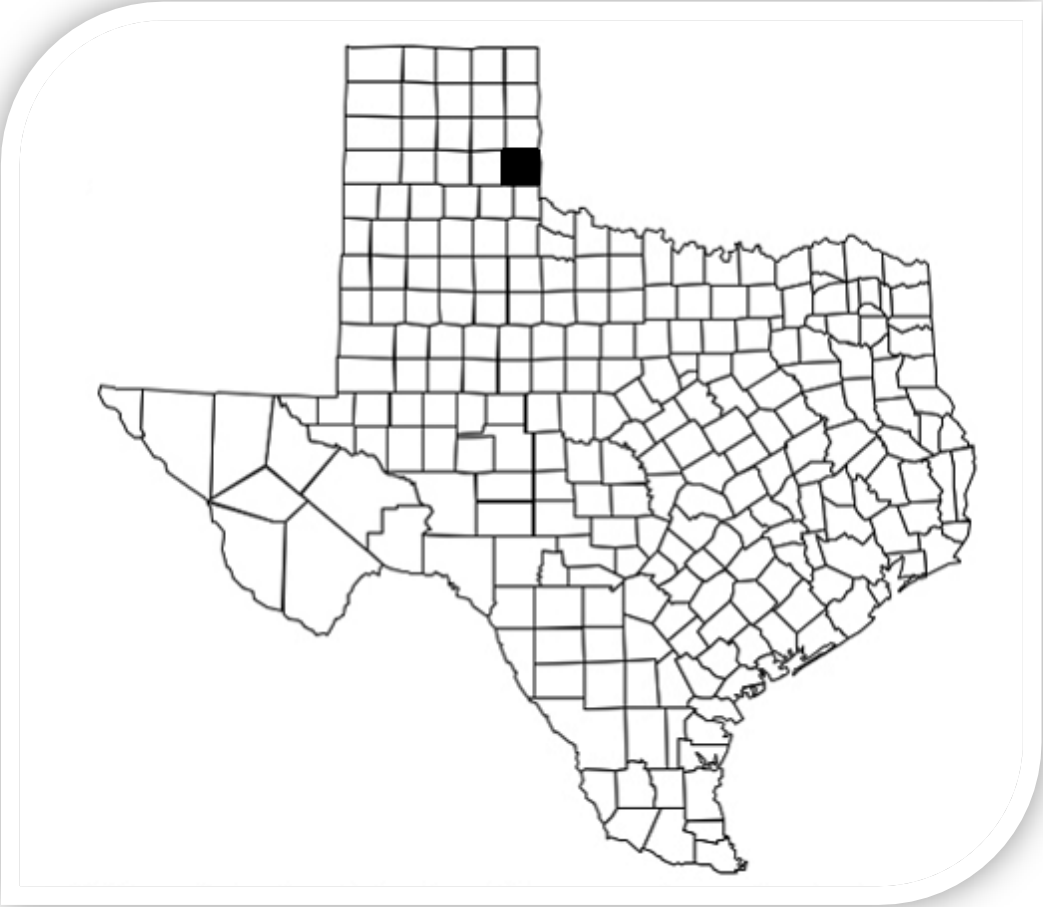
Childress County
Mitigation Action Plan

Childress County,
City of Childress
Childress ISD



DEVELOPED BY THE CHILDRESS COUNTY
HAZARD MITIGATION ACTION TEAM
June 2018

Record of Changes

Change Number	Date of Change	Initials and Date Entered

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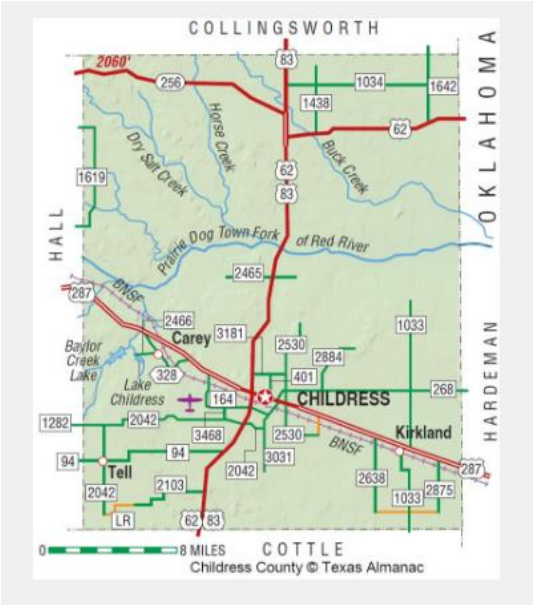
County Overview and Demographics Overview:

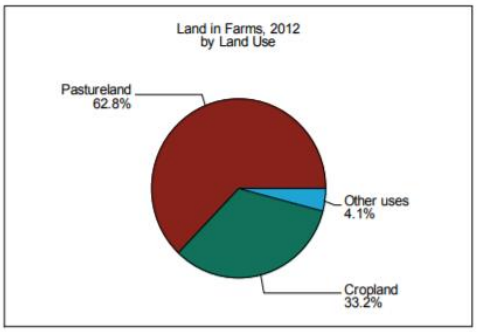


CHILDRESS COUNTY. Childress County, on the eastern edge of the Panhandle, is bounded on the east by Oklahoma, on the south by Cottle County, on the West by Hall County, and on the north by Collingsworth County. The county is named for George C. Childress, author of the Texas Declaration of Independence.

The county seat, Childress, is located 116 miles southeast of Amarillo, on the Fort Worth and Denver Railway and U.S. Highway 287. The center of the county lies at approximately 34°35' north latitude and 100°13' west longitude.

The county comprises 699 square miles of rolling prairies and rough river bottoms. Its soils are a mix, usually a sandy loam mixed with alluvial sands from the county's many creeks and rivers. These soils support a variety of native grasses as well as cotton, wheat, and sorghum. Shin oak, mesquite, salt cedar, and hackberry grow in the bottoms. The county has a small yearly production of oil and gas, but minerals do not play a major role in the local economy. The elevation of the county ranges from 1,600 to 1,900 feet above sea level; the annual growing season averages 217 days, and annual precipitation averages 20.67 inches. The average minimum temperature is 26° F in January, and the average maximum is 99° in July. The major water feature of the county is the Prairie Dog Town Fork of the Red River, which bisects the county as it flows eastward towards the main channel of the Red River. This stream and its tributary creeks (Dry Salt Creek, East Salt Creek, and Spiller, or Buck, Creek) render much of the central and northern part of the county unfit for farming. Thus ranching retains a significant role in the local economy. Baylor Lake and Lake Childress, two small bodies of water, lie to the northwest of Childress and provide recreation.

By the 1980s small industry in Childress included the manufacture of clothing, mobile homes, fences, and wood products. Because of this, by 1980 most of the county's population lived in the town. Childress, the county seat and largest town, had an estimated population of 6,016 in 2014.



Crops and Livestock

The 33 percent of cropland are primarily cotton, wheat, hay, sorghum, and peanuts. In 2012 crops sales were over $29 million. Beef cattle also plays an important role in the county's economy with over 62 percent of the land being use for pasture. Livestock contributed to more than $13 million in sales.

