capabilities and authorities needed to carry out activities. Participating jurisdictions completed an analysis of their current legal, staffing, and fiscal capabilities as they relate to hazard mitigation planning. Jurisdictional capabilities and authorities identified to ensure successful mitigation planning are located within the jurisdictional annexes.

2.7 Plan Evaluation

All members of the Palo Pinto County Hazard Mitigation Planning Team (HMPT) will be responsible for ensuring that the Palo Pinto County Hazard Mitigation Action Plan (HazMAP) is evaluated as required. Specifically, the Palo Pinto County Emergency Management Coordinator, or their designee, will convene the HMPT and ensure an evaluation is conducted in a thorough manner. This evaluation will include analysis of current mitigation projects, evaluation of success, reevaluation of future mitigation needs, and prioritization based upon changes in needs and/or capabilities of Palo Pinto County.

The HMPT will reconvene annually to ensure that projects are on track and to reevaluate the mitigation goals, objectives, and action items. The mitigation plan shall be viewed as an evolving, dynamic document.

2.8 Plan Update

The Disaster Mitigation Act of 2000 requires that the Palo Pinto County Hazard Mitigation Action Plan be updated at least once every five years. During this process, all chapters of the plan will be updated with current information, and analyses and new and/or modified mitigation actions will be developed. The revised plan will be submitted for state and federal review and approval and presented for approval to the Palo Pinto County Commissioners Court and the respective councils of incorporated cities included in this HazMAP. Likewise, each participating jurisdiction will undergo the same process for reviewing, revising and updating their respective plans and submitting them for approval by state, federal, and the local jurisdiction's governing body. The plan will be updated every five years in accordance with federal requirements. Palo Pinto County's Emergency Management Coordinator or their designee will be

responsible for ensuring that this requirement is met. Palo Pinto County and the Hazard Mitigation Planning Team will review the HazMAP annually for needed updates. The HMPT will be involved in this process to ensure all jurisdictions provide input into the planning process. The public will be invited to participate in this process through public hearings.

2.9 Plan Maintenance

It is the intention of all documented plan participants to formally adopt the Palo Pinto County Hazard Mitigation Action Plan after each maintenance revision. Once all participants adopt the changes, the revised HazMAP and proof of adoption will be submitted by the North Central Texas Council of Governments (NCTCOG) to the Texas Division of Emergency Management and the Federal Emergency Management Agency. The plan will be revised and maintained as required under the guidance of the HazMAP and formally adopted by Palo Pinto County and jurisdiction elected officials after each revision.

Following formal adoption by the Palo Pinto County's Commissioners Court and formal adoption of the plan by the governing council of each participating jurisdiction, the actions outlined in the HazMAP will be implemented by the county and participating jurisdictions as described throughout this document.

The Palo Pinto County Emergency Management Coordinator (EMC), or their designee, is responsible for ensuring the HazMAP and its components are monitored, evaluated, and reviewed semiannually by the responsible personnel. The EMC will use email to request the monitoring activities noted below be implemented and changes documented. The progress of action items will be tracked electronically as "in progress," "deferred," or "completed."

These and other changes affecting the plan will be documented within the Palo Pinto County HazMAP file and identified as updates. Updates will be shared between participants by email or in a meeting (if deemed appropriate) twice a year, and included in annual evaluations and reviews, and the five-year update of the plan.

Members of the Hazard Mitigation Planning Team (HMPT) are responsible for ensuring their mitigation strategy is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by the Palo Pinto County EMC calling an annual meeting of the HMPT, whose members will assist in plan review, evaluation, updates, and monitoring. This meeting will be open to the public and public notices will encourage community participation.

During this annual meeting, the members will provide information and updates on the implementation status of each action item included in the plan. As part of the evaluation, the HMPT will assess whether goals address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the HazMAP, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the following timetable:

Responsible Personnel	Activity	Update Schedule
Local Planning Team Point of Contact	Monitoring Plan: track implementation and action items, changes to risk assessment, changes to Local Planning Team (LPT), changes to capabilities, and plan integrations.	Twice a year
	Evaluate Plan: assess effectiveness by evaluating completed actions, implementation processes, responsible personnel, and lessons learned.	Annually
	Update Plan	Once every five years

At least once every five years, or more frequently if such a need is determined by the participants, the HazMAP will undergo a major update with NCTCOG. During this process, all chapters of the plan will be updated with current information and analyses and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for review and approval to the Texas Division of Emergency Management and the Federal Emergency Management Agency and presented to the governing council for approval and adoption. The plan will be updated every five years in accordance with regulations.

2.10 Incorporation into Existing Planning Mechanisms

The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update, and implementation of each participating jurisdiction's individual plans that require specific planning and administrative tasks (for example, plan amendments, ordinance revisions, and capital improvement projects).

The members of the HMPT will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their jurisdictions are consistent with the goals and actions of the Palo Pinto County HazMAP and will not contribute to increased hazard vulnerability in Palo Pinto County or its participating jurisdictions.

During the planning process for new and updated local planning documents, such as a comprehensive plan, capital improvement plan, or emergency management plan, Palo Pinto County and its participating jurisdictions will provide a copy of the Palo Pinto County HazMAP to the appropriate parties and recommend that all goals and strategies of new and updated local planning documents are consistent with and support the goals of the Palo Pinto County HazMAP and will not contribute to increased hazards in the affected jurisdiction(s).

Chapter 3: Hazard Identification and Risk Assessment

Requirement	
§201.6(c)(2)(i)	[The risk assessment shall include a] description of the type, location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
§201.6(c)(2)(ii)	[The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008 must also address NFIP [National Flood Insurance Program] insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:
§201.6(c)(2)(ii)(A)	The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;
§201.6(c)(2)(ii)(B)	An estimate of the potential dollar losses to vulnerable structures identified in this section and a description of the methodology used to prepare the estimate.
§201.6(c)(2)(ii)(C)	Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.
§201.6(c)(2)(iii)	For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

3.1 Hazard Overview

Through an assessment of previous federally declared disasters in Texas, the State of Texas Hazard Mitigation Plan, historical and potential events in Palo Pinto County, and a review of available local mitigation action plans, it was determined that this Hazard Mitigation Action Plan (HazMAP) will address the risks associated with the following nine natural hazards:

- Drought
- Earthquakes
- Expansive Soils
- Extreme Heat
- Flooding (including dam failure)
- Thunderstorms (including hail, wind, and lightning)
- Tornadoes

- Wildfires
- Winter Storms

3.2 Major Disaster Declarations since the 2015 HazMAP

The following table lists the recent major disaster declarations that have occurred in Texas since the approval of Palo Pinto County's 2015 HazMAP:

Disaster	Event	Incident Period	Declared
DR-4485	Texas Covid-19 Pandemic	January 20, 2020 and continuing	March 25, 2020
DR-4377	Severe Storms and Flooding	June 19,2018- July 13,2018	July 06, 2018
DR-4332	Hurricane Harvey	August 23, 2017- September 15, 2017	August 25, 2017
DR-4272	Severe Storms and Flooding	May 22, 2016- June 24, 2016	June 11, 2016
DR-4269	Severe Storms and Flooding	April 17, 2016- April 30, 2016	April 25, 2016
DR-4266	Severe Storms, Tornadoes, and Flooding	March 07, 2016- March 29, 2016	March 19, 2016
DR-4255	Severe Winter Storms, Tornadoes, Straight-line Winds, and Flooding	December 26, 2016- January 21, 2016	February 09, 2016
DR-4245	Severe Storms, Tornadoes, Straight-line Winds, and Flooding	October 22, 2015- October 31, 2015	November 25, 2015
DR-4223	Severe Storms, Tornadoes, Straight-line Winds, and Flooding	May 04, 2015- June 22, 2015	May 29, 2015
DR-4159	Severe Storms and Flooding	October 30, 2013- October 31, 2013	December 20, 2013
DR-4136	Explosion (West, TX Fertilizer)	April 17, 2013- April 20, 2013	August 02, 2013

Source: FEMA

Physical impacts of these declared disasters experienced by HazMAP participants in Palo Pinto County are listed below:

- **Gordon-** no physical impacts.
- **Mineral Wells-** no physical impacts.
- **Mingus-** no physical impacts.
- **Strawn**- no physical impacts.
- **Palo Pinto County Unincorporated**- no physical impacts.

3.3 Natural Hazard Profiles

Through an assessment of previous federally declared disasters in Texas, the State of Texas Hazard Mitigation Plan, historical and potential events in Palo Pinto County, and a review of available local mitigation action plans, it was determined that this Hazard Mitigation Action Plan (HazMAP) will address the risks associated with the following nine natural hazards:

- Drought
- Earthquakes
- Expansive Soils
- Extreme Heat
- Flooding (including dam failure flooding)
- Thunderstorms (including hail, wind, and lightning)
- Tornadoes
- Wildfires
- Winter Storms

Due to the low probability and history of occurrence of coastal erosion, land subsidence, and hurricane/tropical storm, they will not be profiled in this plan.

Since the adoption of the 2015 HazMAP, the definition of a thunderstorm now includes hail, high winds, and lightning. These individual hazards within a thunderstorm will not be listed nor categorized separately.

Around 2013, areas of North Central Texas began experiencing earthquakes. It is suspected that dormant fault lines have been disturbed. Earthquakes have been added to the list of natural hazards profiled in this update for jurisdictions that feel they could be potentially impacted by them.

For this HazMAP, dam failure is considered a technological hazard and will be addressed in the flooding portion of this HazMAP when applicable. Dam failure is an accidental or unintentional collapse, breach, or other failure of an impoundment structure that results in downstream flooding and is considered both a natural hazard and technological hazard.

The following natural hazard profiles are listed in alphabetical order.

3.3.1 Drought

Drought can be defined as a water shortage caused by the natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length. It can be aggravated by other factors such as high temperatures, high winds, and low relative humidity. Drought can impact the economy, environment, and society by limiting food and drinking water, destroying habitat, and triggering health and safety problems due to poor water quality and increased wildfires.

The following chart describes the drought monitoring indices along with drought severity, return period, and a description of the possible impacts of the severity of drought.

Drought Severity	Return Period (years)	Description of Possible Impacts	Drought Monitoring Indices		
			Standardized Precipitation Index (SPI)	NDMC* Drought Category	Palmer Drought Index
Minor Drought	3 to 4	Going into drought; short-term dryness slowing growth of crops or pastures; fire risk above average. Coming out of drought; some lingering water deficits; pastures or crops not fully recovered.	-0.5 to -0.7	D0	-1.0 to -1.9
Moderate Drought	5 to 9	Some damage to crops or pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water use restrictions requested.	-0.8 to -1.2	D1	-2.0 to -2.9
Severe Drought	10 to 17	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.	-1.3 to -1.5	D2	-3.0 to -3.9
Extreme Drought	18 to 43	Major crop and pasture losses; extreme fire danger; widespread water shortages or restrictions.	-1.6 to -1.9	D3	-4.0 to -4.9
Exceptional Drought	44+	Exceptional and widespread crop and pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells creating water emergencies.	less than -2	D4	-5.0 or less

*NDMC - National Drought Mitigation Center

In Texas, local governments are empowered to take action on the behalf of those they serve. When drought conditions exist, a burn ban can be put in place by a county judge or county Commissioners Court prohibiting or restricting outdoor burning for public safety.[3]

3.3.2 Earthquake

An earthquake is a sudden motion or trembling of the earth, either caused by an abrupt release of accumulated strain on the tectonic plates that comprise the earth's crust or from human activities. Scientific studies have tied the quakes in North Central Texas to the disposal of wastewater from oil and gas production.

Magnitude and intensity measure different characteristics of earthquakes. Magnitude measures the energy released at the source of the earthquake and is determined from measurements on seismographs. Intensity measures the strength of shaking produced by the earthquake at a certain location and is determined from effects on people, human structures, and the natural environment.

The Modified Mercalli Intensity Scale classifies earthquakes by the amount of damage inflicted. It quantifies a quake's effects on the land's surface, people, and structures involved. The following is an abbreviated description of the levels of Modified Mercalli intensity.

[3] Fire Danger: Texas Burn Bans. Texas A&M Forest Service. 2018. <http://texasforestservice.tamu.edu/TexasBurnBans/>

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Source: USGS Earthquake Hazards Program.

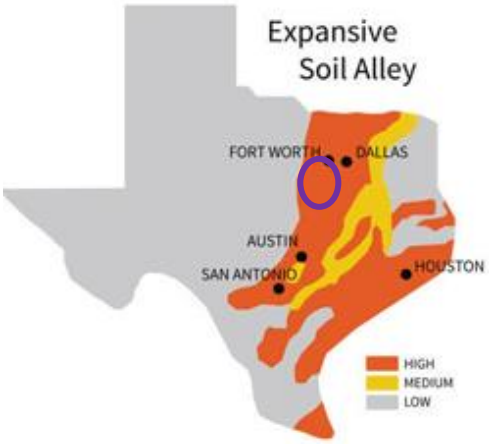
The following table gives intensities that are typically observed at locations near the epicenter of earthquakes of different magnitudes.

Magnitude	Typical Maximum Modified Mercalli Intensity
1.0 - 3.0	**I**
3.0 - 3.9	**II - III**
4.0 - 4.9	**IV - V**
5.0 - 5.9	**VI - VII**
6.0 - 6.9	**VII - IX**
7.0 and higher	**VIII** or higher

Source: USGS Earthquake Hazards Program.

3.3.3 Expansive Soils

Expansive soils are soils that contain large percentages of swelling clays that may experience volume changes of up to 40% in the absence or presence of water. Homes built on expanding smectite clays without due precautions will likely be structurally damaged as the clay takes up water. Cracks will appear in walls and floors. Damage can be minor, but it also can be severe enough for the home to be structurally unsafe. Expansive soil is considered one of the most common causes of pavement distresses in roadways. Depending upon the moisture level, expansive soils will experience changes in volume due to moisture fluctuations from seasonal variations.



Expansive soils is a condition that is native to Texas soil characteristics, and cannot be documented as a time-specific event, except when it leads to structural and infrastructure damage. The great increase in damages in Texas caused by problems with expansive soils can be traced to the rise in residential slab-on-grade construction which began to accelerate in the 1960s. Prior to that time, most residential construction in Texas was pier and beam, with wood siding or other non-masonry covering. Affected homes will be heavily influenced by their proximity to a large body of water, whereas older pier and beam foundations will behave in an entirely different manner.

Geographically, Palo Pinto County is located in the Western Cross Timbers land resource area. Some areas are sandy, some are clay, some are shallow and rocky, and others are pure caliche. Caliche is calcium carbonate that binds with gravel, sand, clay and silt to form a particularly difficult soil to penetrate. There are very few areas in the County that are considered fertile. The Weatherford series consists of deep, well drained, moderately permeable soils that formed in sandy and loamy residuum weathered from weakly cemented sandstone of the Cretaceous age. These very gently sloping to strongly sloping soils occur mainly on convex ridges on hills. Slope ranges from 1 to 12 percent. Mean annual precipitation is about 34 inches and the mean annual temperature is about 65 °F. [4]

A common procedure for evaluating and rating soil expansion potential is the Expansion Index (EI) test. The Expansion Index, EI, is used to measure a basic index property of soil and therefore, the EI is comparable to other indices such as the liquid limit, plastic limit, and plasticity index of soils.

Expansion Index (EI)	EI Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

Source: Expansion Index

[4] Weatherford Series. CRC: BJW: GLL. 2016.
< https://soilseries.sc.egov.usda.gov/OSD_Docs/W/WEATHERFORD.html>

3.3.4 Extreme Heat

Extreme heat is characterized by a combination of very high temperatures and exceptionally humid conditions. When persisting over a period of time, it is called a heat wave.

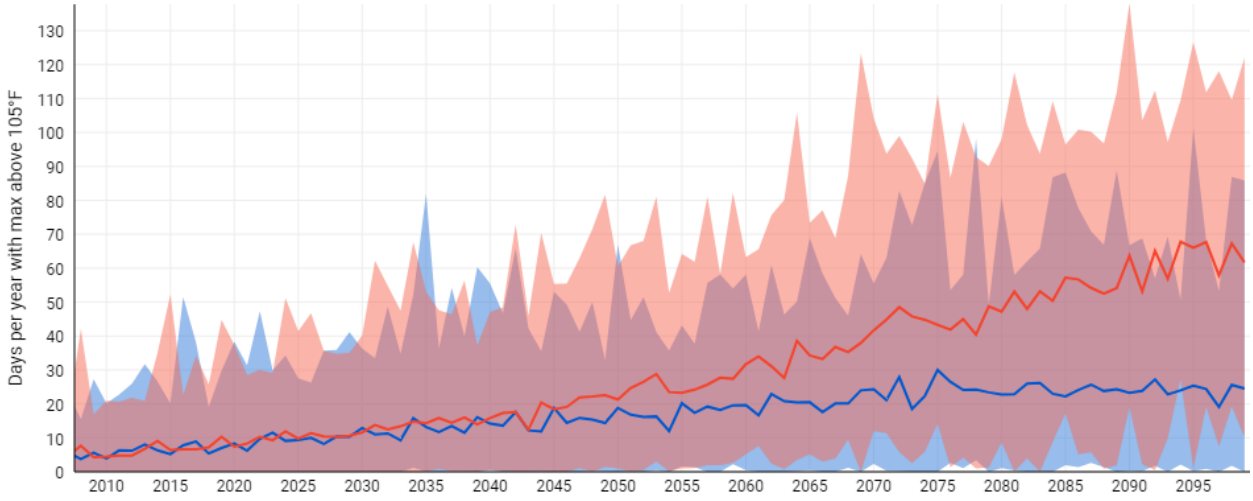
Extreme heat can be a factor that drastically impacts drought conditions, as high temperatures lead to an increased rate of evaporation. The total number of days per year with maximum temperature above various thresholds is an indicator of how often very hot conditions occur. Depending upon humidity, wind, and physical workload, people who work outdoors or don't have access to air conditioning may feel very uncomfortable or experience heat stress or illness on very hot days. Hot days also stress plants, animals, and human infrastructure such as roads, railroads, and electric lines. Increased demand for electricity to cool homes and buildings can place additional stress on energy infrastructure.

Below is a visual representation of the expected amount of days per year that are over 105°F in Palo Pinto County.

- The blue area shows the range of projections for a possible future in which global emissions of heat-trapping gases peak around 2040 and then decline.
- The red area shows the range of projections for a possible future in which global emissions of heat-trapping gases continue to increase through the 21st century. This scenario is called Representative Concentration Pathway (RCP) 8.5. For planning purposes, people who have a low tolerance for risk often focus on this scenario.
- Average lines, represented by the solid blue and red lines, show the weighted mean of all projections at each time step (projections are weighted based on model independence and skill). The lines aren't predictions of actual values; they merely highlight trends in the projections.

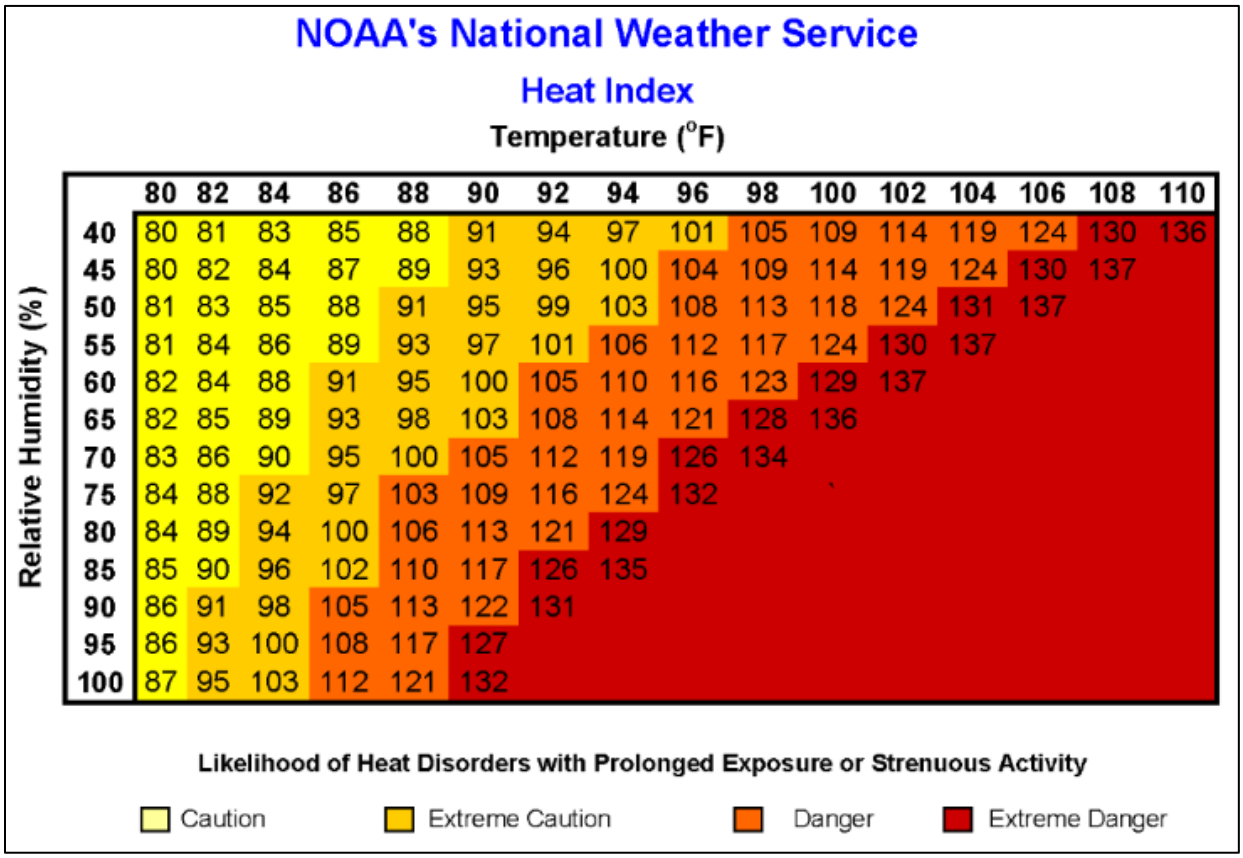
The trend shows how global emissions have a major role in climate variance and has an impact on extreme heat.

Predicted Number of Days Over 105°F in Palo Pinto County



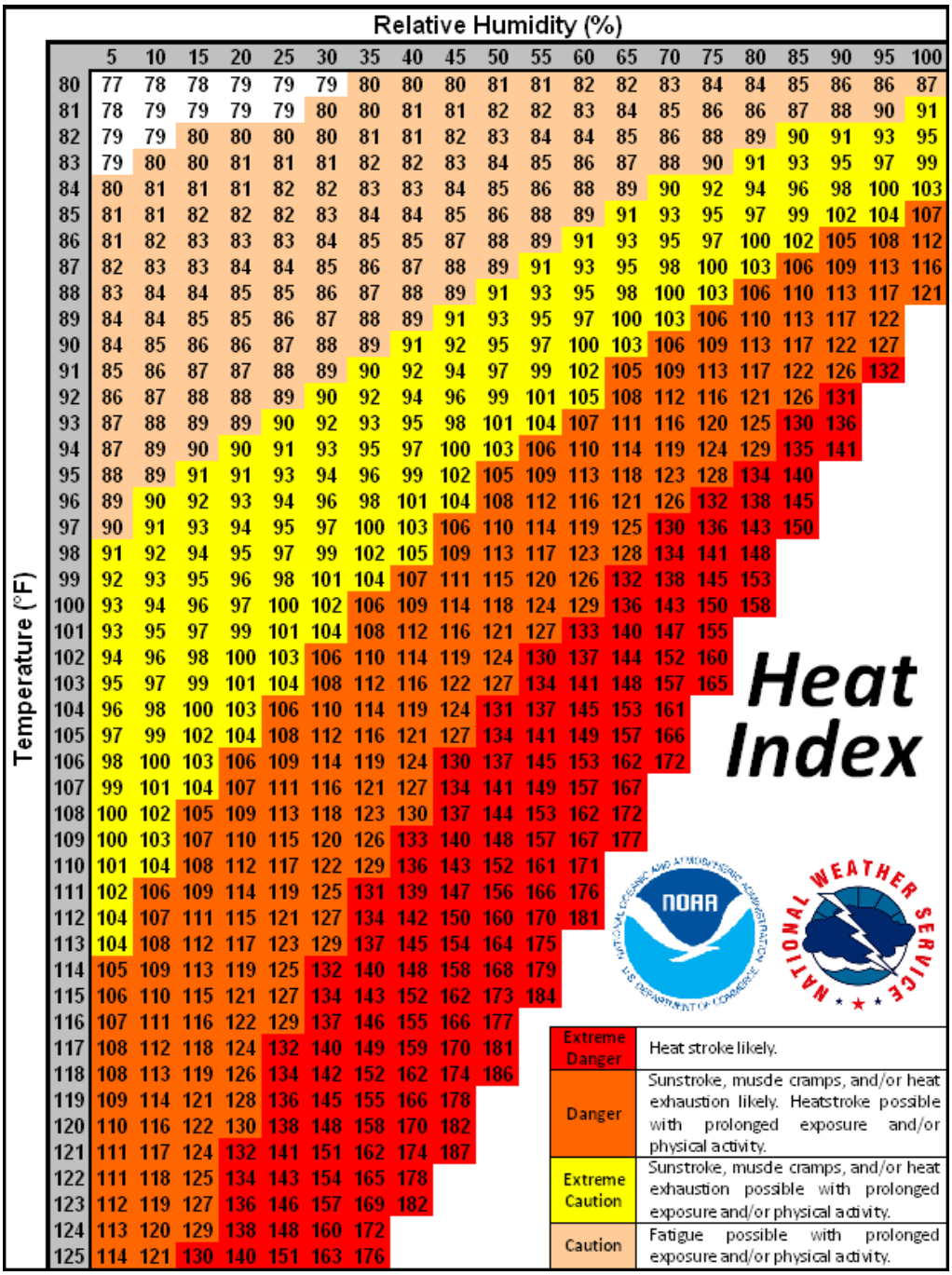
Source: U.S. Climate Resilience Toolkit

The following scale was used to determine the extent of extreme heat in Palo Pinto County and participating jurisdictions. The Heat Index is a measure of how hot it really feels when relative humidity is factored in with the actual air temperature. To find the Heat Index temperature, look at the Heat Index Chart below. As an example, if the air temperature is 96°F and the relative humidity is 65%, the heat index-how hot it feels-is 121°F. The red area without numbers indicates extreme danger. The National Weather Service (NWS) 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.



Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

NWS also offers a Heat Index chart, below, for areas with high heat but low relative humidity. Since heat index values were devised for shady, light wind conditions, exposure to full sunshine can increase heat index values by up to 15°F. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.



Temp (°F)	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
80	77	78	78	79	79	79	80	80	80	81	81	82	82	83	84	84	85	86	86	87
81	78	79	79	79	79	80	80	81	81	82	82	83	84	85	86	86	87	88	90	91
82	79	79	80	80	80	80	81	81	82	83	84	84	85	86	88	89	90	91	93	95
83	79	80	80	81	81	81	82	82	83	84	85	86	87	88	90	91	93	95	97	99
84	80	81	81	81	82	82	83	83	84	85	86	88	89	90	92	94	96	98	100	103
85	81	81	82	82	82	83	84	84	85	86	88	89	91	93	95	97	99	102	104	107
86	81	82	83	83	83	84	85	85	87	88	89	91	93	95	97	100	102	105	108	112
87	82	83	83	84	84	85	86	87	88	89	91	93	95	98	100	103	106	109	113	116
88	83	84	84	85	85	86	87	88	89	91	93	95	98	100	103	106	110	113	117	121
89	84	84	85	85	86	87	88	89	91	93	95	97	100	103	106	110	113	117	122	
90	84	85	86	86	87	88	89	91	92	95	97	100	103	106	109	113	117	122	127	
91	85	86	87	87	88	89	90	92	94	97	99	102	105	109	113	117	122	126	132	
92	86	87	88	88	89	90	92	94	96	99	101	105	108	112	116	121	126	131		
93	87	88	89	89	90	92	93	95	98	101	104	107	111	116	120	125	130	136		
94	87	89	90	90	91	93	95	97	100	103	106	110	114	119	124	129	135	141		
95	88	89	91	91	93	94	96	99	102	105	109	113	118	123	128	134	140			
96	89	90	92	93	94	96	98	101	104	108	112	116	121	126	132	138	145			
97	90	91	93	94	95	97	100	103	106	110	114	119	125	130	136	143	150			
98	91	92	94	95	97	99	102	105	109	113	117	123	128	134	141	148				
99	92	93	95	96	98	101	104	107	111	115	120	126	132	138	145	153				
100	93	94	96	97	100	102	106	109	114	118	124	129	136	143	150	158				
101	93	95	97	99	101	104	108	112	116	121	127	133	140	147	155					
102	94	96	98	100	103	106	110	114	119	124	130	137	144	152	160					
103	95	97	99	101	104	108	112	116	122	127	134	141	148	157	165					
104	96	98	100	103	106	110	114	119	124	131	137	145	153	161						
105	97	99	102	104	108	112	116	121	127	134	141	149	157	166						
106	98	100	103	106	109	114	119	124	130	137	145	153	162	172						
107	99	101	104	107	111	116	121	127	134	141	149	157	167							
108	100	102	105	109	113	118	123	130	137	144	153	162	172							
109	100	103	107	110	115	120	126	133	140	148	157	167	177							
110	101	104	108	112	117	122	129	136	143	152	161	171								
111	102	106	109	114	119	125	131	139	147	156	166	176								
112	104	107	111	115	121	127	134	142	150	160	170	181								
113	104	108	112	117	123	129	137	145	154	164	175									
114	105	109	113	119	125	132	140	148	158	168	179									
115	106	110	115	121	127	134	143	152	162	173	184									
116	107	111	116	122	129	137	146	155	166	177										
117	108	112	118	124	132	140	149	159	170	181										
118	108	113	119	126	134	142	152	162	174	186										
119	109	114	121	128	136	145	155	166	178											
120	110	116	122	130	138	148	158	170	182											
121	111	117	124	132	141	151	162	174	187											
122	111	118	125	134	143	154	165	178												
123	112	119	127	136	146	157	169	182												
124	113	120	129	138	148	160	172													
125	114	121	130	140	151	163	176													

Extreme Danger	Heat stroke likely.
Danger	Sunstroke, musde cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity.
Extreme Caution	Sunstroke, musde cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	Fatigue possible with prolonged exposure and/or physical activity.

3.3.5 Flooding

Flooding is defined as the accumulation of water within a water body and the overflow of excess water onto adjacent floodplain lands. The floodplain (or flood zone) is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding. The statistical meaning of terms like "100-year flood" can be confusing. Simply stated, a floodplain can be located anywhere; it just depends on how large and how often a flood event occurs. Floodplains are those areas that are subject to inundation from flooding. Floods and the floodplains associated with them are often described in terms of the percent chance of a flood event happening in any given year. As a community management or planning term, "floodplain" or "flood zone" most often refers to an area that is subject to inundation by a flood that has a 1% chance of occurring in any given year (commonly referred to as the 100-year floodplain).

Flood Insurance Risk Zones means zone designations on Flood Hazard Boundary Map (FHBM) and Flood Insurance Rate Map (FIRM) that indicate the magnitude of the flood hazard in specific areas of a community. The zone categories are below:

High Risk Area	Description
In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones.	
Zone A	Special flood hazard areas inundated by the 100-year flood; base flood elevations are not determined. 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	Special flood hazard areas inundated by the 100-year flood; base flood elevations are determined. The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
Zone A1-30	Special flood hazard areas inundated by the 100-year flood; base flood elevations are determined. These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format).
Zone AO	Special flood hazard areas inundated by the 100-year flood; with flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
Zone AH	Special flood hazard areas inundated by the 100-year flood; flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations are determined. Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance

	of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
Zone A99	Special flood hazard areas inundated by the 100-year flood to be protected from the 100-year flood by a Federal flood protection system under construction; no base flood elevations are determined. Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.
Moderate to Low Risk Area	**Description**
In communities that participate in the NFIP, flood insurance is available to all property owners and renters in these zones.	
Zone B and Zone X (shaded)	Areas of 500-year flood; areas subject to the 100-year flood with average depths of less than 1 foot or with contributing drainage area less than 1 square mile; and areas protected by levees from the base flood. Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
Zone C and Zone X (un-shaded)	Areas determined to be outside the 500-year floodplain. Area of minimal flood hazard usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.
Undetermined Risk Area	**Description**
Zone D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

Flash Flooding

A flash flood is a rapid flood that inundates low-lying areas in less than six hours. This is caused by intense rainfall from a thunderstorm or several thunderstorms. Flash floods can also occur from the collapse of a man-made structure or ice dam. Construction and development can change the natural drainage and create brand new flood risks as the concrete that comes with new buildings, parking lots, and roads create less land that can absorb excess precipitation from heavy rains. Flash floods are a high-risk hazard since they can tear out trees and destroy buildings and bridges.

Flooding from Dam Failure

Besides rains and river or lake overflow, dam breaks can also cause flooding. A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings. A dam failure is an accidental or unintentional collapse, breach, or other failure of an impoundment structure that results in downstream flooding.

Dam failure will be profiled in this plan within the flooding hazard.

3.3.6 Thunderstorms

A thunderstorm is a storm that consists of rain-bearing clouds and has the potential to produce hail, high winds, and lightning.

Hail

Hail occurs when, at the outgrowth of a severe thunderstorm, balls or irregularly shaped lumps of ice greater than 19.05 mm (0.75 inches) in diameter fall with rain. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to warm air rising rapidly into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation.

The Tornado and Storm Research Organization (TORRO) scale for hail extends from H0 to H10 with its increments of intensity or damage potential related to hail size (distribution and maximum), texture, fall speed, speed of storm translation, and strength of the accompanying wind.

An indication of equivalent hail kinetic energy ranges (in joules per square meter) has now been added to the first six increments on the scale, and this may be derived from radar reflectivity or from hail pads. The International Hailstorm Intensity Scale recognizes that hail size alone is insufficient to accurately categorize the intensity and damage potential of a hailstorm, especially towards the lower end of the scale. For example, without additional information, an event in which hail of up to walnut size is reported (hail size code 3: hail diameter of 21-30 mm) would be graded as a hailstorm with a minimum intensity of H2-H3. Additional information, such as the ground wind speed or the nature of the damage the hail caused, would help to clarify the intensity of the event. For instance, a fall of walnut-sized hail with little or no wind may scar fruit and sever the stems of crops but would not break vertical glass and so would be ranked H2-H3. However, if accompanied by strong winds, the same hail may smash many windows in a house and dent the bodywork of a car, and so be graded an intensity as high as H5.

However, evidence indicates maximum hailstone size is the most important parameter relating to structural damage, especially towards the more severe end of the scale. It must be noted that hailstone shapes are also an important feature, especially as the "effective" diameter of non-spheroidal specimens should ideally be an average of the coordinates. Spiked or jagged hail can also increase some aspects of damage. Below is the TORRO Hailstorm Intensity Scale (H0 to H10) in relation to typical damage and hail size codes.

TORRO Hailstorm Intensity Scale				
Size Code	**Intensity Category**	**Typical Hail Diameter (mm)***	**Probable Kinetic Energy, J-m²**	**Typical Damage Impacts**
H0	Hard Hail	5	0-20	No damage
H1	Potentially Damaging	5-**15**	>20	Slight general damage to plants, crops
H2	Significant	10-**20**	>100	Significant damage to fruit, crops, vegetation
H3	Severe	20-**30**	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-**40**	>500	Widespread glass damage, vehicle bodywork damage
H5	Destructive	30-**50**	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-**60**		Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50-**75**		Severe roof damage, risk of serious injuries
H8	Destructive	60-**90**		Severe damage to aircraft bodywork
H9	Super Hailstorms	75-**100**		Extensive structural damage, risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>100		Extensive structural damage, risk of severe or even fatal injuries to persons caught in the open

** Approximate range (typical maximum size in bold), since other factors (e.g. number and density of hailstones, hail fall speed, and surface wind speeds) affect severity.*

Wind

Straight-line winds are often responsible for the wind damage associated with a thunderstorm. Downbursts or micro-bursts are examples of damaging straight-line winds. A downburst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm that produces a violent, localized downdraft covering 2.5 miles or less. Wind speeds in some of the stronger downbursts can reach 100 to 150 miles per hour, which is similar to that of a strong tornado. The winds produced from a downburst often occur in one direction and the worst damage is usually on the forward side of the downburst.

The following Beaufort Wind Chart shows the description and scale used to classify the wind intensity in a thunderstorm. The scale is now rarely used by professional meteorologists, having been largely replaced by more objective methods of determining wind speeds—such as using anemometers, tracking wind echoes with Doppler radar, and monitoring the deflection of rising weather balloons and radiosondes from their points of release. Nevertheless, it is still useful in estimating the wind characteristics over a large area, and it may be used to estimate the wind where there are no wind instruments. The Beaufort scale also can be used to measure and describe the effects of different wind velocities on objects on land or at sea.

The Beaufort Scale of Wind (Nautical)			
Beaufort Number	**Name of Wind**	**Wind Speed**	
		knots	**knots per hour**
0	Calm	<1	<1
1	Light air	1–3	1–5
2	Light breeze	4–6	6–11
3	Gentle breeze	7–10	12–19
4	Moderate breeze	11–16	20–28
5	Fresh breeze	17–21	29–38
6	Strong breeze	22–27	39–49
7	Moderate gale (or near gale)	28–33	50–61
8	Fresh gale (or gale)	34–40	62–74
9	Strong gale	41–47	75–88
10	Whole gale (or storm)	48–55	89–102
11	Storm (or violent storm)	56–63	103–114
12–17	Hurricane	64 and above	117 and above

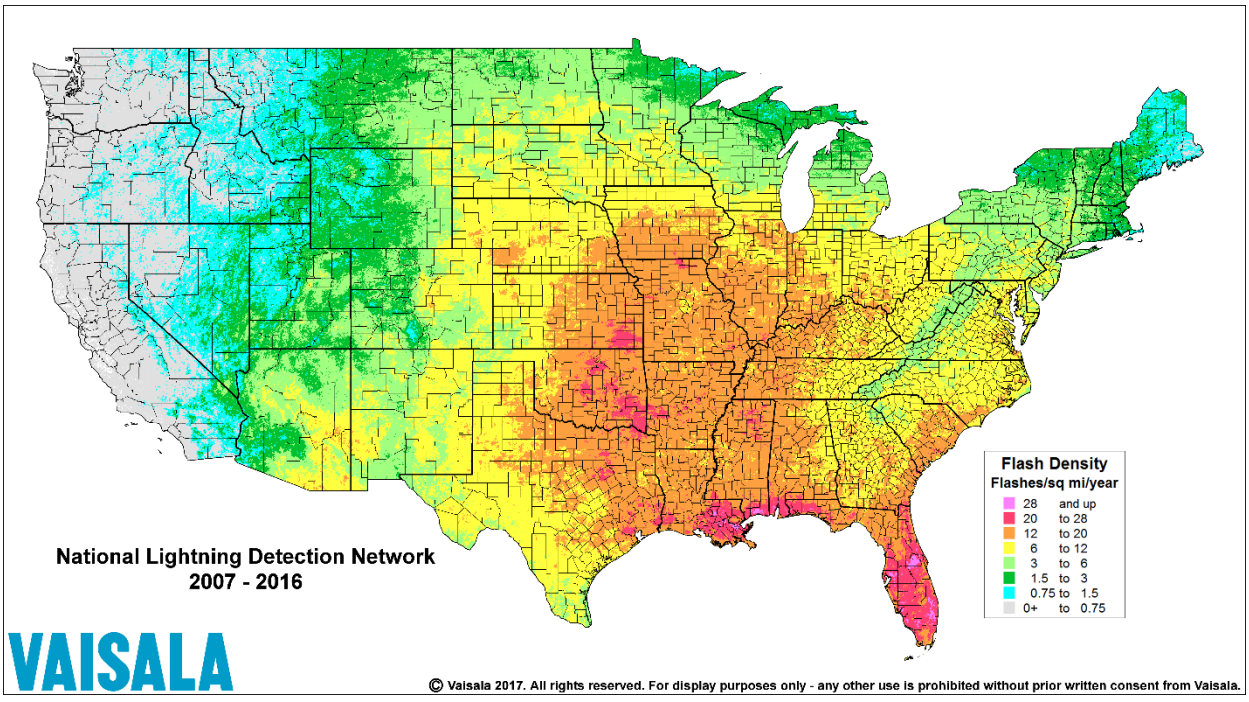
Lightning

Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas within thunderstorms. A “bolt” or brilliant flash of light is created when the buildup becomes strong enough. These bolts of lightning can be seen in cloud-to-cloud or cloud-to-ground strikes. Bolts of lightning can reach temperatures approaching 50,000°F. While lightning is mostly affiliated with thunderstorms, lightning often strikes outside of these storms, as far as 10 miles away from any rainfall. FEMA states that an average of 300 people are injured and 80 people are killed in the United States each year by lighting. Direct strikes have the power to cause significant damage to buildings, critical facilities, infrastructure, and the ignition of wildfires which can result in widespread damages to property and persons. Lightning is the most significant natural contributor to fires affecting the built environment.