Document Organization

Provided below is brief explanation on the lay-out and content of this document. The sections included in this plan are:

Adoption
This plan was formally adopted by Childress County, the City of Childress and Childress ISD, after the document had been reviewed by both the Texas Division of Emergency Management (TDEM) and the Federal Emergency Management Agency (FEMA) to ensure it met current state and federal guidelines governing local MAPs.

Authorities
This section provides a description of the legal authorities under which this plan was developed.

Purpose
This section explains why the plan was written and identifies the benefits to the participating jurisdictions within the Childress County area of having a current Hazard Mitigation Plan.

Element A – The Planning Process
This section explains how the plan was organized and the process followed in developing this document, including:

- Establishing the Mitigation Action Team: Identifies the process Childress County, the City of Childress and Childress ISD followed in establishing their mitigation action team.
- Establishing an Open Public Process: Identifies MAT took to encourage public participation during the development of this plan.

Element B– Hazard Identification and Risk Assessment
This section identifies and analyzes the hazards that affect Childress County-and their impacts on the County' jurisdictions

Hazards – Describes the hazards that impact Childress County, the City of Childress and Childress ISD.

History of Local Hazards – Provides historical and statistical data related to the specific hazards that have impacted the jurisdictions within Childress County.

Risk Summary – Community priorities on specific hazards.

Vulnerability Worksheets – Provides a graphical representation of each jurisdiction's vulnerability to the identified hazards.

Loss Estimates – Provides an estimate of the impact each hazard would have on the critical infrastructure located within the County and its City.

Past Mitigation – Provides a summary view of previous mitigation efforts undertaken by the jurisdictions within Childress County.

Development Trends – Provides an analysis of a growth trends within the County which were considered in developing the mitigation strategies discussed in Element C.

Element C– Mitigation Strategies

- Mitigation Goals and Objectives – Provides the framework for the development of the long-term and short-term strategies identified with the Mitigation Actions.
- Mitigation Actions – Describes the actions that each participating jurisdictions proposes to undertake in order to mitigate the impact of future hazard events.

Element D – Plan Review, Evaluation and Implementation

- Utilizing development patterns and new hazard or risk information; jurisdictions will evaluate progress on the action items and make changes based on new findings.
- Jurisdiction will resubmit plan for approval within 5 years.

Element E– Plan Adoption

- Plans will be adopted by each jurisdiction through their appropriate governing body. This adoption takes place after plan draft has been approved by state and FEMA for applicable content

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Element A - Planning Process

Plan Preparation (A1)

The Hazard Mitigation Plan was developed through the active participation of representatives of Childress County, City of Childress and Childress ISD. Through their expertise in emergency management, engineering, administrative, public works, building and road maintenance, their contributions were critical in the plan development. The team also included stakeholders such as: local business owners, industry representatives, neighboring jurisdictions, regional and state partners. The list of mitigation team members is located on page 15.

This graphic below illustrates the steps taken by the Childress County MAT in developing this document.

Overview of Childress County Planning Process

ORGANIZED ASSETS: Identified and established relationship with existing mitigation authorities and encouraged an open public process that extended to:

a. MAT Members
b. Childress County and the municipality therein
c. Interested residents from the MAT's participating jurisdictions
d. Interested Private/Non-Profit plan stakeholders

DEVELOPED THE PLAN: Develop the MAP based on the risk assessment by:

1. Creating goals and objectives.
2. Developing mitigation action items and prioritizing these actions.
3. Preparing an implementation and monitoring strategy.
4. Documenting the mitigation planning process.

IMPLEMENT PLAN/MONITOR PROGRESS: To promote goal attainment and/or to make adjustments as needed during the MAP's 5-Year life

ASSESSED RISKS: Conduct risk assessment by answering the following questions:

1. What types of hazards is Childress County vulnerable to?
2. How bad can these hazards get?
3. What's being impacted by the identified hazards?
4. How will assets in the Childress County area be impacted by the identified hazards?

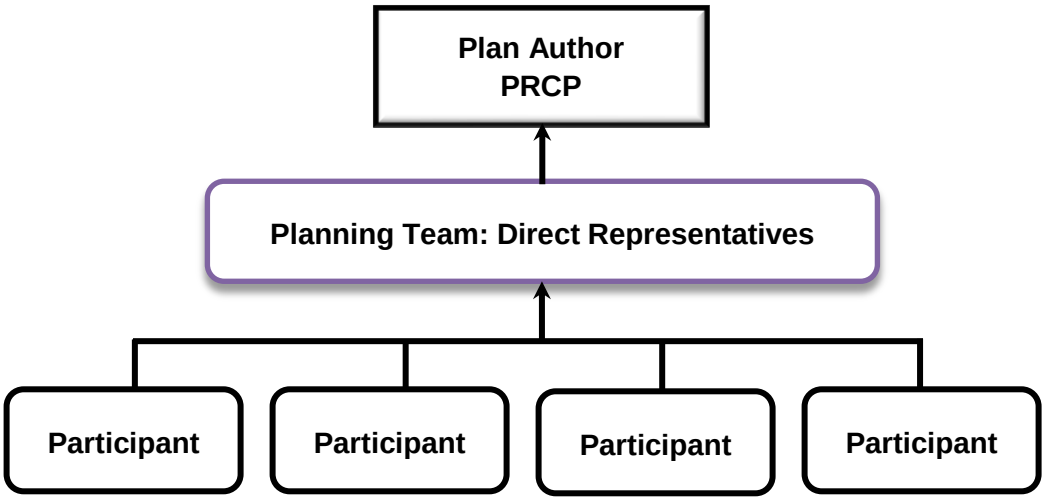
Planning Process

Date	Activity Description	Invitee/Attendees
5/17/2018	Online MAT Meeting Overview of the Hazard Mitigation Plan update process	Local government leaders, Municipal department heads, ISD Superintendents,
5/24/2018	Orientation to Hazard Mitigation. Discussion of previous mitigation action items.	Local government leaders, Municipal department heads, ISD Superintendents, Responder group leaders,, Stake Holders, Regional and State Partners & Neighboring counties
5/24/2018	Development of new mitigation action strategies	Local government leaders, Municipal department heads, ISD Superintendents, Responder group leaders,
5/31/2018	Meeting with jurisdiction leaders. Document infrastructure and Ordinances	Local government leaders, Municipal department heads, ISD Superintendents,
May 2018	Survey link made available for residents in the entire planning area	Social Media, Newspaper, Mass Notification System
6/5/2018	Meeting to validate draft to submit to state for review	Local government leaders, Municipal department heads, ISD Superintendents, Responder group leaders,
Every meeting was posted 72 hour in advanced at the County Courthouse. Invitations were sent out via email. The public was invited to attend through City of Childress website and County Courthouse/City Hall information board. Sign-in sheets were utilized and agendas were available at each meeting.		

Establishing the Mitigation Action Team (A2)

The ***first*** Childress County Hazard Mitigation Plan was approved on November 15, 2006. A subsequent update was approved on March 9, 2015. In 2018, the mitigation team chairman began the process of updating the plan. This process included reviewing previous mitigation strategies and determining the status of each action. In addition, due to turnover, the chairman began to actively recruit new members to begin the update process.