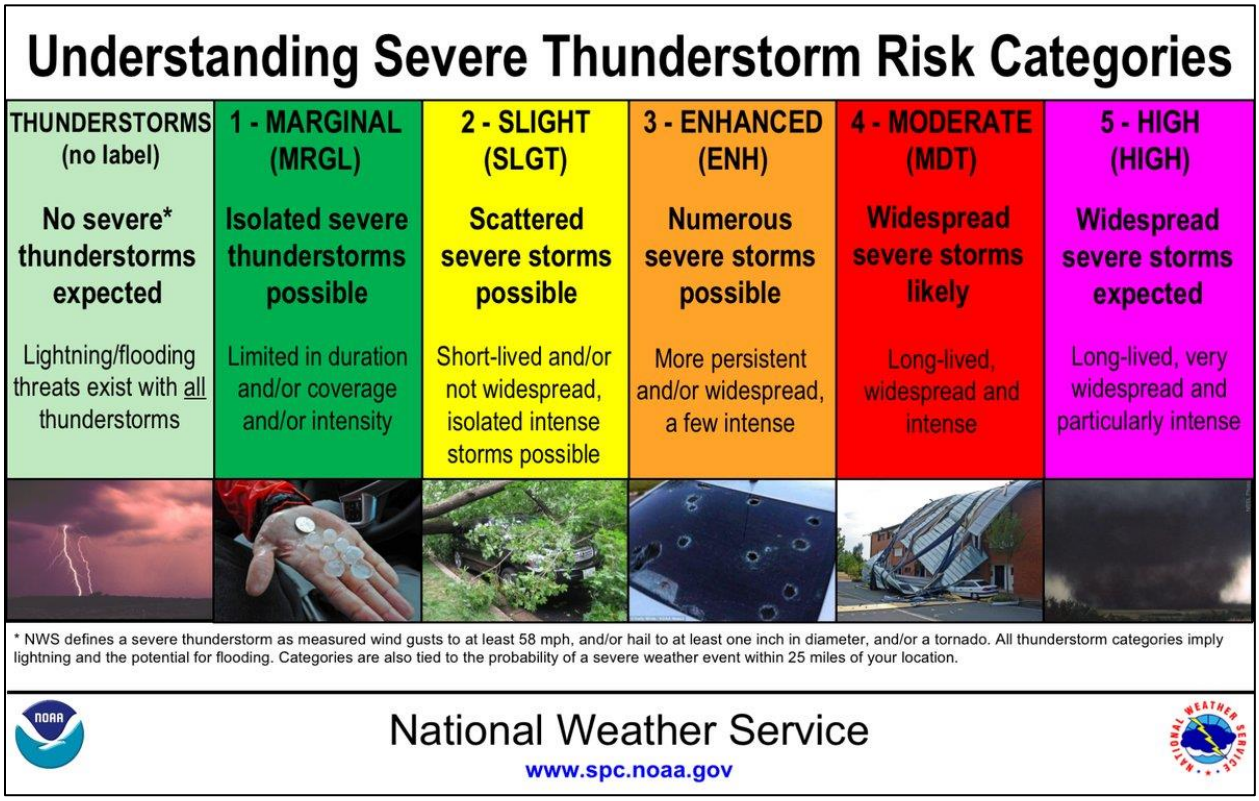
The lightning activity level (LAL) is a common parameter that is part of fire weather forecasts nationwide. LAL is a measure of the amount of lightning activity using values 1 to 6 where:

LAL	Cloud and Storm Development	Lightning Strikes Per 15 Minutes
1	No thunderstorms	-
2	Cumulus clouds are common but only a few reach the towering cumulus stage. A single thunderstorm must be confirmed in the observation area. The clouds produce mainly virga, but light rain will occasionally reach the ground. Lightning is very infrequent	1-8
3	Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two to three must occur within the observation area. Light to moderate rain will reach the ground and lightning is infrequent	9-15
4	Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered and more than three must occur within the observation area. Moderate rain is common and lightning is frequent	16-25
5	Towering cumulus and thunderstorms are numerous. They cover more than three-tenths and occasionally obscure the sky. Rain is moderate to heavy and lightning is frequent and intense	>25
6	Similar to LAL 3 except thunderstorms are dry	

According to the following map from the National Lightning Detection Network, jurisdictions in Palo Pinto County experience a flash density of 12-20 flashes per square mile, per year.



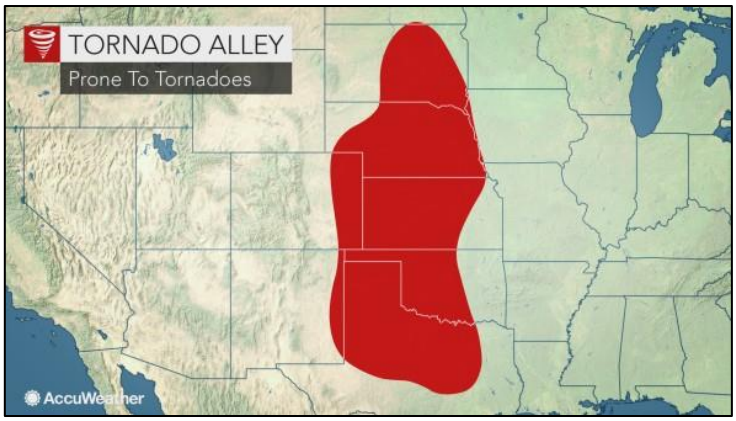
The National Weather Service uses the following Storm Prediction Center (SPC) activity levels to represent severe weather outlooks.



3.3.7 Tornadoes

A tornado is a violently rotating column of air that comes in contact with the ground. A tornado can either be suspended from, or occur underneath, a cumuliform cloud. It is often, but not always, visible as a condensation funnel.

Residents in Palo Pinto County are no strangers to tornadic events, as this area of Texas is a part of "Tornado Alley." Tornado Alley is an area of the U.S. where there is a high potential for tornado development. This area encompasses much of northern Texas northward through Oklahoma, Kansas, Nebraska and parts of New Mexico, South Dakota, Iowa, and eastern Colorado, as seen in this picture.



The Enhanced Fujita Scale, or EF Scale, is the scale for rating the strength of tornadoes during the observed time period via the damage they cause. Six categories from EF0 to EF5 represent increasing degrees of damage. The scale takes into account how most structures are designed and is thought to be an accurate representation of the surface wind speeds in the most violent tornadoes.

Enhanced Fujita Scale		
Enhanced Fujita Category	**Wind Speed in Miles Per Hour (MPH)**	**Potential Damage**
EF0	**65-85**	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	**86-110**	Moderate damage. Roofs severely stripped; manufactured homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	**111-135**	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; manufactured homes completely destroyed; large trees snapped or uprooted; light object become projectiles; 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 blown away some distance.
EF4	**166-200**	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown, and small projectiles generated.
EF5	**>200**	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized projectiles fly through the air in excess of 300 feet.

3.3.8 Wildfire

Wildfire, or wildland fire, is any fire occurring on grassland, forest, or prairie, regardless of ignition source, damages, or benefits. Wildfires are fueled almost exclusively by natural vegetation. Interface or intermix fires are urban/wildland fires in which vegetation and the built environment provide fuel.

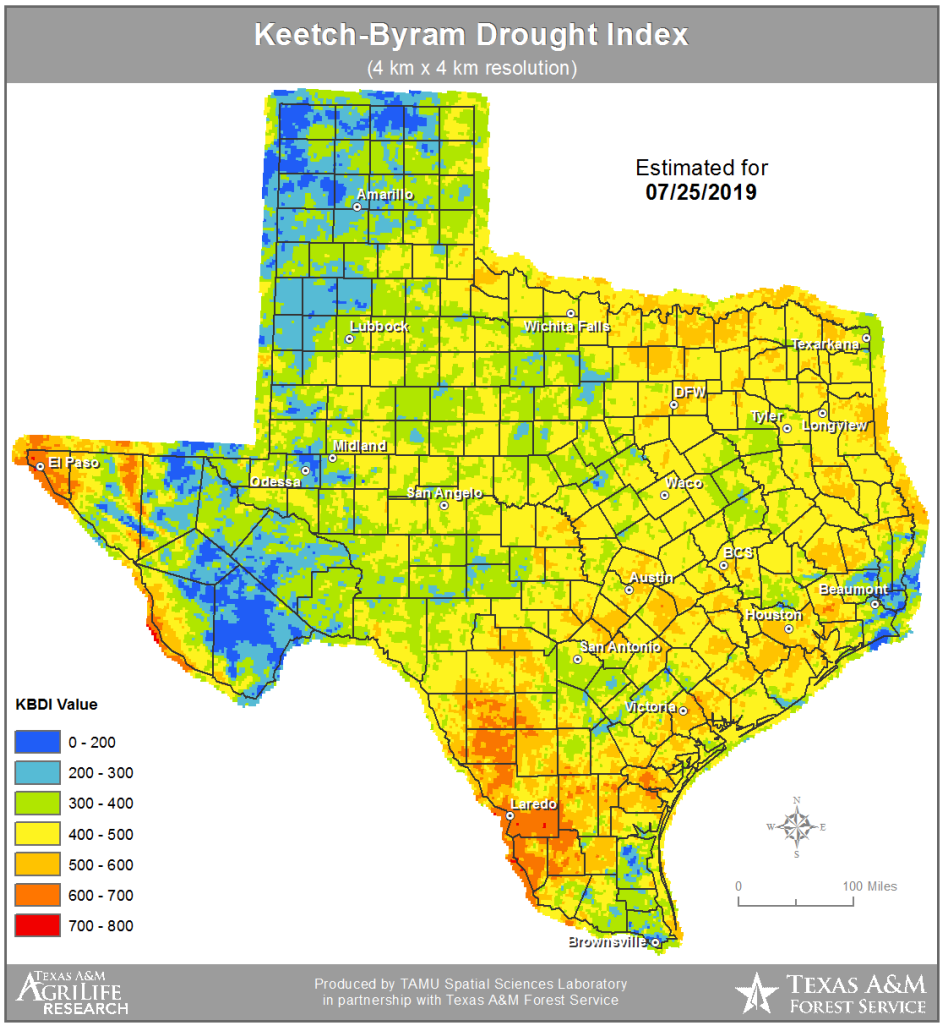
Texas A&M Forest Service (TFS) uses Keetch-Byram Drought Index (KBDI) for determination of drought conditions within the State of Texas. The KBDI is based on a daily water balance, where a drought factor is balanced with precipitation and soil moisture (assumed to have a maximum storage capacity of 8-inches) and is expressed in hundredths of an inch of soil moisture depletion.

The KBDI attempts to measure the amount of precipitation necessary to return the soil to full field capacity. It is a closed system ranging from 0 to 800, where 0 represents a saturated soil, and 800 an absolutely dry soil. At any point along the scale, the KBDI value indicates the amount of precipitation it would take to bring the moisture level back to zero, or saturation.

KBDI was developed to correlate the effects of drought on wildfire potential. This relationship is reflected in the following table:

Index Value (inches)	Color Label	Implications
0 – 200	Blue	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	Blue -> Green	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	Yellow -> Orange	Lower litter and duff layers contribute to fire intensity and will burn actively. Wildfire intensity begins to increase significantly. Larger fuels could burn or smoulder for several days. This is often seen in late summer and early fall.
600 – 800	Reds	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.

Below is an example of the KBDI in Texas:



For the purposes of this hazard analysis, wildfires are assessed under what is known as the wildland-urban interface (WUI). The WUI is an area of development that is susceptible to wildfires due to the amount of structures located in an area with vegetation that can act as fuel for a wildfire. The WUI creates an environment in which fire can move readily between structural and vegetation fuels. The expansion of these areas has increased the likelihood that wildfires will threaten structures and people.

Prioritized Fuel Reduction and Treatment of Structural Ignitability

The following chart shows the vegetation, and thus the amount of fuel sources, in Palo Pinto County. Grassland is the majority of vegetation in the county and can be used for grazing.

Class	Description	Acres	Percent
Open Water	All areas of open water, generally with < 25% cover of vegetation or soil	21,158	3.4 %

Class	Description	Acres	Percent
Developed Open Space	Impervious surfaces account for < 20% of total cover (i.e. golf courses, parks, etc.)	15,468	2.5 %
Developed Low Intensity	Impervious surfaces account for 20-49% of total cover	11,311	1.8 %
Developed Medium Intensity	Impervious surfaces account for 50-79% of total cover	780	0.1 %
Developed High Intensity	Impervious surfaces account for 80-100%of total cover	423	0.1 %
Barren Land (Rock/Sand/Clay)	Vegetation generally accounts for <15% of total cover	38	0.0 %
Cultivated Crops	Areas used for the production of annual crops, includes land being actively tilled	17,478	2.8 %
Pasture/Hay	Areas of grasses and/or legumes planted for livestock grazing or hay production	7,953	1.3 %
Grassland/Herbaceous	Areas dominated (> 80%) by grammanoid or herbaceous vegetation, can be grazed	262,265	41.6 %
Marsh	Low wet areas dominated (>80%) by herbaceous vegetation	0	0.0 %
Shrub/Scrub	Areas dominated by shrubs/trees < 5 meters tall, shrub canopy > than 20% of total vegetation	53,852	8.5 %
Floodplain Forest	> 20% tree cover, the soil is periodically covered or saturated with water	3,273	0.5 %
Deciduous Forest	> 20% tree cover, >75% of tree species shed leaves in response to seasonal change	46,863	7.4 %
Live Oak Forest	> 20% tree cover, live oak species represent >75% of the total tree cover	1,907	0.3 %
Live Oak/Deciduous Forest	> 20% tree cover, neither live oak or deciduous species represent >75% of the total tree cover	0	0.0 %
Juniper or Juniper/Live Oak Forest	> 20% tree cover, juniper or juniper/live oak species represent > 75% of the total tree cover	185,653	29.4 %
Juniper/Deciduous Forest	> 20% tree cover, neither juniper or deciduous species represent > 75% of the total tree cover	2,585	0.4 %
Pinyon/Juniper Forest	> 20% tree cover, pinyon or juniper species represent > 75% of the total tree cover	0	0.0 %
Eastern Redcedar Forest	> 20% tree cover, eastern redcedar represents > 75% of the total tree cover	0	0.0 %
Eastern Redcedar/Deciduous Forest	> 20% tree cover, neither eastern redcedar or deciduous species represent > 75% of the total tree cover	0	0.0 %
Pine Forest	> 20% tree cover, pine species represent > 75% of the total tree cover	0	0.0 %
Pine Regeneration	Areas of pine forest in an early successional or transitional stage	0	0.0 %
Pine/Deciduous Forest	> 20% tree cover, neither pine or deciduous species represent > 75% of the total tree cover	0	0.0 %
Pine/Deciduous Regeneration	Areas of pine or pine/deciduous forest in an early successional or transitional stage	0	0.0 %
Total		**631,007**	**100.0 %**

Source: Texas Wildfire Risk Assessment Portal Professional Viewer.

Common practices to minimize the spread of wildfire are fuel breaks and fire breaks. A **fuel break** is the thinning of vegetation, or fuels, over a specific area of land. They are most commonly used to surround a community and slow the spread of a wildfire. By decreasing the amount of vegetation that the fire has to travel through, the risk of extreme fire behavior greatly depreciates.

Types of fuel breaks include:

- **Mechanical Treatments**- A mechanical treatment removes fuels by cutting shrubs, small trees and ladder fuels that make up the understory of a forested area. Materials are either taken from the site or chipped into smaller pieces. Fuels are selected for removal based on how they would contribute to a wildfire. For example, a thick patch of cedar could readily ignite and release significant heat and embers. This fuel type contributes to the rapid spread of a wildfire and would need to be removed.

  The objective of mechanical treatment is to reduce the intensity of wildfire. If there is less fuel to burn the fire stays low to the ground giving firefighters a safer condition in which to work.

- **Mulching**- A mulching operation is intended to break fuels into smaller pieces and spread them within the fuel break. While the smaller pieces will still carry fire, they will significantly reduce the intensity of it. The goal is to reduce ladder fuels like tall brush that could carry a ground fire into the top of a tree.

  Mulching equipment is classified as either traditional mowers or mulchers that grind the material. Heavy duty mowers are useful when fuels are small enough to be pushed over. However, for sites with an established woody mid-story, or ladder fuels, other equipment may be needed.

- **Herbicide Treatment**- Herbicides are used to control invasive species of plants that will "take over" an area. Invasive plant species can also be reduced with mechanical thinning.

  The effectiveness of herbicide treatments depends on existing vegetation, topography, and other local restrictions. Thick underbrush may require mechanical treatments prior to the use of herbicides.

- **Grazing**- Removing fuels by grazing relies on the consumption of plants by animals. Various types of livestock are used in this way across the state, including Palo Pinto County.

- **Prescribed Burning**- Prescribed or controlled, burning is the most commonly used tool for managing hazardous fuel buildups because of its relatively low cost per acre. Prescribed fire improves natural habitats and reduces heavy fuels. It is important to use a certified prescribe burn manager to improve fire safety and reduce smoke management issues.

Fuel breaks are most effective when placed along a natural fire break like a road. Choosing a site along a road also allows easy access for equipment. Regular maintenance of breaks increases their effectiveness in preventing wildfires. To maintain a fuel break, the use of herbicides as a follow up treatment to mulching will help reduce the amount of weed sprouts. Grazing is also an option to maintain a fuel break.

When creating a fuel break, these tips should be used:

- Follow a natural fire break or contour lines.
- Prune large trees to 10 feet from ground.
- Remove ladder fuels such as tall brush and small trees.

- Thin trees to create a crown spacing of 25 to 30 feet.
- Break up thick areas of brush.
- Maintain a minimum width of 60 feet on flat land and 100 feet on slopes.

A **fire break** is a break in vegetation. In some cases, it may be a gravel road, a river, or a clearing made by a bulldozer. A 'green' fire break uses grasses with high moisture content, such as winter rye or winter wheat to provide a break in the continuity of the fuel. If wide enough, a fire break will stop the spread of direct flame. However, embers can still be lofted into the air and travel across the line.

Considering the various types of fuel and fire breaks, the participating jurisdictions who have identified wildfires as a threat have listed wildfire mitigation actions in Chapter 4, along with actions for all the other identified hazards.

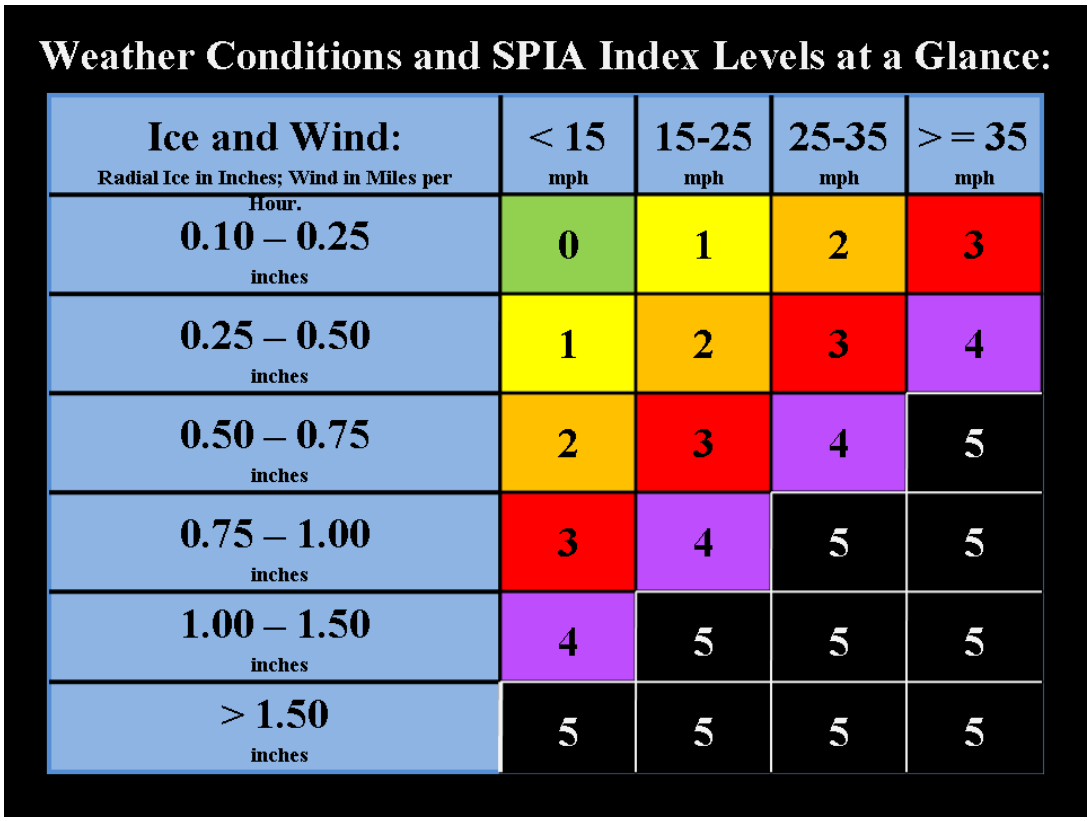
3.3.9 Winter Storms

Winter storms originate as mid-latitude depressions or cyclonic weather systems, sometimes following the path of the jet stream. A winter storm or blizzard combines heavy snowfall, high winds, extreme cold, and ice storms. Many winter depressions give rise to exceptionally heavy rain and widespread flooding and conditions worsen if the precipitation falls in the form of snow. The winter storm season varies widely, depending on latitude, altitude, and proximity to moderating influences. The time period of most winter weather is expected to be during the winter season, between November and March. Winter storms affect the entire planning area equally.

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

An economic impact may occur due to increased consumption of heating fuel, which can lead to energy shortages and higher prices. Schools often close when severe winter weather is forecasted, and it becomes a logistical burden for parents who then have to miss work or find alternative childcare. House fires and resulting deaths tend to occur more frequently from increased and improper use of alternate heating sources. Fires during winter storms also present a greater danger because water supplies may freeze and impede firefighting efforts.

The following Sperry-Piltz Ice Accumulation Index was used to determine the extent of winter conditions:



3.4 Vulnerabilities and Changes in Development since 2015 HazMAP

Vulnerabilities can be social, environmental, economic, or political in nature. These vulnerabilities in turn have various impacts.

We know that, by definition, disasters can cause death and injury. We also know that housing and schools may be destroyed. These particular losses may be considered to be social impacts, as they affect the ability of individuals and families to function.

With regard to negative environmental impacts, if a community contains important ecological sites (e.g., the site of a unique flora or fauna habitat), then these areas may be extremely vulnerable to almost any sort of disaster.

There is monetary loss, or negative economic impact, whenever buildings, non-structural property, or infrastructure is damaged or destroyed. These losses can also result in loss of jobs, loss of economic stability, and loss of services (e.g., power). The more vulnerable the community is to these types of losses, the greater the economic vulnerability to a disaster.

The ability of the community to influence policy makers to reduce vulnerabilities is critical. A disaster entails political impacts. After a disaster has struck, a community often turns to its politicians when looking for guidance. Vulnerabilities may be considered in terms of the individual, the location, the capacity to respond, and the time of day, week, or year.

According to FEMA, the definition of vulnerability is “the susceptibility of people, property, industry, resources, ecosystems, or historic buildings and artifacts to the negative impact of a disaster.” The Palo

Pinto County Hazard Mitigation Planning Team (HMPT) conducted a risk assessment to determine vulnerabilities in their jurisdictions. The following information is an overview of vulnerabilities within Palo Pinto County, including data about critical facilities/infrastructure, historic buildings, lakes, and natural environment.

Overall, the vulnerability level and priorities of the participants has remained the same since the last mitigation plan.

3.4.1 Critical Facilities and Infrastructure

Critical facilities and infrastructure provide services and functions essential to a community, especially during and after a disaster. For a critical facility to function, building systems and equipment must remain operational. Furthermore, it must be supplied with essential utilities (typically power, water, waste disposal, and communications, but occasionally natural gas and steam). An inventory of critical facilities in each participating jurisdiction is located in the Appendix A, though a list of examples is provided below.

Critical Facility Examples

- Ambulance Services (Private)
- Banks
- Detention Centers- federal
- Detention Centers- county
- Detention Centers- local
- Fire Stations
- Fueling Stations
- Government Offices-federal
- Government Offices-county
- Government Offices-local
- Grocery Stores
- Historical Sites
- Hospitals
- Landfills
- Major Employers
- Medical Clinics
- Pharmacies
- Physicians
- Police Stations
- Radio Stations
- Research Labs/Facilities
- Sheriff's Office
- Veterinarian Offices
- Water Towers

Vulnerable Facility Examples

- Amusement Parks
- Apartment Complexes
- Childcare Facilities
- Churches
- Hotels/Motels
- Mobile Home/RV Parks
- Nursing Homes
- Properties Within the 100-year Floodplain
- Recreation Centers
- Retirement Communities
- Schools (Elementary/Middle School/High School)
- Sporting Arenas
- Colleges
- Montessori's/Nursery Schools/Kindergartens

This hazard mitigation action plan (HazMAP) provides enough information regarding critical facilities to enable the jurisdiction to identify and prioritize appropriate mitigation actions; however, some information may be deemed highly sensitive and should not be made available to the public. Information

jurisdictions consider sensitive should be treated as an addendum to this mitigation plan so that it is still a part of the plan, but access can be controlled.

According to the Department of Homeland Security, there are 16 critical infrastructure sectors whose assets, systems, and networks, whether physical or virtual, are considered so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health or safety, or any combination thereof. The following list identifies the 16 critical infrastructure sectors.

Critical Infrastructure Sectors

- Chemical Sector
- Commercial Facilities Sector
- Communication Sector
- Critical Manufacturing Sector
- Dams Sector
- Defense Industrial Base Sector
- Emergency Services Sector
- Energy Sector
- Financial Services Sector
- Food and Agriculture Sector
- Government Facilities Sector
- Healthcare and Public Health Sector
- Information Technology Sector
- Nuclear Reactors, Materials, and Waste Sector
- Transportation Sector
- Water and Wastewater Systems Sector

The age of this infrastructure ties into its level of vulnerability. The older the infrastructure, the more likely it is to fail due to the impacting hazards. Collapsed bridges, unsafe power grids, interrupted water supply-weak infrastructure can turn natural hazards into disasters. When critical infrastructure fails, it becomes nearly impossible to aid those who lack the means of evacuating on their own. This results in rescue operations that take longer to plan and execute and pose increased risks to first responders and residents due to the lack of information on the number of affected residents or the location of those who need additional assistance. Below is a list of examples for critical infrastructure.

Critical Infrastructure Examples

- Airports
- Bridges and Overpasses
- Cell Towers
- Dams/ Levees
- Wastewater Pump & Lift Stations
- Major Roadways
- Power Plant
- Railways
- Sewer Lines
- Solar Farms
- Superfund Sites
- Utility Lines
- Wastewater Treatment Facilities
- Water Lines
- Water Treatment Facilities
- Wind Farms

The following sections go into detail about some of these critical infrastructures.

Bridges

Bridges are *immensely* important to everyday travel. Bridges allow safe passage where previously it was not possible or much more difficult. Bridges allow people go to school, seek medical help, and go to work without having to negotiate a busy road, a dangerous railway line, or a fast-flowing river. Bridges are also extremely vulnerable to the impacts of natural hazards, specially earthquakes, flooding, and winter storms.

Below is a detailed list of the historic and notable bridges within the county. Of these 13 bridges, only 9 are open to vehicular traffic. These bridges are extremely vulnerable to severe weather.

Name	Location	Status	Design	Year Built	Year Lost	Span Length (ft.)	Total Length (ft.)
Branch Grassy Branch Bridge	Cook Road over Branch of Grassy Branch	No longer exists	Pony truss	1945	--	76.1	126.0
Branch of Rock Creek Bridge	Dobbs Valley Road over Branch of Rock Creek	Replaced by a new bridge in 2006	Pony truss	1925	2006	50.9	51.8
Buck Creek Bridge	McPherson Road over Buck Creek	Closed to all traffic	Pony truss	1925	--	47.9	49.9
Fork Barton Creek Bridge	CR 221 over Fork of Barton Creek	Replaced by new bridge	Pony truss	1926	2002	28.9	29.9
Indian Creek Bridge / Old Bankhead Highway	E. Bankhead / Old US 180 over Indian Creek	Open to traffic	Slab	1940	--	22.0	65.9
Keechi Creek Bridge	Old Christian Road over Keechi Creek	Replaced by a new bridge	Pony truss	1926	--	60.0	80.1
Mill Branch Bridge	Ro Bell Road (former Bankhead	Open to traffic on private ranch road	Concrete stringer	1925	--	40.0	40.0

Name	Location	Status	Design	Year Built	Year Lost	Span Length (ft.)	Total Length (ft.)
	Highway / TX 1 / US 80) over Mill Branch						
Possum Kingdom Bridge	TX 16 over Brazos River	Open to traffic	Stone arch	1942	--	24.0	433.1
Rocky Creek Bridge	CR 227 over Rocky Creek	Replaced by new bridge	Pony truss	1928	1996	39.0	60.0
Saline Creek Bridge	Panama Road over Saline Creek	Replaced by a new bridge	Pony truss	1928	--	49.9	49.9
Turkey Creek Bridge	Copperhead Road over Turkey Creek	No longer exists	Pony truss	1925	2002	59.1	60.0
Turkey Creek Bridge	Union Hill Road over Turkey Creek	Replaced by a new bridge	Pony truss	1925	--	100.1	101.1
US281 Brazos River Bridge	US 281 over Brazos River	Closed, but being rehabilitated with new deck and paint and will re-open for vehicular traffic in Spring 2019	Polygonal Warren through truss with all verticals	1939	--	252.0	1138.2

Abbreviations:

CR: County Road

FM: Farm-to-Market

Trib: Tributary

Source: Bridgehunter.com

The Texas Department of Transportation (TxDOT) manages 182 on-system bridges and 55 off-system bridges within the county.

On-system bridges are located on the designated state highway system, are maintained by TxDOT, and are typically funded with a combination of federal and state or state-only funds.

Off-system bridges are not part of the designated state highway system and are under the direct jurisdiction of the local government such as a county, city, other political subdivision of the state, or special district with authority to finance a highway improvement project.

Roads

Below is a list of low water crossings in Palo Pinto County as of 2012. A low water crossing provides a bridge or overpass for vehicles to cross bodies of water when water flow is low. Under high-flow conditions, water runs over the roadway and impedes vehicular traffic. Texas leads the nation in flash flood deaths, and most are due to people crossing these low areas in times of flooding.

Road	Flooding Source	Low Water Crossing Type	Owner
Cook Road	Keechi Creek East Fork, TRIB	N/A	*Data unavailable*
Rambling Road	Keechi Creek East Fork, TRIB	Vented Ford	*Data unavailable*
Fortune Bend Road	Dark Valley Creek	Vented Ford	*Data unavailable*
Pleasant Valley Road	Brazos River, TRIB	Vented Ford	*Data unavailable*
Wilson	Ward Branch	Unvented Ford	*Data unavailable*
Hohhertz Road	Bills Creek	Vented Ford	*Data unavailable*
Robinson Road	Walnut Creek	Vented Ford	*Data unavailable*
Elm Creek Road	Deep Elm Creek	Vented Ford	*Data unavailable*
Park Road 36	Brazos River, TRIB	Vented Ford	TxDOT
Fairview Road	Baker Creek	Vented Ford	*Data unavailable*
Fairview Road	Baker Creek	Vented Ford	*Data unavailable*
Dobbs Valley Road	Brazos River, TRIB	Unvented Ford	*Data unavailable*
Bosley Road	Rocky Bluff Creek	Unvented Ford	*Data unavailable*
Dyer Road	Dry Branch Kickapoo Creek	Vented Ford	*Data unavailable*
Oaks Crossing Road	Whatley Creek	Unvented Ford	*Data unavailable*
Oaks Crossing Road	Whatley Creek, TRIB	Vented Ford	*Data unavailable*
Marsden Road	Rock Creek, TRIB	Vented Ford	*Data unavailable*
Definitions			
Hwy: Highway			
TxDOT: Texas Department of Transportation			
SH: State Highway			
FM: Farm-to-Market			
TRIB: Tributary			
Low Water Crossing Types Defined: **Bridges** are open-bottom structures with elevated decks. They may be designed with one or several piers. Low-water bridges generally have greater capacity and can pass higher flows underneath the driving surface than most vented and unvented fords.			

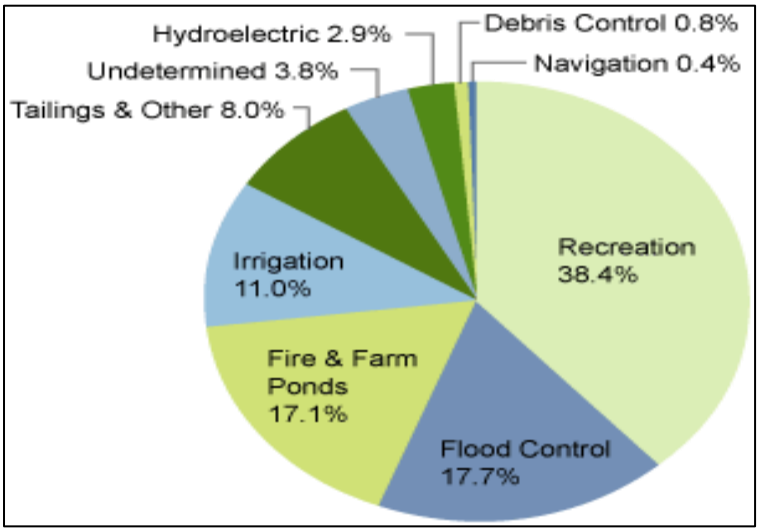
Road	Flooding Source	Low Water Crossing Type	Owner
Vented fords have a driving surface elevated some distance above the streambed with culverts (vents) that enable low flows to pass beneath the roadbed. The vents can be one or more pipes, box culverts, or open-bottom arches. In streams carrying large amounts of debris, the driving surface over the vent may be removable, permitting debris to be cleared after a large flow event.			

Source: Texas Low Water Crossing Inventory_032312

Dams

Dams provide a range of economic, environmental, and social benefits, including recreation, flood control, water supply, hydroelectric power, waste management, river navigation, and wildlife habitat.

The graph to the right reflects the benefits of dams in the United States.



Source: FEMA- Benefits of Dams

Below is a list of the dams in Palo Pinto County provided by the United States Army Corps of Engineers. Those without a city name can be presumed to be located in the unincorporated Palo Pinto County. The list reflects the most current 2018 National Inventory of Dams (NID) database. State and federal dam regulators provided their data from May to November 2018 for inclusion in the 2018 database.

Please contact the respective state or federal regulatory authority for the most up-to-date information. The NID consists of dams meeting at least one of the following criteria, though to protect the sensitivity of the dams the criteria will not be identified for each dam:

1. High hazard potential classification - loss of human life is likely if the dam fails.
2. Significant hazard potential classification - no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.
3. Height is equal to or exceeds 25 feet and storage exceeds 15 acre-feet.
4. Height exceeds 6 feet and storage is equal to or exceeds 50 acre-feet.

	Dam Name	Jurisdiction	Owner	EAP
1	EAST KEECHI CREEK WS SCS SITE 10 DAM	NONE	PALO PINTO SWCD; EAST KEECHI CREEK WCID 1	NR

	Dam Name	Jurisdiction	Owner	EAP
2	RICHARDS LAKE NO 2 DAM	SANTO	ROBERT RICHARDS	NR
3	RICHARDS LAKE NO 1 DAM	SANTO	ROBERT AND RICHARDS	NR
4	MINGUS LAKE DAM		RR-MAY LAND HOLDINGS LTD	Y
5	JOHNSON LAKE DAM		HENRY ROSS	NR
6	RINGO LAKE DAM		MARGARET RINGO	NR
7	HODGKINS LAKE DAM	DODSON	CHARLIE HODGKINS	NR
8	JAMES LAKE DAM		HARRY ROYE	NR
9	GORDON CITY RESERVOIR DAM	GORDON	CITY OF GORDON	NR
10	LAKE MCINTYRE		DESTINATION DEVELOPMENT COMMUNITY III LTD	NR
11	LAKE PALO PINTO DAM	BRAZOS	PALO PINTO COUNTY MWD 1; CITY OF MINERAL WELLS	Y
12	LAKE TUCKER DAM	STRAWN	CITY OF STRAWN	Y
13	DOUBLE GATES LAKE DAM		DOUBLE GATES RANCH CORPORATION	NR
14	LONE STAR LAKE DAM		WILL BELDING	NR
15	MORRIS SHEPPARD DAM		BRAZOS RIVER AUTHORITY	Y
16	JANIE LAKE DAM	PALO PINTO	AIMEE LUBIN; AMBER BROOKS; AUDREY BINES; CAROL REAGAN; JANE BESTE; JOHN COOK; JOSEPH BROOKS; KATHERINE CAREY; WILLIAM CAREY	Y
17	MCMURREY LAKE DAM		MH MCMURREY ESTATE	NR
18	EAST KEECHI CREEK WS SCS SITE 8 DAM	NONE	EAST KEECHI CREEK WCID 1; PALO PINTO SWCD	N
19	LAWRENCE PORTER LAKE NO 2 DAM	SANTO	LAWRENCE PORTER	NR
20	LAWRENCE PORTER LAKE NO 3 DAM	SANTO	LAWRENCE PORTER	NR
21	LAWRENCE PORTER LAKE NO 1 DAM	SANTO	LAWRENCE PORTER	NR
22	E J PORTER LAKE DAM	SANTO	EJ PORTER	NR

	Dam Name	Jurisdiction	Owner	EAP
23	RICHARDS LAKE NO 4 DAM	SANTO	BOB RICHARDS	NR
24	RICHARDS LAKE NO 3 DAM	SANTO	BOB RICHARDS	NR
25	WADDELL RANCH DAM NO 3	BRAZOS	EARL WADDELL INC	NR
26	WADDELL RANCH LAKE NO 1 DAM	BRAZOS	EARL WADDELL INC	NR
27	HOLIDAY HILLS CLUB LAKE DAM	BENNETT (LAKOTA)	HOLIDAY HILLS COUNTRY CLUB INC	Y
28	LAKE C B LONG DAM	BRAZOS	CITY OF GORDON	Y
29	PANAMA CREEK RESERVOIR DAM	SANTO	EARL WADDELL INC	NR
30	DECKER LAKE DAM		RW DECKER	NR
31	BAILEY LAKE DAM		KAREN HAGSETH	NR
32	WILSON LAKE DAM		WOODY WILSON	NR
33	DIKE LAKE DAM		AR DIKE	NR
34	HENSLEE LAKE NO 1 DAM		MICHAEL RUFF	NR
35	HENSLEE LAKE NO 2 DAM		MICHAEL RUFF	NR
36	HENSLEE LAKE NO 3 DAM		MICHAEL RUFF	NR
37	LE WALLEN LAKE NO 1 DAM		VALTON WALLEN	NR
38	LE WALLEN LAKE NO 2 DAM		VALTON WALLEN	NR
39	POLLARD CREEK WS SCS SITE 1A DAM	MINERAL WELLS	PALO PINTO SWCD; CITY OF MINERAL WELLS; PALO PINTO COUNTY	Y
40	POLLARD CREEK WS SCS SITE 2 DAM	MINERAL WELLS	PALO PINTO SWCD; CITY OF MINERAL WELLS; PALO PINTO COUNTY	Y
41	EARL WADDELL DAM	SANTO	EARL WADDELL	NR
42	HILLTOP PRESEDIMENTATION RESERVOIR DAM		PALO PINTO COUNTY MWD 1; CITY OF MINERAL WELLS	Y

	Dam Name	Jurisdiction	Owner	EAP
43	KIMBERLIN RANCH LAKE DAM		CHARLOTTE JANE PARKS TRUST NO 101; KIMBERLIN PK TRUST	NR
44	101 RANCH DAM NO 1		BOB SIMPSON	NR
45	101 RANCH DAM NO 2		BOB SIMPSON	NR
46	101 RANCH DAM NO 3		BOB SIMPSON	NR
47	101 RANCH DAM NO 4		BOB SIMPSON	NR
48	101 RANCH DAM NO 5		BOB SIMPSON	NR
49	101 RANCH DAM NO 6		BOB SIMPSON	NR
50	101 RANCH DAM NO 7		BOB SIMPSON	NR
51	101 RANCH DAM NO 8		BOB SIMPSON	NR
52	101 RANCH DAM NO 9		BOB SIMPSON	NR
53	101 RANCH DAM NO 10		BOB SIMPSON	NR
54	BLACKMON STOCK TANK DAM		WALLACE BLACKMON	Y

Source: National Inventory of Dams, https://nid-test.sec.usace.army.mil/ords/f?p=105:1

** An Emergency Action Plan (EAP) is a formal document that identifies potential emergency conditions at a dam and specifies actions to be followed to minimize loss of life and property damage. Under the EAP category, the following acronyms are used Y (Yes), N (No), or NR (Not Required)*

Environmental Protection Agency National Priorities List of Superfund Sites

Besides local critical facilities, some jurisdictions have national critical facilities that are monitored by the federal government, such as superfund sites. The Environmental Protection Agency's (EPA's) Superfund program is responsible for cleaning up some of the nation's most contaminated land and responding to environmental emergencies, oil spills, and natural disasters. To protect public health and the environment, the Superfund program focuses on making a visible and lasting difference in communities, ensuring that people can live and work in healthy, vibrant places. The EPA National Priorities List (NPL) is the list of sites of national priority among the known releases or threatened releases of hazardous

substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation.[5]

According to the list, there are no superfund sites in Palo Pinto County.

3.4.2 Historic Buildings and Districts

Historic landmarks and districts are important to consider when evaluating vulnerabilities to hazards. What is historic, and worth saving, varies with the beholder. "Historic" applies to a building that is part of a community's tangible past. Due to the advanced of these structures, they are highly susceptible to cracking, leaning, and total destruction caused by any of the hazards.

Historic buildings and structures, artwork, monuments, family heirlooms, and historic documents are often irreplaceable, and may be lost forever in a disaster if not considered in the mitigation planning process. The loss of these resources is all the more painful because of how often residents rely on their presence after a disaster, to reinforce connections with neighbors and the larger community, and to seek comfort in the aftermath of a disaster.