Childress County Mitigation Action Team Hierarchy



At the outset of the planning process, the Childress County Judge mailed a solicitation to the other jurisdictions and plan stakeholder groups in their County; inviting their participation on the Childress County Mitigation Action Team (MAT). In addition, the MAT meetings were all well-advertised and the meeting postings encouraged and welcomed the public's participation.

PRPC followed up by sending an email to each of the agencies/ organizations in the planning area that had been contacted by the Judge and thought to have a direct stake or interest in the MAP update process to encourage them to participate or be represented at the initial MAT meeting.

Each of the participating jurisdictions made an effort to elicit involvement on the MAT from the various groups within their jurisdiction and neighboring communities. Particular focus was placed on inviting participation by the local school districts and neighboring counties. Overall, the list of agencies / organizations thought to have a direct stake or interest in this MAP update process or that could somehow inform the planning process included:

Mitigation Action Team – Participating Jurisdictions

Mitigation Action Team Members		
	Agency and Position	**Potential Stake, Interest or Contribution**
Childress County	County Judge County Commissioners	County officials would have a stake in any mitigation actions undertaken by the County and would ultimately be responsible for recommending the update's adoption by the Commissioners' Court
	County Administrator's Office County Flood Plain *Administrator*	The FPA could inform the MAT on matters related to SFHAs in Potter County and have an interest in flood mitigation actions proposed for the County
	County Road & Bridge *Superintendent*	R&B could inform the MAT on the impacts of natural hazards on the County's road system and have input on the development of proposed mitigation actions
	Sheriff's Office County Sheriff	SO could inform the MAT on public safety issues related to natural hazards and have input on the development of proposed mitigation actions
	County Appraisal District *Chief Appraiser*	The Appraisal District could inform loss value determinations made by the MAT
	Office of Emergency Mgmt. *County EMC*	The OEM could provide mitigation ideas and presumably, would be charged with carrying a number of the mitigation actions out
	Hospital District *Hospital CEO*	The Department could both inform and have a direct interest in the MAP's mitigation measures, particularly those that apply to mass casualties.
City of Childress	Elected Officials *Mayor*	City Officials would have a stake in any mitigation actions undertaken by the City and would ultimately be responsible for recommending the update's adoption by the City Council
	City Administration *City Secretary/Manager*	City Administration would have a stake in any mitigation actions undertaken by the City and would ultimately be responsible for recommending the update's adoption by the City Council
	Building Safety Department *Building Safety Dir.*	Would have an interest and potential stake in mitigation actions that would affect building codes and code enforcement
	Public Works *Public Works Director*	Could provide detail on how hazards and proposed mitigation actions could impact the City's utility systems
	Fire Department *Fire Chief*	The Department could both inform and have a direct interest in the MAP's mitigation measures, particularly those that apply to wildfires
ISD	Childress ISD *Superintendent*	Being located in the planning area, the IDS campuses would share the area's hazard concerns and could be benefited by the MAT's mitigation actions

Stakeholders		
	Agency and Position	**Potential Stake, Interest or Contribution**
Local Partners and Industry	Economic Development Corp. *EDC Executive Director*	The EDC resources could inform future economic development trends in the City
	Texas AgriLife Extension Childress County Extension Agent	AgriLife could inform some of the decisions that might impact area farmers/ranchers and help in promoting certain mitigation actions.
	Industry	Industry in the planning area would have a direct stake and interest in the outcome of this planning process
	THE PUBLIC	The residents of the planning area would have a direct stake and interest in the outcome of this planning process
	Neighboring Communities: Hall County EMC Collingsworth County EMC	Jurisdictions that border the planning area have an interest in the outcome of this planning process and could contribute to the development of hazard profiling.
	Panhandle Regional Planning Commission (PRPC) *Regional Serv. Director*	Aside from assisting the MAT in writing this update, PRPC could provide data that would inform the actions/decisions of the MAT
Regional, State & Federal Partners	Amarillo Office of the National Weather Service (NWS) *Warning Coordinator Meteorologist*	The NWS could provide regionalized data with regard to past/forecasted weather trends that could inform the formation of mitigation actions
	Texas Forest Service (TFS) *Regional Fire Coord.*	TFS resources could inform the MAT's development of wildfire mitigation actions
	Parks and Wildlife Meredith Director	TFS resources could inform the MAT's development of wildfire mitigation actions
	Army Corps of Engineers (ACE) *SW Div.,Fort Worth, TX*	ACE resources could inform local flood control efforts with streambed/wetland data
	Texas State Data Center (TSDC) *On-line Resources*	TSDC resources could provide data to forecast future population growth in the APR Planning area
	Texas Water Development Board (TWDB) *On-line Resources*	TWDB resources could provide the City with severe repetitive loss data and inform actions focused on drought contingencies

In some form or fashion, all the participating jurisdictions/stakeholders listed above played a part in the MAP update process. State and federal agency participation was primarily obtained through the use of their websites. Information was gleaned from their sites to develop the hazard profiles found later in this document, to estimate future hazard impacts, for projecting future growth and development and for identifying potential actions that could be employed in mitigating the impacts of future hazard events in the planning area.

The MAT planning process was open throughout and with active participation from the public in all the meetings. Over 117 participated from the planning area in the Household Natural/ Hazards Preparedness Survey and the attitudes and opinions reflected by the resident responses were considered as the mitigation actions in this MAP update were being developed. Each participant was able to enter their zip code to separate results by jurisdiction.

In following FEMA's Local Mitigation Planning Handbook suggestions, the individuals invited to participate on the MAT brought certain skill sets or experiences to the process that helped to ensure the overall relevance of the plan. The types of MAT member contributions included:

- Emergency managers/first responders – had direct experience with past hazard events and existing preparedness measures, and/or had a direct line of communication with the State emergency management agency.
- Local community planners – were able to assist the planning team in understanding current, and future community development trends, the policies or activities that affect development, and the relationship between hazards and development.
- Mapping specialists – were able to analyze and interpret map data to support the planning process and communicate complex information, such as the locations of assets at risk in threat- or hazard-prone areas and estimates of damage for a particular disaster scenario.
- Public works/engineering staff – were able to identify current or projected problems for the community's infrastructure that could be addressed through capital improvements supported by the mitigation plan.
- Elected and executive officials – were familiar with the total needs of their jurisdiction and were able to communicate how the mitigation plan could support other social, economic, or environmental goals locally.
- Floodplain administrators – were able to provide information on local flood hazard maps, floodplain ordinance and actions that could be undertaken to support the goals of the National Flood Insurance Program and help reduce flood losses.
- Code Enforcement Officials – were able to help the team understand how local codes can be used in support of the Childress County plan's mitigation goals.
- State/Federal Partners – were able to serve as a data resource; providing the MAT with relevant statistics, historical account, etc. that could be used to inform the planning process.

The table below lists the current membership of the MAT and describes the contributions each member made with the development of this document.