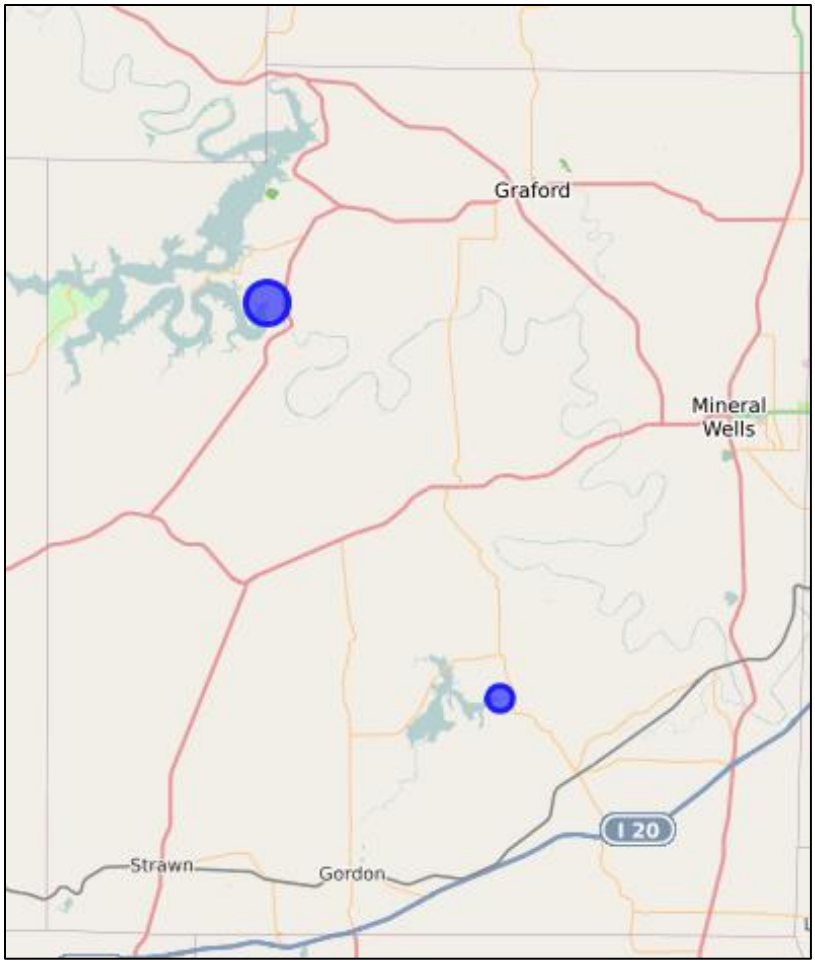
According to the Texas Historic Sites Atlas, there are 43 cemeteries, 4 museums, and 52 historical markers throughout Palo Pinto County. There are also 8 national register properties and 3 courthouses on the list.[6]

The Palo Pinto Historical Commission is responsible for keeping the county's history alive.

3.4.3 Bodies of Water

The level of local water sources has a dramatic effect on the impact of drought and flooding in the participating jurisdictions. Palo Pinto County has two major lakes that are used for surface water and recreation, Lake Palo Pinto and Possum Kingdom Lake. Both lakes are part of the Brazos River Basin. One of the issues in the Brazos River Basin is the increasing demand on surface water resources in the upper basin as groundwater supplies decline, particularly in the Ogallala Aquifer, which has historically supplied the majority of water there. As a result, balancing environmental requirements with these demands is an important issue in the basin. The lake locations are shown in the following map.

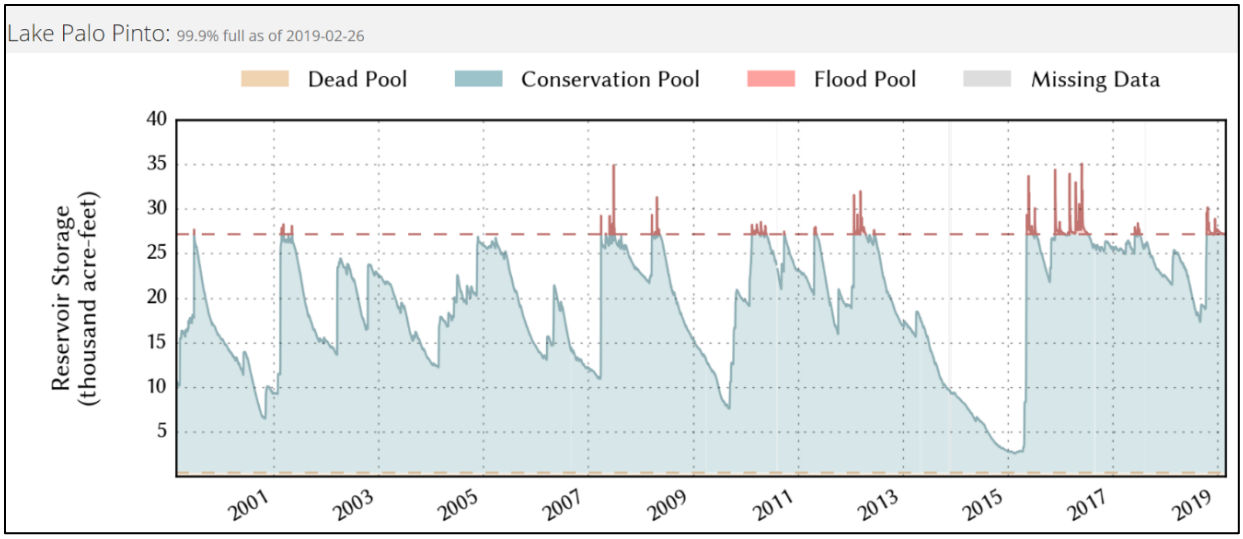
[5] Superfund: National Priority List (NPL). United States Environmental Protection Agency. <https://www.epa.gov/superfund/superfund-national-priorities-list-npl>
[6] Texas Historical Sites Atlas. 2015. Texas Historical Commission. <https://atlas.thc.state.tx.us/>



Currently, these lakes have recovered from previous drought periods and are close to or at capacity, as seen in the following table.

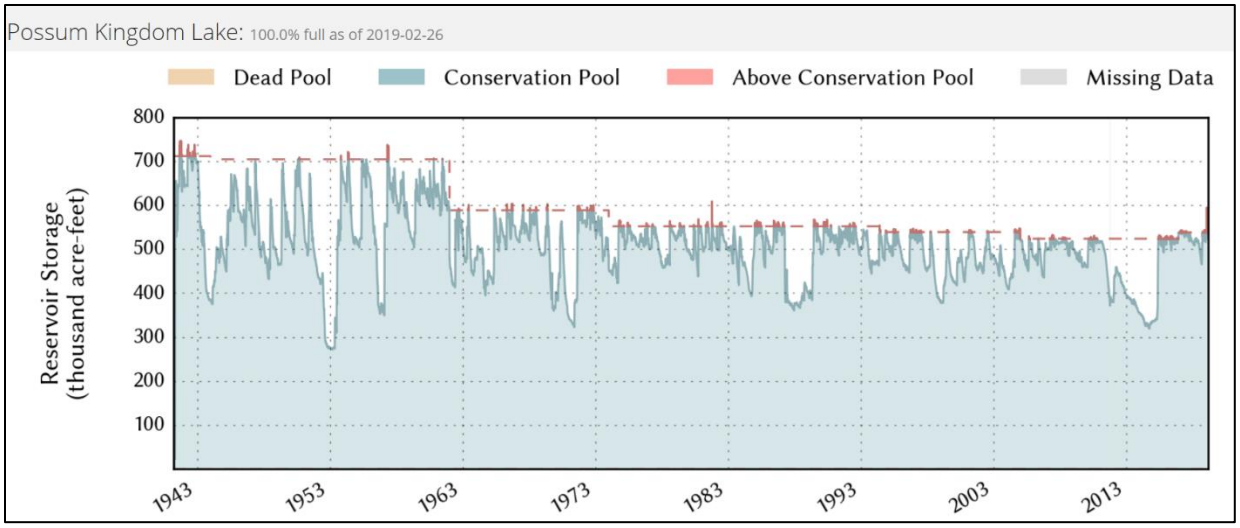
Recent Conditions of Lakes in Palo Pinto County, as of January 2019							
Reservoir	**Percent Full**	**Water Level (feet)**	**Height Above Conservation Pool (feet)**	**Reservoir Storage (acre-feet)**	**Conservation Storage (acre-feet)**	**Conservation Capacity (acre-feet)**	**Surface Area (acres)**
Lake Palo Pinto	99.2	866.90	-0.10	26,935	26,549	26,766	2,170
Possum Kingdom Lake	100.0	999.12	0.12	540,292	538,139	538,139	17,975

Source: Water Data for Texas, https://waterdatafortexas.org/reservoirs/statewide.



According to the Texas Water Development Board (TWDB), Lake Palo Pinto is located about fifteen miles southwest of Mineral Wells in Palo Pinto County, on Palo Pinto Creek, a tributary of the Brazos River. The lake is owned by the Palo Pinto Municipal Water District No. 1 and operated by the City of Mineral Wells for municipal, industrial and recreational purposes. Construction of Palo Pinto Creek Dam began on March 21, 1963 and was completed on April 20, 1964. Deliberate impoundment of water began on April 16, 1964. Enlargement to the dam was completed on November 13, 1965. Designed by Freese, Nichols, and Endress and constructed by the Longview Construction Company, the dam is an earthfill embankment of 1,255 feet long, 96 feet high and 22 feet wide at the top. The top of the dam is at elevation of 898 feet above mean sea level (NGVD29). The (emergence) spillway is located at the right end of the dam and is a concrete ogee weir with a crest of 550 feet in length at the elevation of 867.3 feet above mean sea level. According to TWDB 2007 survey, the reservoir has a conservation capacity of 27,215 acre-feet and a surface area of 2,176 acres at the conservation pool elevation of 867.3 feet above mean sea level (NAVD88). The dam controls a drainage area of about 471 square miles.[7]

[7] Texas Water Development Board. Lake Palo Pinto (Brazos River Basin).
< http://www.twdb.texas.gov/surfacewater/rivers/reservoirs/palo_pinto/index.asp>



According to TWDB, Possum Kingdom Lake and Morris Sheppard Dam are located about eighteen miles southeast of Graham mainly in Palo Pinto County, on the Brazos River. The Lake and the dam are owned operated by the Brazos River Authority for municipal, industrial, mining, irrigation, flood-control, recreational, and power-generation uses. The dam, named for Senator John Morris Sheppard, was authorized by the United States Congress in 1935 and by the State of Texas (Permit No. 1262) on May 9, 1938. Construction for the dam began on May 29, 1938, under general contractors C. F. Lytle and A. L. Johnson and was completed on March 20, 1941. Deliberate impoundment started on March 21, 1941 and power generation began on April 17, 1941. The dam, a reinforced concrete, Ambursen-type, massive buttress with flat-slab deck, a section of nine roof-weir gates, two bulkhead sections, and an earthen dike. The total length is 2,740 feet with a maximum height of 189 feet with the top of the dam at elevation 1,024 feet above mean sea level. The spillway consists of nine roof-weir type gates 73 feet 8 inches wide by 13 feet high with top of gate elevation of 1,000 feet above mean sea level. Flood-control releases are from one or more of these gates having a total discharge capacity of 550,000 cubic feet per second for the nine gates at design elevation of 1,000 feet above mean sea level. The lake, named after the original place where Possum are plentiful for hunters in the earlier day of 1900s, used to have a storage capacity of 724,700 acre-feet, a surface area of 19,800 acres at the conservation pool elevation 1,000 feet above mean sea level. According to TWDB 2016 volumetric survey, the storage capacity of the lake has reduced to 538,139 acre-feet encompassing a surface area of 17,914 acres at the conservation pool elevation, 999.0 feet above mean sea level (NGVD29). The dam controls a drainage area of about 22,550 square miles, of which 9,240 are noncontributing.[8]

[8] Texas Water Development Board. Possum Kingdom Lake (Brazos River Basin).
< http://www.twdb.texas.gov/surfacewater/rivers/reservoirs/possum_kingdom/index.asp>

The following list identifies all the lakes and reservoirs in the participating jurisdictions.

Name	United States Geological Survey Topographic Map
Costello Lake	Palo Pinto
Dike Lake	Mineral Wells West
Double Gates Lake	Strawn West
Gordon City Reservoir	Strawn East
Henslee Lake Number 1	Gordon
Henslee Lake Number 2	Gordon
Henslee Lake Number 3	Strawn West
Holiday Hills Club Lake	Mineral Wells East
James Lake	Gordon
Lake C B Long	Strawn East
Lake Mingus	Strawn East
Lake Palo Pinto	Lone Camp
Lake Pinto	Mineral Wells West
McMurrey Lake	Palo Pinto
Panama Creek Reservoir	Gordon

Source: TX HomeTownLocator

3.4.4 Natural Environment and Federally Protected Species

The Texas Parks and Wildlife Department established a list of rare, threatened, and endangered species within Palo Pinto County. All species on the county list are tracked in the Texas Natural Diversity Database (TXNDD). Species include birds, fishes, mammals, mollusks, and reptiles.[9] The following species are listed as rare species living in Palo Pinto County:

Amphibian-	Strecker's chorus frog
Amphibian-	Woodhouse's toad
Bird-	bald eagle
Bird-	black rail
Bird-	black capped vireo
Bird-	Franklin's gull
Bird-	golden cheeked warbler
Bird-	interior least tern
Bird-	mountain plover
Bird-	piping plover
Bird-	western burrowing owl
Bird-	white faced ibis
Mammal-	American badger
Mammal-	big brown bat
Mammal-	big free tailed bat

Bird-	whooping crane
Fish-	alligator gar
Fish-	American eel
Fish-	blue sucker
Fish-	chub shiner
Fish-	Guadalupe bass
Fish-	Red River pupfish
Fish-	sharpnose shiner
Fish-	silverband shiner
Fish-	smalleye shiner
Insect-	American bumblebee
Insect-	Comanche harvester ant
Reptile-	eastern box turtle
Reptile-	slender glass lizard
Reptile-	smooth softshell

[9] Texas Parks and Wildlife Department, Wildlife Division, Diversity and Habitat Assessment Programs. TPWD County Lists of Protected Species and Species of Greatest Conservation Need. Palo Pinto County. 30 December 2016.

Mammal-	eastern red bat
Mammal-	hoary bat
Mammal-	long tailed weasel
Mammal-	Mexican free tailed bat
Mammal-	mink
Mammal-	mountain lion
Mammal-	plains spotted skunk
Mammal-	swamp rabbit
Mammal-	thirteen lined ground squirrel
Mammal-	tricolored bat
Mammal-	western hog nosed skunk
Mammal-	woodland vole
Mollusk-	Texas fawnsfoot
Reptile-	American alligator
Reptile-	Brazos water snake
Reptile-	common garter snake

Reptile-	Texas garter snake
Reptile-	Texas horned lizard
Reptile-	timber (canebrake) rattlesnake
Reptile-	western box turtle
Reptile-	western chicken turtle
Reptile-	western hognose snake
Plant-	Comanche Peak prairie clover
Plant-	earleaf false foxglove
Plant-	Engelmann's bladderpod
Plant-	Glen Rose yucca
Plant-	Hall's prairie clover
Plant-	Mohlenbrock's sedge
Plant-	Osage Plains false foxglove
Plant-	Reverchon's scurfpea
Plant-	Topeka purple coneflower
Plant-	turnip root scurfea

Currently, there are no regional plans related to the future of North Texas' natural assets of habitat, plants, animals, open space areas and corridors, tree canopy, or carbon footprint. There are studies of particular topics that have been conducted for other purposes. For example, the Environmental Impact Statement of an individual project considers the project's impact on endangered species. Also, there are studies underway on particular topics but for smaller areas within the North Texas region.[10]

Under Chapter 12.0011 of the Texas Parks and Wildlife Code, Texas Parks and Wildlife Department (TPWD) is charged with "providing recommendations that will protect fish and wildlife resources to local, state, and federal agencies that approve, permit, license, or construct developmental projects" and "providing information on fish and wildlife resources to any local, state, and federal agencies or private organizations that make decisions affecting those resources." Project types reviewed by TPWD include reservoirs, highway projects, pipelines, urban infrastructure, utility construction, renewable energy, and residential and commercial construction, as well as many others.

Each state in the U.S. has completed a Wildlife Action Plan or Comprehensive Wildlife Conservation Strategy to improve the stability and recovery of species which are in decline, already listed as threatened or endangered, and/or are representative of the diversity and health of the state's wildlife. To date, these plans have become important guides for natural resource management programs, conservation funding, partnership building, project development, and problem-solving at local and regional levels. TPWD is the steward of the Texas Conservation Action Plan, formerly called the Texas Comprehensive Wildlife Conservation Strategy 2005 - 2010 or Texas Wildlife Action Plan. This revised Texas plan (approved by the U.S. Fish and Wildlife Service in 2013) is a series of 11 regionally-specific Ecoregion handbooks, a Statewide/Multi-region handbook, and this Overview document. Collectively, they are now called the Texas Conservation Action Plan.

[10] North Texas to 2030: Extending the Trends. Vision North Texas.

While the Texas Conservation Action Plan is a conservation plan for species at most at risk, its primary purpose is to bring people together to realize conservation benefits, prevent species listings, and preserve our natural heritage for future generations. Handbooks contain information on Species of Greatest Conservation Need, regionally important habitats, local conservation goals and projects, regional and statewide activities, contact information for conservation partners, and maps. The activities in each handbook are starting points to engage landowners, land-use planners, natural resources professionals, and the public in regional and local community-based conservation.[11]

3.4.5 Factors that Increase Vulnerability

Climate Variability

A key factor to an increase in vulnerability is climate variability, also known as climate change. According to the United States Environmental Protection Agency (EPA),

> Texas's climate is changing. Most of the state has warmed between one-half and one-degree Fahrenheit (°F) in the past century. In the eastern two-thirds of the state, average annual rainfall is increasing, yet the soil is becoming drier. Rainstorms are becoming more intense, and floods are becoming more severe... In the coming decades, storms are likely to become more severe, deserts may expand, and summers are likely to become increasingly hot and dry, creating problems for agriculture and possibly human health. Our climate is changing because the earth is warming. People have increased the amount of carbon dioxide in the air by 40% since the late 1700s. Other heat-trapping greenhouse gases are also increasing. These gases have warmed the surface and lower atmosphere of our planet about one degree during the last 50 years. Evaporation increases as the atmosphere warms, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places—but contributes to drought in others…[12]

The following is an article from the Dallas Morning News that describes the effects of climate change specifically in North Central Texas:

> The United States has just come off a record year for weather and climate disasters and, by most accounts, it's only going to get worse.
>
> Last year hurricanes Harvey, Irma, and Maria; the wildfires and floods in California; and tornado outbreaks in the Midwest and the South delivered $306.2 billion in damages, more than any year in history when adjusted for inflation.
>
> Texas is particularly vulnerable to a changing climate. It has had more costly weather-related disasters than any other state, and those events will happen more often as air and ocean temperatures climb, scientists say.
>
> "Climate change is not just about polar bears," said Katharine Hayhoe, a climate scientist at Texas Tech University with an impressive YouTube following. "It will affect North Texas profoundly."

[11] Texas Conservation Action Plan. Texas Parks & Wildlife.
< https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/tcap/>

[12] What Climate Change Means for Texas. August 2016. EPA 430-F-16-045. United States Environmental Protection Agency.< https://archive.epa.gov/epa/sites/production/files/2016-09/documents/climate-change-tx.pdf>

Between 2041 and 2050, Dallas-Fort Worth may see August temperatures rise from a mean of 86 °F at the end of the 20th century to 94 °F, with extremes rising above 120, reports one study by scientists at the University of Texas at Arlington.

Longer droughts and more extreme rainstorms will pose a challenge for those who manage drinking water supplies, those who raise cattle, and those who oversee our roads and railways.

The changes may also have unexpected effects on people's daily lives, including jobs. Intense heat can imperil cars and airplanes, evaporate drinking water supplies, and halt outdoor labor such as farm work and construction.

Adam Smith, a scientist with the federal government's main climate agency, the National Oceanic and Atmospheric Administration, calls Texas "the disaster capital of the United States."

As Smith explains, Texas is susceptible to almost every kind of weather and climate hazard, from extreme cold to extreme heat, from severe drought and wildfires to torrential floods. Texas is also home to a booming population and critical infrastructure, including the petrochemical plants that were damaged in Hurricane Harvey.

"Texas is a hot-spot for a wide range of extreme natural events due to its geography," said Smith. "We expect many of these extremes to become more frequent and intense as time moves forward."

While uncertainty is built into climate models, scientists have a high degree of confidence in many of the changes they observe and predict.

The bigger, longer and more common an event is, the greater the accuracy with which scientists can project how climate change will impact it, said Hayhoe, a lead author of a November 2017 climate change report overseen by scientists at 13 federal agencies. Larger events have more data associated with them and can be easier to model.

Researchers are very confident that climate change will increase both average and extreme temperatures. They are also confident that climate change is likely to increase the risk of heavy precipitation in many areas and may bring stronger droughts to the south-central and southwestern parts of the U.S.

Projected impacts on smaller-scale events like tornadoes and hailstorms are less well understood.

One area of consensus is the cause of climate change. "It is extremely likely that human activities, especially emissions of greenhouse gases, are the dominant cause of the observed warming since the mid-20th century," note the authors of the Fourth National Climate Assessment, a Congressionally mandated review that scientists conduct every four years. They add that there are no convincing alternative explanations.

Below is how these changes will affect our area, the evidence behind the projections, and how confident scientists are in each of these findings.

Heat

More record-setting heat in North Texas is a virtual certainty. Already, we are living through the warmest period in the history of modern civilization, the federal report found, and that warming will accelerate.

Climate science contrarians often attack the models on which climate projections are based. Myron Ebell, who led President Donald Trump's transition team at the Environmental Protection Agency, accepts that humans are most likely responsible for warming, but he says models have exaggerated the outcome. Ebell is director of the Center for Energy and Environment at the Competitive Enterprise Institute, a libertarian advocacy group based in Washington, D.C. He acknowledges that he is not a scientist.

In fact, researchers have used models to predict global temperature changes for more than 50 years, and the models' projections have been fairly accurate over the long term. In the early 21st century, a discrepancy appeared between observed and modeled temperatures-a period dubbed the "global warming slowdown" or "hiatus."

Scientists have published scores of studies on the mismatch and tied it to several factors that contributed to lower-than-expected observed temperatures. Those factors include a series of small volcanic eruptions, the cooling effects of which scientists had underestimated, and lower than expected solar output.

Findings from those studies are helping to improve climate model simulations and helping scientists better understand why there are differences between simulations and observations in the early 21stcentury, said Ben Santer, a climate scientist at the Lawrence Livermore National Laboratory.

Global average temperatures increased about 1.8 degrees Fahrenheit in the last 115 years. In Dallas, they climbed from about 65 °F during the early part of the 20th century to 68 °F during the most recent decade. If nothing is done to reduce emissions of carbon dioxide and other greenhouse gases, average temperatures in the city may reach the low 70s by 2050 and surpass 75°F by the end of the century.

Earlier this year, Amir Jina and colleagues published a study in the journal *Science* that estimated economic damage from climate change in each county of the United States.

Once temperatures reach the high 90s, equal to or above body temperature, fatality rates go up.

Besides people, heat also affects roads. A 2015 study by the University of Texas at Arlington (UTA) that focused on the impact of climate change on transportation predicted "an increase in wildfires along paved highways, heat-induced stress on bridges and railroads, air-conditioning problems in public transport vehicles and heat-related accidents by failure of individual vehicles and heat-related stress."

The study concluded, "These impacts can be translated into substantial mobility and economic loss."

Drought

Along with heat will come stronger drought, which "has profound economic impacts," said Hayhoe.

The prediction that North Texas will have longer and more severe droughts is based on multiple factors, including the relationship between high temperatures and soil dryness and the presence of more frequent and longer lasting high-pressure systems in summer that suppress rainfall and deflect storms away from our area.

Hayhoe points to Texas' 2010-2013 drought as a probable sign of things to come. Although this drought occurred naturally, as a result of a strong La Niña event that typically brings dry conditions to our area, it was exacerbated by extreme heat. That event created severe hay shortages for cattle farmers and led some ranchers to prematurely slaughter their herds or export them out of state.

"Cotton can be drought-resistant, but not cattle," said Hayhoe.

The 2015 UTA study predicts a reduction in soil moisture of 10% to 15% in all seasons by 2050, which can also lead to cracked pavement and the premature loss of roads, railways, and other infrastructure.

Heat and drought also pose a problem for drinking water supplies, which North Texas sources from surface reservoirs that will be increasingly prone to evaporation. Hayhoe says some water managers are considering pumping the reservoirs underground during exceptionally hot and dry conditions, or covering them with polymer "blankets."

The blankets are an invisible layer of organic molecules that can help reduce evaporation.

Floods

While it's not likely that annual precipitation totals will change in North Texas, rainfall patterns likely will. Hayhoe and Nielsen-Gammon both say we will likely see enhanced "feast or famine" cycles with torrential rainstorms in the spring followed by longer than usual dry periods.

These predictions carry a high degree of certainty, because climatologists have already recorded this trend playing out.

"Rainfall becoming more extreme is something we expect because we've observed this not just in North Texas but throughout the United States, and models consistently predict it will continue to happen," said Nielsen-Gammon.

Severe rainstorms, the UTA scientists predict, will have the capacity to flood highway exit and service roads in the Federal Emergency Management Agency (FEMA) 100-year floodplain.

"While the state highway system was built above flooding levels, the connector roads may be easily flooded," said Arne Winguth, a climate scientist at UTA who co-authored the report.

Tornadoes and hail

Two events climate scientists cannot reliably project are hailstorms and tornadoes. "A lot of the things we care about are too small-scale to predict with more confidence," said Nielsen-Gammon. "The historical record is not large enough for longer-term forecasts."

There is some evidence that tornadoes, like rainstorms, are becoming more concentrated on fewer days and that their season has become less predictable.

The same is true with hail. "One thing we expect to happen with a warming climate is that the average humidity in the lower atmosphere may decrease, and if that happens it's easier for hail to stay frozen," said Nielsen-Gammon. "That factor might increase hailstorms, but that's just one of many factors that do affect hail."

Economy

Jina of the University of Chicago predicted in his study that climate change would decrease Dallas County's annual income by 10% to 20% in the coming decades unless emissions are reduced. "North Texas is one of the worst-affected places in the country," he said. Much of the loss comes from higher mortality rates, soaring air-conditioning costs, and reduced labor productivity.

To track labor productivity, Jina and his colleagues examined national time-use surveys, diaries kept by thousands of volunteers across the country, and compared them with local weather data. He found that on extremely hot days, people tended to stop working about 30 minutes early.

"There's direct evidence that people concentrate less well, make more mistakes and their brain just functions less efficiently if it's too hot," he said. Heat also disrupts sleep. "The general lack of productivity leads to them saying, 'No more work today.'"

The good news is that many climate-change effects are manageable. They do require local and federal authorities to plan ahead and take action, said Smith of the National Oceanic and Atmospheric Administration.

"It is important," he said, "to address where we build, how we build and also to build protections for populations already exposed in vulnerable areas."[13]

All participating jurisdictions are experiencing the effects of climate variability.

Population Increase and Demographics

The entire planning areas of the participating jurisdictions, including their populations, are vulnerable to the damaging effects of most of the natural hazards identified. The 2030 population projections produced by the North Central Texas Council of Governments (NCTCOG) use the year 2000 as a base year and project population and employment in five-year increments to 2030. Over the 30-year horizon, the 16-county North Texas region is anticipated to add 1.6 million households with a corresponding 4.1 million people and 2.3 million non-construction jobs. This represents an average annual population growth rate of 2.6% for these 30 years, a magnitude of growth never before experienced in the North Central Texas region.

[13] Climate change to bring North Texas longer droughts, heavy rains, 120-degree temps within 25 years. Kuchment, Anna. 2018, February 15. <https://www.dallasnews.com/news/climate-change-1/2018/02/15/climate-change-to-bring-texas-longer-droughts-heavy-rains-120-temps-august-within-25-years>

NCTCOG forecasts reflect only one set of growth assumptions. If circumstances change, real growth outcomes might be considerably different.[14]

Population growth and distribution, especially increased population density and urbanization, increases vulnerability to disasters.[15] The elderly, very young, those without air conditioning or heating, and outdoor laborers are most at risk to the effects of extreme heat and winter storms.

Residents living in a floodplain are most at risk to flooding and residents living in the Wildland-Urban Interface (WUI) are most at risk to wildfires. Those living in poverty and in homes not built using enhanced building codes are most susceptible to the damages from these hazards.

The following table reflects the **estimated** changes in participating jurisdictions' demographics, gathered by the North Central Texas Council of Governments, since the adoption of the 2015 HazMAP. Population estimates for Palo Pinto County refers to the entire county, not just the unincorporated portion.

Jurisdiction	2012 Population Estimate	2015 Population Estimate	2018 Population Estimate
Gordon	Data unavailable	Data unavailable	478 (census)
Mineral Wells	16,830	16,790	16,790
Mingus	Data unavailable	Data unavailable	248 (census)
Strawn	Data unavailable	Data unavailable	654 (census)
Palo Pinto County	28,320	28,710	28,710

Source: North Central Texas Regional Data Center.

In the context of emergencies, vulnerable groups may include individuals with disabilities, pregnant women, children, elderly persons, prisoners, certain members of ethnic minorities, people with language barriers, and the impoverished. For these populations, emergency response failures can have catastrophic consequences, including loss of the ability to work or live independently, permanent injury, and death. Without appropriate preparation, vulnerable individuals may not be able to evacuate as instructed, reach points of distribution for medical countermeasures, understand written or verbal communications during an emergency, or find suitable housing if their residences are destroyed during a disaster.

The community profiles of the participating jurisdictions are identified in the following table. Note jurisdictions with less than 5,000 residents do not have data for every topic. The Palo Pinto County column of numbers includes all cities (not just participating cities) and the unincorporated portion of the county.

[14] North Texas to 2030: Extending the Trends. Vision North Texas.

[15] Ben Wisner et al., At Risk: Natural Hazards, People's Vulnerability, and Disasters, 2d ed. (London: Routledge, 2004).

Community Profile					
Topic	**Gordon**	**Mineral Wells**	**Mingus**	**Strawn**	**Palo Pinto County**
Persons under 5 years (%)	Data unavailable	7.1%	Data unavailable	Data unavailable	6.3%
Persons 65 years and over (%)	Data unavailable	13.5%	Data unavailable	Data unavailable	19.2%
Language other than English spoken at home (%)	Data unavailable	19.3%	Data unavailable	Data unavailable	14.0%
With a disability, under age 65 (%)	Data unavailable	13.4%	Data unavailable	Data unavailable	13.2%
Persons without health insurance, under age 65 (%)	16.0 %	30.2%	29.9 %	20.3 %	21.5%
Persons in poverty (%)	12.9 %	23.5%	16.3 %	11.0 %	16.8%
Median household income	$36,667	$39,292	$31,250	$31,131	$45,067
Total housing units	266	5,160	154	343	10,441
Median housing value	$91,700	$81,300	$36,300	$70,000	$88,600
Percent of households with a broadband Internet subscription	67.6%	70.8%	27.6%	44.3%	68.4%

Source: US Census Bureau Quick Facts, www.census.gov.

New technologies that provide 9-1-1 and public safety officials with the ability to proactively engage the community have had a dramatic effect on mortality rates during these increasing amount and strength of natural disasters. Identifying at risk populations and providing them with information and assistance when they most need it can make a significant difference, especially in the event of an evacuation or seeking shelter. One measure of the strength of a community's response and recovery system is its attentiveness to its most vulnerable citizens. It is a cruel fact: disasters discriminate.

Repetitive Loss Properties

Among the National Flood Insurance Policy (NFIP) policyholders are thousands whose properties have flooded multiple times. Called "repetitive loss properties," these are buildings and/or contents for which the NFIP has paid at least two claims of more than $1,000 in any 10-year period since 1978. "Severe repetitive loss properties" are those for which the program has either made at least four payments for buildings and/or contents of more than $5,000 or at least two building-only payments that exceeded the value of the property.

These two kinds of properties are the biggest draw on the NFIP Fund. They not only increase the NFIP's annual losses and the need for borrowing; but they drain funds needed to prepare for catastrophic events.

Community leaders and residents should also be concerned with the Repetitive Loss problem because residents' lives are disrupted and may be threatened by the continual flooding.

The primary objective of identifying these properties is to eliminate or reduce the damage to property and the disruption to life caused by repeated flooding of the same properties.

The following table reflects the loss statistics for repetitive loss properties in participating jurisdictions.

Loss Statistics: from January 1, 1978 through report as of September 30, 2018					
Jurisdiction	**Total Losses**	**Closed Losses**	**Open Losses**	**Closed Without Payment (CWOP) Losses**	**Total Payments**
Gordon	0	0	0	0	$0
Mineral Wells	37	29	0	8	$231,441.15
Mingus	2	2	0	0	$35,994.99
Strawn	0	0	0	0	$0
Palo Pinto County Unincorporated	57	49	0	8	$1,201,087.50
Total losses: All losses submitted regardless of the status.					
Closed losses: Losses that have been paid.					
Open losses: Losses that have not been paid in full.					
CWOP losses: Losses that have been closed without payment.					
Total Payments: Total amount paid on losses.					

Source: Claim Information by State, https://bsa.nfipstat.fema.gov/reports/1040.htm#48.

The tables below provide information about the repetitive loss and severe repetitive loss properties within the participating jurisdictions as of March 2019, as provided by the Federal Emergency Management Agency. More details about the properties are not available to the public.

Property Details									
Community Number	**Mitigated?**	**Insured?**	**City**	**Occupancy**	**Flood Zone**	**Total Building Payment**	**Total Contents Payment**	**Losses**	**Total Paid**
480516	No	No	Mineral Wells	Single Family	X	$82,881.38	$20,031.86	3	$102,913.24
480516	No	No	Mineral Wells	Single Family	C	$13,827.55	$6,298.10	2	$20,125.65
480517	No	Yes	Mineral Wells	Other-Nonresidential	AE	$2,362.96	$-	2	$2,362.96
480517	No	No	Mineral Wells	Single Family	AE	$47,700.93	$8,347.20	4	$56,048.13

Property Details									
Community Number	Mitigated?	Insured?	City	Occupancy	Flood Zone	Total Building Payment	Total Contents Payment	Losses	Total Paid
480516	No	SDF	Palo Pinto	Single Family	A	$131,547.78	$-	6	$131,547.78
480516	No	No	Palo Pinto	Single Family	A	$8,635.85	$3,330.04	2	$11,965.89

New Development

Unsustainable development is one of the major factors in the rising costs of natural disasters. Many mitigation design strategies and technologies serve double duty, by not only preventing or reducing disaster losses but serving the broader goal of long-term community sustainability. For example, land use regulations prohibiting development in flood-prone areas may also help preserve the natural and beneficial functions of floodplains. New development in hazard-prone areas increases the risk of damage and injury from that hazard. The following are new developments in hazard-prone areas of the participating jurisdictions.

- **Gordon-** no new development.
- **Mineral Wells-** Two new housing projects are in the planning stages.
- **Mingus-** no new development.
- **Strawn-** no new development.
- **Palo Pinto County Unincorporated**- New subdivisions are being developed across the unincorporated county, but outside of designated floodplains.

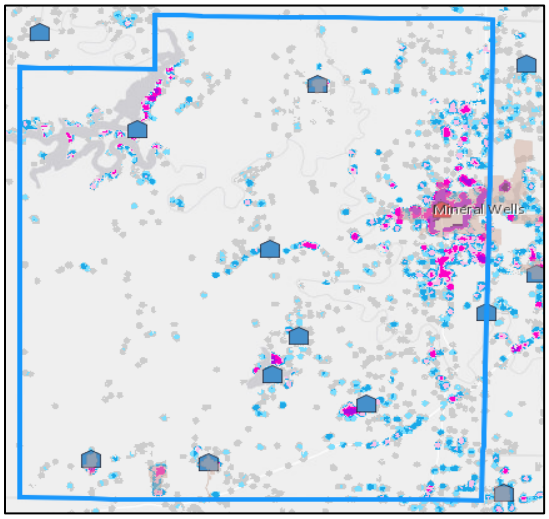
Wildland-Urban Interface

The Wildland-Urban Interface (WUI) layer of a map reflects housing density depicting where humans and their structures meet or intermix with wildland fuels. Wildfires can cause significant damage to property and threatens the lives of people who are unable to evacuate WUI areas. All improved property, critical facilities, and critical structures and infrastructure located in these wildfire-prone areas are considered vulnerable and can be exposed to this hazard.

WUI housing density is categorized based on the standard Federal Register and United States Forest Service (USFS) Silvis data set categories. The number of housing density categories is extended to provide a better gradation of housing distribution to meet specific requirements of the states for their fire protection planning activities. While units of the data set are in houses per square kilometer, which is consistent with other data such as USFS SILVIS, the data is presented as the number of houses per acre to aid with interpretation and use in Texas.

The following map reflects the WUI areas in Palo Pinto County, with the locations of fire stations. The paid fire departments are marked in red and volunteer fire departments are marked in blue.

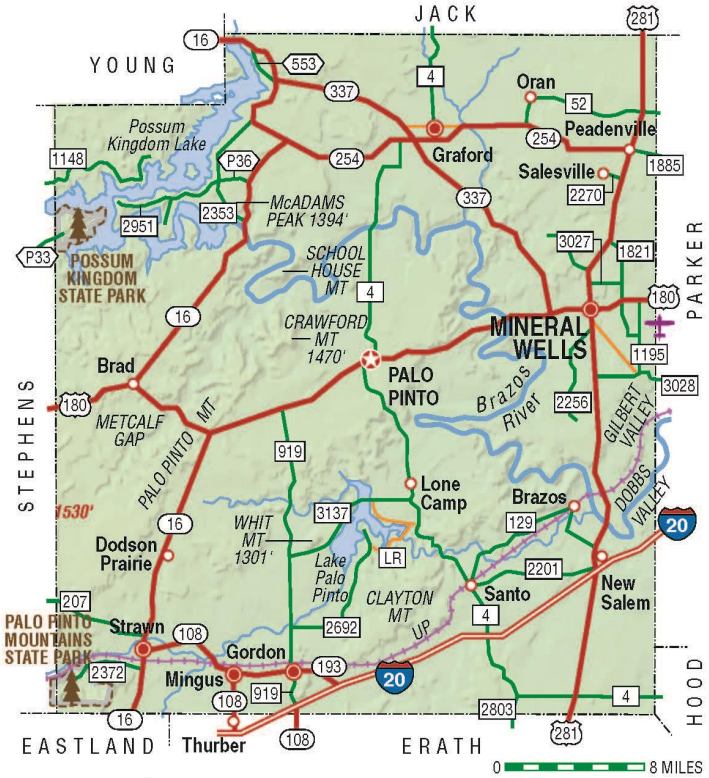
Palo Pinto County WUI Density Map



	No Data
	1-LT 1 hs/40 ac
	2-1 hs/40 to 1 hs/20 ac
	3-1 hs/20 to 1 hs/10 ac
	4-1 hs/10 to 1 hs/5 ac
	5-1 hs/5 to 1 hs/2 ac
	6-1 hs/2 to 3 hs/ac
	7-GT 3 hs/ac
*hs- house *ac- acre	

Source: Texas Wildfire Risk Assessment Portal Professional

Map for Reference



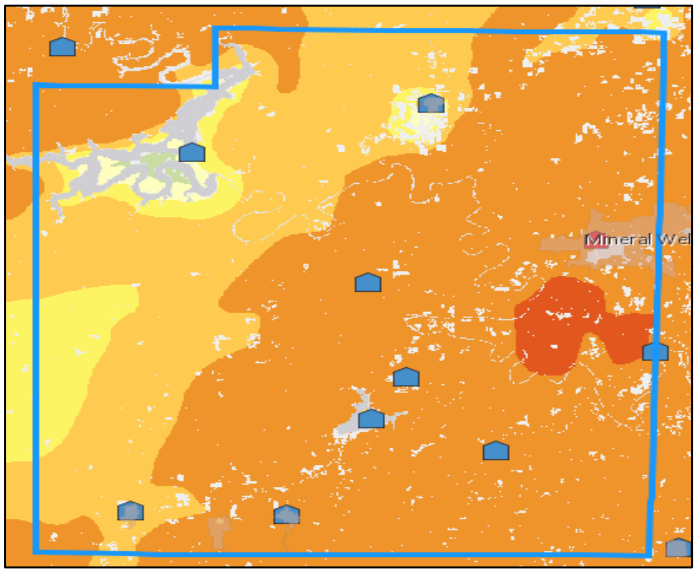
Palo Pinto County © Texas Almanac

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 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 based on the Wildland Fire Susceptibility Index (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 percentile weather categories. WFSI is defined as the likelihood of an acre burning.

The following map shows the threat level of wildfires in Palo Pinto County, with the locations of fire stations. The paid fire departments are marked in red and volunteer fire departments are marked in blue.

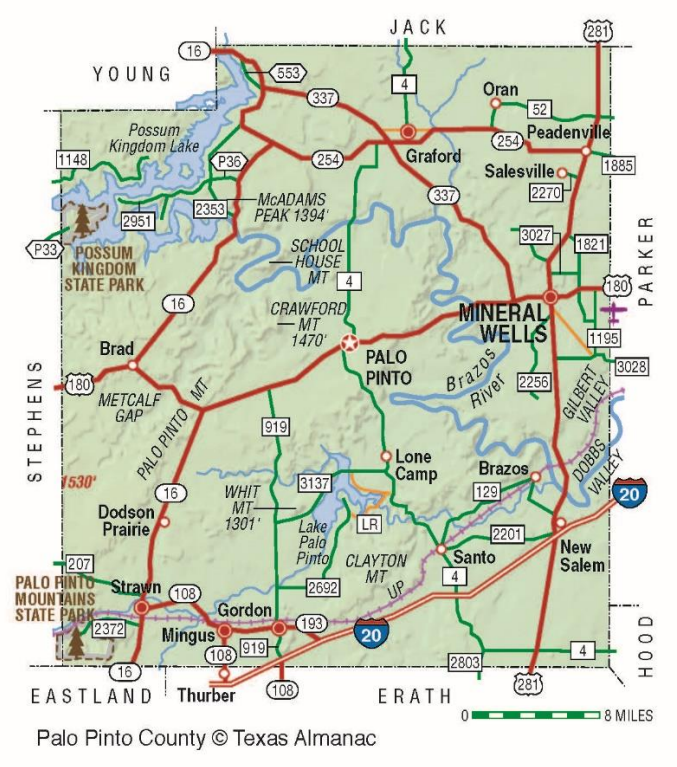
Palo Pinto County Wildfire Threat Map



	No Data
	1-Low
	2
	3-Moderate
	4
	5-High
	6
	7-Very High

Source: Texas Wildfire Risk Assessment Portal Professional Viewer.

Map for Reference



3.4.6 Factors that Decrease Vulnerability

Local Mitigation Activities

Factors that decrease vulnerability to hazards include the mitigation actions that have previously been implemented, the adoption of new codes and policies, and the participation in regional projects sponsored by the North Central Texas Council of Governments (NCTCOG) and other governing agencies.

The participating jurisdictions have implemented a variety of mitigation actions to protect their communities from damaging disasters. These previous mitigation actions are described in detail in Chapter 4.

National Policy

On October 5, 2018, President Trump signed the Disaster Recovery Reform Act of 2018 (DRRA) into law as part of the Federal Aviation Administration Reauthorization Act of 2018. These reforms acknowledge the shared responsibility of disaster response and recovery, aim to reduce the complexity of FEMA and build the nation's capacity for the next catastrophic event. The law contains more than 50 provisions that require FEMA policy or regulation changes for full implementation, as they amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act. It has yet to be seen how the DRRA will be implemented and how it will impact state and local agencies, but highlights from the DRRA include:

Highlights from the DRRA include:

- **Greater investment in mitigation, before a disaster:** Authorizing the National Public Infrastructure Pre-Disaster Hazard Mitigation Grant Program, which will be funded through the Disaster Relief Fund as a six percent set aside from disaster expenses.
    - This program will focus on funding public infrastructure projects that increase community resilience before a disaster occurs.
    - Previously, funding for pre-disaster mitigation grants relied on congressional appropriations which varied from year to year. Now, with a reliable stream of sufficient funding, communities will be able to plan and execute mitigation programs to reduce disaster risk nationwide.
    - According to a 2017 National Institute of Building Sciences report, the nation saves six dollars in future disaster costs for every one dollar invested in mitigation activities.
- **Reducing risk from future disasters after fire:** Providing hazard mitigation grant funding in areas that received Fire Management Assistance Grants as a result of wildfire. Adding fourteen new mitigation project types associated with wildfires and windstorms.
- **Increasing state capacity to manage disaster recovery:** Allowing for higher rates of reimbursement to state, local and tribal partners for their administrative costs when implementing public assistance (12 percent) and hazard mitigation projects (15 percent). Additionally, the legislation provides flexibility for states and tribes to administer their own post-disaster housing missions, while encouraging the development of disaster housing strategies.
    - States, tribes, territories and local governments bear significant administrative costs implementing disaster recovery programs. Often these costs can be high and substantially burdensome for the impacted entity to meet. Increasing the funding for administrative costs will enable faster, more effective delivery of vital recovery programs to communities.
    - State and tribal officials have the best understanding of the temporary housing needs for survivors in their communities. This provision incentivizes innovation, cost containment and prudent management by providing general eligibility requirements while allowing them the flexibility to design their own programs.
- **Providing greater flexibility to survivors with disabilities:** Increasing the amount of assistance available to individuals and households affected by disasters, including allowing accessibility repairs for people with disabilities, without counting those repairs against their maximum disaster assistance grant award.
- **Retaining skilled response and recovery personnel:** Authorizing FEMA to appoint certain types of temporary employees who have been with the agency for three continuous years to full time positions in the same manner as federal employees with competitive status. This allows the agency to retain and promote talented, experienced emergency managers.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners, renters and businesses and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of general risk insurance, but also of flood insurance, specifically. When a community participates in the NFIP, it participates in one of two phases: the Emergency Program or the Regular Program.

Emergency Program: Entry-level participation phase.

- Limited coverage
- Flat rates
- Basic Flood Hazard Boundary Map (FHBM)*

*Initial flood hazard identification

Regular Program: Most participating communities are in this phase.

- Full participation
- Detailed Flood Insurance Rate Map (FIRM)
- NFIP's full limits of insurance

The following table includes the NFIP status of the participating jurisdictions.

Community Name	CID	County	Initial FHBM Identified	Initial FIRM Identified	Current Effective Map Date	Reg-Emer Date	Tribal
Gordon	480963B	Palo Pinto	10/22/76	08/02/12	04/05/19	05/27/20	No
Mineral Wells	480517B	Palo Pinto, Parker	05/07/74	12/01/77	04/05/19	12/01/77	No
Mingus	480518B	Palo Pinto	05/02/75	09/01/04	04/05/19	09/01/04	No
Strawn	480965B	Palo Pinto	07/16/76	11/01/89	04/05/19	11/01/89	No
Palo Pinto County Unincorporated	480516B	Palo Pinto	-	08/02/90	04/05/19	12/19/84	No
CID: A different community identification number is assigned for the incorporated city versus the unincorporated county.							
Community Name: The incorporated city or unincorporated county, parish, or borough.							
County: This column should match the relative incorporated city, township, village, or other entity.							

Init FHBM Identified: This date tells when the Flood Hazard Boundary Map was created. This map is only a factor in communities that do not have a Flood Insurance Rate Map.
Init FIRM Identified: This date represents the community's first Flood Insurance Rate Map, and it is important because it represents the dividing line between two building categories called Pre-FIRM and Post-FIRM.
Current Effective Map Date: This is the date of the map currently in effect.
Reg-Emer Date: The date the community first joined the NFIP. An "E" next to the date indicates that the community is in the Emergency Program and subject to limited coverage. If there is no "E" next to the date, then the community participates in the Regular Program.
Tribal: A "yes" in this column indicates that the participating community is a tribal nation.
NSFHA: A 'Non-Special Flood Hazard Area' is an area that is in a moderate-to-low risk flood zone (Zones B, C, X Pre- and Post-FIRM)

Source: FEMA Community Status Book Report, http://www.fema.gov/cis/TX.html.

Jurisdictions participating in the NFIP are required to regulate any development in designated flood prone areas. In Palo Pinto County, all work within a Federal Emergency Management Agency (FEMA) designated floodplain requires a floodplain permit.

The NFIP offers three Standard Flood Insurance Policy forms: Dwelling, General Property, and Residential Condominium Building Association. These forms provide policyholders with a description of their coverage and other important coverage information. Below is a table of the local policy statistics.

Policy Statistics as of 09/30/2018			
Jurisdiction	**Policies In-force**	**Insurance In-force (whole $)**	**Written Premium In-force**
Gordon	-	-	-
Mineral Wells	62	$10,636,000	$54,872
Mingus	1	$350,000	$373
Strawn	2	$68,000	$1,200
Palo Pinto County Unincorporated	122	$26,969,400	$115,821

Source: FEMA Policy Statistics Country-Wide, https://bsa.nfipstat.fema.gov/reports/1011.htm.

Community Rating System

The Community Rating System (CRS) is a voluntary program for communities that participate in the National Flood Insurance Program (NFIP). The goals of the CRS are to reduce flood damages to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. The CRS has been developed to provide incentives in the form of premium discounts for communities to go beyond the minimum floodplain management requirements to develop extra measures to provide protection from flooding. For a community to be eligible, it must be in full compliance with the NFIP.

All communities start out with a Class 10 rating, which provides no discount. There are 10 CRS classes: Class 1 requires the most credit points and gives the greatest premium discount; Class 10 identifies a community that does not apply for the CRS or does not obtain a minimum number of credit points and receives no discount. There are 18 activities recognized as measures for eliminating exposure to floods. Credit points are assigned to each activity. The activities are organized under 4 main categories:

- Public Information
- Mapping and Regulation
- Flood Damage Reduction
- Flood Preparedness

Premium discounts ranging from 5% to a maximum of 45% are applied to eligible policies written in a community as recognition of the floodplain management activities instituted.

All CRS communities must maintain completed FEMA elevation and floodproofing certificates for all new and substantially improved construction in the Special Flood Hazard Area (SFHA) after the date of application for CRS classification. These certificates must be available upon request. Therefore, in writing a policy, an agent/producer should be able to get these certificates from any CRS community. In addition, some CRS communities receive credit for having completed certificates for Post-Flood Insurance Rate Map (FIRM) buildings constructed prior to the CRS application date. If they do receive this credit, these certificates should also be available to agents/producers writing flood insurance.

According to the April 2018 NFIP Flood Insurance Manual, there are no CRS communities amongst the participating jurisdictions in this hazard mitigation action plan.

The following table describes NFIP compliance within the participating jurisdictions.

NFIP Topic	Source of Information
How many structures are exposed to flood risk within the community?	Community Floodplain Administrator (FPA)
Gordon- Approximately 10	
Mineral Wells- Unknown	
Mingus- There are approximately 18 structures at risk to flooding.	
Strawn- Unknown	
Palo Pinto County Unincorporated- Unknown	
Describe any areas of flood risk with limited NFIP policy coverage	Community FPA and FEMA Insurance Specialist
Gordon- Unknown	
Mineral Wells- Unknown	
Mingus- Unknown	
Strawn- Unknown	
Palo Pinto County Unincorporated- None	
Is the Community FPA or NFIP Coordinator certified?	Community FPA

Gordon- No	
Mineral Wells- No	
Mingus- No	
Strawn- No	
Palo Pinto County Unincorporated- No	
Is floodplain management an auxiliary function?	Community FPA
Gordon- Yes	
Mineral Wells- Yes	
Mingus- No	
Strawn- No	
Palo Pinto County Unincorporated- No	
Provide an explanation of NFIP administration services (e.g. permit review, GIS, education or outreach, inspections, engineering capability)	Community FPA
Gordon- New Construction permits are required	
Mineral Wells- Review information for building permits to ensure compliance. GIS ensures correct overlays for mapping for the building department and citizens.	
Mingus- Flood Insurance Study managed by FEMA.	
Strawn- Services are in development.	
Palo Pinto County Unincorporated- Working on doing permitting and inspections.	
What are the barriers to running an effective NFIP program in the community, if any?	Community FPA
Gordon- Staff training limited at current time.	
Mineral Wells- Staff training limited at current time.	
Mingus- None	
Strawn- Staff training limited at current time.	
Palo Pinto County Unincorporated- Support and education is lacking.	
Is the community in good standing with the NFIP?	State NFIP Coordinator, FEMA NFIP Specialist, community records
Gordon- Yes	
Mineral Wells- Yes	
Mingus- Yes	
Strawn- Yes	
Palo Pinto County Unincorporated- Yes	
Are there any outstanding compliance issues (i.e. current violations)?	State NFIP Coordinator, FEMA NFIP Specialist, community records
Gordon- No	
Mineral Wells- No	
Mingus- No	
Strawn- No	
Palo Pinto County Unincorporated- No	
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	State NFIP Coordinator, FEMA NFIP Specialist, community records

Gordon- Unknown	
Mineral Wells- Unknown	
Mingus- February 2014	
Strawn- Unknown	
Palo Pinto County Unincorporated- May 2019, via phone and email.	
Is a CAV or CAC scheduled or needed?	State NFIP Coordinator, FEMA NFIP Specialist, community records
Gordon- No	
Mineral Wells- Yes	
Mingus- No	
Strawn- Yes	
Palo Pinto County Unincorporated- No	
Are the FIRMs digital or paper?	Community FPA
Gordon- Digital	
Mineral Wells- Digital	
Mingus- Both	
Strawn- Digital	
Palo Pinto County Unincorporated- Both	
Do floodplain development regulations meet or exceed FEMA or state minimum requirements? If so, in what ways?	Community FPA
Gordon- Yes	
Mineral Wells- Yes	
Mingus- No	
Strawn- No	
Palo Pinto County Unincorporated- No	
Provide an explanation of the permitting process.	Community FPA, State, FEMA NFIP
Gordon- Building permit obtained at City Hall, then FNIP Coordinator is scheduled to visit site of building and construct an investigation and also check of the NFIP maps.	
Mineral Wells- 1. Property is identified & reviewed to find where it is in flood zone area. 2. If found in floodplain, elevation certificate is required, no permit issued until provided with certificate. 3. If found in floodway, permit is not allowed for new construction. We explain to citizens and developers about the ability to have studies done to possibly move forward with development, but no one has wanted to move on since then.	
Mingus- Follow county process.	
Strawn- In progress	
Palo Pinto County Unincorporated- In progress	

3.4.7 Greatest Vulnerabilities

Below is a list of the participating jurisdictions greatest vulnerabilities in relation to natural hazards.

Gordon	• Any substantial event would be devastating to the financial capabilities of the city.
Mineral Wells	• A large portion of the downtown district including city hall lies in a flood prone area. The city hall annex has been flooded within the last five years at least once. • According to the report Texas Wildfire Risk Assessment, Mineral Wells and a five-mile area outside the cities limits ranks "High" for a Wildland Urban Interface incident. • Severe weather events are always a concern for Mineral Wells. There have been two tornados within the last four years. A severe hailstorm in 2012 did millions of dollars in damage throughout the city.
Mingus	• A major railroad runs through the middle of the city that could be vulnerable to natural hazards and have a severe impact on the community and traffic if damaged.
Strawn	• There is no building strong enough to withstand tornadoes or strong winds. • Drought severely effects water levels. • Volunteer fire departments require interlocal agreements for all events.
Palo Pinto County Unincorporated	• The courthouse, sheriff's office, jail, and water treatment plant are critical facilities. • There are not enough resources to respond to and recover from any natural hazard event.

3.5 Historical Events

This section shows historical events and damage for the following natural hazards in Palo Pinto County since the 2015 HazMAP:

- Drought
- Earthquakes
- Expansive Soils
- Extreme Heat
- Flooding (including dam failure)
- Thunderstorms (including hail, wind, and lightning)
- Tornadoes
- Wildfires
- Winter Storms

Weather Events

The following tables identify the weather events (drought, extreme heat, flooding, thunderstorms, tornadoes, and winter storms), captured by the National Weather Service (NWS), that have occurred from 2012-2018 in the participating jurisdictions or the Palo Pinto County Zone. Damages are recorded in $US. The National Centers for Environmental Information (NCEI) receives storm data from the NWS. The NWS receives their information from a variety of sources, which include but are not limited to: county, state and federal emergency management officials, local law enforcement officials, SkyWarn spotters, NWS

damage surveys, newspaper clipping services, the insurance industry, and the general public, among others. NWS Storm Data are geographically categorized by county or by NWS Forecast Zone. Localized events such as a tornado, thunderstorm winds, flash floods, and hail are categorized using the *Palo Pinto Co.* (County) designation. More widespread events that can impact the entire county equally, such as heat, cold, drought, floods, and winter weather, are categorized using the *Palo Pinto (Zone)*.

There have been no NWS reports of extreme heat within the participating jurisdictions.

Due to the climate variability and increasing populations, it is expected that the same level of damage experienced in the past will occur in the future, if not more, for each event.

The following abbreviations from the column headings for all weather tables are explained below:
'Mag': Magnitude, **'Dth':** Deaths, **'Inj':** Injuries, **'PrD':** Property Damage ($), **'CrD':** Crop Damage ($)

The following weather events are listed in alphabetical order.

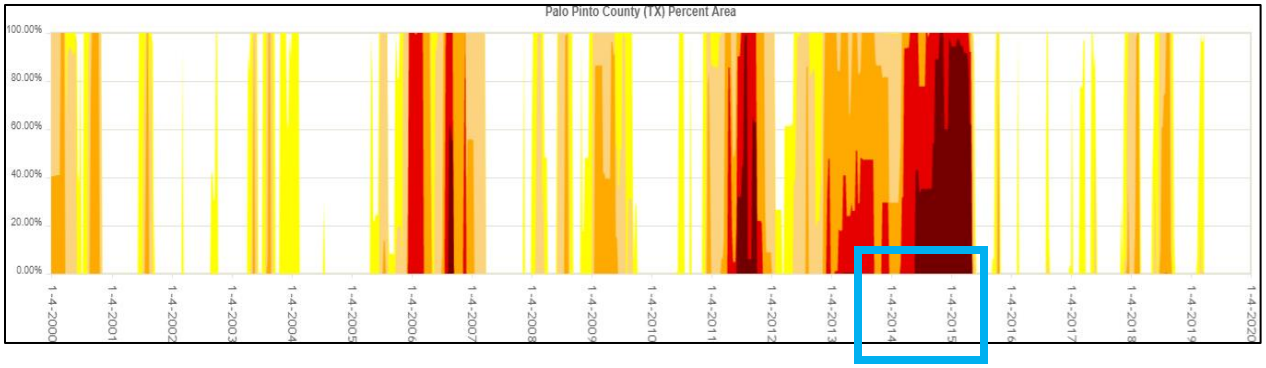
Drought

Location	County/Zone	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
PALO PINTO (ZONE)	PALO PINTO (ZONE)	08/07/2012	00:00	Drought		0	0	0.00K	0.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	11/20/2012	00:00	Drought		0	0	0.00K	2.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	12/01/2012	00:00	Drought		0	0	0.00K	2.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	01/01/2013	00:00	Drought		0	0	0.00K	2.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	02/01/2013	00:00	Drought		0	0	0.00K	2.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	03/01/2013	00:00	Drought		0	0	2.00K	0.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	04/01/2013	00:00	Drought		0	0	0.00K	3.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	05/01/2013	00:00	Drought		0	0	0.00K	4.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	06/01/2013	00:00	Drought		0	0	0.00K	3.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	07/01/2013	00:00	Drought		0	0	0.00K	4.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	08/01/2013	00:00	Drought		0	0	0.00K	3.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	09/01/2013	00:00	Drought		0	0	0.00K	3.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	10/01/2013	00:00	Drought		0	0	0.00K	3.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	11/01/2013	00:00	Drought		0	0	0.00K	4.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	12/01/2013	00:00	Drought		0	0	0.00K	3.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	01/01/2014	00:00	Drought		0	0	0.00K	3.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	02/01/2014	00:00	Drought		0	0	0.00K	2.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	03/01/2014	00:00	Drought		0	0	0.00K	7.00K

Drought									
Location	County/Zone	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
PALO PINTO (ZONE)	PALO PINTO (ZONE)	04/01/2014	00:00	Drought		0	0	0.00K	4.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	05/01/2014	00:00	Drought		0	0	0.00K	3.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	06/01/2014	00:00	Drought		0	0	0.00K	3.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	07/01/2014	00:00	Drought		0	0	0.00K	5.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	08/01/2014	00:00	Drought		0	0	0.00K	5.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	09/01/2014	00:00	Drought		0	0	7.00K	0.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	10/01/2014	00:00	Drought		0	0	0.00K	5.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	11/01/2014	00:00	Drought		0	0	0.00K	3.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	12/01/2014	00:00	Drought		0	0	0.00K	10.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	01/01/2015	00:00	Drought		0	0	0.00K	4.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	02/01/2015	00:00	Drought		0	0	0.00K	2.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	03/01/2015	00:00	Drought		0	0	0.00K	5.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	04/01/2015	00:00	Drought		0	0	0.00K	4.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	10/20/2015	00:00	Drought		0	0	1.00K	0.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	02/01/2018	00:00	Drought		0	0	0.00K	0.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	08/01/2018	00:00	Drought		0	0	0.00K	1.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	10/01/2019	0:00	Drought		0	0	0.00K	0.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	11/01/2019	0:00	Drought		0	0	0.00K	0.00K
Totals:						0	0	10.00K	104.00K

Source: NOAA National Centers for Environmental Information

During these times the value of cattle decreased dramatically due to low cattle weight caused by drought impact on feed lots. Cattle had to be shipped to Oklahoma and farmers had to buy hay to feed cattle instead of growing it themselves. Water levels are a critical concern during this time. The following chart reflects the annual changes in drought conditions.



D0	D1	D2	D3	D4

Source: United States Drought Monitor.

As shown in the Percent Area graph above, the time period from 2014-2015 had the greatest severity and longest time period of D3-D4 drought conditions. Besides major crop damage, these extreme drought conditions have the potential to put Palo Pinto County in extreme fire danger and could cause widespread water shortage and restrictions, creating a water emergency.

Flood

Location	County/Zone	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
MINERAL WELLS	PALO PINTO CO.	03/07/2016	22:10	Flood		0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	4/18/2015	17:30	Flash Flood		0	0	8.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	03/18/2020	01:44	Flash Flood		0	0	0.00K	0.00K
STRAWN	PALO PINTO CO.	5/26/2015	18:50	Flash Flood		0	0	0.00K	0.00K
LAKE PALO PINTO	PALO PINTO CO.	5/26/2015	18:50	Flash Flood		0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	3/7/2016	19:10	Flash Flood		0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	4/17/2016	6:20	Flash Flood		0	0	10.00K	0.00K
STRAWN	PALO PINTO CO.	5/30/2016	0:00	Flash Flood		0	0	15.00K	0.00K
STRAWN	PALO PINTO CO.	5/31/2016	13:20	Flash Flood		0	0	5.00K	0.00K
Totals:						0	0	38.00K	0.00K

Source: NOAA National Centers for Environmental Information

Flooding led to major road closures and the need for high water rescues. Some roads were completely washed out. All the flood reports at the National Weather Service involved roads and vehicles

Thunderstorm									
Location	County/Zone	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
GORDON	PALO PINTO CO.	5/26/2015	18:10	Thunderstorm Wind	70 kts. EG	0	0	0.00K	0.00K
GORDON	PALO PINTO CO.	5/26/2015	18:10	Hail	1.75 in.	0	0	0.00K	5.00K
GORDON	PALO PINTO CO.	3/30/2016	14:45	Hail	1.00 in.	0	0	0.00K	0.00K
GORDON	PALO PINTO CO.	5/25/2018	16:18	Hail	1.00 in.	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	5/30/2012	21:20	Thunderstorm Wind	56 kts. EG	0	0	10.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	10/12/2014	23:40	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	5/16/2015	22:40	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	8/18/2018	16:11	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	03/13/2019	02:30	Thunderstorm Wind	51 kts. EG	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	10/20/2019	22:36	Thunderstorm Wind	65 kts. MG	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	1/24/2012	15:10	Hail	0.75 in.	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	3/19/2012	14:03	Hail	0.75 in.	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	5/4/2012	17:27	Hail	1.00 in.	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	5/4/2012	18:45	Hail	1.00 in.	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	2/10/2013	1:30	Hail	0.88 in.	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	3/9/2013	16:40	Hail	1.00 in.	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	5/15/2013	17:13	Hail	1.50 in.	0	0	0.00K	0.00K

Thunderstorm

Location	County/Zone	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
MINERAL WELLS	PALO PINTO CO.	5/15/2013	17:14	Hail	1.25 in.	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	5/15/2013	17:20	Hail	1.75 in.	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	5/15/2013	17:25	Hail	4.00 in.	0	0	400.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	5/19/2015	18:18	Hail	1.75 in.	0	0	50.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	4/21/2018	15:49	Hail	0.75 in.	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	4/21/2018	15:50	Hail	1.00 in.	0	0	0.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	6/23/2019	19:30	Hail	1.25 in.	0	0	0.00K	0.00K
PALO PINTO	PALO PINTO CO.	4/18/2015	16:22	Hail	1.75 in.	0	0	4.00K	0.00K
PALO PINTO	PALO PINTO CO.	4/18/2015	16:35	Hail	1.75 in.	0	0	10.00K	0.00K
PALO PINTO	PALO PINTO CO.	5/25/2018	15:40	Hail	0.88 in.	0	0	0.00K	0.00K
STRAWN	PALO PINTO CO.	4/26/2015	19:05	Hail	1.75 in.	0	0	10.00K	0.00K
STRAWN	PALO PINTO CO.	5/26/2015	16:49	Hail	0.75 in.	0	0	0.00K	0.00K
Totals:						0	0	499.00K	5.00K

In.: Inch
Kts.: knots
EG: Estimated Gusts

Source: NOAA National Centers for Environmental Information

Property was damaged by wind and hail. The most costly, single incident resulted from grapefruit size hail reported in the City of Mineral Wells.

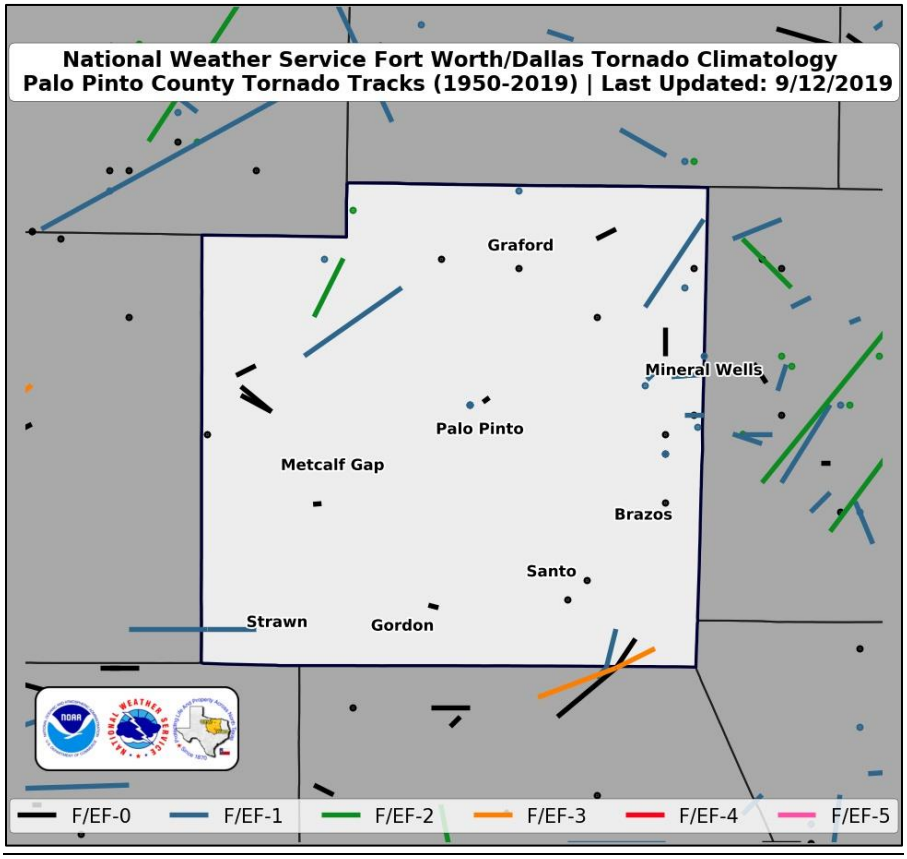
Tornado

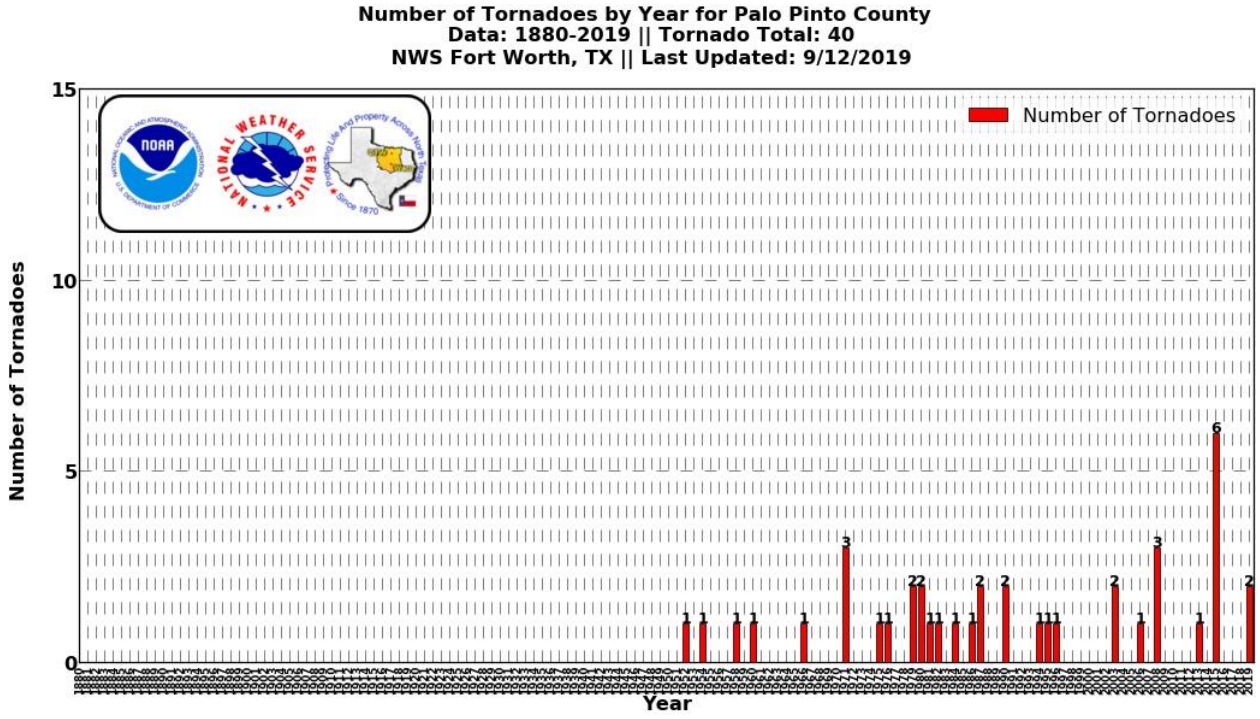
Location	County/Zone	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
PALO PINTO	PALO PINTO CO.	5/19/2015	17:19	Tornado	EF0	0	0	0.00K	0.00K

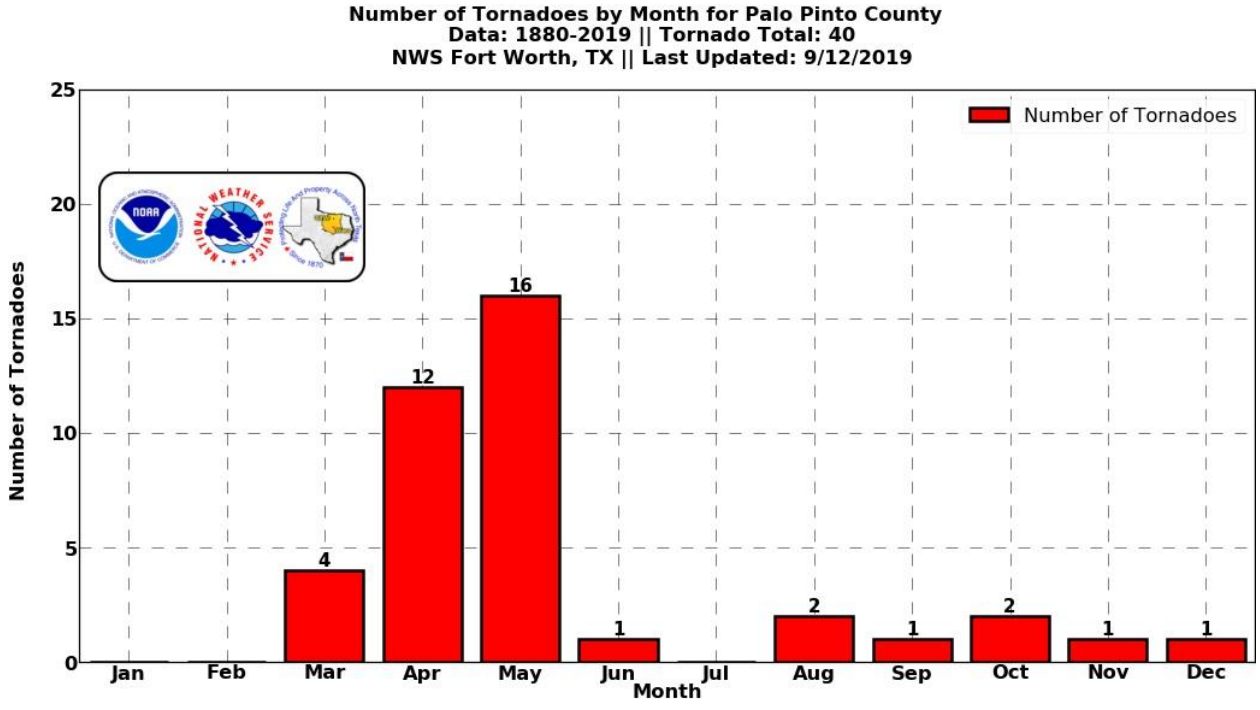
MINERAL WELLS	PALO PINTO CO.	5/19/2015	18:29	Tornado	EF1	0	0	230.00K	0.00K
MINERAL WELLS	PALO PINTO CO.	3/13/2019	02:25	Tornado	EF1	0	0	10.00K	0.00K
GORDON	PALO PINTO CO.	5/26/2015	17:29	Tornado	EF0	0	0	0.00K	0.00K
Totals:						0	0	240.00K	0.00K

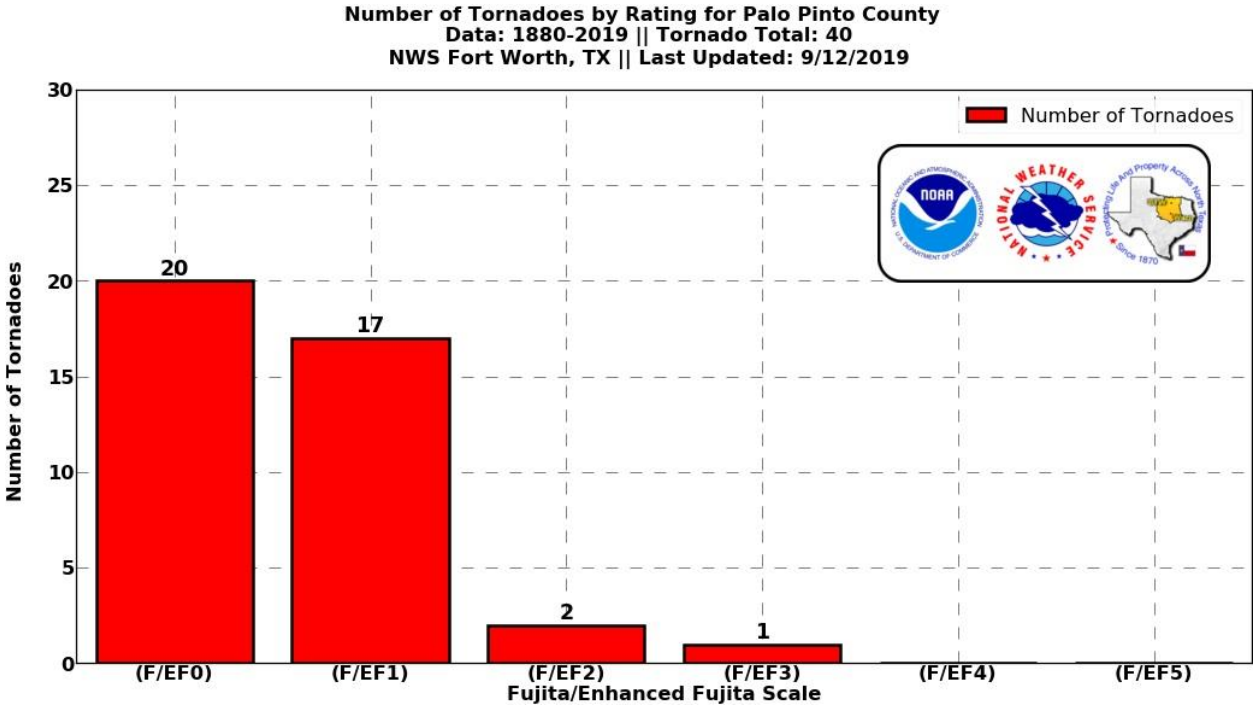
Source: NOAA National Centers for Environmental Information

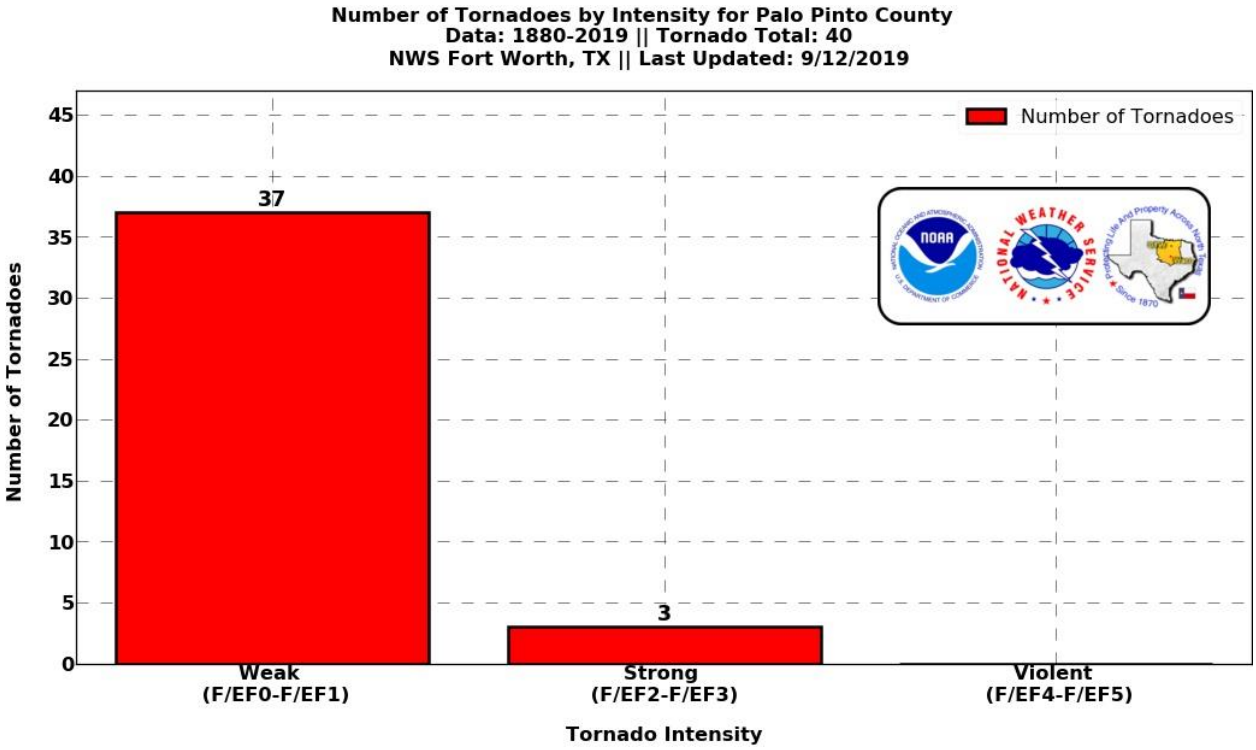
Property damage included damage to trees, power lines, and a few homes. The following map and charts are from the National Weather Service (NWS) Fort Worth Palo Pinto County Climatology Page, 1950-2019. They reflect historical data related to tornadoes in Palo Pinto County.




Number of Tornadoes by Year for Palo Pinto County
Data: 1880-2019 || Tornado Total: 40
NWS Fort Worth, TX || Last Updated: 9/12/2019
Number of Tornadoes
Number of Tornadoes
Year


Number of Tornadoes by Month for Palo Pinto County
Data: 1880-2019 || Tornado Total: 40
NWS Fort Worth, TX || Last Updated: 9/12/2019
Number of Tornadoes
Number of Tornadoes
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month





Winter Storm

Location	County/Zone	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
PALO PINTO (ZONE)	PALO PINTO (ZONE)	02/27/2015	06:15	Heavy Snow		0	0	0.00K	0.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	12/05/2013	14:00	Winter Storm		0	0	500.00K	0.00K
PALO PINTO (ZONE)	PALO PINTO (ZONE)	02/22/2015	17:15	Winter Storm		0	0	7.00K	0.00K
Totals:						0	0	507.00K	0.00K

Source: NOAA National Centers for Environmental Information

The following article highlights the severe impacts of winter weather in North Central Texas and Palo Pinto County. Although this article describes a 2013 storm, it also describes what Palo Pinto County could experience again.

National Weather Service: North Texas Snowfall Events

December 5-6, 2013

A winter storm affected much of North and Central Texas for an extended period from December 5th through the 10th. A combination of freezing rain, sleet, and a little snow began falling during the day on the 5th and continued through the morning hours of the 6th. As the ice and sleet settled on the 6th, a thick layer of ice paralyzed most of the area north of a line from Goldthwaite to Cleburne to Ennis to Sulphur Springs. In this area, accumulations of sleet and ice measured up to 5" with the highest amounts from Denton to Sherman to Bonham.

NBC 5 News captured "cobblestone ice" on North Texas roads

Temperatures remained below freezing until the 9th and 10th resulting in a prolonged winter event. Most residents were forced to remain at home for several days. A new term, coined "cobblestone ice," was used to describe the condition of the ice on the interstates and highways due to the compaction of ice and sleet.

South of this area, lighter amounts of icing occurred producing mainly icy bridges, overpasses, and elevated surfaces. As a result of the ice storm, significant tree damage occurred with thousands of tree branches falling under the weight of the ice. Power lines were also brought down, and at the peak of the storm, 275,000 customers were without power in the North Texas region. Most schools, especially in the hardest hit areas, were closed for several days. Some businesses were forced to close for a day or two also. Hundreds of injuries were reported due to falls on the ice but exact numbers were not available. Seven fatalities occurred during this event; 4 in vehicles, 2 from exposure, and 1 from a fall on the ice. Early estimates from the insurance council estimated $30 million in residential insured loses. The estimate did not include damage to vehicles or roads. Many roads and bridges were damaged from the ice and/or from attempts by Texas Department of Transportation to remove the ice using plows and graders. Hundreds of people and semi-trucks were stranded for long periods on

many of the main highways and interstates including I-35 from Fort Worth to the Oklahoma border and Interstate 20 from Fort Worth going west. The clean-up from this event took weeks and even a few months is some places.[16]

Though there has not been a major winter event recorded since this 2013 example, a severe winter storm happening in the next five years cannot be ruled out, as weather patterns have been evolving along with the change in climate, as mentioned earlier.

Not all events have been reported to NWS, as some participants have experienced damage from various hazard events not listed above. Based on the information in the chart above, participating jurisdictions in Palo Pinto County can expect a similar occurrence of events and level of damage over the next five years.

Geographic Events

The following data reflects past geographic events that have occurred within the participating jurisdictions. **According to the best information available, there is no history of dam failure in Palo Pinto County and the participating jurisdictions. Expansive soils damage has not been formally documented, though damage has slowly occurred over time.**

Earthquake Events

The number of earthquake events in Palo Pinto County varies by source of information. The TexNet Earthquake Catalog website developed and run in 2017 by the University of Texas at Austin's Bureau of Economic Geology provides the most precise near real-time information available about earthquakes across Texas. According to their data, no earthquakes have been reported in Palo Pinto County since 2017. Based on this information, the chances of a future earthquake are low.

The following information is a dataset from the United States Geological Survey (USGS) of earthquakes greater than +2.0 magnitude in Palo Pinto County since 2012. Abbreviations under the 'Location' category represent cardinal direction.