Childress County Mitigation Action Team and Contributions			
NAME	**TITLE**	**JURISDICTION**	**CONTRIBUTION**
Bill Ricks	EMC/Team Coordinator	Childress County	*Emergency Manager*; coordinated the MAT meetings, obtained data to profile hazards, provided background on past mitigation actions in the planning area; identified potential mitigation actions
Jay Mayden	County Judge	Childress County	*Elected official*; assisted with the development of mitigation actions for the County and presented the MAP to the Commissioners' Court for adoption
Michael Pigg	Sheriff's Office Sheriff	Childress County	*Law Enforcement*; familiarized the MAT with the County's law enforcement prevention activities and assisted with the development of mitigation actions
Brenda Overstreet	Treasurer's Office Treasurer	Childress County	The Treasurer could develop loss value determinations made by the MAT
Terry Holley	County Appraisal District Chief Appraiser	Childress County	The Appraiser could develop loss value determinations made by the MAT
Dawn Dockter	County Extension Agent	Childress County	*Industry Partner*; providing data critical to the identification or hazards and their impacts
Kevin Hodge	City Manager	City of Childress	*Executive official*; helped the MAT in discerning the "P" (political) element in the assessments of potential mitigation actions and with the development of mitigation actions
Cary Preston	Mayor	City of Childress	*Elected official*; assisted with the development of mitigation actions for the City and presented the MAP to the Council for adoption
Eddie Taylor	Public Works Supervisor	City of Childress	*Public works/engineering*; assisted the MAT in understanding some of the technical implications of proposed mitigation actions; particularly as they applied to key City infrastructure

NAME	TITLE	JURISDICTION	CONTRIBUTION
Rick Teran	Childress ISD Superintendent	Childress ISD	*ISD Representative*; actively participated in the MAT meetings and assisted with the development of mitigation actions for the ISD
Shade Miller	Police Department	City of Childress	*Law Enforcement*; familiarized the MAT with the County's law enforcement prevention activities and assisted with the development of mitigation actions
Daniel Tyler	Childress FD Chief	City of Childress	*First responder*; assisted with gathering wildfire data and identification of potential wildfire mitigation actions
Holly Holcomb	Chief Operating Officer	Childress Regional Medical Center	*Hospital Representative*; assisted with gathering critical infrastructure data on the medical resources and identification of medical mitigation actions.
Mike Gittinger	Warning Coord. Meteorologist	Amarillo Office of the NWS	*State/Federal Partner*; providing data critical to the identification or hazards and their impacts
Emily Nolte	Emergency Planner	PRPC	*Local community planner*, assisted the MAT Team leader with public communications; served as an interface with TDEM/FEMA as the MAP was being reviewed

Establishing an Open Public Process (A3)

As previously noted, the development of this plan followed the requirements set out by FEMA under 44 CFR §201.6. One of the foundational pieces of those requirements calls for the public to be given ample opportunity to observe, if not participate, in the planning process. §201.6(b)(1) required the County to provide, *"(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;*".

To that end, whenever a MAT meeting was scheduled, postings to announce public meetings were placed at each city hall county, courthouse and ISD information boards, for each of the participating jurisdiction, at least 72 hours prior to the meeting. The notice included a list of individuals who were suited to mitigation team service for each participating jurisdiction. The following information is an excerpt from the invitation:

NOTICE TO THE PUBLIC

The Childress County Mitigation Action Team has scheduled a meeting on (date), at (time), in the (meeting room) of the Childress County Courthouse located at the 100 Ave. E NW Childress, Texas. The Childress County Hazard Mitigation Plan is being updated. When completed, it will serve as a guide for implementing mitigation strategies which are intended to help reduce the human, economic, and environmental costs of natural disasters. The public is invited to attend. For more information, please contact (plan scribe), with the PRPC, at (806) 372-3381.

In addition, the MAT took advantage of another regional project funded by FEMA that allowed residents the opportunity to review the draft plan. The Panhandle Area Regional Information System (PARIS) is a virtual communications tool that serves the entire Panhandle region. Over the past four years, public mass notification tools have been added to PARIS courtesy of FEMA. These tools allow residents to subscribe to receive emergency alerts and information from their local jurisdictions.

In this instance, PARIS was used to send out notices to subscribed residents in planning area to inform them of the plan update process. The message contained a link to the draft version of the County's plan. Residents were then invited to read the plan and provide their comments and suggestions back to the MAT through the Team Coordinator Bill Ricks.

The draft was made available for public comment both electronically, through PARIS and physically at the Courthouse in Childress, Childress City Hall, and the Childress ISD Admin building, and at PRPC, 72 hours in advance of the governing bodies, meetings. The final draft was discussed in open session during those meetings, with a call for public comment, before the adopting resolutions were considered and passed.

These adoption meetings were preceded with a different Notice to the Public which generally read as follows:

NOTICE OF A PUBLIC HEARING ON THE ADOPTION OF THE CHILDRESS COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Childress County Commissioners Court will conduct a public hearing before considering final adoption of the recently completed 2017 Childress County Hazard Mitigation Plan Update on (date), at (time), in the (meeting room) of the Childress County Courthouse located at the 100 Ave. E NW Childress, Texas. This plan incorporates mitigation actions intended to minimize the impacts of certain natural hazards on the residents of the planning area.

A copy of the plan is now available for review in the Childress County Courthouse, Childress City Hall and at Childress ISD during normal business hours or may be reviewed online at:

http://theprpc.org/Programs/EmergencyPreparedness/default.html

The meeting is open to the public and interested residents are encouraged to attend to offer feedback and comment.

Each jurisdiction posted their own customized notice; giving their residents the date/time on which their governing body would consider the plan adoption along with a location at which the plan could be physically reviewed locally.

In addition, a press release was issued to the Red River Sun newspaper to announce the pending jurisdictional adoption meetings.

The Childress County Hazard Mitigation Plan will remain available to the public on PARIS until it's replaced by the next 5-year update. The public will also be notified of and invited to the meetings when the MAT gathers to conduct its annual review of the MAP.

Existing Documents and Studies Reviewed for Plan Development (A4)

Documents and Databases	
State of Texas Hazard Mitigation Plan	Texas Water Development Board
Childress County EOP 2016	Natural Disasters & Weather Extremes
Regional Economic Recovery Plan 2016	FEMA Disaster Declarations
Texas A&M Forest Service Fire Reports	US Census American Fact Finder
Panhandle Nation – County Roads	Texas Association of Counties Profiles
NOAA Storm Event Database	Corp of Engineers Studies
FEMA Flood Map Center	

A review of the capabilities was completed by key Childress County and participating jurisdictions' departments and provided information pertaining to existing plans (see above), policies, ordinances, and regulations to be integrated into the goals and objectives of the Plan.

Continued Public Participation Process (A5)

The MAT will conduct annual public mitigation action strategy update presentations during the 5 year period. Each participating jurisdiction will host a local workshop and invite the public residing in their jurisdiction. A press release will be issued to the Red River Sun newspaper, in addition to internal newsletters and email lists within the ISD's. Annual meetings held locally will ensure public participation with the focus being on their own strategies. County and City residents as well as the student body and staff will be given a forum to submit any additional identified areas of concern to possibly vet out action items in the future. Two years prior to the expiration; the mitigation team will convene to update the existing plan with actions gleaned from the local meetings.

The MAP will be posted on regional shared portal, which will allow the public to access the document at any time. A point of contact is provided for every plan in the portal; the PRPC will be responsible for ensuring the contact list stays current. As an alternate, the PRPC'S contact information will also be provided to ensure that public inquiries and comments are properly channeled for processing to the appropriate County point of contact on a timely basis.

Monitoring (A6)

MAT participants will be responsible for evaluating the plan annually for updates to jurisdictional goals, objectives, and action items. If needed, these participants will coordinate through the MAT Chairperson to integrate these updates into the Plan. A record of those changes will be maintained in the plan. The MAT Chairman will be responsible for monitoring the overall plan for updates on an annual basis.

Monitoring and evaluation involves the ongoing process of compiling information on the outcomes from the implementation of the hazard mitigation objectives. The goal is to determine whether the planning area's vulnerability has decreased as a result of the plan. When vulnerability has decreased as a result of identified mitigation actions, the plan participants will determine why and will implement successful mitigation actions in other locations. Where vulnerability has increased, or remained constant, the plan participants will identify if other potential mitigation strategies may be more successful.

Method and Schedule for Keeping Plan Current

Method and Schedule for Keeping Plan Current			
	How	**When**	**By Whom**
Monitoring/Evaluate	The plan and action items will be evaluated on an annual basis to determine effectiveness of the programs. **Element A**: Continue to recruit members for the mitigation team members. Evaluate public satisfaction with the outreach method and level of input they were allowed to provide through an annual survey. **Element B**: Participants will provide any new development of hazard history that may impact changes in priorities. Monitor new information from the NWS and TFS Wildfire Risk for new maps and history. Monitor new versions of CHAMPS for new data. **Element C:** Existing strategies will be evaluated and priorities adjusted based on hazard history. Lead agency/departments will continually monitor action items as they are implemented. Through the Mitigation Action Item Monitoring Form, they will inform the MAT of the status of the action and target completion date. **Element D:** Monitor the status for existing strategies. Identify how the plan was utilized to recognize new projects or to re-prioritize existing strategies. As development changes occur they will be incorporated in to the plan and strategies can be adjusted according to the increase or decrease in growth. Review of the overall goals and using the scoring criteria – will provide clear measurement of the actions.	Quarterly updates and upon completion	Responsible Departments identified for each action for each jurisdiction. Participating Jurisdictions, Responsible Departments, MAT Members
Update	The MAT will update this plan every 5 years. However, through the annual evaluation, each participating jurisdiction will provide any changes to the existing plan to the MAT Chairmen. Two years prior to the expiration, all participating jurisdictions will begin the formal update process. The Formal process will begin with a county-wide meeting which will include all participating jurisdictions. Tasks will be established for each jurisdiction: 1) to review prior mitigation action items and 2) document hazards that have occurred in the last several years. Each participating jurisdiction will hold “jurisdictional” meetings to solicit feedback from the public during this process. Surveys will be extended to the entire county to determine changes in mitigation planning at the resident level. This process will culminate in the several meetings to review the information gleaned and to formally update plan. Plan will be submitted to the State for review and to FEMA for approval.	Every 5 years	Participating Jurisdictions, Responsible Departments, MAT Members

The MAT will conduct an annual meeting intended for all plan participants for the purpose of monitoring and evaluating the progress being made in fulfilling the MAP's goals, objectives, and Mitigation Actions. The objectives of the annual MAT review will be:

- to identify mitigation activities that are in progress, have been deferred or been completed;
- to assess whether the MAP's current mitigations goals and objectives continue to address existing (at the time of the review) and expected conditions;
- to determine whether or not the nature and/or magnitude of each plan participant's risks have changed; and
- to determine, by plan participant, if resources are available and appropriate for implementing prioritized actions in the coming year.

Any changes made during the annual review process(es) will be noted on the Record of Changes found page vi of this document. As part of the monitoring of the mitigation actions, responsible parties will be provided the form below to update the MAT on the progress of strategies that have been implemented.

Sample Mitigation Action Item Monitor Form

Mitigation Action Item Monitoring Form (Sample)			
Date Submitted		**Dept. Responsible**	
Mitigation Action		**Installation of Additional Early Warning Sirens**	
Objectives		Provide early warning sirens to warn citizens of approaching weather dangers.	
Target		Erect 2 multidirectional sirens within the city limits	
Progress		1 multidirectional siren has been erected and tested in SW Childress at the corner of 11th and Bell. The second siren is delayed due to a lack of funding source	

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Element B – Hazard Identification and Risk Assessment

The purpose of hazard mitigation is to reduce potential losses from future natural disasters. The intent of mitigation planning, therefore, is to maintain a process that leads to hazard mitigation actions. This mitigation plan will identify only natural hazards that impact our community and identify actions to reduce losses from those hazards and establish a coordinated process to implement the plan.

Hazards Analysis

Early in the update process, the committee completed an analysis of the plan and decided that much of the contents on hazard analysis remained relevant. As with the original plan, the committee for this update found the following natural hazards continue to be present and could have an effect to the planning area.			
Natural Hazards			
Drought	Flooding	Hail Storms	Lightning
Tornado	Wildfire	Windstorms	Winter Storms

The mitigation team studied the entire list of possible natural hazards that could affect the jurisdiction and found that while some hazards could be considered, historical data did not support the need to include the following hazards. Data of the following hazards found that the possibility of a future event would have less than a 1.5% chance of occurring in the next 65 years, therefore, the risk is negligible, or that history has never recorded any such event for the jurisdiction and the event is not likely to occur in the next 5 years.

- Earthquake-1.5% chance of occurring in next 65 years.
- Dam/Levee Failure (*The Baylor Creek Dam is a no/low hazard and has no potential to affect assets of the plan participants)*

Childress County is located in the Texas Panhandle where the possibility of the following hazards occurring in the city are highly unlikely and were not considered to pose a risk to the jurisdictions.

- Extreme Heat
- Hurricanes/Tropical Storms
- Coastal Erosion
- Expansive Soils
- Land subsidence

Some of these hazards are interconnected (e.g., droughts create more fuel for wildfires) while some hazards could be characterized as elements of a broader hazard agent. For example, hail and severe winds can be produced by thunderstorms and they may all occur during a single thunderstorm event. It should also be noted that some hazards, such as severe winter storms, may impact a large area and cause little damage, while other hazards, such as a tornadoes, may impact a small area but cause extensive damage.

The 2015 Hazard Mitigation Plan included Severe Thunderstorms. It was determined that the product of a severe thunderstorm is what contributes to property damage. Therefore, Hail and Windstorms as bi-products of a Severe Thunderstorm will be profiled separately in the 2018 plan to better represent cause and effect. **Severe Thunderstorms <u>will not</u> be profiled in this plan.**

The Authors of this plan recognize the significance of industrial, technological, and man-made hazards that pose a threat to both residents and property. Specific plans that address the recognition and response procedures of those hazards can be found in the following documents:

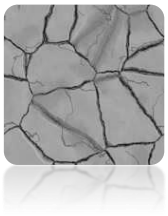
- Childress County 2016 Emergency Operations Plan
- LEPC – Community Emergency Response Plan
- Regional Aviation Disaster Plan/Mass Fatality Plan
- Pipeline Emergency Response Guidelines
- FAD – Regional Foreign Animal Disease Plan

The following man-made hazards can be found in the planning area:

Industrial/Technological/Man-made Hazards				
Hazard	**Frequency of Occurrence**	**Warning Time**	**Geographic Extent**	**Potential Impact**
Hazardous Materials Release	Likely	None	Localized	Major
Pipeline Explosion	Unlikely	None	Localized	Major
Potable Water Failure	Likely	None	Localized	Miner
Aircraft Accident	Unlikely	None	Multi-county	Major

Natural Hazard Profile (B1, B2, B3)

Drought



Description

A **Drought** is, "*a period of unusually dry weather that persists long enough to cause environmental or economic problems, such as crop damage and water supply shortages.*" Extreme weather such as heat waves, heavy downpours and droughts are expected to accompanying climate change.