Date and Time	Depth	Magnitude	Location
2013-12-09T09:23:14.340Z	5	3.7	17km NNE of Mineral Wells, Texas
2013-11-28T08:41:07.600Z	4.99	2.8	21km SSW of Jacksboro, Texas
2013-11-28T07:58:35.690Z	5	3.7	18km N of Mineral Wells, Texas

Source: USGS

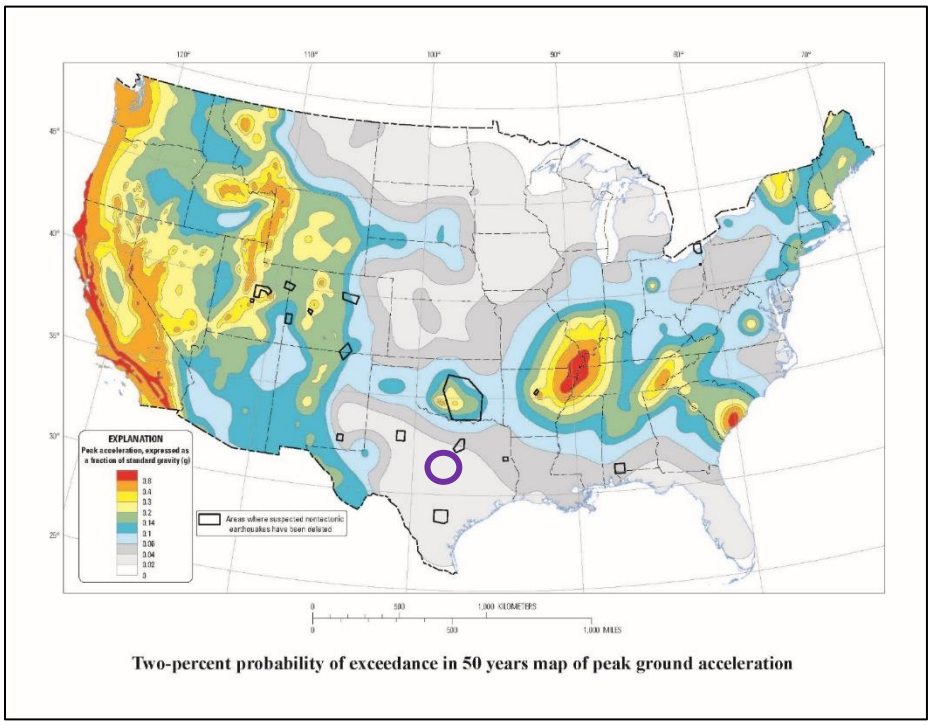
The following map is a visual of the USGS dataset. The map area is of Palo Pinto County.

[16] North Texas Snowfall Events 2013-1879, National Weather Service. <https://www.weather.gov/fwd/snowevents>

Source: USGS

According to the dataset, there has been three +2.0 magnitude earthquakes in the county since 2012, though there has been no damage reported.

Palo Pinto County has a very low risk to future earthquakes, as shown in the following map.



Two-percent probability of exceedance in 50 years map of peak ground acceleration

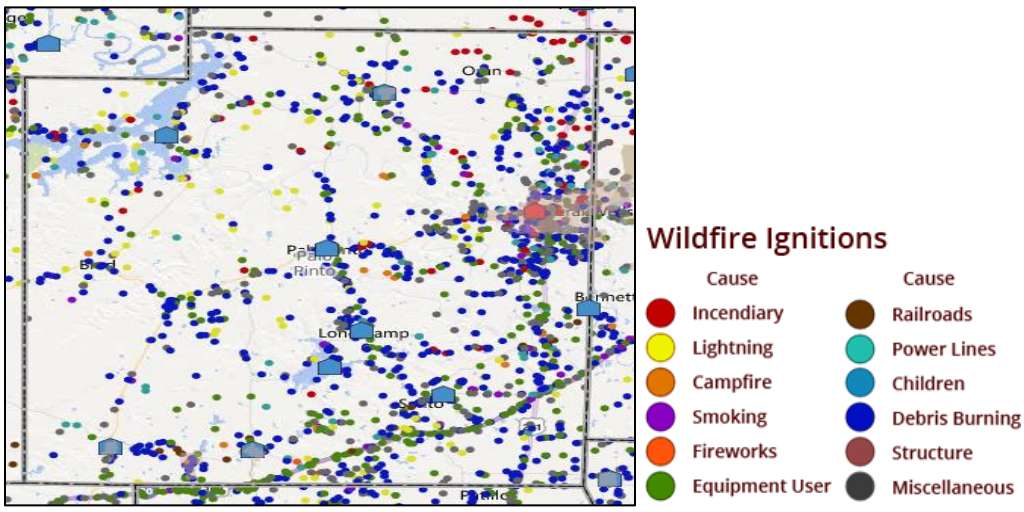
Source: USGS

Wildfire Events

Below is a list of wildfire damage across Palo Pinto County, according to Texas A&M Forest Service records.

Year	County	Agency	Fires	Acres
2012	Palo Pinto	TX A&M Forest Service	5	3,780
2012	Palo Pinto	Fire Departments	190	2,442
2013	Palo Pinto	TX A&M Forest Service	2	45
2013	Palo Pinto	Fire Departments	194	1,745
2014	Palo Pinto	TX A&M Forest Service	1	100
2014	Palo Pinto	Fire Departments	82	387
2015	Palo Pinto	TX A&M Forest Service	3	31
2015	Palo Pinto	Fire Departments	63	133
2016	Palo Pinto	TX A&M Forest Service	2	95
2016	Palo Pinto	Fire Departments	89	652
2017	Palo Pinto	TX A&M Forest Service	7	305
2017	Palo Pinto	Fire Departments	156	3,325
2018	Palo Pinto	TX A&M Forest Service	9	4,999
2018	Palo Pinto	Fire Departments	156	2,812

The following Wildfire Ignitions dataset from the Texas A&M Forest Service (TFS) shows the point location of all fires in Palo Pinto County from 2005 – 2015. The date range is set by TFS. The fires are symbolized by the cause of the fire. The wildfire occurrence database was obtained from state and local fire department report data sources for the years 2005 to 2015. The local category includes fires reported via Texas A&M Forest Service online fire department reporting system. It is a voluntary reporting system that includes fires reported by both paid and volunteer fire departments since 2005. The compiled fire occurrence database was cleaned to remove duplicate records and to correct inaccurate locations. More detailed maps, per jurisdiction, are located in Appendix A.



Source: Texas A&M Forest Service

3.6 Hazard Summary

Each participating jurisdiction described the location, probability of a future event, and the maximum probable extent of each hazard. The following terms were used to describe the categories:

Location: Location is the geographic area within the planning area that is affected by the hazard, such as a floodplain. The entire planning area may be uniformly affected by some hazards, such as drought or winter storm, while only portions of the planning area may be affected by others, like wildfires. The planning area refers to individual jurisdictions. Planning area refers to the size of the participating jurisdiction providing the description.

- **Negligible**- Less than 10% of planning area would be impacted by a single event.
- **Limited**- 10 to 25% of planning area would be impacted by a single event.
- **Significant**- 26 to 99% of planning area would be impacted by a single event.
- **Extensive**- 100% of planning area would be impacted by a single event, or the event has no boundary and could occur anywhere within the planning area.

Probability of Future Events: This information was based on historic events and changing climate.

- **Unlikely**- Less than 1% annual probability.
- **Possible**- Between 1 and 10% annual probability.
- **Likely**- Between 10 and 100% annual probability.
- **Highly Likely**- 100% annual probability.

Level of Possible Damage: Based on historic events and future probability.

- **Minor**- Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities. Very few injuries, if any.
- **Limited**- More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day. Minor injuries possible.
- **Critical**- More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week. Multiple deaths/injuries.
- **Catastrophic**- More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more. High number of deaths/injuries possible.

Maximum Probable Extent: Based on historic events and future probability.

- **Minor**- Minor classification on the scientific scale.
- **Medium**- Medium classification on the scientific scale.
- **Major**- Major classification on the scientific scale.

Extent Scale			
Hazard	**Classification**		
	Minor	**Medium**	**Major**
Drought	PDSI -1.99 to +1.99 D0	PDSI -2.00 to -2.99 D1	PDSI -3.00 to -5.00 D2-D4
Earthquake	Magnitude < 4.9	Magnitude 5.0-6.9	Magnitude > 7.0

Extent Scale			
Hazard	**Classification**		
	Minor	**Medium**	**Major**
Expansive Soils	EI Expansion Potential: 21-50 (Low) EI Expansion Potential: 0-21 (Very Low)	EI Expansion Potential: 51-90 (Medium)	EI Expansion Potential: 91-130 (High) EI Expansion Potential: >130 (Very High)
Extreme Heat	Heat Index 80F°-96F° with 40% humidity	Heat Index 97F°-104F° with 40% humidity	Heat Index >105F° with 40% humidity
Flooding	Within 100yr Flood Zone, Zone AE, A < 10 feet of water	Within 500yr Flood Zone, Zone X 10-25 feet of water	Extending Beyond 100yr and 500yr Flood Zones, Zone A, AE, X > 25 feet of water
Flooding from Dam Failure	< 20% of critical facilities in the inundation zone; Dam Storage capacity less than 10,000 acre-feet	20-50% of critical facilities in the inundation zone; Dam Storage capacity between 10,000 and 100,000 acre- feet	> 50% of critical facilities in the inundation zone; Dam Storage capacity 100,000 acre-feet or more
Thunderstorm	Hail 0”-1.6” Wind Knots <1-10 LAL: 1-2	Hail 1.6”-2.4” Wind Knots 11-27 LAL: 3-4	Hail 2.4”->4” Wind Knots 28-64+ LAL: 5-6
Tornado	EF0	EF1-EF2	EF3-EF5
Wildfire	KBDI 0-300	KBDI 300-500	KBDI 500-800
Winter Storms	Temperatures 40F° to 35F° Wind Speed <25 MPH Ice Accumulation <.50 inches	Temperatures 30F° to 20F° Wind Speed 25-35 MPH Ice Accumulation .10-1.00 inches	Temperatures 15F° to -45F° Wind Speed >35 MPH Ice Accumulation >.25 inches
Abbreviations:			
PDSI: Palmer Drought (Severity) Index			
EI: Expansion Index test			
LAL: Lightning Activity Level			
EF: Enhanced Fujita scale			
KBDI: Keetch-Byram Drought Index			

Below are the hazard summaries, in alphabetical order, for each participating jurisdiction.

Drought				
Jurisdiction	**Location**	**Probability of Future Events**	**Level of Possible Damage**	**Maximum Probable Extent/Strength**
Gordon	Extensive	Highly	Critical	Major
Mineral Wells	Extensive	Likely	Minor	Major
Mingus	Extensive	Highly Likely	Catastrophic	Major
Strawn	Extensive	Highly Likely	Catastrophic	Major
Palo Pinto County Unincorporated	Extensive	Highly Likely	Catastrophic	Major

Potential impacts from drought include:

- Property damage
- Loss of water supply
- Increases grassfire potential and intensity
- Negative impact on citizens, to include water restrictions and lack of drinkable water supply
- Impact on car washes, parks, and pools
- Impact on crops, livestock, and natural vegetation
- Increase in food prices
- Dust storms, leading to transportation accidents
- Natural environments damage, to include protected species and critical habitats
- Pipeline damage

Source of groundwater or surface-supply:
Gordon- CB Long Lake **Mineral Wells-** Lake Palo Pinto **Mingus-** Tucker Lake **Strawn-** Surface water comes from the city-owned Tucker Lake and groundwater comes from Desdemona, TX. **Palo Pinto County Unincorporated-** Lakes
Describe the type of water restrictions the jurisdiction enforces, either year-round or during a drought:
Gordon- Limited water usage all together. **Mineral Wells-** A staggered water fee structure is used to deter excessive water usage. Watering restriction triggers are in place at predetermined lake intervals. **Mingus-** Residents are notified via letters to limit water usage, residents who go over the allotted usage are fined. **Strawn-** Drought Continency Plan addresses restrictions. **Palo Pinto County Unincorporated-** Follow guidelines from the Brazos River Authority and Palo Pinto County Municipal Water District No. 1. Restrictions can include watering lawns limited to once a week, or not at all, and no car washes.

Earthquake				
Jurisdiction	**Location**	**Probability of Future Events**	**Level of Possible Damage**	**Maximum Probable Extent/Strength**
Gordon	Extensive	Unlikely	Limited	Minor
Mineral Wells	Extensive	Unlikely	Limited	Minor
Mingus	Extensive	Unlikely	Limited	Minor
Strawn	Extensive	Unlikely	Limited	Minor
Palo Pinto County Unincorporated	Extensive	Unlikely	Minor	Minor

Potential impacts from earthquakes include:

- Injury or death
- Property and infrastructure damage
- Water contamination or loss via broken pipes
- Transportation and communication disruption or damage
- Increase in traffic accidents
- Building collapse
- Natural gas leak
- Misplaced residents
- Power outages
- Natural environments damage, to include protected species and critical habitats

Does your jurisdiction require a permit for foundation repairs? Reviewing permits can help a jurisdiction determine the amount of damage in the community.
Gordon- No **Mineral Wells-** No **Mingus-** No **Strawn-** No **Palo Pinto County Unincorporated-** No

Expansive Soils				
Jurisdiction	**Location**	**Probability of Future Events**	**Level of Possible Damage**	**Maximum Probable Extent/Strength**
Gordon	Extensive	Likely	Critical	Medium
Mineral Wells	Extensive	Likely	Limited	Minor
Mingus	Extensive	Likely	Minor	Minor
Strawn	Extensive	Highly Likely	Limited	Medium
Palo Pinto County Unincorporated	Extensive	Highly Likely	Limited	Medium

Potential impacts from expansive soils include:

- Property damage due to foundation damage
- Water contamination or loss via broken pipes
- Building and infrastructure damage
- Road damage
- Transportation delays due to road condition
- Damage to utility lines
- Damage to crops and livestock

Extreme Heat				
Jurisdiction	**Location**	**Probability of Future Events**	**Level of Possible Damage**	**Maximum Probable Extent/Strength**
Gordon	Extensive	Highly	Critical	Major
Mineral Wells	Extensive	Highly Likely	Minor	Major
Mingus	Extensive	Highly Likely	Minor	Major
Strawn	Extensive	Highly Likely	Limited	Major
Palo Pinto County Unincorporated	Extensive	Highly Likely	Limited	Major

Potential impacts from extreme heat include:

- Heatstroke or death. Elderly people who cannot afford air conditioning are at greatest risk
- Property damage
- Loss of water supply
- Increases grassfire potential and intensity
- Impact on logistics
- Power outages
- Road and train track buckling
- Disruption in critical infrastructure operations
- Vehicle engine failure
- Damage to crops

What special events or sporting events are held outside during the summer?
Gordon- 4th of July Celebration, school sports **Mineral Wells-** Golf, softball, Crazy Water Festival **Mingus-** N/A **Strawn-** Football practice and Town Homecoming every other year. **Palo Pinto County Unincorporated-** N/A
How many extreme heat exposures have been reported since 2012 at these events?
Gordon- None **Mineral Wells-** Unknown **Mingus-** N/A **Strawn-** No exposures reported. **Palo Pinto County Unincorporated-** N/A

Flooding				
Jurisdiction	**Location**	**Probability of Future Events**	**Level of Possible Damage**	**Maximum Probable Extent/Strength**
Gordon	Extensive	Possible	Limited	Minor
Mineral Wells	Extensive	Likely	Limited	Minor
Mingus	Extensive	Highly Likely	Catastrophic	Major
Strawn	Extensive	Highly Likely	Limited	Medium
Palo Pinto County Unincorporated	Extensive	Highly Likely	Limited	Major

Flooding can occur anywhere with low-lying areas, clogged drains, and/or intense rain. Potential impacts from flooding include:

Potential impacts from flooding include:

- Loss of electricity
- Loss of, or contamination of, water supply
- Loss of property
- Structure and infrastructure damage – flooded structures and eroded roads
- Misplaced residents
- Snakes migrate and number of mosquitoes increase
- Fire – as a result of loss of water supply
- Debris in transportation paths
- Emergency response delays
- Disruption of traffic can lead to impacts to the economy
- Natural environment damage, to include protected species and critical habitats

Common flooding hazards within the planning area include flood hazards from flash flooding, dam failure, and new development. Flooding from dam failure have never occurred nor is it predicted to occur in the next 5 years. Floodwater can disguise many dangerous obstacles, like uncovered manholes or debris that can cause someone to fall over. Standing water, or water that isn't flowing, can also become a breeding ground for insects that can make people very ill. Another risk can be downed power lines which may still be live.

Considering population, economy, existing and future structures, improved property, critical facilities, critical infrastructure, and protected species, what is specifically vulnerable to flooding in your jurisdiction?
Gordon- Properties along the dry creek bed. **Mineral Wells-** There are multiple areas of the city that are susceptible to flooding that could have various consequences. There are also several areas within the city that are prone to street flooding. Most areas for street flooding are the main arteries, Hwy 180, and Hwy 281. **Mingus-** All properties and populations in the floodplain. **Strawn-** There are 1.5 streets in floodplain with approximately 6 houses.

Palo Pinto County Unincorporated- All properties and populations in the floodplain.

Describe future development that may be at risk to flooding based on current zoning maps.

Gordon- Unknown

Mineral Wells- Unknown

Mingus- Unknown

Strawn- None

Palo Pinto County Unincorporated- None

What rivers, creeks, and/or lakes are in your jurisdiction?

Gordon- Unnamed dry creek bed

Mineral Wells- Crystal Creek, Pollard Creek, Rock Creek, Lake Mineral Wells, Holiday Hills Lake, Pinto Lake

Mingus- Gibson Creek

Strawn- Palo Pinto Creek, Tucker Lake

Palo Pinto County Unincorporated- Brazos River, Possum Kingdom Lake, Mineral Wells Lake, Lake Palo Pinto, Tucker lake, and multiple other sources of water.

Which of these water sources have a history of flooding?

Gordon- Unnamed dry creek bed floods with heavy rains.

Mineral Wells- Crystal Creek, Pollard Creek, and Rock Creek

Mingus- Gibson Creek

Strawn- Palo Pinto Creek

Palo Pinto County Unincorporated- Lake Palo Pinto and the Brazos River

Name any streets or intersections that experience flooding or flash flooding:

Gordon- Cedar Street, Elem Street

Mineral Wells- Various points and surrounding areas on highways 180 and 281. MH379 @ Weathers Road. SW 25th Avenue around Palo Pinto Hospital.

Mingus- Hwy 193

Strawn- Palo Pinto Avenue & Caddo Street, Vern Avenue Woodlawn Avenue

Palo Pinto County Unincorporated- FM4, 919, 337, 16

Identify low water crossings and whether they are bridges or vented/unvented fords:

Gordon- None

Mineral Wells- Low water crossing (2) at West City Park- vented

Mingus- Hwy 193

Strawn- Palo Pinto Street & FM2372, McKinley Avenue

Palo Pinto County Unincorporated- Unknown

What critical facilities or infrastructure (airports, dams, water treatment facilities, wastewater treatment facilities, schools, hospitals, fire stations, and police stations) are located in the 100-year floodplain?

Gordon- None

Mineral Wells- City Hall, Fire, Police Station, and Houston Elementary School

Mingus- None

Strawn- Wastewater Treatment Plant, Tucker Lake Dam

Palo Pinto County Unincorporated- Possum Kingdom Dam
In the event of a wildfire, will flooding and erosion be an issue in restoring destroyed forested slopes?
Gordon- Unknown **Mineral Wells-** To a degree**.** **Mingus-** No **Strawn-** No **Palo Pinto County Unincorporated-** No

Only the City of Mingus had existing data for the following table:

Jurisdiction	Source	Residential Parcels Located in 100-year Floodplain	Percentage of Total Residential Parcels Located in 100-year Floodplain	Commercial and Industrial Parcels in 100-year Floodplain	Percentage of Commercial and Industrial Parcels in 100-year Floodplain
Mingus	*Palo Pinto County Geographic Information System (GIS) Property Appraiser.*	18	12%	0	0

Flooding from Dam Failure				
Jurisdiction	**Location**	**Probability of Future Events**	**Level of Possible Damage**	**Maximum Probable Extent/Strength**
Gordon	N/A	N/A	N/A	**N/A**
Mineral Wells	Negligible	Unlikely	Minor	Minor
Mingus	Negligible	Unlikely	Minor	Minor
Strawn	Negligible	Unlikely	Minor	Minor
Palo Pinto County Unincorporated	Negligible	Unlikely	Minor	Minor

Potential impacts from dam failure include:

- Property and crop damage
- Transportation delays
- Injury or death
- Train derailment

The hazard extent rating scale for dam failure is based on the amount of potential damage that can be caused by a failure. For the purposes of this hazard analysis, damage from dam failure only takes into account areas where developed property is affected.

Although dam failures have the potential to cause extensive damage, there has been no recorded failures in Palo Pinto County, as a wide array of measures, including maintenance, are taken to ensure structural integrity. The United States Corps of Engineers (USACE) and the Texas Commission on Environmental Quality (TCEQ) have conducted extensive dam failure training for jurisdictional staff, reducing the impact of flooding from a dam failure to the jurisdictions. Jurisdictions have also worked with the private owners to ensure maintenance is enforced and regulated.

Palo Pinto County also participates in regular dam failure exercises at Possum Kingdom Lake for the Morris Sheppard Dam, mitigating the county's vulnerability to flooding exposure from dam failure.

What dams are in your jurisdiction and what would be negatively affected if they failed (both within and outside your jurisdiction)?
Gordon- None **Mineral Wells-** Holiday Hills Club Lake Dam, Lake Mineral Wells Dam, and Lake Palo Pinto Dam. Lake Mineral Wells and Holiday Hills would mostly affect a rural area with low density housing and a few small businesses. Both would create a problem and damage to Hwy 180. Pinto lake would mostly affect Hwy 180 on the west end and a few smaller businesses. **Mingus-** Thurber Lake Dam in Erath County would affect the City of Mingus, but the city itself has no dams. **Strawn-** Lake Tucker Dam follows path of creek. The railroad and some residents would be impacted. **Palo Pinto County Unincorporated-** Morris Sheppard Dam on Possum Kingdom Lake would impact various parts of the county.

The hazard classification of dams is not available to the public, per Homeland Security regulations. If specific information is needed, please contact the dam owner or the Dam Safety Section of the TCEQ.

According to USACE, there are 54 total dams within Palo Pinto County: 35% of the dams are regulated by a state agency and 0% are regulated by a federal agency. The average age of the dams is 46 years old.

The following chart identifies the recorded discharge of the dams that were identified by the participants as a potential threat to their communities.

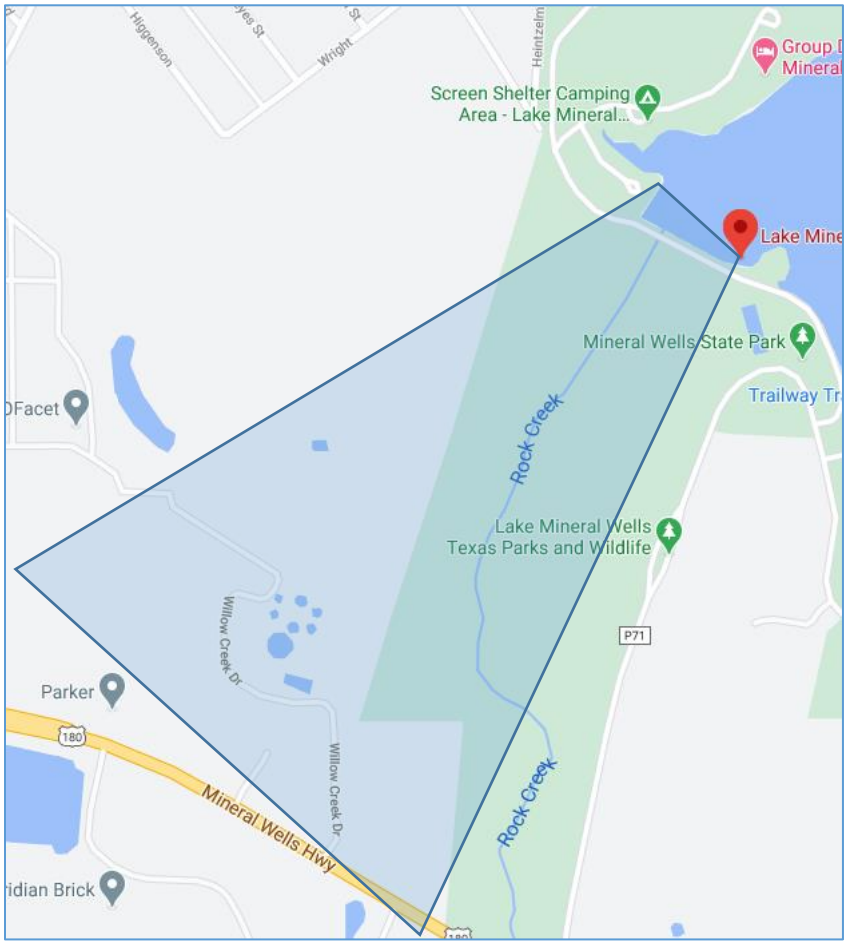
DAM_NAME	DAM_ LENGTH	DAM_ HEIGHT	MAX_ DISCHARGE	MAX_ STORAGE	DRAINAGE_ AREA
HOLIDAY HILLS CLUB LAKE DAM	585	22.5	5301	325	0.65
LAKE MINERAL WELLS DAM (Parker County)	1610	53.6	122427	16356	668
LAKE PALO PINTO DAM	1255	96	362299	186000	471
THURBER LAKE DAM (Erath County)	2590	29	2	1590	111
LAKE TUCKER DAM	900	97	34013	2500	24
MORRIS SHEPPARD DAM	2740	187	507762	1365000	14030

For dams with a maximum storage capacity of 100,000 acre-feet or more, all census blocks within five miles were considered to be at risk to 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 were considered 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 were considered to be at risk to potential dam failure hazards. Exact dam inundation maps are not available to the public- thus the following information is merely as estimation. For specific information, please contact the dam owners.

The following maps are **estimated** inundation zones for the six (6) dams the jurisdictions identified as the most impactful to their communities.

Holiday Hills Club Lake Dam

Lake Mineral Wells Dam



Lake Palo Pinto Dam

Thurber Lake Dam

Morris Sheppard Dam

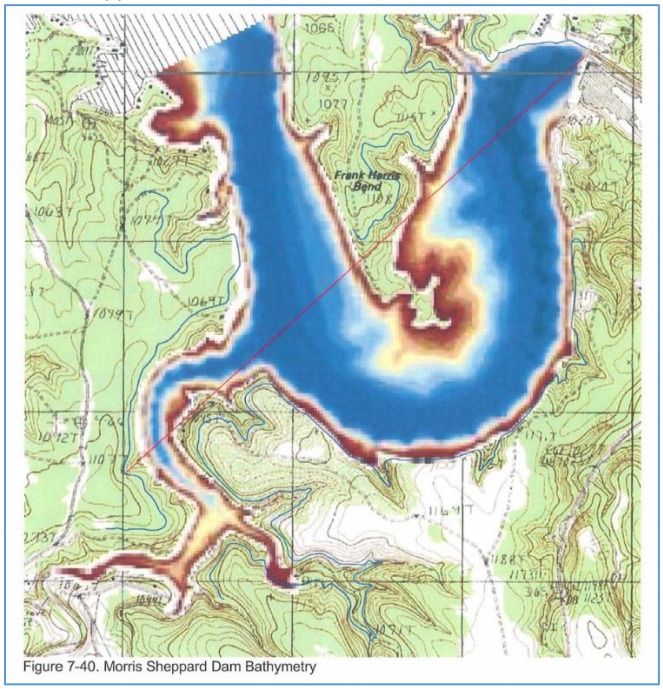


Figure 7-40. Morris Sheppard Dam Bathymetry

It is each dam owner's responsibility to ensure that their dam is in compliance with the Texas Commission on Environmental Quality's [17](TCEQ) regulations regarding emergency action plans. Additionally, each dam owner required to have an emergency action plan must know and be prepared to take the actions outlined in their emergency action plan, should their dam begin to fail.

Local emergency management is only responsible for the impact of flooding from dam failure on surrounding areas. The responsibility for maintaining a safe dam rests with its owner. Dam owners are also responsible for maintaining safety *at* and *around* their dam. Dam owners are the only ones who can directly maintain the dams and implement mitigation and safety measures on the structures.[18]

Responsible Parties	Dam Related Safety Activities
Dam Owners/Operators	• Identification of emergency at dam • Initial notifications • Implementation of repairs • Security and technical assistance on site
Local Emergency Management and Local Responders	• Public warning • Possible evacuation • Shelter plan activated • Rescue and recovery • State of Emergency declaration • Termination of emergency status
State Emergency Management	• Aid affected area when requested • Coordinate specialized assistance • Notify appropriate state agencies • Determine who does what in an emergency

Thunderstorm				
Jurisdiction	**Location**	**Probability of Future Events**	**Level of Possible Damage**	**Maximum Probable Extent/Strength**
Gordon	Extensive	Likely	Limited	Medium
Mineral Wells	Extensive	Highly Likely	Limited	Medium
Mingus	Extensive	Highly Likely	Catastrophic	Major
Strawn	Extensive	Highly Likely	Critical	Major
Palo Pinto County Unincorporated	Extensive	Highly Likely	Critical	Major

Potential impacts from thunderstorms include:

- Property damage to fences, vehicles, equipment, and roofs
- Transportation delays

[17] https://www.tceq.texas.gov/compliance/investigation/damsafetyprog.html For the most up-to-date information, contact TCEQ directly.

[18] https://damsafety-prod.s3.amazonaws.com/s3fs-public/files/All%20-%20Dam%20Owner%20Fact%20Sheets%202019.pdf Dam Ownership Fact Sheet. 2018.

- Injury or death
- Electrical grid problems
- Power outage
- Communication problems – phone and internet lines down
- Natural environment damage, to include protected species and critical habitats
- Property damage
- Crop damage
- Fire- caused by lightning
- Blocked roadways from trees and damaged property

Although most new homes and buildings in the participating jurisdictions are built to resist the effects of all but the strongest thunderstorms, several mobile and manufactured home parks and vehicles remain vulnerable. Thousands of homes and vehicles can be damaged by high winds, hail, and lightning in a single storm, causing millions of dollars in damages.[19]

Tornado				
Jurisdiction	**Location**	**Probability of Future Events**	**Level of Possible Damage**	**Maximum Probable Extent/Strength**
Gordon	Extensive	Possible	Catastrophic	Medium
Mineral Wells	Extensive	Likely	Catastrophic	Medium
Mingus	Extensive	Possible	Catastrophic	Medium
Strawn	Extensive	Possible	Catastrophic	Medium
Palo Pinto County Unincorporated	Extensive	Likely	Catastrophic	Medium

Potential impacts from tornadoes include:

- Injury or death
- Power outage
- Blocked roadways from trees and damaged property
- Natural gas pipeline breaks – fire injuries, possible deaths
- Transportation disruption
- Rerouting traffic
- Loss of property
- Structure and infrastructure damage
- Misplaced residents
- Natural environment damage, to include protected species and critical habitats

Are there any community safe rooms in your jurisdiction?
Gordon- No **Mineral Wells-** No

[19] State of Texas Mitigation Plan. 2013, page 72.

Mingus- No
Strawn- No
Palo Pinto County Unincorporated- Basement at Court House- limited.

Wildfire				
Jurisdiction	**Location**	**Probability of Future Events**	**Level of Possible Damage**	**Maximum Probable Extent/Strength**
Gordon	Extensive	Likely	Catastrophic	Major
Mineral Wells	Significant	Likely	Critical	Major
Mingus	Extensive	Possible	Catastrophic	Medium
Strawn	Limited	Likely	Catastrophic	Major
Palo Pinto County Unincorporated	Extensive	Highly Likely	Catastrophic	Major

Potential impacts from wildfires include:

- Injury or death
- Property and fence damage
- Road closure
- Loss of power – burning utility poles
- Loss of property
- Loss of crops and livestock
- Structure and infrastructure damage
- Misplaced residents
- Loss of resources
- Natural environments damage, to include protected species and critical habitats

Considering population, economy, existing and future structures, improved property, critical facilities, critical infrastructure, and protected species, what is specifically vulnerable to wildfires in your jurisdiction?

Gordon- City is surrounded by open land.
Mineral Wells- Mineral Wells has a hospital and two nursing homes that could very easily be impacted by the smoke from a wildland fire, located on the SW part of town. Located in the N and NW part of town there are mostly homes that would be impacted. On the NE there is a military training facility and a state park that have potential for a very large wildland fire. Southeast in the city is Mineral Wells Airport that is heavily wooded to its east.
Mingus- City is surrounded by open land.
Strawn-6 homes in WUI. Rolling fire would burn the city. Most homes are wood frame.
Palo Pinto County Unincorporated- The county is full of open spaces; thus, the entire population is at risk.

Where are sources of open space, greater than 25 acres, in your jurisdiction?
Gordon- City is surrounded by open land. **Mineral Wells-** The entire city has large parcels of land either mixed in or surrounding the city. **Mingus-** City is surrounded by open land. **Strawn-** City is surrounded by open land. **Palo Pinto County Unincorporated-** The county is full of open spaces.
Does your jurisdiction participate in prescribed burns? *A controlled or prescribed burn, also known as hazard reduction burning, backfire, swailing, or a burn-off, is a wildfire set intentionally for purposes of forest management, farming, prairie restoration or greenhouse gas abatement.*
Gordon- No **Mineral Wells-** No **Mingus-** No **Strawn-** No **Palo Pinto County Unincorporated-** Yes

Winter Storm

Jurisdiction	Location	Probability of Future Events	Level of Possible Damage	Maximum Probable Extent/Strength
Gordon	Extensive	Likely	Critical	Major
Mineral Wells	Extensive	Likely	Limited	Medium
Mingus	Extensive	Possible	Limited	Minor
Strawn	Extensive	Highly Likely	Minor	Major
Palo Pinto County Unincorporated	Extensive	Likely	Minor	Major

Potential impacts from winter storms include:

- Structure and infrastructure damage
- Injury or death
- Power outages
- Loss of ability to use roads for driving
- Increased traffic accidents
- Loss of heat
- Stranded travelers / motels at full capacity
- Tree debris create fuel load for fire hazard
- Delayed emergency response time
- Frozen/ busted pipes leading to loss of water
- Disruption of traffic
- Impacts to the economy
- Communication capabilities decrease

List bridges and overpasses within the jurisdiction that could be impacted by a winter storm:
Gordon- N/A **Mineral Wells-** N/A **Mingus-** N/A **Strawn-** There is one bridge outside of town that would be impacted. **Palo Pinto County Unincorporated-** Multiple-TxDOT owns majority.

3.7 Hazard Ranking

Due to the frequency of occurrence and high impact of hazards during this planning period, the ranking order of these hazards has changed since the 2015 plan. After assessing the vulnerabilities, capabilities, and risks, the participating jurisdictions considered the possible effects on population, economy, existing and future structures, improved property, critical facilities and infrastructure, and the natural environment when ranking each hazard.

The following table reflects the rankings of each hazard, per jurisdiction.

Jurisdiction	Drought	Earthquake	Expansive Soils	Extreme Heat	Flooding	Dam Failure Flooding	Thunderstorms	Tornadoes	Wildfires	Winter Storms
Gordon	3	9	4	5	2	N/A	6	8	**1**	7
Mineral Wells	8	9	7	6	4	10	2	**1**	3	5
Mingus	3	10	7	8	2	9	**1**	4	5	6
Strawn	**1**	10	6	7	5	9	4	2	3	8
Palo Pinto County Unincorporated	**1**	9	7	6	5	10	2	4	3	8

Gordon is not impacted by dam failure flooding because there are no dams within or around their city.

Chapter 4: Mitigation Strategy

Requirement	
§201.6(c)(3)	[The plan shall include the following:] A mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools.
§201.6(c)(3)(i)	[The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
§201.6(c)(3)(iii)	[The hazard mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA [Federal Emergency Management Agency] after October 1, 2008, must also address the jurisdiction's participation in the NFIP [National Flood Insurance Program], and continued compliance with NFIP requirements, as appropriate.
§201.6(c)(3)(iv)	[The hazard mitigation strategy shall include an] action plan, describing how the action identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
§201.6(c)(4)(ii)	For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan. [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvements, when appropriate.

4.1 Mitigation Goals

The Palo Pinto County Hazard Mitigation Planning Team reviewed the previous Palo Pinto County mitigation goals and unanimously agreed to forego these goals and adopt the following hazard mitigation goals:

"Our goals are to protect life and reduce bodily harm from natural hazards, and to lessen the impacts of natural hazards on property and the community through hazard mitigation."

4.2 Mitigation Strategy

The mitigation strategy serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The Stafford Act directs hazard mitigation plans to describe hazard mitigation actions and establish a strategy to implement those actions. Therefore, all other requirements for a hazard mitigation plan lead to and support the mitigation strategy.

Each participating jurisdiction recommended strategies and actions that would support the mitigation goals, then went through a ranking process to determine which actions they would prioritize for completion. The jurisdictions conducted a cost benefit analysis to determine which strategies would most benefit their community. All project cost estimations are based on agency expertise by those submitting mitigation actions as well as previous project costs; however, many projects provided have not yet undergone the official benefit-cost analysis provided by FEMA. In these cases, jurisdictions derived the benefit cost per project based on a study conducted by the National Institute of Building Science. This study estimates that past 23 years of federally funded natural hazard mitigation has prevented approximately one million nonfatal injuries, 600 deaths, and 4,000 cases of post-traumatic stress disorder (PTSD), a total cost savings of $68 billion. The key findings of the report included that $1 spent on mitigation saves society an average of $6, with positive benefit-cost ratios for all hazard types studied.[20] Therefore, to reflect the benefits of future projects, each estimated project was multiplied by 6 to represent the benefit of each mitigation strategy. Utilizing this information, in addition to their jurisdiction's priorities, jurisdictions ranked their mitigation strategies and submitted them to the HMPT.

4.3 Funding Priorities

As necessary, Palo Pinto County and participating jurisdictions will seek outside funding sources to implement mitigation projects in both the pre-disaster and post-disaster environments. When applicable, potential funding sources have been identified for proposed actions listed in the mitigation strategies.

Priority will go towards projects will the highest positive impact on community resilience.

4.4 Status of Previous Mitigation Action Items

The action items in the 2015 Palo Pinto County HazMAP were determined by the 2015 Local Planning Team (LPT) in each jurisdiction. Below are the action items from each participating jurisdiction from the 2015 plan and the status of each action. Actions deleted are no longer a priority and actions deferred are deferred to this HazMAP. The cities of Gordon, Mingus, and Strawn are new participants; thus, they do not have previous action to identify.

City of Mineral Wells	
Status	**2015 Mitigation Actions**
In-progress	Develop and implement a comprehensive public education program.
In-progress	Expand existing outdoor warning siren coverage.
Completed	Adapt existing city structure to serve as city emergency operations center.

[20] Multihazard Mitigation Council (2017) Natural Hazard Mitigation Saves 2017 Interim Report: An Independent Study. Principal Investigator Porter, K.; Co-Principal Investigators Scawthorn, C.; Dash, N.; Santos, J.; Investigators: Eguchi, M., Ghosh., S., Huyck, C., Isteita, M., Mickey, K., Rashed, T.; P. Schneider, Director, MMC. National Institute of Building Sciences, Washington.

City of Mineral Wells	
Status	**2015 Mitigation Actions**
In-progress	Install covered parking areas as needed to protect city vehicles against hail.
Completed	Purchase generators to ensure continued operation of critical infrastructure during and after severe weather events and other disasters.
In-progress	Develop and implement a tree-trimming program to minimize amount of debris generated during events.
In-progress	Fix drainage issues and culvert replacement on areas that continue to flood.
Deleted	Conduct a seismology study to determine scope, impact, and extent of potential earthquakes.
In-progress	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the city.

Palo Pinto County Unincorporated	
Status	**2015 Mitigation Actions**
In-progress	Develop and implement a comprehensive public education program.
Deferred	Purchase and installation of a CASA Weather Radar system.
Completed	Implement Individual Tornado Safe Room Rebate Program.
Deferred	Dig a well and build a pumping station to provide an emergency water source for the unincorporated county.
Deferred	Construct a 30,000-gallon water storage tank.
Deferred	Purchase mass notification system for county citizens to receive calls and texts.
Deleted	Purchase and distribute NOAA weather radios to Palo Pinto County residents.
Deleted	Implement a feasibility study examining retrofitting of critical facilities with hail resistant roofing and hail resistant window coverings.
Deleted	Project to retrofit critical infrastructure facilities with hail resistant roofing and hail resistant window coverings after study complete.
In-progress	Develop and implement a tree-trimming program to minimize amount of debris generated during severe weather events.
In-progress	Initiate a targeted fuel load reduction campaign to reduce the potential for wildland-urban interface fires.
In-progress	Develop a Community Wildfire Protection Plan.
Deferred	Develop public information/education program for citizens to be aware of potential loss of life to wildfires and the impact that early warning/recognition will bring them.
Deferred	Create a Stormwater Management Program to analyze historical and current conditions contributing to flooding.
Deferred	Develop a buyout program for repetitive flood loss areas within the county.
Deferred	Fix drainage issues and culvert replacement on areas that continue to flood.
Deferred	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Deferred	Educate downstream property owners on the benefits of participating in the National Flood Insurance Program.
Deleted	Conduct a seismology study to determine scope, impact, and extent of potential earthquakes.

4.5 New Mitigation Action Items

New action items were determined by each participating jurisdiction's Local Planning Team for the this Hazard Mitigation Action Plan (HazMAP). These actions include mitigation actions that qualify for mitigation funding as well as enforcement, maintenance, and response actions that the jurisdictions have identified as opportunities to increase their resiliency to hazards.

During the capabilities assessment and hazard analysis, previously impacted assets and populations were analyzed to determine the highest probability of damage and potential of loss of life per hazard. To determine the estimated benefit of each action item, data from the 2017 Interim Report was used to develop a cost-benefit analysis [*Estimated Cost x 6 = Estimated Benefit*], as it reports that $1 spent in mitigation saves a community an average of $6 in recovery[21].

Remaining consistent with previous plans, **priority** will go towards projects with the highest positive impact on community resilience, including life safety and property protection. Below are the action items for this HazMAP.