Droughts are frequently classified as one of following four types:

Meteorological – Drought defined by the level of "dryness" when compared to an average, or normal amount of precipitation over a given period of time.

Agricultural - Agricultural droughts relate common characteristics of drought to their specific agricultural-related impacts. Emphasis tends to be placed on factors such as soil water deficits, water needs based on differing stages of crop development, and water reservoir levels.

Anticipating the range of future droughts that could impact the entire planning are, the MAT then considered the effects those events might have. The table below describes the impacts the various stages of drought could potentially have on the planning area.

Drought Severity Classification

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

Short-term drought indicator blends focus on 1-3 month precipitation. Long-term blends focus on 6-60 months. Additional indices used, mainly during the growing season, include the USDA/NASS Topsoil Moisture, Keetch-Byram Drought Index (KBDI), and NOAA/NESDIS satellite Vegetation Health Indices. Indices used primarily during the snow season and in the West include snow water content, river basin precipitation, and the Surface Water Supply Index (SWSI). Other indicators include groundwater levels, reservoir storage, and pasture/range conditions.

Source: http://droughtmonitor.unl.edu/classify.htm

Location
Drought conditions can affect the entire planning area equally.

Extent and Previous Occurrences
The entire planning area experienced exceptionally drought conditions (D4) in 2012 & 2013 due to the limited amount of rainfall experienced in 2011 with an average of only .92 inches of rain. Therefore, the entire planning area can experience up to a D4.

Impact
Extended droughts can have a tremendous effect on local jurisdictions. The planning area can experience economic losses for the agricultural industry, loss of water recreation and susceptibility to increased wildfire activity from accidental ignition sources (transformers, dry lightning, dragging chains, etc).

	Vulnerabilities
Unincorporated Area	• All residents/homes/property are vulnerable to the secondary impacts of drought which is wildfire. In extreme drought conditions grass land is more susceptible to catch on fire from sparks from railcars, cigarette butts and transformer malfunctions with little to limited structures to stop the spread. • Crops & Agricultural accounts/economy: 33% of the "unincorporated" area is private farmland with a county annual income of over $29million in agricultural accounts, crop damage is likely to occur in the event of a drought . • Decreased cattle profits due to increased supplemental feed due to loss of grasses representing over 62% of land use.
City of Childress	• Vegetation – Landscape/lawn/garden: Around city buildings and recreation venues to include the golf course, parks and swimming pool. • Damage landscape and lawns to residential homes. • Childress General Hospital and Fox Rural Health Clinic have minimal drought resistant vegetation and would require increased water use to maintain. Impact would be an increase of water usage, increased cost of maintenance and decrease of available water for other purposes. • 60 acres behind the hospital was the former country club. Grass areas can suffer from drought, thus making the area more susceptible to wildfires.
Childress ISD	• Landscape: Childress ISD – (4 campuses) do not have drought resistant vegetation and is vulnerable to dry and lack of water conditions. The impact of drought to the ISD is increased water use to maintain the existing landscape. • Athletic fields (baseball and softball)

Probability of Future Events
Historical patterns are assumed to be a dominant factor in determining future drought events. Based upon the historical instances of drought events which have occurred in the area during the last 10 years, droughts occurred in 7 of those years. Based on this data, the MAT estimates the probability for a drought in the entire planning area in any given year to be 70.00%.

Years in the Record Span 2008-2018	No. of Years in the Span in which the Event occurred	Computation	Future Probability of 1 or more events per Year
10	7	(10/7) * 100 =	70.00%

Flooding

Description

According to the NFIP, a **Flood** is defined as "*A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from: 1) Overflow of inland or tidal waters; 2) Unusual and rapid accumulation or runoff of surface waters from any source; or, 3) Mudflow* (Mudflow is the collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.)"

Flash Flooding is what typically impacts the planning area.

Flash Floods:

A flash flood generally results from a torrential rain on a relatively small drainage area. Runoff from these intense rainfalls results in high flood waters that can destroy roads, bridges, homes, buildings and other community developments. Discharges quickly reach a maximum and diminish almost as rapidly.

Flash floods are a potential source of destruction and a threat to public safety in areas where the terrain is steep, surface runoff rates are high, streams flow in narrow canyons and gullies, or severe thunderstorms stall over an area. The historical instances of flooding that have occurred within the planning area are all flash flood types of events. Therefore, flash flooding will be addressed within this plan. Flash flooding is typically measured in the depth of flood waters in feet or inches.

Location

During extreme rains, flash flooding event can impact the entire planning area.

Extent

During times of heavy rains which can result in a flash flood instance, water can stand up to a depth of one to three feet of inundations to caliche roads and culverts in low lying areas.

US Hwy 287 is a major highway connecting traffic from the Dallas Metro area to Colorado. Heavy rain can contribute to flash flooding on the highway putting thousands of travelers at risk or forcing road closure until the danger has subsided.

The City of Childress and Childress ISD have experienced flash flood instances where events have resulted in 2-4 inches of rainfall within a 2 hour period can produce water running over roadways and in some cases backing up backing up onto resident's properties and potentially, into homes at depths up to 15".

Impact

In the planning area, flash floods can severely damage the roads and wash out culverts. Road closures while the water drains out can cause severe delays in moving industry commodities. Damage to private parking lots from water draining off of county or state highways can

contribute to insurance claims. Loss of ground floor in homes due to rushing water is also an impact.

Several of the narrative descriptions in the "Previous Occurrences" section demonstrate how flood depth can be affected by these variables.

Vulnerabilities	
Unincorporated Area	• Erosion to crop land or damage to county roads and culverts • Damage to county road and bridge equipment when forced to drive through running water. • Damage to lower floors of Courthouse and/or to the Sheriff's Office and Jail.
City of Childress	• City drainage system & their capabilities are vulnerable to becoming ineffective during flood events because of inadequate funding and poor development to withstand the heavy water flow of a flood event. • Potential damage to the lift station, 6 pump station and wastewater treatment plant. • Childress Regional Medical main hospital and 5 ancillary buildings damage to ER, Fox Rural Medical Center main building, EMS barn, dialysis center, Dr. Housing and Old clinic (rented out as Apollo transport offices, nursing school) • Damage to parking lot, EMS Barn and Dr. Housing due to standing water from runoff from the old country club land. •
Childress ISD	• Childress ISD Campuses (4 campuses), District Support Center, Maintenance Barn and Bus Barn. • Damage to parking lots • Damage to the athletic fields (turf football field, baseball field, softball field) • Childress ISD has sustained water damage to both the Elementary and High School gym with losses over $150,000.

Probability of Future Events

Historical patterns are assumed to be a dominant factor in determining future flooding events. Based upon the historical instances of flooding events that have occurred in the area during the last 10 years, the entire planning area has experienced at least seven flooding events in 5 of those years. Based on this data, the MAT estimates that in any given year, there's a 70% chance that any part of the county will experience one or more flooding events.