City of Gordon Mitigation Action Items

Hazard(s) Addressed	**Flooding**
Action: Establish a Floodplain Management Ordinance that will fulfill the requirements for NFIP.	
Participating Jurisdiction:	City of Gordon
Priority:	1
Estimated Cost:	$2,500.00
Estimated Benefit:	$15,000.00
Potential Funding Source(s):	General Budget
Lead Agency/Department Responsible:	City Secretary / Public Works Department
Implementation Schedule:	24 months
Hazard(s) Addressed	**Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms**
Action: Establish a public education program to include mitigation actions for the identified hazards.	
Participating Jurisdiction:	City of Gordon
Priority:	2
Estimated Cost:	$2,000.00
Estimated Benefit:	$12,000.00
Potential Funding Source(s):	General Funds / Grants
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	24 months

[21] Natural Hazard Mitigation Saves: 2017 Interim Report. National Institute of Building Science. < https://www.nibs.org/page/mitigationsaves>

Hazard(s) Addressed	Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms
Action: Update current Swift Reach Alerting system with updated features and service to make sure all residents were included in alerts for severe weather and waterline breaks.	
Participating Jurisdiction:	City of Gordon
Priority:	3
Estimated Cost:	$1,000.00
Estimated Benefit:	$6,000.00
Potential Funding Source(s):	General Fund/ Water Works Fund
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	24 months
Hazard(s) Addressed	**Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms**
Action: Update and/or adopt the most current building code, residential code, mechanical code, plumbing code, and electrical code.	
Participating Jurisdiction:	City of Gordon
Priority:	4
Estimated Cost:	$5,000.00
Estimated Benefit:	$30,000.00
Potential Funding Source(s):	General Fund
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months
Hazard(s) Addressed	**Drought, Extreme Heat, Thunderstorms, Wildfires**
Action: Develop a Wildland-Urban Interface Code. This code can also assist with drought resistant vegetation, and tree/brush pruning for thunderstorms.	
Participating Jurisdiction:	City of Gordon
Priority:	5
Estimated Cost:	$5,000.00
Estimated Benefit:	$30,000.00
Potential Funding Source(s):	General Fund/Grants
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	24 months

City of Mineral Wells Mitigation Action Items

Hazard(s) Addressed	Flooding, Dam Failure Flooding
Action: Improve the city's drainage, to include but not limited to, expanding and adding ditches, increasing and adding culverts, using porous pavements, and clearing existing debris buildup	
Participating Jurisdiction:	City of Mineral Wells
Priority:	1
Estimated Cost:	$1,000,000
Estimated Benefit:	$6,000,000
Potential Funding Source(s):	Drainage Fund, grants
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months
Hazard(s) Addressed	**Flooding, Dam Failure Flooding**
Action: Repair Mineral Wells State Park Dam.	
Participating Jurisdiction:	City of Mineral Wells
Priority:	2
Estimated Cost:	$1,000,000
Estimated Benefit:	$6,000,000
Potential Funding Source(s):	General fund, taxes, grants
Lead Agency/Department Responsible:	Texas Parks & Wildlife Department
Implementation Schedule:	As soon as funds are available
Hazard(s) Addressed	**Wildfires**
Action: Install dry hydrants in Wildland Urban Interface.	
Participating Jurisdiction:	City of Mineral Wells
Priority:	3
Estimated Cost:	$200,000
Estimated Benefit:	$1,200,000
Potential Funding Source(s):	General fund, grants
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	24 months

Hazard(s) Addressed	Extreme Heat, Thunderstorms, Tornadoes, Winter Storms
Action: Create community storm shelters in high-density, vulnerable areas of the city that could also be used as cooling/warming centers.	
Participating Jurisdiction:	City of Mineral Wells
Priority:	4
Estimated Cost:	$500,000
Estimated Benefit:	$3,000,000
Potential Funding Source(s):	General fund, taxes, grants
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months
Hazard(s) Addressed	**Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Dam Failure Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms**
Action: Provide Natura Hazard Awareness Classes that involves a discussion on mitigation activities.	
Participating Jurisdiction:	City of Mineral Wells
Priority:	5
Estimated Cost:	$5,000
Estimated Benefit:	$30,000
Potential Funding Source(s):	General fund, grants
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	24 months
Hazard(s) Addressed	**Flooding**
Action: Become a National Flood Insurance Program Community Rating System (CRS) community.	
Participating Jurisdiction:	City of Mineral Wells
Priority:	6
Estimated Cost:	$5,000
Estimated Benefit:	$30,000
Potential Funding Source(s):	General fund, grants
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	24 months

Hazard(s) Addressed	Drought
Action: Create a drought contingency plan.	
Participating Jurisdiction:	City of Mineral Wells
Priority:	7
Estimated Cost:	$5,000
Estimated Benefit:	$30,000
Potential Funding Source(s):	General fund, grants
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	12 months
Hazard(s) Addressed	**Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Dam Failure Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms**
Action: Adopt the most current International Building Code (IBC) and International Residential Code (IRC).	
Participating Jurisdiction:	City of Mineral Wells
Priority:	8
Estimated Cost:	$5,000
Estimated Benefit:	$30,000
Potential Funding Source(s):	General fund, grants
Lead Agency/Department Responsible:	Building Official
Implementation Schedule:	12 months

City of Mingus Mitigation Action Items

Hazard(s) Addressed	Earthquakes, Extreme Heat, Flooding, Dam Failure Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms
Action: Install a Notification System to warn citizens of emergencies.	
Participating Jurisdiction:	City of Mingus
Priority:	1
Estimated Cost:	$3,250
Estimated Benefit:	$19,500
Potential Funding Source(s):	City General Budget
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	24 months

Hazard(s) Addressed	Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Dam Failure Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms
Action: Adopt the most current building code, residential code, mechanical code, plumbing code, and electrical code.	
Participating Jurisdiction:	City of Mingus
Priority:	2
Estimated Cost:	$3,000
Estimated Benefit:	$18,000
Potential Funding Source(s):	City General Budget
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months
Hazard(s) Addressed	**Flooding , Dam Failure Flooding,**
Action: Place culverts in locations that experience the most flash flooding.	
Participating Jurisdiction:	City of Mingus
Priority:	3
Estimated Cost:	$20,000
Estimated Benefit:	$120,000
Potential Funding Source(s):	City General Budget
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months
Hazard(s) Addressed	**Drought, Extreme Heat, Thunderstorms, Wildfires**
Action: Develop a Wildland-Urban Interface Code. This code can also assist with drought resistant vegetation, and tree/brush pruning for thunderstorms.	
Participating Jurisdiction:	City of Mingus
Priority:	4
Estimated Cost:	$8,000
Estimated Benefit:	$24,000
Potential Funding Source(s):	City Budget, Capital Improvement Budget, Grants, Firewise Program
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months

Hazard(s) Addressed	Drought, Expansive Soils, Extreme Heat, Flooding, Dam Failure Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms
Action: Update current Swift Reach Alerting system with updated features and service to make sure all residents were included in alerts for severe weather and waterline breaks.	
Participating Jurisdiction:	City of Mingus
Priority:	5
Estimated Cost:	$1,000
Estimated Benefit:	$6,000
Potential Funding Source(s):	General Fund/ Water Works Fund
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	24 months
Hazard(s) Addressed	**Flooding**
Action: Establish a Floodplain Management Ordinance that will fulfill the requirements of the NFIP.	
Participating Jurisdiction	City of Mingus
Priority:	6
Estimated Cost:	$3,000
Estimated Benefit:	$18,000
Potential Funding Source(s):	General Budget
Lead Agency/Department Responsible:	City Secretary / Public Works Department
Implementation Schedule:	24 months
Hazard(s) Addressed	**Drought, Expansive Soils, Extreme Heat, Flooding**
Action: Use Smartscape in existing and new developments landscapes	
Participating Jurisdiction	City of Mingus
Priority:	7
Estimated Cost:	$100,000
Estimated Benefit:	$600,000
Potential Funding Source(s):	General Budget, Grants, Property Owners
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months

Hazard(s) Addressed	Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms
Action: Establish a public education program to include mitigation actions for the identified hazards.	
Participating Jurisdiction:	City of Mingus
Priority:	8
Estimated Cost:	$2,000.00
Estimated Benefit:	$12,000.00
Potential Funding Source(s):	General Funds / Grants
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	24 months

City of Strawn Mitigation Action Items

Hazard(s) Addressed	Drought, Wildfires
Action: Reduce fuel load by code enforcement on overgrown lots.	
Participating Jurisdiction:	City of Strawn
Priority:	1
Estimated Cost:	$5,000
Estimated Benefit:	$30,000
Potential Funding Source(s):	City Budgets, Grants
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	24 months
Hazard(s) Addressed	**Flooding, Dam Failure Flooding,**
Action: Improve stormwater drainage to reduce damage to flood prone areas by identifying areas damaged in previous floods.	
Participating Jurisdiction:	City of Strawn
Priority:	2
Estimated Cost:	$5,000
Estimated Benefit:	$30,000
Potential Funding Source(s):	City Budget, Grants
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 Months

Hazard(s) Addressed	Tornadoes
Action: Construct a community safe room.	
Participating Jurisdiction:	City of Strawn
Priority:	3
Estimated Cost:	$750,000
Estimated Benefit:	$4,500,000
Potential Funding Source(s):	City Budget, Development Corporation Budget, Grants
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	24 months
Hazard(s) Addressed	**Drought, Expansive Soils, Extreme Heat, Flooding**
Action: Upgrade existing water supply system and distribution system, replace existing water line that has reached end of life, and extend alternative water well lines to create more redundancy in supply.	
Participating Jurisdiction:	City of Strawn
Priority:	4
Estimated Cost:	$500,000
Estimated Benefit:	$3,000,000
Potential Funding Source(s):	City Budget, Texas Parks and Wildlife Department, Grants
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months
Hazard(s) Addressed	**Flooding, Dam Failure Flooding**
Action: Implement procedures to clear any unauthorized vegetation from Tucker Lake Dam and spillway.	
Participating Jurisdiction:	City of Strawn
Priority:	5
Estimated Cost:	$20,000
Estimated Benefit:	$120,000
Potential Funding Source(s):	City Budget, Grants
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 Months

Hazard(s) Addressed	Earthquakes, Expansive Soils, Flooding, Dam Failure Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms
Action: Implement a warning system via social media and telephone mass notification.	
Participating Jurisdiction:	City of Strawn
Priority:	6
Estimated Cost:	$20,000
Estimated Benefit:	$120,000
Potential Funding Source(s):	City Budget, Grants
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 Months
Hazard(s) Addressed	**Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Dam Failure Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms**
Action: Create a public education program to include mitigation strategies and NFIP information for the identified natural hazards using social media, city website, and public outreach.	
Participating Jurisdiction:	City of Strawn
Priority:	7
Estimated Cost:	$1,000
Estimated Benefit:	$6,000
Potential Funding Source(s):	City Budget, Grants
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 Months
Hazard(s) Addressed	**Earthquakes, Expansive Soils, Flooding, Dam Failure Flooding, Thunderstorms, Tornadoes, Wildfires**
Action: Abatement on abandoned properties to prevent future damages and increase in destruction.	
Participating Jurisdiction:	City of Strawn
Priority:	8
Estimated Cost:	$100,000
Estimated Benefit:	$600,000
Potential Funding Source(s):	City Budgets, Grants
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	24 months

Hazard(s) Addressed	Drought, Expansive Soils, Extreme Heat, Flooding
Action: Use Smartscape in existing and new developments landscapes	
Participating Jurisdiction	City of Strawn
Priority:	9
Estimated Cost:	$100,000
Estimated Benefit:	$600,000
Potential Funding Source(s):	General Budget, Grants, Property Owners
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months

Palo Pinto County Unincorporated Mitigation Action Items

Hazard(s) Addressed	Wildfires
Action: Implement *Ready Set Go* program.	
Participating Jurisdiction:	Palo Pinto County Unincorporated
Priority:	1
Estimated Cost:	$5,000
Estimated Benefit:	$30,000
Potential Funding Source(s):	County General Fund / Grant Funding
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	24 months
Hazard(s) Addressed	**Earthquakes, Flooding, Dam Failure Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms**
Action: Implement a public safety notification system (Code Red).	
Participating Jurisdiction:	Palo Pinto County Unincorporated
Priority:	2
Estimated Cost:	$6,000
Estimated Benefit:	$36,000
Potential Funding Source(s):	County General Fund / Grant Funding
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	12 months

Hazard(s) Addressed	Flooding, Dam Failure Flooding
Action: Reevaluate permitting process and permits for properties in the floodplain with County Engineer.	
Participating Jurisdiction:	Palo Pinto County Unincorporated
Priority:	3
Estimated Cost:	$2,500
Estimated Benefit:	$15,000
Potential Funding Source(s):	County General Fund / Grant Funding
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	12 months
Hazard(s) Addressed	**Wildfires**
Action: Help jurisdictions become Firewise Communities.	
Participating Jurisdiction:	Palo Pinto County Unincorporated
Priority:	4
Estimated Cost:	$100,000
Estimated Benefit:	$600,000
Potential Funding Source(s):	County General Fund / Grant Funding
Lead Agency/Department Responsible:	Fire Chief
Implementation Schedule:	24 months
Hazard(s) Addressed	**Flooding, Dam Failure Flooding**
Action: Clean ditches and remove obstructions from culverts.	
Participating Jurisdiction:	Palo Pinto County Unincorporated
Priority:	5
Estimated Cost:	$350,000
Estimated Benefit:	$2,100,000
Potential Funding Source(s):	County General Fund
Lead Agency/Department Responsible:	Commissioners
Implementation Schedule:	24 months
Hazard(s) Addressed	**Winter Storms**
Action: Have precincts prepared to pretreat all tier 3 roadways prior to weather events.	
Participating Jurisdiction:	Palo Pinto County Unincorporated
Priority:	6
Estimated Cost:	$25,000
Estimated Benefit:	$150,000
Potential Funding Source(s):	County General Fund / Grant Funding
Lead Agency/Department Responsible:	Commissioners
Implementation Schedule:	24 months

Hazard(s) Addressed	Drought, Flooding, Dam Failure Flooding
Action: Construct retaining walls along county roads where landslides from water problems are probable.	
Participating Jurisdiction:	Palo Pinto County Unincorporated
Priority:	7
Estimated Cost:	$1,000,000
Estimated Benefit:	$6,000,000
Potential Funding Source(s):	County General Fund / Grant Funding
Lead Agency/Department Responsible:	Commissioners
Implementation Schedule:	24 months
Hazard(s) Addressed	**Thunderstorms, Tornadoes**
Action: Build community shelters.	
Participating Jurisdiction	Palo Pinto County Unincorporated
Priority:	8
Estimated Cost:	$1,000,000
Estimated Benefit:	$6,000,000
Potential Funding Source(s):	County General Fund / Grant Funding
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	24 months
Hazard(s) Addressed	**Drought**
Action: Setup rainwater retention systems.	
Participating Jurisdiction	Palo Pinto County Unincorporated
Priority:	9
Estimated Cost:	$500,000
Estimated Benefit:	$3,000,000
Potential Funding Source(s):	County General Fund
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months
Hazard(s) Addressed	**Dam Failure Flooding, Earthquakes**
Action: Ensure high hazard dam owners are members of a dam safety program.	
Participating Jurisdiction:	Palo Pinto County Unincorporated
Priority:	10
Estimated Cost:	$500
Estimated Benefit:	$3,000
Potential Funding Source(s):	County General Fund / Grant Funding
Lead Agency/Department Responsible:	Commissioners
Implementation Schedule:	24 months

Hazard(s) Addressed	Drought, Expansive Soils, Extreme Heat, Flooding
Action: Use Smartscape in existing and new developments landscapes; implement landscape techniques to stabilize soil; plant trees to create shaded areas for public	
Participating Jurisdiction	Palo Pinto County Unincorporated
Priority:	11
Estimated Cost:	$100,000
Estimated Benefit:	$600,000
Potential Funding Source(s):	General Budget, Grants, Property Owners
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months

Hazard(s) Addressed	Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Winter Storms
Action: Ensure new and existing utilities are strengthened and reinforced with insulation and flex piping to prevent disruption in services.	
Participating Jurisdiction	Palo Pinto County Unincorporated
Priority:	12
Estimated Cost:	$500,000
Estimated Benefit:	$3,000,000
Potential Funding Source(s):	General Budget, Grants, Property Owners
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	24 months

Hazard(s) Addressed	Drought, Earthquakes, Expansive Soils, Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms
Action: Establish a public education program to include mitigation actions for the identified hazards.	
Participating Jurisdiction:	Palo Pinto County Unincorporated
Priority:	13
Estimated Cost:	$2,000.00
Estimated Benefit:	$12,000.00
Potential Funding Source(s):	General Funds / Grants
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	24 months

4.6 Incorporation into Existing Planning Mechanisms

Based on Requirement 201.6(c)(4(ii) and the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for the town were carefully reviewed and considered when developing the mitigation actions for this plan. The Local Planning Team (LPT) will establish a process in which the mitigation strategy, goals, objectives, and actions outlined in this plan will be incorporated into the existing local planning strategies. At this time, the HazMAP has not been formally integrated into existing planning mechanisms.

Once the plan is adopted, the LPT will coordinate implementation with the responsible parties in the town, as well as external stakeholders as needed.

The following steps will be taken in implementing this HazMAP into local plans:

1. Change is proposed by an elected official or other interested party.
2. Proposal is placed on the local agenda of the governing body.
3. Agenda is published at least 10 days in advance of the meeting at which it will be discussed, so members of the public have an opportunity to attend the discussion meeting. Publication may be made by posting the agenda on the city's website, in the city newsletter, or on a public bulletin board.
4. Proposal is discussed at the planning meeting, including any comments by members of the public attendance.
5. Proposal is voted on by the governing body.
6. If the proposal is passed, the change is implemented by the appropriate party.

Planning mechanisms in which the HazMAP will be integrated are listed below.

Jurisdiction	Type of Plan or Activity	Department Responsible	Update Schedule	Actions to be Integrated
Gordon	Capital Improvement Plan	City Administration	Every 5 years	Reference this HazMAP when developing the plan.
Mineral Wells	Operational Plan	Public Works Department	Every 5 years	Reference HazMAP when being stages of plan.
Mineral Wells	Capital Improvement Plan	City Administration	Every 5 years	Reference this HazMAP when developing the plan.
Mingus	Comprehensive Plan	Planning, Zoning, and Public Works Departments	Every 5 years	Reference this HazMAP when developing the plans for critical infrastructure and resources.
Strawn	Floodplain Ordinance	Public Works Department	As needed	Reference this HazMAP when updating the ordinance.
Palo Pinto County Unincorporated	Economic Development Plan	Commissioners' Court	Every 5 years	Reference this HazMAP when developing the plan.

Although it is recognized that there are many possible benefits to integrating components of this Hazard Mitigation Action Plan (HazMAP) into other planning mechanisms, the participating jurisdictions consider this HazMAP, including development and maintenance, to be the primary vehicle to ensure implementation of local hazard mitigation actions.

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Chapter 5: Conclusion

Through the development of this plan, Palo Pinto County has developed a thorough hazard history, an inventory of critical facilities, and an assessment of their current capabilities. This data, when used in conjunction with the updated information about hazard threats and vulnerabilities, will prove to be invaluable to Palo Pinto County and its participating jurisdictions.

Natural hazards have been identified county-wide and technological hazards have been listed for selected jurisdictions that opted to include these hazards. Mitigation projects that could reduce the risk of lives and property due to the identified threats have been compiled and prioritized.

The creation of the Palo Pinto County Hazard Mitigation Planning Team (HMPT) brought together stakeholders from communities and organizations onto one planning team. This group has been able to work together effectively and efficiently to produce this document and establish a greater awareness of risks and mitigation strategies.

In addition to the HMPT, the creation of the Local Planning Team (LPT) in each jurisdiction brought together stakeholders and departments within the jurisdiction onto one planning team. This group was able to work together effectively and efficiently to produce jurisdictional data for this document and establish a greater awareness of risks and mitigation strategies.

This plan will continue to evolve as necessary to properly represent the threats and vulnerabilities affecting Palo Pinto County. Continued public participation is encouraged and will continue through the ongoing multijurisdictional hazard mitigation process. The plan, in its entirety (not limited to but including development, public participation, hazard identification, and mitigation actions), will continue to be monitored and evaluated.

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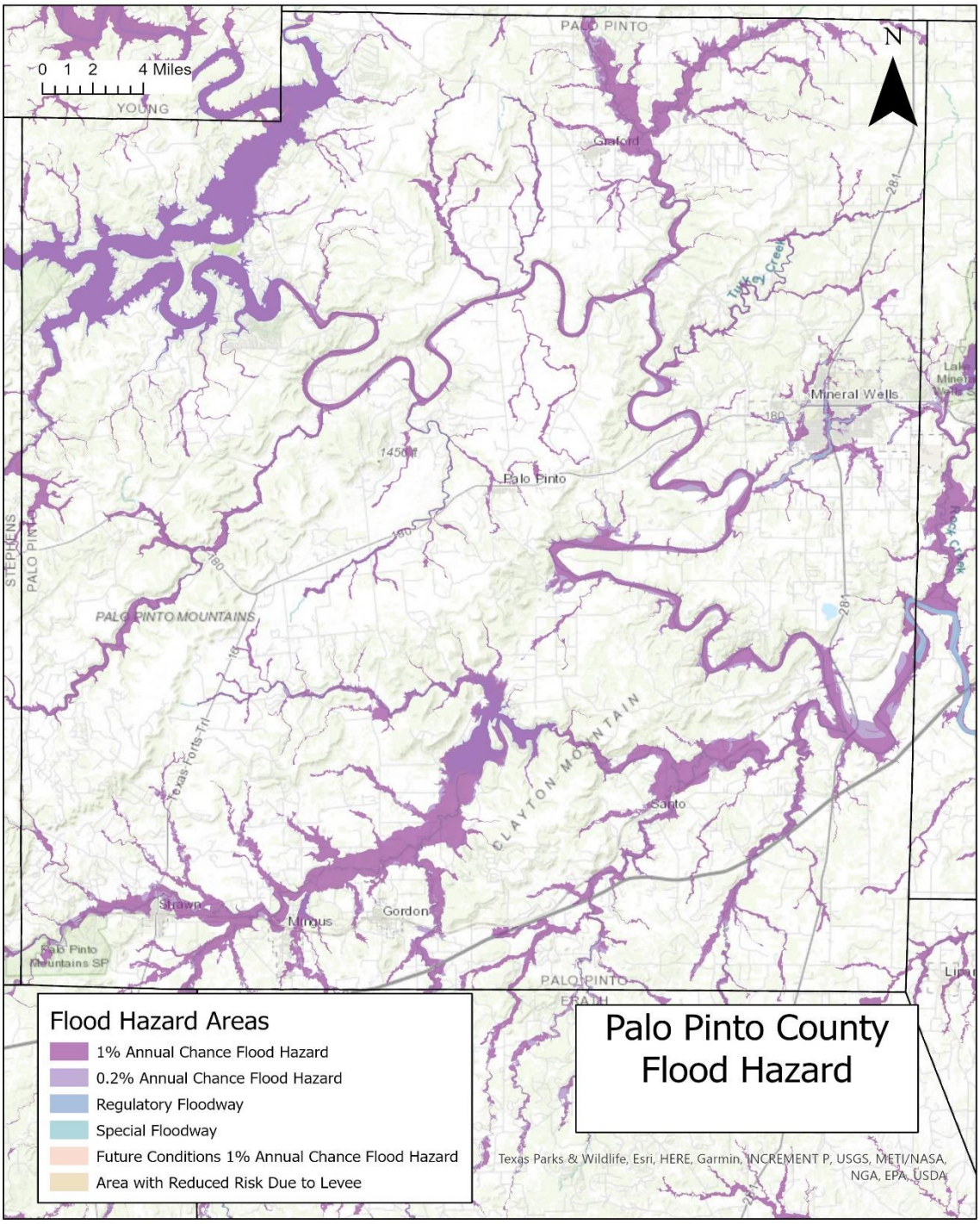
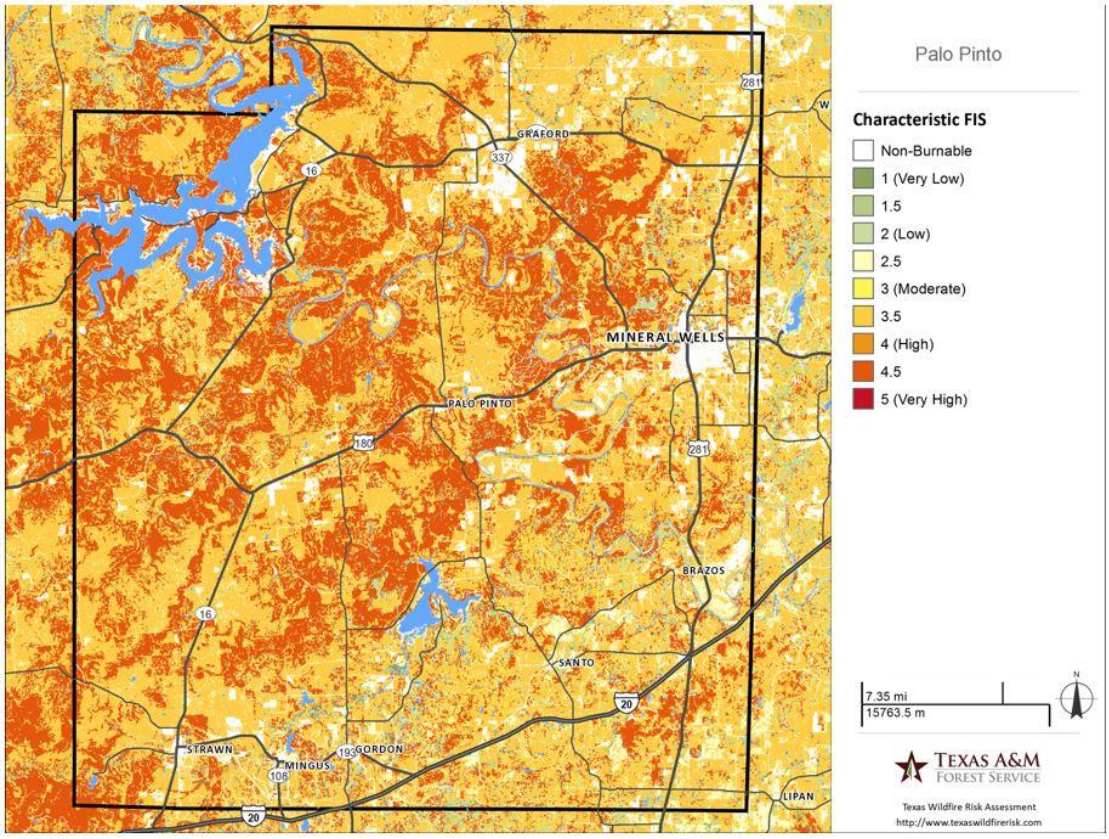
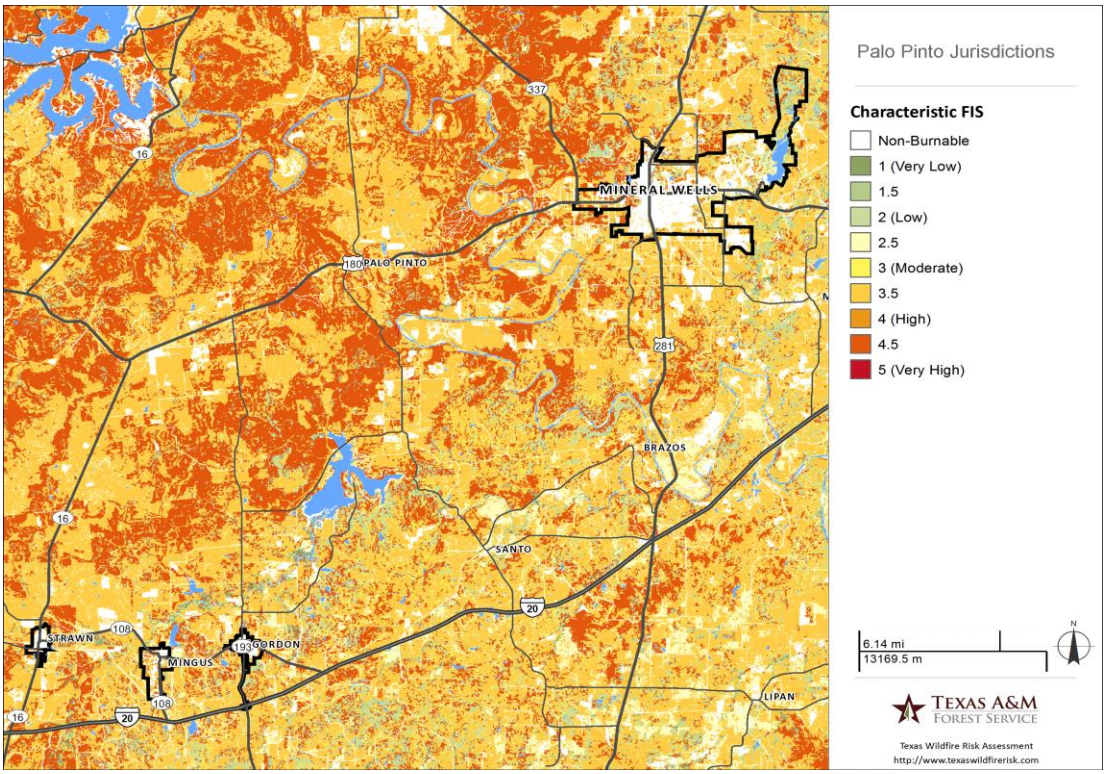
Appendix A: Maps & Tables

Palo Pinto County Flood Hazard Map



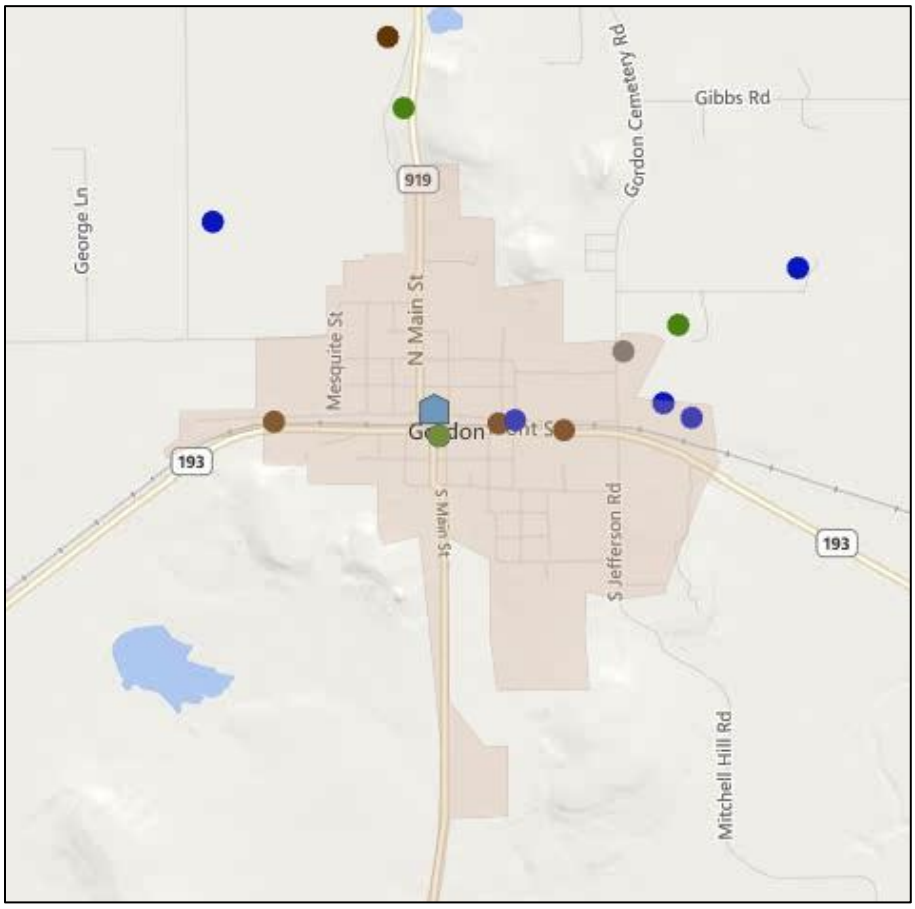
Palo Pinto County Fire Intensity Scale Map





City of Gordon

Wildfire Ignitions, 2005-2015



Wildfire Ignitions

Cause	Cause
Incendiary	Railroads
Lightning	Power Lines
Campfire	Children
Smoking	Debris Burning
Fireworks	Structure
Equipment User	Miscellaneous

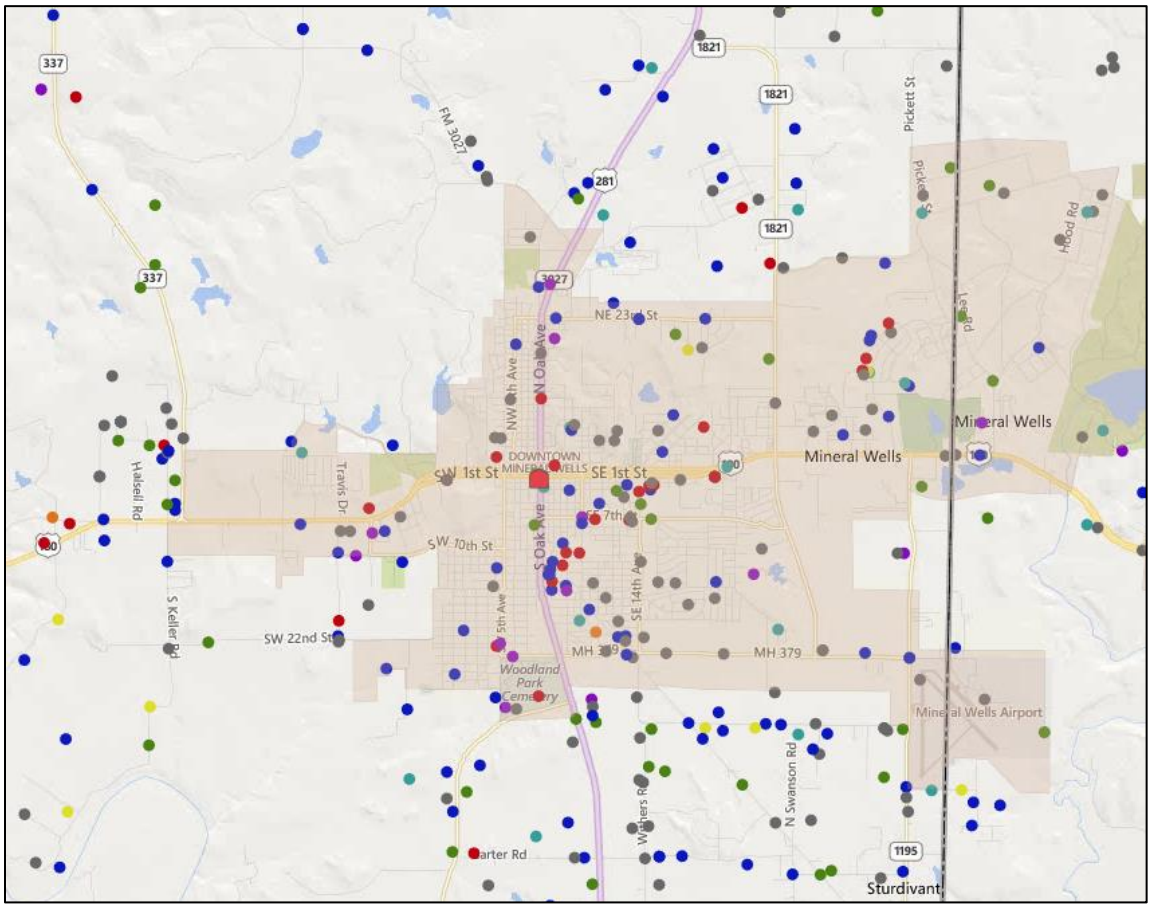
Source: [Texas A&M Forest Service]

Gordon Critical and Vulnerable Facility & Infrastructure Table

At Risk To: (Yes (Y) or No (N))								**Gordon Critical and Vulnerable Facility and Infrastructure Inventory**				
Drought	Expansive Soils	Extreme Heat	Flooding	Thunderstorms	Tornadoes	Wildfires	Winter Storms	**Facility Name or Description**	**Address**	**Capacity**	**Structure Value**	**Content Value**
Y	Y	Y	Y	Y	N	Y	Y	City Hall	105 South Main Street	300	$75,000	$30,000
Y	Y	Y	Y	Y	N	Y	Y	Volunteer Fire Department	115 West Crockett	800	$150,000	$500,000
Y	Y	Y	Y	Y	N	Y	Y	Water Treatment Plant	1801 Hwy 193	10	$200,000	$3,000,000
Y	Y	Y	Y	Y	N	Y	Y	Water Tower	1801 Hwy 193	0	$1,000,000	$200,000
Y	Y	Y	Y	Y	N	Y	Y	School	305 Rusk	1000	$750,000	$5,000,000
Y	Y	Y	Y	Y	N	Y	Y	Post Office	201 South Main Street	15	$50,000	$250,000
Y	Y	Y	Y	Y	N	Y	Y	Sewer Treatment Plant	850 Cemetery Road	0	$0	$500,000
Y	Y	Y	Y	Y	N	Y	Y	Railroad	Crockett	0	N/A	N/A

City of Mineral Wells

Wildfire Ignitions, 2005-2015



Wildfire Ignitions

Cause	Cause
Incendiary	Railroads
Lightning	Power Lines
Campfire	Children
Smoking	Debris Burning
Fireworks	Structure
Equipment User	Miscellaneous

Source: [Texas A&M Forest Service]

Mineral Wells Critical and Vulnerable Facility & Infrastructure Table

At Risk To: (Yes (Y) or No (N))								**Mineral Wells Critical and Vulnerable Facility Inventory**					
Drought	Expansive Soils	Extreme Heat	Flooding	Thunderstorms	Tornadoes	Wildfires	Winter Storms	**Facility Name or Description**	**Address**	**Capacity**	**Square Feet**	**Structure Value**	**Content Value**
	Y		Y	Y	Y	Y	Y	Mineral Wells Nursing & Rehab	316 Southwest 25th Avenue	108	27,000	$1,000,000	$250,000
	Y		Y	Y	Y	Y	Y	Palo Pinto Nursing Center	200 Southwest 25th Avenue	106	26,000	$1,000,000	$250,000
	Y			Y	Y		Y	Serenity Estates Senior Living	401 Northwest 4th Street	26	12,000	$420,000	$105,000
	Y			Y	Y		Y	Lakewell Place Senior Living	3005 Northeast 2nd Street	30	24,000	$1,500,000	$245,000
	Y			Y	Y		Y	Sandstone Foothills Senior Living	402 Brazos Drive #108		34,000	$1,150,000	$230,000
	Y		Y	Y	Y		Y	Royal Gardens Apartments	1501 SE Martin Luther King Jr. Street	80 UNITS	80,000	$10,000,000	$2,000,000
	Y			Y	Y		Y	Pioneer Crossing Apartments	2509 East Hubbard Street		120,000	$15,000,000	$3,000,000
	Y			Y	Y		Y	Spanish Trace Apartments	3001 Northeast 2nd Street		84,000	$10,500,000	$2,050,000
	Y			Y	Y		Y	Parkwood Apartments	2901 Northeast 2nd Street		56,000	$7,000,000	$1,400,000
	Y			Y	Y		Y	Heritage Manor Apartments	2501 Southeast 6th Street		32,400	$4,050,000	$810,000
	Y			Y	Y		Y	Walmart	601 FM 1821		200,000	$60,000,000 @$300	Unknown

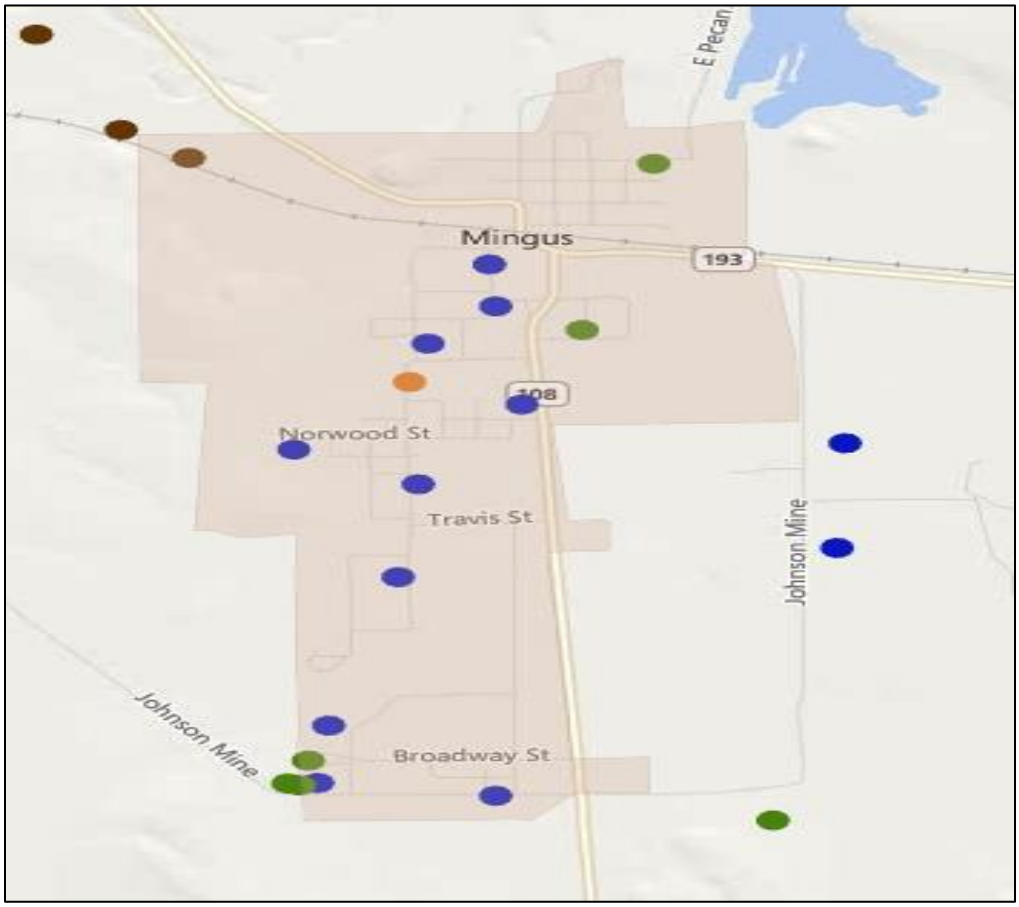
At Risk To: (Yes (Y) or No (N))								Mineral Wells Critical and Vulnerable Facility Inventory					
Drought	Expansive Soils	Extreme Heat	Flooding	Thunderstorms	Tornadoes	Wildfires	Winter Storms	**Facility Name or Description**	**Address**	**Capacity**	**Square Feet**	**Structure Value**	**Content Value**
	Y			Y	Y		Y	Cantex Manufacturing Complex	2101 Southeast 1st Street		550,000	$165,000,000	Unknown
	Y			Y	Y		Y	Vent A Matic Manufacturing Complex	Washington Street		154,000	@150, $23,000,000	Unknown
	Y			Y	Y		Y	Vent A Matic	422 Lee Road		52,000	$7,800,000	Unknown
	Y			Y	Y		Y	Vent A Matic Complex	Grant Road		78,000	@150 $11,700,000	Unknown
Y	Y			Y	Y		Y	Meridian Brick Plant West	500 Northeast 14th Street	0	130,000	$39,000,000	Unknown
Y	Y		Y	Y	Y	Y	Y	Meridian Brick Plant East	7510 US 180	0	38,000	$11,400,000	Unknown
	Y			Y	Y		Y	Genesys Aerosystems (S-Tec Corporation)	1 S-Tec Way		60,000	$18,000,000	Unknown
	Y		Y	Y	Y		Y	Texas Department of Public Safety (Highway Patrol & DL office)	600 Garrett Morris Pkwy		13,000	@300 $3,900,000	$800,000
Y	Y	Y	Y	Y	Y		Y	TxDOT Highway Maintenance	2400 Hwy 180 West		16,000	$4,800,000	Unknown
	Y		Y	Y	Y		Y	Nicki's Kritters Daycare	1005 SE 14th Avenue	100	4,000	$500,000	$100,00
	Y			Y	Y		Y	Kidde Klub House Daycare	1708 Martin Luther King Jr. Street	100	8,000	$1,000,000	$200,000
	Y			Y	Y	Y	Y	All About Kids Daycare	1709 Southeast Airport Road	100	5,200	$650,000	$130,000

At Risk To: (Yes (Y) or No (N))								Mineral Wells Critical and Vulnerable Facility Inventory					
Drought	Expansive Soils	Extreme Heat	Flooding	Thunderstorms	Tornadoes	Wildfires	Winter Storms	**Facility Name or Description**	**Address**	**Capacity**	**Square Feet**	**Structure Value**	**Content Value**
	Y			Y	Y	Y	Y	Weatherford College	704 Hood Road	500	77,500	$23,250,000	$4,650,000
Y	Y	Y	Y	Y	Y	Y	Y	Oncor		N/A	N/A	N/A	N/A
	Y			Y	Y		Y	Comfort Suites	105 Karl Kessler	60 rooms/180	42,000	$5,250,000	$1,050,000
	Y			Y	Y		Y	Knights Inn	4103 Hwy 180 East	31 rooms/93	17,800	$2,225,000	$445,00
	Y			Y	Y		Y	Executive Inn	2809 Hwy 180 West	30 rooms/90	18,000	$2,250,000	$450,000
	Y		Y	Y	Y	Y	Y	Palo Pinto General Hospital (PPGH)	400 Southwest 25th Avenue	74	145,000	$20,300,000	$$38,400,000
	Y		Y	Y	Y	Y	Y	*PPGH Shop*		*0*	*10,000*	*$500,000*	*$250,000*
	Y		Y	Y	Y	Y	Y	*PPGH Workshop*		*0*	*10,000*	*$700,000*	*$1,000,000*
	Y		Y	Y	Y	Y	Y	*PPGH Storage*		*0*	*2400*	*$300,000*	*$50,000*
	Y		Y	Y	Y	Y	Y	*PPGH Heart Center/Physical Therapy*	*320 Southwest 26th Avenue*	*50*	*17,220*	*$400,000*	*$2,000,000*
	Y		Y	Y	Y	Y	Y	*PPGH Medical Office*	*218 Southwest 26th Avenue*		*7,779*	*$300,000*	*$3,000,000*
	Y		Y	Y	Y	Y	Y	*PPGH Clinic*	*202 Southwest 25th Avenue*		*29,222*	*$1,700,000*	*$6,300,000*
		Y	Y	Y	Y		Y	*PPGH Mobil Clinic*	*Mobil*	*N/A*	*N/A*	*$2,000*	*$48,000*
	Y			Y	Y		Y	Palo Pinto Complex	118 Washington Road		360,000@150	$54,000,000	Unknown
	Y		Y	Y	Y		Y	Antenna Products	100 Southeast 25th Avenue		100,000@150	$15,000,000	Unknown

At Risk To: (Yes (Y) or No (N))								Mineral Wells Critical and Vulnerable Facility Inventory					
Drought	Expansive Soils	Extreme Heat	Flooding	Thunderstorms	Tornadoes	Wildfires	Winter Storms	**Facility Name or Description**	**Address**	**Capacity**	**Square Feet**	**Structure Value**	**Content Value**
	Y			Y	Y		Y	Red Lion Inn	6801 Hwy 180 E	65 rooms/195	42,000	$5,250,000	$1,050,000
	Y			Y	Y		Y	Best Western Inn	4410 Hwy 180 East	50 rooms/150	34,000	$4,250,000	$850,000
	Y			Y	Y		Y	Days Inn	107 Washington Road	42 rooms/126	27,000	$3,375,000	$675,000

City of Mingus

Wildfire Ignitions, 2005-2015



Wildfire Ignitions

Cause	Cause
Incendiary	Railroads
Lightning	Power Lines
Campfire	Children
Smoking	Debris Burning
Fireworks	Structure
Equipment User	Miscellaneous

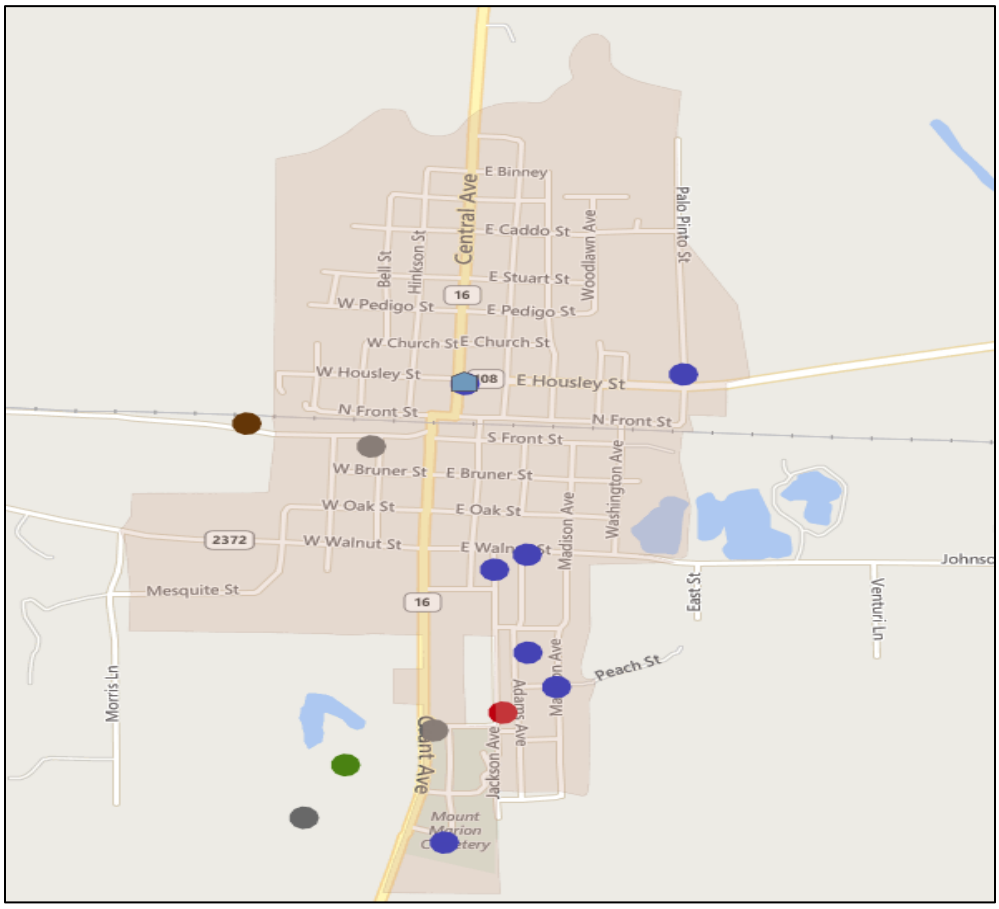
Source: [Texas A&M Forest Service]

Mingus Critical and Vulnerable Facility & Infrastructure Table

At Risk To: (Yes (Y) or No (N))								**Mingus Critical and Vulnerable Facility Inventory**		
Drought	Expansive Soils	Extreme Heat	Flooding	Thunderstorms	Tornadoes	Wildfires	Winter Storms	**Facility Name or Description**	**Address**	**Capacity**
Y	Y	Y	Y	Y	Y	Y	Y	Water Tower		50,000 gallons
N	Y	N	N	Y	Y	Y	N	City Hall	229 South Mingus Boulevard	Unknown
N	Y	N	Y	Y	Y	Y	N	Community Center		Unknown
Y	Y	Y	Y	Y	Y	Y	Y	Railroad		Unknown

City of Strawn

Wildfire Ignitions, 2005-2015



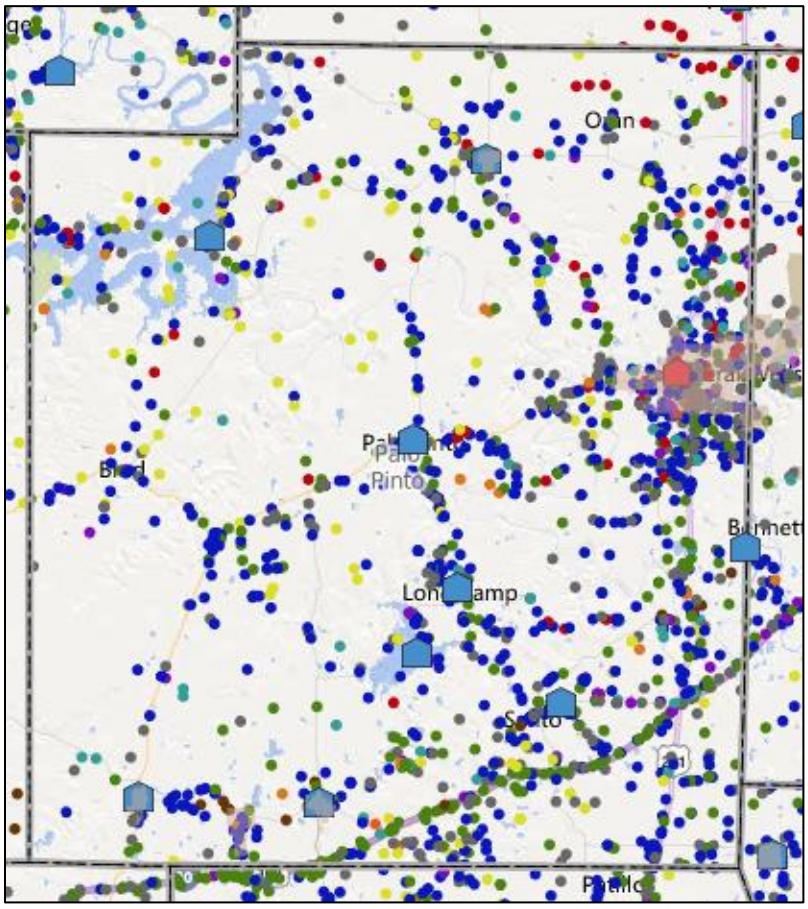
Source: [Texas A&M Forest Service]

Strawn Critical and Vulnerable Facility & Infrastructure Table

At Risk To: (Yes (Y) or No (N))								**Strawn Critical and Vulnerable Facility Inventory**	
Drought	Expansive Soils	Extreme Heat	Flooding	Thunderstorms	Tornadoes	Wildfires	Winter Storms	**Facility Name or Description**	**Address**
Y	Y	Y	Y	Y	Y	Y	Y	Strawn ISD	
Y	Y	Y	Y	Y	Y	Y	Y	City Hall	118 Housley Street
Y	Y	Y	Y	Y	Y	Y	Y	Strawn Water Treatment Plant	400 South Front Street
Y	Y	Y	Y	Y	Y	Y	Y	Wastewater Treatment Plant	
Y	Y	Y	Y	Y	Y	Y	Y	Water Tower	
Y	Y	Y	Y	Y	Y	Y	Y	Mary's Cafe	119 Grant Avenue
Y	Y	Y	Y	Y	Y	Y	Y	Strawn First National Bank Albany	123 Central Avenue
Y	Y	Y	Y	Y	Y	Y	Y	First Baptist	200 Houston Street
Y	Y	Y	Y	Y	Y	Y	Y	Trinity Baptist	211 Willow Street
Y	Y	Y	Y	Y	Y	Y	Y	St. John Catholic Church	126 Hickory Street
Y	Y	Y	Y	Y	Y	Y	Y	City Storage Barn	
Y	Y	Y	Y	Y	Y	Y	Y	Strawn Volunteer Fire Station	612 Grant Avenue

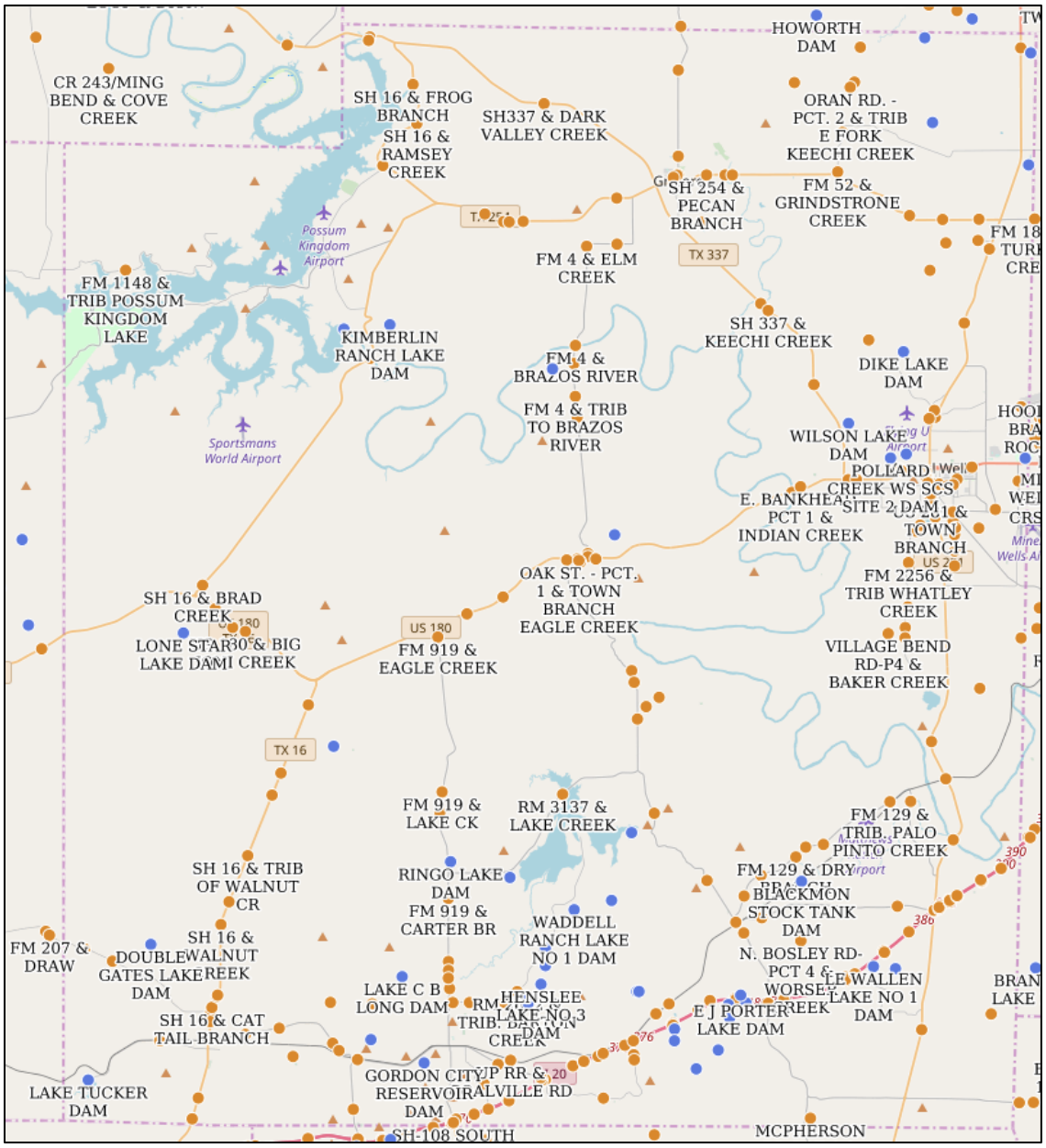
Palo Pinto County Unincorporated

Wildfire Ignitions, 2005-2015

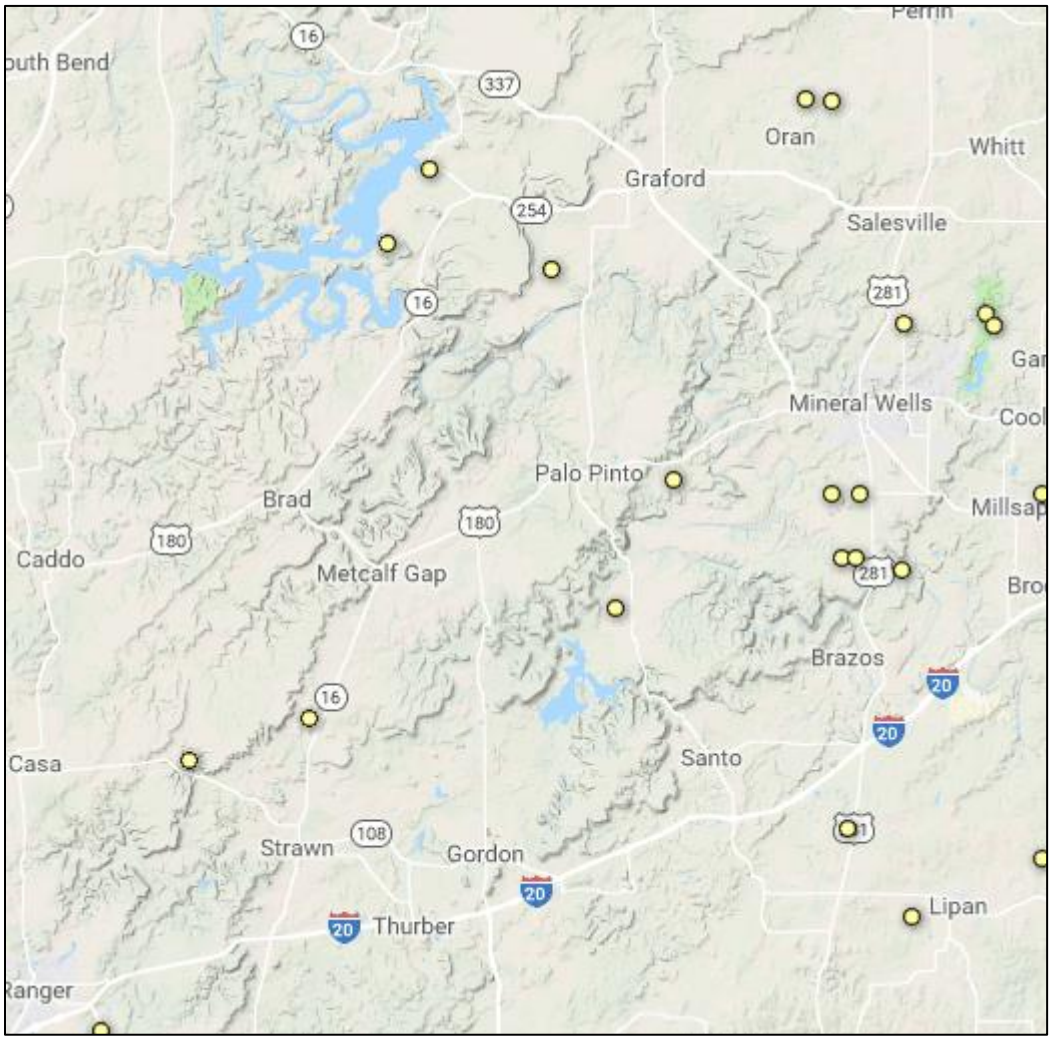


Source: [Texas A&M Forest Service]

Dams and Bridges



Low Water Crossings



Palo Pinto County Unincorporated Critical and Vulnerable Facility & Infrastructure Table

At Risk To: (Yes (Y) or No (N))								**Palo Pinto County Unincorporated Critical and Vulnerable Facility Inventory**	
Drought	Expansive Soils	Extreme Heat	Flooding	Thunderstorms	Tornadoes	Wildfires	Winter Storms	**Facility Name or Description**	**Address**
Y	Y	Y	Y	Y	Y	Y	Y	County Courthouse	520 Oak Street
Y	Y	Y	Y	Y	Y	Y	Y	Sheriff's Office & Jail	420 Cedar Street
Y	Y	Y	Y	Y	Y	Y	Y	Water Treatment Facilities	
Y	Y	Y	Y	Y	Y	Y	Y	Palo Pinto Pre-K to 6	821 Oak Street
Y	Y	Y	Y	Y	Y	Y	Y	RV Parks	Various locations

Appendix B: Capabilities Assessment

The following capability assessments examine the ability of the jurisdictions to implement and manage a comprehensive mitigation strategy. Strengths, weaknesses, and resources of the jurisdictions are identified as a means to develop an effective Hazard Mitigation Action Plan (HazMAP). The capabilities identified in these assessments were evaluated collectively to develop feasible recommendations, which support the implementation of effective mitigation activities.

The assessments include questions regarding existing plans, policies, and regulations that contribute to or hinder the ability to implement hazard mitigation activities, including legal and regulatory capabilities; administrative and technical capabilities; and fiscal capabilities.

City of Gordon

Planning and Regulatory Assessment

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and

Type of Plans	Have capability?	Level	If Yes…		
Comprehensive or Master Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Capital Improvement Plan (CIP)	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to	☐Yes	**Comments:**

Type of Plans	Have capability?	Level	If Yes…		
			implement mitigation actions?	☐No	
Economic Development Plan	☒Yes ☐No ☐N/A	☒ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☒No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☒No	**Comments:**
			Can the plan be used to implement mitigation actions?	☒Yes ☐No	**Comments:**
Local Emergency Operations Plan	☒Yes ☐No ☐N/A	☐ Local ☒ County ☐ Region	**Does the plan address natural hazards?**	☒Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☒No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☒No	**Comments:**
Continuity of Operations Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to	☐Yes	**Comments:**

Type of Plans	Have capability?	Level	If Yes…		
			implement mitigation actions?	☐No	
Transportation Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Stormwater Management Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Community Wildfire Protection Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to	☐Yes	**Comments:**

Type of Plans	Have capability?	Level	If Yes…		
			implement mitigation actions?	☐No	
Green Infrastructure Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Parks or Open Space Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Hazard Mitigation Plan	☒Yes ☐No ☐N/A	☐ Local ☒ County ☐ Region	**Does the plan address natural hazards?**	☒Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☒Yes ☐No	**Comments:**
			Can the plan be used to	☒Yes	**Comments:**

Type of Plans	Have capability?	Level	If Yes…		
			implement mitigation actions?	☐No	

Land Use Planning and Ordinances	Have capability?	If Yes…		
Zoning Ordinance	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments:**
Subdivision Ordinance	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments:**
Floodplain Ordinance	☒Yes ☐No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☒Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☐Yes ☒No	**Comments:**
Flood Insurance Rate Maps (FIRM)	☒Yes ☐No ☐N/A	**Is the FIRM an effective measure for reducing hazard impacts?**	☐Yes ☒No	**Comments: Applied for**
		Is the FIRM adequately administered and enforced?	☐Yes ☒No	**Comments:**

Land Use Planning and Ordinances	Have capability?	If Yes…		
Natural Hazard Specific Ordinance (e.g., stormwater, wildfire)	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments:**
Acquisition of land for open space and public recreation uses	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments:**

Building Code, Permitting, and Inspections	Have capability?	
Building Code	☐Yes ☒No ☐N/A	**Version/Year: State standards**
Building Code Effectiveness Grading Schedule (BGEGS) Score	☐Yes ☒No ☐N/A	**Score:**
Fire Department ISO Rating	☒Yes ☐No ☐N/A	**Rating: 9**
Site Plan Review Requirements	☐Yes ☒No ☐N/A	**Review method:**

Administrative and Technical Assessment

Administrative and technical capabilities include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administration	**Have capability?**	**If Yes…**
Planning Commission	☐Yes ☒No ☐N/A	**Describe capability:**
Mitigation Planning Committee	☒Yes	**Describe capability:** Identifies hazards, conducts a risk and vulnerability assessment, and creates and monitors mitigation actions.
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	☒Yes ☐No ☐N/A	**Describe capability: Maintenance as needed**
Mutual Aid Agreements	☒Yes ☐No ☐N/A	**Describe capability: County**

Staff	**Have capability? FT/PT***	**If Yes…**	
***Full-time (FT) or part-time (PT) position**			
Chief Building Official	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Floodplain Administrator	☐Yes-FT ☒Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations?**	☒ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☒No

Staff	Have capability? FT/PT*	If Yes…	
***Full-time (FT) or part-time (PT) position**			
Emergency Manager	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Community Planner	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Civil Engineer	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
GIS Coordinator	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Public Works Director	☒Yes-FT ☐Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☒No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☒No

Staff	Have capability? FT/PT*	If Yes…	
***Full-time (FT) or part-time (PT) position**			
Fire Chief	☒Yes-FT ☐Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations?**	☒ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☒ Yes ☐No
Environmental Director	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No

Technical	Have capability?	If Yes…	
Warning Systems/Services (e.g., Reverse 911, outdoor warning signals)	☒Yes ☐No ☐N/A	**Describe capability:** Swift 911	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☒ No
		If yes, for what type of event?	
Hazard data and information	☐Yes ☒No ☐N/A	**Describe capability:**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐ No
		If yes, for what type of event?	
Grant writing	☐Yes	**Describe capability.**	

Technical	Have capability?	If Yes…	
	☒No ☐N/A	**Has capability been used to assess or mitigate risk in the past?**	☐ Yes ☐ No
		If yes, for what type of event?	
HaZUS analysis or GIS software	☐Yes ☒No ☐N/A	**Describe capability:**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐ No
		If yes, for what type of event?	

Education and Outreach Assessment

Education and outreach programs and methods can be used to implement mitigation activities and communicate hazard-related information.

Program or Organization	Have capability?	If Yes…	
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	☐Yes ☒No ☐N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	☒Yes ☐No ☐N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation: Volunteer Fire Department	

Program or Organization	Have capability?	If Yes…	
Natural disaster or safety related school programs	☒Yes ☐No ☐N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation: Tornado drills	
Public/private partnership initiatives addressing disaster-related issues	☐Yes ☒No ☐N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
StormReady certification	☐Yes ☒No ☐N/A	Answer will be pre-filled.	
Firewise Communities Certification	☐Yes ☒No ☐N/A	Answer will be pre-filled.	

Financial Assessment

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resources	Have capability?	If Yes…	
Capital Improvements Project funding	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Authority to levy taxes for specific purposes	☒Yes	**Could the resource be used to fund future mitigation actions?**	☒Yes

Funding Resources	Have capability?	If Yes…	
	☐No ☐N/A		☐No
		Has the funding resource been used in past?	☐Yes ☒No
		If yes, for what type of mitigation activities?	
Fees for water, sewer, gas, and/or electric services	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☒No
		Has the funding resource been used in past?	☐Yes ☒No
		If yes, for what type of mitigation activities?	
Impact fees for new development	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Stormwater utility fee	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Incurrence of debt through general obligation bonds and/or special tax bonds	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☒Yes ☐No
		If yes, for what type of mitigation activities? Not for mitigation	
Incur debt through private activities	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of mitigation activities?	

Funding Resources	Have capability?	If Yes…	
Community Development Block Grant	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☐Yes ☒No
		If yes, for what type of mitigation activities?	
Other federal funding programs (e.g. FEMA mitigation grants)	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
State funding programs	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☒Yes ☐No
		If yes, for what type of mitigation activities? Code Updates	

How can these capabilities be expanded and improved to reduce risk?
Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting and passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates to existing plans as new needs are recognized.

City of Mineral Wells

Planning and Regulatory Assessment

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of natural hazards.

Type of Plans	Have capability?	Level	If Yes…		
Comprehensive or Master Plan	☐Yes ☒No	☐ Local	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**

Type of Plans	Have capability?	Level	If Yes…		
	☐N/A	☐ County ☐ Region	**Does the plan identify projects to include in the mitigation strategy?**	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Capital Improvement Plan (CIP)	☐Yes ☒No ☐N/A	☒ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Economic Development Plan	☐Yes ☒No ☐N/A	☒ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments: Currently in the process of being developed.**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Local Emergency Operations Plan	☒Yes ☐No	☐ Local	**Does the plan address natural hazards?**	☒Yes ☐No	**Comments:**

Type of Plans	Have capability?	Level	If Yes…		
	☐N/A	☒ County ☐ Region	**Does the plan identify projects to include in the mitigation strategy?**	☒Yes ☐No	**Comments: Not sure**
			Can the plan be used to implement mitigation actions?	☒Yes ☐No	**Comments:**
Continuity of Operations Plan	☐Yes ☒No ☐N/A	☒ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Transportation Plan	☒Yes ☐No ☐N/A	☐ Local ☒ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Stormwater Management Plan	☐Yes ☒No	☒ Local	**Does the plan address natural hazards?**	☒Yes ☐No	**Comments: In the process of being developed.**

Type of Plans	Have capability?	Level	If Yes…		
	☐N/A	☐ County ☐ Region	**Does the plan identify projects to include in the mitigation strategy?**	☒Yes ☐No	**Comments: Currently being evaluated by an engineering firm**
			Can the plan be used to implement mitigation actions?	☒Yes ☐No	**Comments:**
Community Wildfire Protection Plan	☐Yes ☒No ☐N/A	☒ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Green Infrastructure Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Parks or Open Space Plan	☐Yes ☒No	☒ Local	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments: Pending**

Type of Plans	Have capability?	Level	If Yes…		
	☐ N/A	☐ County ☐ Region	**Does the plan identify projects to include in the mitigation strategy?**	☐ Yes ☐ No	**Comments: Pending**
			Can the plan be used to implement mitigation actions?	☐ Yes ☐ No	**Comments: Pending**
Hazard Mitigation Plan	☒ Yes ☐ No ☐ N/A	☐ Local ☒ County ☐ Region	**Does the plan address natural hazards?**	☒ Yes ☐ No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☒ Yes ☐ No	**Comments:**
			Can the plan be used to implement mitigation actions?	☒ Yes ☐ No	**Comments:**

Land Use Planning and Ordinances	Have capability?	If Yes…		
Zoning Ordinance	☒ Yes ☐ No ☐ N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☒ Yes ☐ No	**Comments:**
		Is the ordinance adequately administered and enforced?	☒ Yes ☐ No	**Comments:**
Subdivision Ordinance	☒ Yes ☐ No	**Is the ordinance an effective measure for reducing hazard impacts?**	☒ Yes ☐ No	**Comments:**

Land Use Planning and Ordinances	Have capability?	If Yes…		
	☐N/A	**Is the ordinance adequately administered and enforced?**	☒Yes ☐No	**Comments:**
Floodplain Ordinance	☒Yes ☐No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☒Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☒Yes ☐No	**Comments: Personnel need more training. Public education needed.**
Flood Insurance Rate Maps	☒Yes ☐No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☒Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☒Yes ☐No	**Comments: Personnel need more training. Public needs education.**
Natural Hazard Specific Ordinance (e.g., stormwater, wildfire)	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments:**
Acquisition of land for open space and public recreation uses	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments:**

Building Code, Permitting, and Inspections	Have capability?	
Building Code: planning on adopting the 2015 in the next few months.	☒Yes ☐No ☐N/A	**Version/Year: 2012**
Building Code Effectiveness Grading Schedule (BGEGS) Score	☒Yes ☐No ☐N/A	**Score: 7**
Fire Department ISO Rating	☒Yes ☐No ☐N/A	**Rating: 5/5Y**
Site Plan Review Requirements	☒Yes ☐No ☐N/A	**Review method: Engineer or City Planner**

Administrative and Technical Assessment

Administrative and technical capabilities include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administration	Have capability?	If Yes…
Planning Commission	☒Yes ☐No ☐N/A	**Describe capability:**
Mitigation Planning Committee	☒Yes	**Describe capability:** Hazard identification and risk assessment.
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	☒Yes ☐No ☐N/A	**Describe capability:** Needs to be improved, Stormwater Utility is in place to assist in the future
Mutual Aid Agreements	☒Yes ☐No ☐N/A	**Describe capability:** Fire/Rescue assistance

Staff	Have capability? FT/PT*	If Yes…	
***Full-time (FT) or part-time (PT) position**			
Chief Building Official	☐ Yes-FT ☒ Yes- PT ☐ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☒ No
		Is staff trained on natural hazards and mitigation?	☒ Yes ☐ No
Floodplain Administrator	☐ Yes-FT ☒ Yes- PT ☐ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☒ No
		Is staff trained on natural hazards and mitigation?	☒ Yes ☐ No
Emergency Manager	☐ Yes-FT ☒ Yes- PT ☐ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☒ No
		Is staff trained on natural hazards and mitigation?	☒ Yes ☐ No
Community Planner	☐ Yes-FT ☒ Yes- PT ☐ No ☐ N/A	**Is staffing adequate to enforce regulations? Contracted**	☒ Yes ☐ No
		Is staff trained on natural hazards and mitigation? Company hired recently	☒ Yes ☐ No
Civil Engineer	☒ Yes-FT ☐ Yes- PT ☐ No ☐ N/A	**Is staffing adequate to enforce regulations?** **Contracted**	☒ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☒ Yes ☐ No

Staff	Have capability? FT/PT*	If Yes…	
***Full-time (FT) or part-time (PT) position**			
GIS Coordinator	☐Yes-FT ☒Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations?**	☒ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☒ Yes ☐No
Public Works Director	☒Yes-FT ☐Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations?**	☒ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Fire Chief	☐Yes-FT ☒Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☒No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☒No
Environmental Director	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No

Technical	Have capability?	If Yes…	
Warning Systems/Services (e.g., Reverse 911, outdoor warning signals)	☒Yes ☐No ☐N/A	**Describe capability.**	
		Has capability been used to assess or mitigate risk in the past?	☒ Yes

Technical	Have capability?	If Yes…	
			☐ No
		If yes, for what type of event? Weather	
Hazard data and information	☒ Yes ☐ No ☐ N/A	**Describe capability: Storm events**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐ No
		If yes, for what type of event? Tornado and Hail	
Grant writing	☒ Yes ☐ No ☐ N/A	**Describe capability. Both in house and outsourced**	
		Has capability been used to assess or mitigate risk in the past?	☒ Yes ☐ No
		If yes, for what type of event? Fire hydrants	
HaZUS analysis or GIS software	☐ Yes ☒ No ☐ N/A	**Describe capability:**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐ No
		If yes, for what type of event?	

Education and Outreach Assessment

Education and outreach programs and methods can be used to implement mitigation activities and communicate hazard-related information.

Program or Organization	Have capability?	If Yes…	
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	☐Yes ☒No ☐N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	☐Yes ☒No ☐N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
Natural disaster or safety related school programs	☐Yes ☒No ☐N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
Public/private partnership initiatives addressing disaster-related issues	☐Yes ☒No ☐N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
StormReady certification	☐Yes ☒No ☐N/A	Answer will be pre-filled.	
Firewise Communities Certification	☐Yes ☒No ☐N/A	Answer will be pre-filled.	

Financial Assessment

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resources	Have capability?	If Yes…	
Capital Improvements project funding	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☐Yes ☒No
		If yes, for what type of activities?	
Authority to levy taxes for specific purposes	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☐Yes ☒No
		If yes, for what type of activities?	
Fees for water, sewer, gas, and/or electric services	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☒Yes ☐No
		If yes, for what type of activities? Water related	
Impact fees for new development	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of activities?	
Stormwater utility fee	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☒Yes ☐No
		If yes, for what type of activities? Drainage study, Gradeall	

Funding Resources	Have capability?	If Yes…	
Incurrence of debt through general obligation bonds and/or special tax bonds	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☐Yes ☒No
		If yes, for what type of activities?	
Incur debt through private activities	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☒No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of activities?	
Community Development Block Grant	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☒Yes ☐No
		If yes, for what type of activities? Fire Hydrants	
Other federal funding programs (e.g. FEMA mitigation grants)	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of activities?	
State funding programs	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☒Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of activities?	

How can these capabilities be expanded and improved to reduce risk?
Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting and passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates to existing plans as new needs are recognized.

City of Mingus

Planning and Regulatory Assessment

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of natural hazards.

Type of Plans	Have capability?	Level	If Yes…		
Comprehensive or Master Plan	☐ Yes ☒ No ☐ N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐ Yes ☐ No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐ Yes ☐ No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐ Yes ☐ No	**Comments:**
Capital Improvement Plan (CIP)	☐ Yes ☒ No ☐ N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐ Yes ☐ No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐ Yes ☐ No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐ Yes ☐ No	**Comments:**
Economic Development Plan	☐ Yes ☒ No ☐ N/A	☐ Local ☐ County	**Does the plan address natural hazards?**	☐ Yes ☐ No	**Comments:**
			Does the plan identify projects to include in the	☐ Yes ☐ No	**Comments:**

Type of Plans	Have capability?	Level	If Yes…		
		☐ Region	**mitigation strategy?**		
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Local Emergency Operations Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Continuity of Operations Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Transportation Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the	☐Yes ☐No	**Comments:**

Type of Plans	Have capability?	Level	If Yes…		
		☐ Region	**mitigation strategy?**		
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Stormwater Management Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Community Wildfire Protection Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Green Infrastructure Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the	☐Yes ☐No	**Comments:**

Type of Plans	Have capability?	Level	If Yes…		
		☐ Region	**mitigation strategy?**		
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Parks or Open Space Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**
Hazard Mitigation Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments:**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments:**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments:**

Land Use Planning and Ordinances	Have capability?	If Yes…		
Zoning Ordinance	☐Yes	**Is the ordinance an effective measure for**	☐Yes	**Comments:**

Land Use Planning and Ordinances	Have capability?	If Yes…		
	☒No ☐N/A	**reducing hazard impacts?**	☐No	
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments:**
Subdivision Ordinance	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments:**
Floodplain Ordinance	☒Yes ☐No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☒Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☒Yes ☐No	**Comments:**
Flood Insurance Rate Maps (FIRM)	☒Yes ☐No ☐N/A	**Is the FIRM an effective measure for reducing hazard impacts?**	☒Yes ☐No	**Comments:**
		Is the FIRM adequately administered and enforced?	☒Yes ☐No	**Comments:**
Natural Hazard Specific Ordinance (e.g., stormwater, wildfire)	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments:**

Land Use Planning and Ordinances	Have capability?	If Yes…		
Acquisition of land for open space and public recreation uses	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments:**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments:**

Building Code, Permitting, and Inspections	Have capability?	
Building Code	☐Yes ☒No ☐N/A	**Version/Year:**
Building Code Effectiveness Grading Schedule (BGEGS) Score	☐Yes ☒No ☐N/A	**Score:**
Fire Department ISO Rating	☒Yes ☐No ☐N/A	**Rating: 9**
Site Plan Review Requirements	☐Yes ☒No ☐N/A	**Review method:**

Administrative and Technical Assessment

Administrative and technical capabilities include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administration	Have capability?	If Yes…
Planning Commission	☐Yes ☒No	**Describe capability:**

	☐N/A	
Mitigation Planning Committee	☒Yes	**Describe capability:** Identifies hazards, conducts a risk and vulnerability assessment, and creates and monitors mitigation actions.
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	☐Yes ☒No ☐N/A	**Describe capability:**
Mutual Aid Agreements	☒Yes ☐No ☐N/A	**Describe capability: Palo Pinto County**

Staff	**Have capability? FT/PT***	**If Yes…**	
***Full-time (FT) or part-time (PT) position**			
Chief Building Official	☐Yes-FT ☐Yes- PT ☐No ☒N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Floodplain Administrator	☐Yes-FT ☒Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☒No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☒No
Emergency Manager	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No

Staff	Have capability? FT/PT*	If Yes…	
***Full-time (FT) or part-time (PT) position**			
Community Planner	☐ Yes-FT ☐ Yes- PT ☒ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐ No
Civil Engineer	☐ Yes-FT ☐ Yes- PT ☒ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐ No
GIS Coordinator	☐ Yes-FT ☐ Yes- PT ☒ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐ No
Public Works Director	☐ Yes-FT ☒ Yes- PT ☐ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☒ No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☒ No
Fire Chief	☐ Yes-FT ☒ Yes- PT ☐ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☒ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☒ Yes ☐ No

Staff	Have capability? FT/PT*	If Yes…	
***Full-time (FT) or part-time (PT) position**			
Environmental Director	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No

Technical	Have capability?	If Yes…	
Warning Systems/Services (e.g., Reverse 911, outdoor warning signals)	☐Yes ☒No ☐N/A	**Describe capability.**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐ No
		If yes, for what type of event?	
Hazard data and information	☐Yes ☒No ☐N/A	**Describe capability:**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐ No
		If yes, for what type of event?	
Grant writing	☒Yes ☐No ☐N/A	**Describe capability.**	
		Has capability been used to assess or mitigate risk in the past?	☒ Yes ☐ No
		If yes, for what type of event?	

Technical	Have capability?	If Yes…	
HaZUS analysis or GIS software	☐ Yes ☒ No ☐ N/A	**Describe capability:**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐ No
		If yes, for what type of event?	

Education and Outreach Assessment

Education and outreach programs and methods can be used to implement mitigation activities and communicate hazard-related information.

Program or Organization	Have capability?	If Yes…	
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	☐ Yes ☒ No ☐ N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	☐ Yes ☒ No ☐ N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
Natural disaster or safety related school programs	☐ Yes ☒ No ☐ N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	

Program or Organization	Have capability?	If Yes…	
Public/private partnership initiatives addressing disaster-related issues	☐Yes ☒No ☐N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
StormReady certification	☐Yes ☒No ☐N/A	Answer will be pre-filled.	
Firewise Communities Certification	☐Yes ☒No ☐N/A	Answer will be pre-filled.	