Probability of Future Events	Years in Record Span 2008-2018	No. of Events in the Span	Computation	Future Probability of 1 or more events year
Unincorporated Area	10	7	(710) * 100=	70.00%
City of Childress & Childress ISD	The City of Childress has frequently been inundated with flash flooding that has resulted in stalled cars and city road and parking lot damage. Those incidents were not found in the extreme NOAA Weather website. Events would mirror those found in the county.			

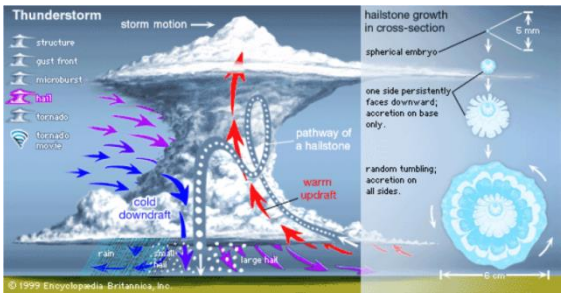
Previous Occurrences

Date	Dth	Inj	PrD	CrD	Hazard Impact Narrative
4/16/2010	0	0	25.00K	0.00K	Heavy rainfall centered over western Hall County resulted in significant flooding downstream along the Prairie Dog Town Fork of the Red River. The high water flooded low lying farmland, ranch land, and several roadways.
8/16/2013	0	0	0.00K	0.00K	Local law enforcement officials reported that heavy rainfall from continued thunderstorm activity forced the closure of the Highway 83 underpass on the south side of Childress. The highway reopened a couple of hours later following the end of the intense rainfall
7/6/2015	0	0	0.00K	250.00K	Several roads had flooded stretches across the eastern South Plains northeast to Childress County. The greatest monetary impact of these heavy rains was dealt to area crops as thousands of acres of milo, cotton and some corn suffered varying degrees of damage from flooding.
5/22/2016	0	0	0.00K	0.00K	A nearly stationary storm over Hall and western Childress Counties produced copious amounts of rainfall which lead to flash flooding especially along US Highway 287 in Childress County.
10/6/2016	0	0	0.00K	0.00K	Law enforcement reported street flooding in Kirkland. Some rural roads south of town were impassable due to standing water.
11/2/2016	0	0	20.00K	0.00K	Flooding closed the Highway 83 underpass southwest of Childress. A low profile car attempted to drive through these floodwaters, but became stranded after stalling out.
10/4/2017	0	0	0.00K	0.00K	This torrential rainfall brought large scale flooding to western Childress County. Furthermore, minor river flooding occurred along the Prairie Dog Town Fork of the Red River.

Hail

Description/

Hail is a form of solid precipitation. It consists of balls or irregular lumps of ice, each of which is called a hailstone. A **Hailstorm** is, "*any storm that produces hailstones that reach the ground*." Hail is produced by ice crystals that form in a low pressure front due to the rapid rising of warm air into the upper atmosphere and subsequent cooling of the air mass. Hail usually falls as shaped masses of ice greater than 0.25 inches in diameter. The size of the hail can be directly correlated with the size of the thunderstorm.



Hailstorms are an outgrowth of severe thunderstorms. People outdoors would be the most likely victims during a hailstorm, but the biggest threat would come from large hailstones and damage they would cause to property.

The table below provides definition to the various sizes or categories of hail and the potential damage that can be caused by hail of that size.

NWS/TORRO Hail Scale

Combined NOAA/TORRO Hailstorm Intensity Scales				
Size Code	**Intensity Category**	**Typical Hail Diameter (inches)**	**Approximate Size**	**Typical Damage Impacts**
H0	Hard Hail	up to 0.33	Pea	No damage
H1	Potentially Damaging	0.33-0.60	Marble or Mothball	Slight damage to plants, crops
H2	Potentially Damaging	0.60-0.80	Dime or grape	Significant damage to fruit, crops, vegetation
H3	Severe	0.80-1.20	Nickel to Quarter	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	1.2-1.6	Half Dollar to Ping Pong Ball	Widespread glass damage, vehicle bodywork damage
H5	Destructive	1.6-2.0	Silver dollar to Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	2.0-2.4	Lime or Egg	Aircraft bodywork dented, brick walls pitted
H7	Very destructive	2.4-3.0	Tennis ball	Severe roof damage, risk of serious injuries
H8	Very destructive	3.0-3.5	Baseball to Orange	Severe damage to aircraft bodywork
H9	Super Hailstorms	3.5-4.0	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	4+	Softball and up	Extensive structural damage. Risk of severe/fatal injuries to persons in the open

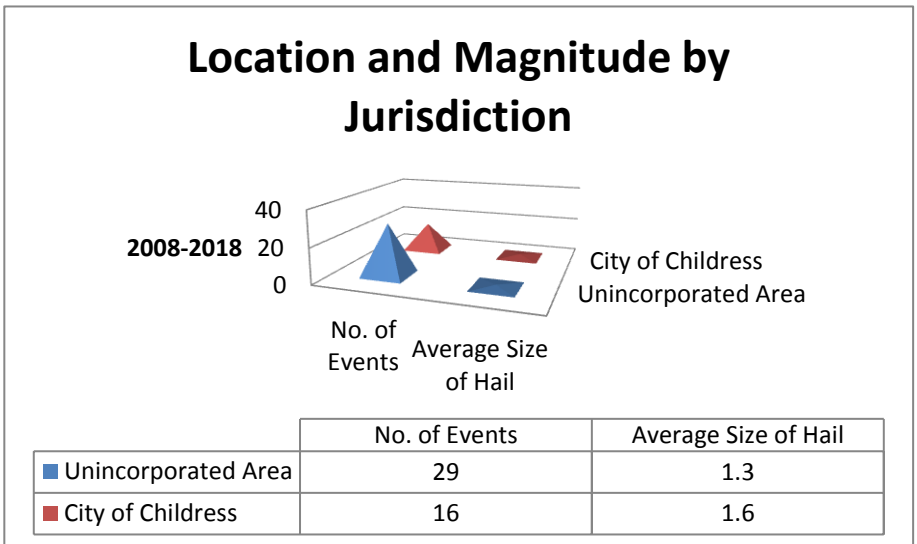
Source: www.noaa.gov and www.torro.org

Location

The entire planning area can anticipate frequent hailstorms that can contribute to property and crop damage.

Extent

While the largest average size of hail encountered within the planning area, measured by the diameter, is 1.45 in., there have been many occurrences when the diameter measured 2.75" and as high as 3.00" resulting in over $2M in damage which is within the range of H7-H8 on the combined NOAA/TORRO Hailstorm Intensity Scale. Therefore, the entire planning area can experience a H7, with typical hail diameter being1-2 inches.



	No. of Events	Average Size of Hail
Unincorporated Area	29	1.3
City of Childress	16	1.6

The chart above depicts hail occurrences and magnitude by jurisdiction. Hail of this size can decimate crops, roofs, and injure people who are not inside. No matter the size of the hail – the largest losses seen through any size of hail is vehicular damage, amounting to hundreds of thousands of dollars in claims, many times what could be considered repetitive loss depending on the age and repair history.