Financial Assessment

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resources	Have capability?	If Yes…	
Capital Improvements Project funding	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Authority to levy taxes for specific purposes	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Fees for water, sewer, gas, and/or electric services	☒Yes ☐No	**Could the resource be used to fund future mitigation actions?**	☐Yes ☒No

Funding Resources	Have capability?	If Yes…	
	☐N/A	**Has the funding resource been used in past?**	☐Yes ☒No
		If yes, for what type of mitigation activities?	
Impact fees for new development	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Stormwater utility fee	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Incurrence of debt through general obligation bonds and/or special tax bonds	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Incur debt through private activities	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No
		Has the funding resource been used in past?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Community Development Block Grant	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation actions?**	☐Yes ☒No
		Has the funding resource been used in past?	☐Yes ☒No
		If yes, for what type of mitigation activities?	
	☐Yes ☒No	**Could the resource be used to fund future mitigation actions?**	☐Yes ☐No

Funding Resources	Have capability?	If Yes…	
Other federal funding programs (e.g. FEMA mitigation grants)	☐ N/A	**Has the funding resource been used in past?**	☐ Yes ☐ No
		If yes, for what type of mitigation activities?	
State funding programs	☐ Yes ☒ No ☐ N/A	**Could the resource be used to fund future mitigation actions?**	☐ Yes ☐ No
		Has the funding resource been used in past?	☐ Yes ☐ No
		If yes, for what type of mitigation activities?	

How can these capabilities be expanded and improved to reduce risk?
Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting and passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates to existing plans as new needs are recognized.

City of Strawn

Planning and Regulatory Assessment

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of natural hazards.

Type of Plans	Have capability?	Level	If Yes…		
Comprehensive or Master Plan	☐ Yes ☒ No ☐ N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐ Yes ☐ No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐ Yes ☐ No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐ Yes ☐ No	**Comments (optional):**

Type of Plans	Have capability?	Level	If Yes…		
Capital Improvement Plan (CIP)	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**
Economic Development Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**
Local Emergency Operations Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**

Type of Plans	Have capability?	Level	If Yes…		
Continuity of Operations Plan	☐ Yes ☒ No ☐ N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐ Yes ☐ No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐ Yes ☐ No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐ Yes ☐ No	**Comments (optional):**
Transportation Plan	☐ Yes ☒ No ☐ N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐ Yes ☐ No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐ Yes ☐ No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐ Yes ☐ No	**Comments (optional):**
Stormwater Management Plan	☐ Yes ☒ No ☐ N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐ Yes ☐ No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐ Yes ☐ No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐ Yes ☐ No	**Comments (optional):**

Type of Plans	Have capability?	Level	If Yes…		
Community Wildfire Protection Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**
Green Infrastructure Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**
Parks or Open Space Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**

Type of Plans	Have capability?	Level	If Yes…		
Hazard Mitigation Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**

Land Use Planning and Ordinances	Have capability?	If Yes…		
Zoning Ordinance	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments (optional):**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments (optional):**
Subdivision Ordinance	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments (optional):**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments (optional):**
Floodplain Ordinance	☒Yes ☐No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☒Yes ☐No	**Comments (optional):**
		Is the ordinance adequately	☒Yes	**Comments (optional):**

Land Use Planning and Ordinances	Have capability?	If Yes…		
		administered and enforced?	☐ No	
Flood Insurance Rate Maps (FIRM)	☒ Yes ☐ No ☐ N/A	**Is the FIRM an effective measure for reducing hazard impacts?**	☒ Yes ☐ No	**Comments (optional):**
		Is the FIRM adequately administered and enforced?	☐ Yes ☐ No	**Comments (optional):**
Natural Hazard Specific Ordinance (e.g., stormwater, wildfire)	☐ Yes ☒ No ☐ N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐ Yes ☐ No	**Comments (optional):**
		Is the ordinance adequately administered and enforced?	☐ Yes ☐ No	**Comments (optional):**
Acquisition of land for open space and public recreation uses	☐ Yes ☒ No ☐ N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐ Yes ☐ No	**Comments (optional):**
		Is the ordinance adequately administered and enforced?	☐ Yes ☐ No	**Comments (optional):**

Building Code, Permitting, and Inspections	Have capability?	
Building Code	☐ Yes ☒ No ☐ N/A	**Version/Year:**
Building Code Effectiveness Grading Schedule (BGEGS) Score	☐ Yes ☒ No ☐ N/A	**Score:**
Fire Department ISO Rating	☒ Yes	**Rating: 8**

	☐ No ☐ N/A	
Site Plan Review Requirements	☐ Yes ☒ No ☐ N/A	**Review method:**

Administrative and Technical Assessment

Administrative and technical capabilities include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administration	**Have capability?**	**If Yes…**
Planning Commission	☐ Yes ☒ No ☐ N/A	**Describe capability:**
Mitigation Planning Committee	☒ Yes	**Describe capability:** Identifies hazards, conducts a risk and vulnerability assessment, and creates and monitors mitigation actions.
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	☐ Yes ☒ No ☐ N/A	**Describe capability:**
Mutual Aid Agreements	☒ Yes ☐ No ☐ N/A	**Describe capability: With Palo Pinto, and fire department mutual aid with surrounding (Ranger & Gordon), water with Mingus and Gordon**

Staff	**Have capability? FT/PT***	**If Yes…**	
***Full-time (FT) or part-time (PT) position**			
Chief Building Official	☐ Yes-FT ☐ Yes- PT ☒ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐ No

Floodplain Administrator	☐Yes-FT ☒Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Emergency Manager	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Community Planner	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Civil Engineer	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations? Contract basis**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
GIS Coordinator	☐Yes-FT ☐Yes- PT ☒No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Public Works Director	☒Yes-FT ☐Yes- PT	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No

	☐ No ☐ N/A	**Is staff trained on natural hazards and mitigation?**	☐ Yes ☐ No
Fire Chief	☐ Yes-FT ☒ Yes- PT ☐ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐ No
Environmental Director	☐ Yes-FT ☐ Yes- PT ☒ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐ No

Technical	**Have capability?**	**If Yes…**	
Warning Systems/Services (e.g., Reverse 911, outdoor warning signals)	☐ Yes ☒ No ☐ N/A	**Describe capability:**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐ No
		If yes, for what type of hazard event?	
Hazard data and information	☐ Yes ☒ No ☐ N/A	**Describe capability: Tier II Reports**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐ No
		If yes, for what type of hazard event?	
Grant writing	☒ Yes	**Describe capability:** Contract grant writer	

Technical	Have capability?	If Yes…	
	☐ No ☐ N/A	**Has capability been used to assess or mitigate risk in the past?**	☐ Yes ☒ No
		If yes, for what type of hazard event?	
HaZUS analysis or GIS software	☐ Yes ☒ No ☐ N/A	**Describe capability:**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐ No
		If yes, for what type of hazard event?	

Education and Outreach Assessment

Education and outreach programs and methods can be used to implement mitigation activities and communicate hazard-related information.

Program or Organization	Have capability?	If Yes…	
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	☐ Yes ☒ No ☐ N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation: CARE animal rescue group	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	☒ Yes ☐ No ☐ N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation: During drought events education is enhanced	

Program or Organization	Have capability?	If Yes…	
Natural disaster or safety related school programs	☐Yes ☒No ☐N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
Public/private partnership initiatives addressing disaster-related issues	☐Yes ☒No ☐N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
StormReady certification	☐Yes ☒No ☐N/A	Answer will be pre-filled.	
Firewise Communities Certification	☐Yes ☒No ☐N/A	Answer will be pre-filled.	

Financial Assessment

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resources	Have capability?	If Yes…	
Capital Improvements Project funding (reserves is set aside)	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Authority to levy taxes for specific purposes	☒Yes	**Could the resource be used to fund future mitigation activities?**	☒Yes

Funding Resources	Have capability?	If Yes…	
	☐No ☐N/A		☐No
		Has the funding resource been used in past for mitigation activities?	☒Yes ☐No
		If yes, for what type of mitigation activities? Water revenue bonds	
Fees for water, sewer, gas, and/or electric services Water & Sewer	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☒Yes ☐No
		Has the funding resource been used in past for mitigation activities for mitigation activities?	☐Yes ☒No
		If yes, for what type of mitigation activities?	
Impact fees for new development	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Stormwater utility fee	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Incurrence of debt through general obligation bonds and/or special tax bonds Water system- general obligation bond	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Incur debt through private activities (city bought backhoe)	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☒No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☒No
		If yes, for what type of mitigation activities?	

Funding Resources	Have capability?	If Yes…	
Community Development Block Grant	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☒Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☒Yes ☐No
		If yes, for what type of mitigation activities? Water system	
Other federal funding programs (e.g. FEMA mitigation grants)	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☒Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☒Yes ☐No
		If yes, for what type of mitigation activities?	
State funding programs	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation activities? TDA & TWDB**	☒Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☒Yes ☐No
		If yes, for what type of mitigation activities?	

How can these capabilities be expanded and improved to reduce risk?
Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting and passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates to existing plans as new needs are recognized.

Palo Pinto County Unincorporated

Planning and Regulatory Assessment

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of natural hazards.

Type of Plans	Have capability?	Level	If Yes…		
Comprehensive or Master Plan	☐Yes ☒No	☐ Local	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**

Type of Plans	Have capability?	Level	If Yes…		
	☐N/A	☐ County ☐ Region	**Does the plan identify projects to include in the mitigation strategy?**	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**
Capital Improvement Plan (CIP)	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**
Economic Development Plan	☒Yes ☐No ☐N/A	☐ Local ☒ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☒No	**Comments (optional): In Progress**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☒No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☒Yes ☐No	**Comments (optional):**
Local Emergency Operations Plan	☐Yes ☐No	☐ Local	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional): State Level**

Type of Plans	Have capability?	Level	If Yes…		
	☒N/A	☐ County ☐ Region	**Does the plan identify projects to include in the mitigation strategy?**	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**
Continuity of Operations Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**
Transportation Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**
Stormwater Management Plan	☒Yes ☐No	☐ Local	**Does the plan address natural hazards?**	☒Yes ☐No	**Comments (optional):**

Type of Plans	Have capability?	Level	If Yes…		
	☐N/A	☒ County ☐ Region	**Does the plan identify projects to include in the mitigation strategy?**	☒Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☒Yes ☐No	**Comments (optional):**
Community Wildfire Protection Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional): In progress**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**
Green Infrastructure Plan	☐Yes ☒No ☐N/A	☐ Local ☐ County ☐ Region	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☐Yes ☐No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐Yes ☐No	**Comments (optional):**
Parks or Open Space Plan	☐Yes ☒No	☐ Local	**Does the plan address natural hazards?**	☐Yes ☐No	**Comments (optional):**

Type of Plans	Have capability?	Level	If Yes…		
	☐ N/A	☐ County ☐ Region	**Does the plan identify projects to include in the mitigation strategy?**	☐ Yes ☐ No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☐ Yes ☐ No	**Comments (optional):**
Hazard Mitigation Plan	☒ Yes ☐ No ☐ N/A	☐ Local ☒ County ☐ Region	**Does the plan address natural hazards?**	☒ Yes ☐ No	**Comments (optional):**
			Does the plan identify projects to include in the mitigation strategy?	☒ Yes ☐ No	**Comments (optional):**
			Can the plan be used to implement mitigation actions?	☒ Yes ☐ No	**Comments (optional):**

Land Use Planning and Ordinances	Have capability?	If Yes…		
Zoning Ordinance	☐ Yes ☒ No ☐ N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐ Yes ☐ No	**Comments (optional):**
		Is the ordinance adequately administered and enforced?	☐ Yes ☐ No	**Comments (optional):**
Subdivision Ordinance	☒ Yes ☐ No	**Is the ordinance an effective measure for reducing hazard impacts?**	☒ Yes ☐ No	**Comments (optional):**

Land Use Planning and Ordinances	Have capability?	If Yes…		
	☐N/A	**Is the ordinance adequately administered and enforced?**	☒Yes ☐No	**Comments (optional):**
Floodplain Ordinance	☒Yes ☐No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☒Yes ☐No	**Comments (optional):**
		Is the ordinance adequately administered and enforced?	☒Yes ☐No	**Comments (optional):**
Flood Insurance Rate Maps (FIRM)	☒Yes ☐No ☐N/A	**Is the FIRM an effective measure for reducing hazard impacts?**	☒Yes ☐No	**Comments (optional):**
		Is the FIRM adequately administered and enforced?	☒Yes ☐No	**Comments (optional):**
Natural Hazard Specific Ordinance (e.g., stormwater, wildfire)	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments (optional):**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments (optional):**
Acquisition of land for open space and public recreation uses	☐Yes ☒No ☐N/A	**Is the ordinance an effective measure for reducing hazard impacts?**	☐Yes ☐No	**Comments (optional):**
		Is the ordinance adequately administered and enforced?	☐Yes ☐No	**Comments (optional):**

Building Code, Permitting, and Inspections	Have capability?	
Building Code	☐Yes ☒No ☐N/A	**Version/Year:**
Building Code Effectiveness Grading Schedule (BGEGS) Score	☐Yes ☒No ☐N/A	**Score:**
Fire Department ISO Rating	☒Yes ☐No ☐N/A	**Rating: County has over 11 departments, ratings vary**
Site Plan Review Requirements	☐Yes ☒No ☐N/A	**Review method:**

Administrative and Technical Assessment

Administrative and technical capabilities include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions.

Administration	Have capability?	If Yes…
Planning Commission	☒Yes ☐No ☐N/A	**Describe capability:** Depends on plan being reviewed
Mitigation Planning Committee	☒Yes	**Describe capability:** Identifies hazards, conducts a risk and vulnerability assessment, and creates and monitors mitigation actions.
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	☐Yes ☒No ☐N/A	**Describe capability:**
Mutual Aid Agreements	☒Yes ☐No ☐N/A	**Describe capability: Fire, surrounding counties**

Staff	Have capability? FT/PT*	If Yes…	
***Full-time (FT) or part-time (PT) position**			
Chief Building Official	☐ Yes-FT ☐ Yes- PT ☒ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐ No
Floodplain Administrator	☐ Yes-FT ☒ Yes- PT ☐ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐ No
Emergency Manager	☒ Yes-FT ☐ Yes- PT ☐ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☒ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☒ Yes ☐ No
Community Planner	☐ Yes-FT ☐ Yes- PT ☒ No ☐ N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐ No
Civil Engineer	☐ Yes-FT ☒ Yes- PT ☐ No ☐ N/A	**Is staffing adequate to enforce regulations? Contract**	☒ Yes ☐ No
		Is staff trained on natural hazards and mitigation?	☐ Yes

Staff	Have capability? FT/PT*	If Yes…	
***Full-time (FT) or part-time (PT) position**			
			☐No
GIS Coordinator	☒Yes-FT ☐Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☒No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Public Works Director	☒Yes-FT ☐Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Fire Chief	☐Yes-FT ☒Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations?**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No
Environmental Director	☐Yes-FT ☒Yes- PT ☐No ☐N/A	**Is staffing adequate to enforce regulations? Part of Public Works**	☐ Yes ☐No
		Is staff trained on natural hazards and mitigation?	☐ Yes ☐No

Technical	Have capability?	If Yes…	
Warning Systems/Services (e.g., Reverse 911, outdoor warning signals)	☐Yes ☒No ☐N/A	**Describe capability:**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐No
		If yes, for what type of hazard event?	
Hazard data and information	☒Yes ☐No ☐N/A	**Describe capability:** Reports are recorded, Emergency Management does paperwork for declared disasters.	
		Has capability been used to assess or mitigate risk in the past?	☒ Yes ☐No
		If yes, for what type of hazard event? Wildfire data is used to update burn bans and CWPP.	
Grant writing	☒Yes ☐No ☐N/A	**Describe capability: Minimal, equipment**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐No
		If yes, for what type of hazard event?	
HaZUS analysis or GIS software	☒Yes ☐No ☐N/A	**Describe capability:**	
		Has capability been used to assess or mitigate risk in the past?	☐ Yes ☐No
		If yes, for what type of hazard event?	

Education and Outreach Assessment

Education and outreach programs and methods can be used to implement mitigation activities and communicate hazard-related information.

Program or Organization	Have capability?	If Yes…	
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	☒ Yes ☐ No ☐ N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☒ No
		Describe program or organization and how it relates to disaster resilience and mitigation: Disaster Relief Team	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	☐ Yes ☒ No ☐ N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
Natural disaster or safety related school programs	☒ Yes ☐ No ☐ N/A	**Could the program or organization help implement future mitigation activities?**	☒ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation: Tornado drills and Fire safety, Clown Program, Slop the Bleed, Fire Pup	
Public/private partnership initiatives addressing disaster-related issues	☐ Yes ☒ No ☐ N/A	**Could the program or organization help implement future mitigation activities?**	☐ Yes ☐ No
		Describe program or organization and how it relates to disaster resilience and mitigation:	
StormReady certification	☐ Yes ☒ No ☐ N/A	Answer will be pre-filled.	

Program or Organization	Have capability?	If Yes…
Firewise Communities Certification	☒Yes ☐No ☐N/A	Answer will be pre-filled. One part of the county.

Financial Assessment

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resources	Have capability?	If Yes…	
Capital Improvements Project funding	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☒Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☒No
		If yes, for what type of mitigation activities?	
Authority to levy taxes for specific purposes	☒Yes ☐No ☐N/A	**Could the resource be used to fund future mitigation activities? Apply for bonds**	☒Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Fees for water, sewer, gas, and/or electric services	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Impact fees for new development	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	

Funding Resources	Have capability?	If Yes…	
Stormwater utility fee	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Incurrence of debt through general obligation bonds and/or special tax bonds	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Incur debt through private activities	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Community Development Block Grant	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
Other federal funding programs (e.g. FEMA mitigation grants)	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	
State funding programs	☐Yes ☒No ☐N/A	**Could the resource be used to fund future mitigation activities?**	☐Yes ☐No
		Has the funding resource been used in past for mitigation activities?	☐Yes ☐No
		If yes, for what type of mitigation activities?	

How can these capabilities be expanded and improved to reduce risk?
Actions that can expand and improve existing authorities, plans, policies, and resources for mitigation include budgeting and passing policies and procedures for mitigation actions, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates to existing plans as new needs are recognized.

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Appendix C: NCTCOG Programs

The North Central Texas Council of Governments (NCTCOG) is a voluntary association of, by and for local governments, established to assist in regional planning. NCTCOG's purpose is to strengthen both the individual and collective power of local governments and to help them recognize regional opportunities, eliminate unnecessary duplication, and make joint decisions. NCTCOG consists of many departments that implement programs and projects that address the mitigation goals of the participating jurisdictions.

The Environment & Development Department at NCTCOG plays a major role in regional coordination and management of reports and projects that improve regional resilience to natural hazards through the following programs:

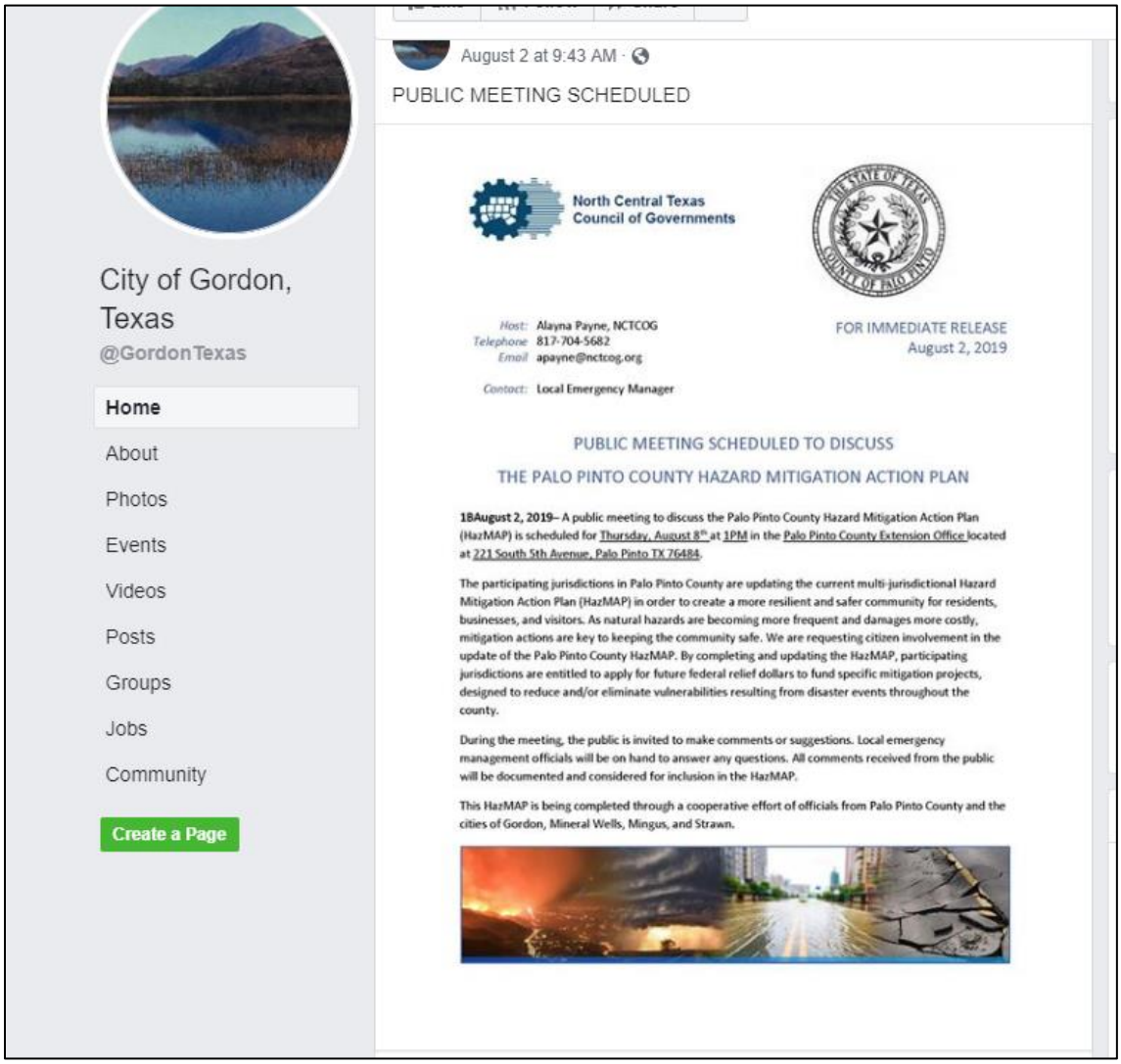
- **The Corridor Development Certificate (CDC)** – The CDC process aims to stabilize flood risk along the Trinity River. The CDC process does not prohibit floodplain development but ensures that any development that does occur in the floodplain will not raise flood water levels or reduce flood storage capacity. A CDC permit is required to develop land within a specific area of the Trinity floodplain called the Regulatory Zone, which is similar to the 100-year floodplain.
    - Under the CDC process, local governments retain ultimate control over floodplain permitting decisions, but other communities along the Trinity River Corridor are given the opportunity to review and comment on projects in their neighbor's jurisdiction. As the Metroplex economy continues to grow and develop, the CDC process will prevent increased flood risks
- **NCTCOG-OneRain Contrail Flood Warning Software**- Contrail software that delivers automated real-time data collection, processing, validation, analysis, archiving and visualization of hydrometeorological and environmental sensor data.
- **The *integrated* Stormwater Management (iSWM) Program**- The iSWM™ Program for Construction and Development is a cooperative initiative that assists cities and counties to achieve their goals of water quality protection, streambank protection, and flood mitigation, while also helping communities meet their construction and post-construction obligations under state stormwater permits.
    - Development and redevelopment by their nature increase the amount of imperviousness in our surrounding environment. This increased imperviousness translates into loss of natural areas, more sources for pollution in runoff, and heightened flooding risks. To help mitigate these impacts, more than 60 local governments are cooperating to proactively create sound stormwater management guidance for the region through the *integrated* Stormwater Management (iSWM) Program.
- **16-County Watershed Management Initiative**- Communities from across the region come together to collaborate on how to reduce the risks of flooding in their communities.
- **Texas Smartscape**- Texas SmartScape™ is a landscape program crafted to be "smart" for North Central Texas. Based on water-efficient landscape principles, it promotes the use of plants suited to our region's soil, climate, and precipitation that don't require much—if any—additional irrigation, pesticides, fertilizer, or herbicides to thrive.

    - The two main goals of the program are to:
        - Improve stormwater runoff quality
        - Conserve local water supplies
- The Transportation Department promotes the following programs:
- **Bicycle-Pedestrian-** The passage of the 1991 Intermodal Surface Transportation Efficiency Act prompted NCTCOG to include non-motorized transportation network improvements in regional planning efforts. NCTCOG established the Bicycle and Pedestrian program in 1992 to address the various activities related to implementing bicycle and pedestrian facilities as an alternative mode of regional transportation.
- **Sustainable Development**- As land uses influence regional travel patterns and demand on the transportation system, and transportation connects land uses and provides access to developments, both need to be planned in conjunction with one another. NCTCOG supports Sustainable Development: mixed-use, infill, and transit-oriented developments that reduce vehicle miles traveled, enable the use of alternative modes of transportation, promote economic development, and improve air quality.

Appendix D: Public Meeting Documents

The participants advertised public meetings to discuss the development of this Hazard Mitigation Action Plan, including the co-hosted meeting on August 8, 2019 at the Palo Pinto County Extension Office. The announcements of the public meetings are below.

City of Gordon



City of Gordon, Texas
@GordonTexas

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Groups
Jobs
Community
Create a Page

August 2 at 9:43 AM ·

PUBLIC MEETING SCHEDULED

North Central Texas Council of Governments

Host: Alayna Payne, NCTCOG
Telephone 817-704-5682
Email apayne@nctcog.org

Contact: Local Emergency Manager

FOR IMMEDIATE RELEASE
August 2, 2019

PUBLIC MEETING SCHEDULED TO DISCUSS
THE PALO PINTO COUNTY HAZARD MITIGATION ACTION PLAN

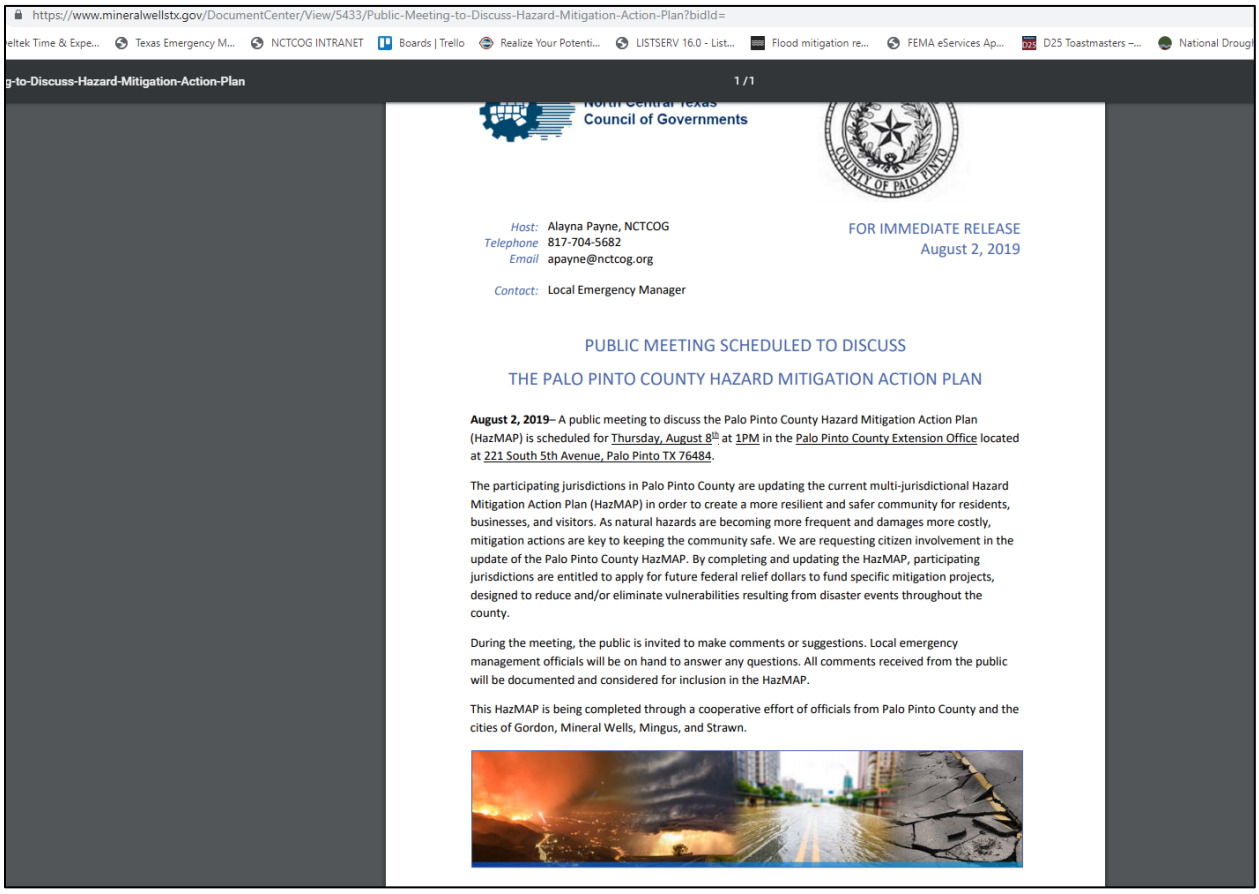
18August 2, 2019– A public meeting to discuss the Palo Pinto County Hazard Mitigation Action Plan (HazMAP) is scheduled for Thursday, August 8th at 1PM in the Palo Pinto County Extension Office located at 221 South 5th Avenue, Palo Pinto TX 76484.

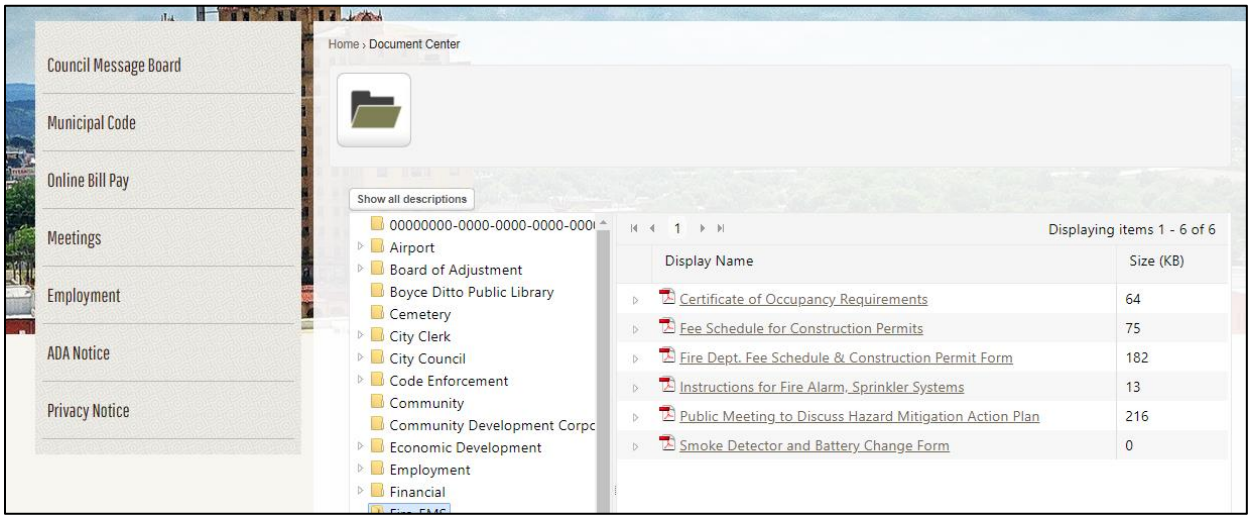
The participating jurisdictions in Palo Pinto County are updating the current multi-jurisdictional Hazard Mitigation Action Plan (HazMAP) in order to create a more resilient and safer community for residents, businesses, and visitors. As natural hazards are becoming more frequent and damages more costly, mitigation actions are key to keeping the community safe. We are requesting citizen involvement in the update of the Palo Pinto County HazMAP. By completing and updating the HazMAP, participating jurisdictions are entitled to apply for future federal relief dollars to fund specific mitigation projects, designed to reduce and/or eliminate vulnerabilities resulting from disaster events throughout the county.

During the meeting, the public is invited to make comments or suggestions. Local emergency management officials will be on hand to answer any questions. All comments received from the public will be documented and considered for inclusion in the HazMAP.

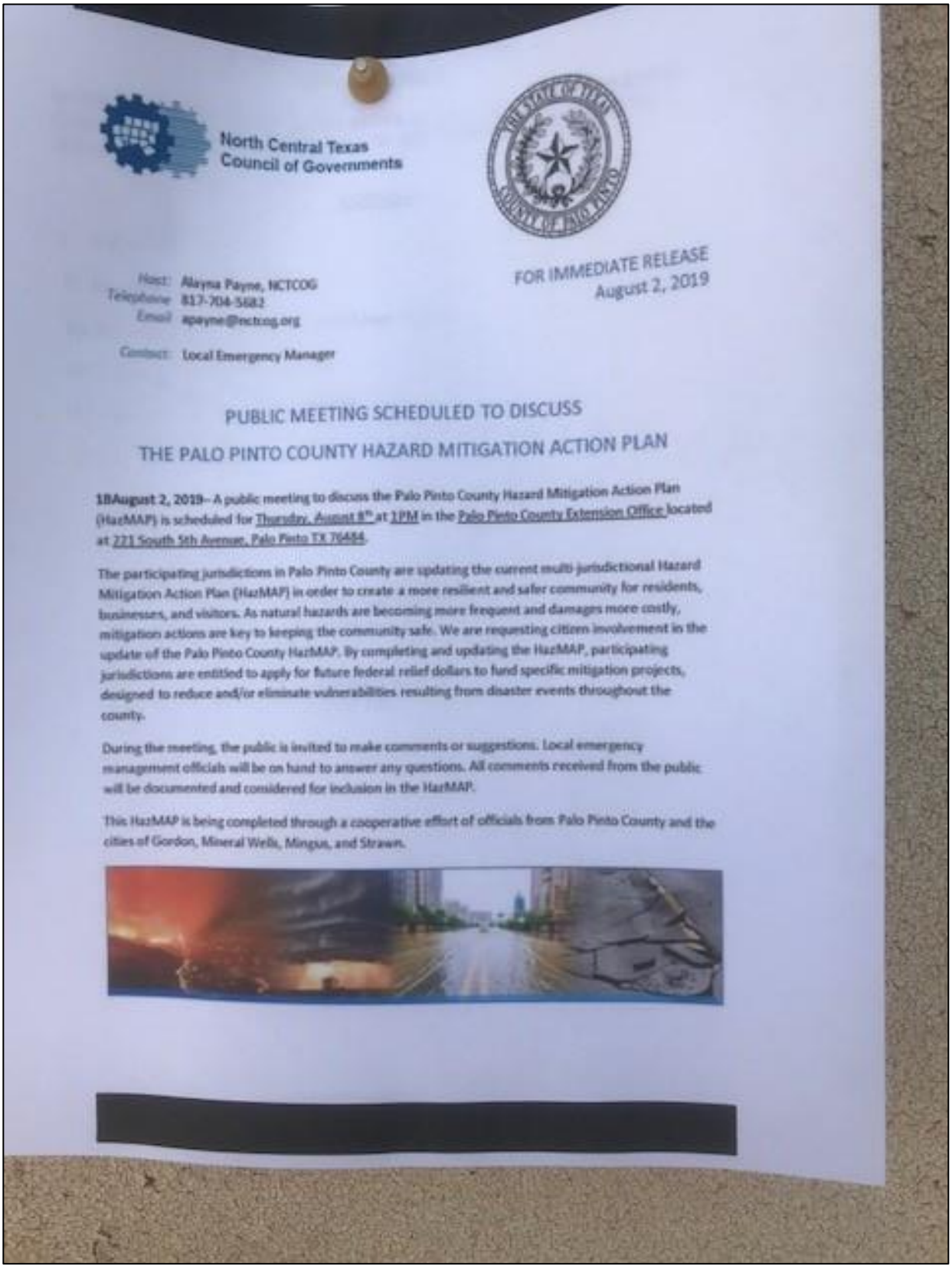
This HazMAP is being completed through a cooperative effort of officials from Palo Pinto County and the cities of Gordon, Mineral Wells, Mingus, and Strawn.

City of Mineral Wells





City of Mingus



North Central Texas
Council of Governments

Host: Alayna Payne, NCTCOG
Telephone: 817-704-5682
Email: apayne@nctcog.org

Contact: Local Emergency Manager

FOR IMMEDIATE RELEASE
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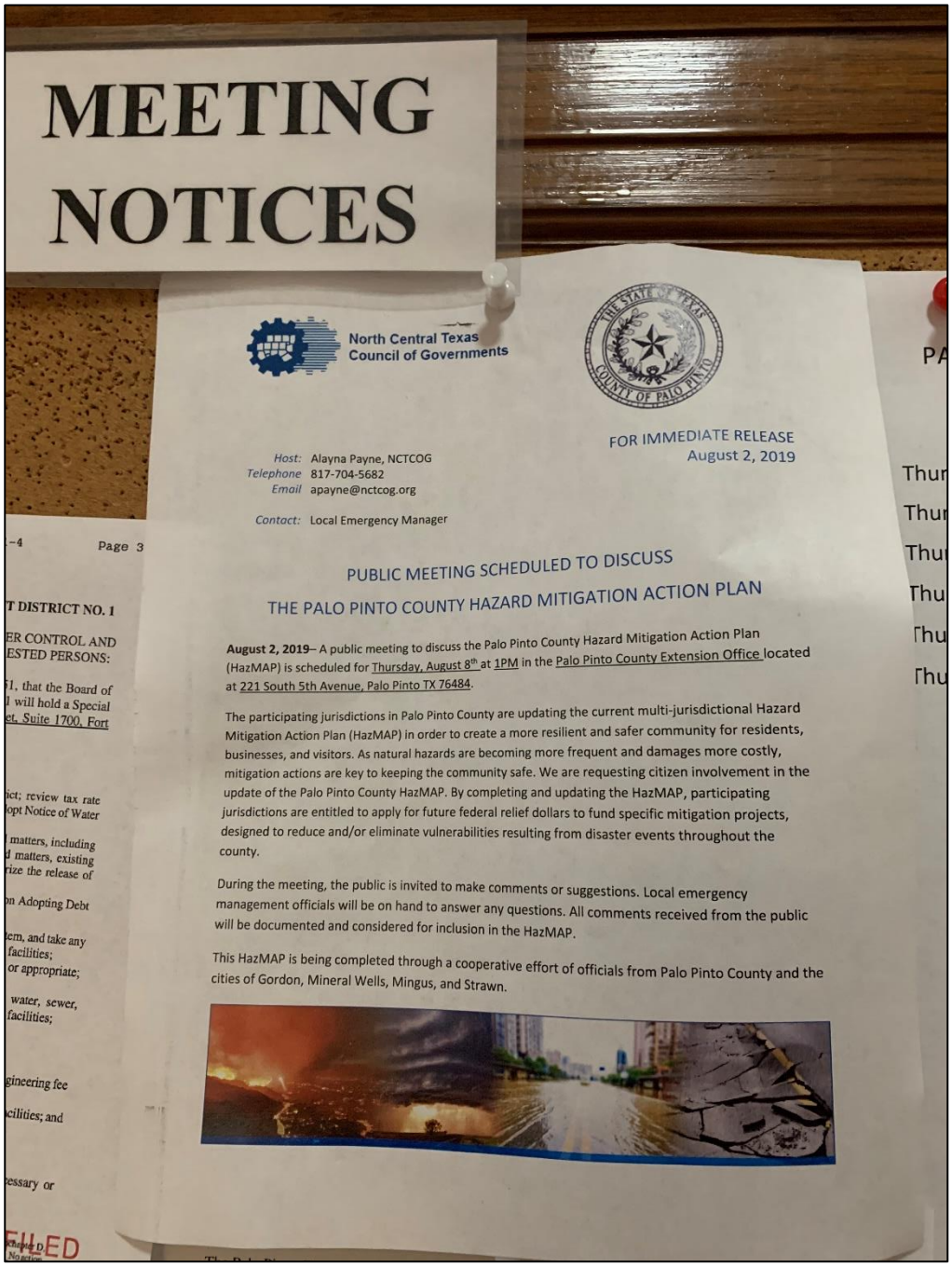
City of Strawn

Palo Pinto County Unincorporated



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Appendix E: Local Planning Teams

The following tables identify the members of the Local Planning Team (LPT) from each participating jurisdiction.

City of Gordon		
Agency/Organization	**Position**	**Role in LPT**
City Official	Mayor	General oversight, hazard identification, and plan development
Administration	City Secretary	Hazard identification and plan development
City of Mineral Wells		
Agency/Organization	**Position**	**Role in LPT**
Fire Department	Fire Chief	General oversight, hazard identification, and plan development
Fire Department	Assistant Fire Chief	Hazard identification and plan development
Building and Zoning Department	Floodplain Manager/Building Official	Hazard identification and plan development
Public Works Department	Public Works Director	Hazard identification and plan development
Public Works Department	GIS Specialist	Hazard identification and plan development
Finance Department	Finance Director	Hazard identification and plan development
City of Mingus		
Agency/Organization	**Position**	**Role in LPT**
City Official	Mayor	General oversight, hazard identification, and plan development
Administration	City Secretary	Hazard identification and plan development
Public Works Department	Water Supervisor	Hazard Identification and plan development
City of Strawn		
Agency/Organization	**Position**	**Role in LPT**
City Official	Mayor	General oversight, hazard identification, and plan development
Administration	City Secretary	Hazard identification and plan development
Police Department	Police Chief	Hazard identification and plan development
Palo Pinto County Unincorporated		
Agency/Organization	**Position**	**Role in LPT**
Office of Emergency Management	Emergency Management Coordinator	General oversight, hazard identification, and plan development

Palo Pinto County Unincorporated		
Agency/Organization	**Position**	**Role in LPT**
Office of Emergency Management	County Fire Chief	Hazard identification and plan development
Public Works Department	Public Works Director	Hazard identification and plan development
Sheriff's Office	Captain	Hazard identification and plan development