Impact

Hail can cause considerable damage to crops and property. Injuries and deaths can occur as direct result both to people and to livestock who are not under shelter. Hail damage to both vehicles and buildings (glass) can minimize work for government. Repairs can cause a significant reduction in workforce as employees are without transportation to go to work due to reparation of vehicles or waiting for contractors to conduct home repairs.

	Vulnerabilities
Unincorporated Area	• 1 Radio tower, communications system not covered or shielded, impact could be loss/interruption of communications • Windshield and body damage to vehicles on county roads and highways are vulnerable to hailstorm because they have to travel longer before reaching shelter. Impacts of damaged windshields could cause accidents and put the driver and passenger lives at risk. • Vehicle body and glass Windows: Specifically damage to 10 Sheriff's Office patrol cars, constable, OEM and 22 road and bridge vehicles required to still be out on the roads responding to calls during tornadic events. • Damage to 7 County buildings to include roof, windows and HVAC systems, County Jail and Precinct Barns • Crops & Agricultural accounts/economy: 12% of the county is devoted to crops, in addition to the resources that support the planting and harvesting process.

City of Childress	• Roof, HVAC and window damage to critical city facilities to include city hall, police & fire department, Golf Course, parks playground and attractions.
	• Control systems and building damage at water and sewer plant.
	• Vehicle service/storage area, and several other city owned properties
	• Vehicle body and glass Windows: Specifically damage to Childress emergency response vehicles and public works vehicles which are required to be out on the roads responding to calls during hailstorm events.
	• Potential damage to the 1 lift stations, 6 sewage pump, and 1 water tower.
	• Critical Hospital Facilities to include Hospital/ER, Fox Rural Health Clinic
	  • 2 generators located on the ground level but they are covered
	  • Roof and windows in all buildings
	  • 5 large HVAC and 20 smaller HVAC systems on the roof of the hospital.
	• Equipment damage due to loss of power example CAT scan, Lab Equipment, PAC systems, Dialysis, ER.
	• Dialysis Clinic and Clinic are not on a generator. Loss of electricity would be critical.

Childress ISD	• Childress ISD Campuses (4 campuses), District Support Center, Maintenance Barn and Bus Barn. Damage to roofs, 110 uncovered HVAC's , Windows • Damage to school buses- 19 and the other 16 ISD vehicles. • Damage to the athletic fields (turf football field, baseball field, softball field) • Damage to outside lighting structures for athletic fields. • Impact could cause school closures, accidents and staff/student injuries

Probability of Future Events

Specific damage loss numbers as reported by NOAA Storm Events Database were used to produce the data for the estimation of future loss. It is important to understand that the true financial impact due to hailstorms are difficult to state. Property damage information for residents, businesses, schools and government properties make insurance claims to insurance or vehicle insurance and are not typically not included in the Storm Event data. Therefore, you can make the conclusion that the property damage is probably considerable..

Probability of Future Events	Years in Record Span 2008-2018	No. of Events in the Span	Computation	Future Probability of 1 or more events year
Unincorporated Area	10	29	(29/10) * 100=	290%
Childress & Childress ISD	10	16	(16/10) * 100=	160%

Previous Occurrences

Location	Date	Mag	Dth	Inj	PrD	CrD	Hazard Impact Narrative
Unincorporated	5/30/2012	1	0	0	0.00K	0.00K	
Unincorporated	6/19/2016	1	0	0	0.00K	0.00K	
Unincorporated	4/21/2010	1.5	0	0	0.00K	0.00K	
Unincorporated	4/1/2013	1.75	0	0	0.00K	0.00K	
City of Childress	5/12/2009	0.88	0	0	0.00K	0.00K	
City of Childress	11/7/2011	0.88	0	0	0.00K	0.00K	
City of Childress	5/3/2017	0.88	0	0	0.00K	0.00K	
City of Childress	5/31/2011	1	0	0	0.00K	0.00K	
City of Childress	3/19/2012	1	0	0	0.00K	0.00K	
City of Childress	4/29/2017	1	0	0	0.00K	0.00K	
City of Childress	4/23/2014	1.5	0	0	0.00K	0.00K	
City of Childress	4/9/2008	1.75	0	0	0.00K	0.00K	
City of Childress	6/15/2008	1.75	0	0	1.000M	2.000M	Up to golf ball size hail combined with extreme downburst winds to result in widespread damage across the city of Childress and a number of surrounding agricultural fields. Wind-driven hail destroyed approximately ninety percent of the east-facing windows in the city of nearly 7,000 residents. Vinyl exterior siding was shredded on a number of structures. In addition, a few hundred vehicles sustained damage and grain sorghum crops suffered extensive damage.
City of Childress	4/22/2010	1.75	0	0	0.00K	0.00K	
City of Childress	5/27/2013	1.75	0	0	0.00K	0.00K	
City of Childress	4/20/2014	1.75	0	0	50.00K	0.00K	
City of Childress	5/17/2016	1.75	0	0	100.00K	0.00K	A swath of hail up to the size of golf balls fell over the city of Childress for about 15 minutes accompanied by strong winds at times. Damage was largely comprised of vehicle dents.
City of Childress	4/1/2013	2	0	0	0.40K	0.00K	

Location	Date	Mag	Dth	Inj	PrD	CrD	Hazard Impact Narrative
City of Childress	4/20/2014	2.75	0	0	1.000M	0.00K	On the heels of a supercell that produced golf ball size hail and damage in Childress, a second supercell impacted Childress less than 30 minutes later. This latter storm was more intense and dropped very large hail up to baseball size in the city. Preliminary evidence indicates widespread damage was dealt to vehicles, windows and roofing throughout much of the city.
City of Childress	6/30/2017	3	0	0	2.000M	0.00K	The slow movement of this supercell storm compounded damage to hundreds of vehicles, homes and buildings in the area. Combined property losses are estimated to be around $2 million.
Unincorporated	4/26/2015	0.75	0	0	0.00K	0.00K	
Unincorporated	5/15/2009	0.88	0	0	0.00K	0.00K	
Unincorporated	5/16/2017	0.88	0	0	0.00K	0.00K	
Unincorporated	5/16/2017	1	0	0	0.00K	0.00K	
Unincorporated	5/10/2017	1.75	0	0	0.00K	0.00K	
Unincorporated	10/6/2016	2	0	0	15.00K	0.00K	A swath of severe hail ranging from quarter size to two inches in diameter fell along US Highway 287 in and near Kirkland. Some vehicles in this area suffered cracked windshields and body damage.
Unincorporated	4/20/2014	1	0	0	0.00K	0.00K	
Unincorporated	4/13/2012	1.75	0	0	0.00K	0.00K	
Unincorporated	8/25/2016	1.75	0	0	0.00K	0.00K	
Unincorporated	3/18/2012	1	0	0	0.00K	0.00K	
Unincorporated	3/18/2012	1.75	0	0	0.00K	0.00K	
Unincorporated	4/20/2014	2	0	0	0.00K	0.00K	
Unincorporated	6/19/2008	0.88	0	0	0.00K	0.00K	
Unincorporated	5/30/2012	0.88	0	0	0.00K	0.00K	
Unincorporated	5/13/2016	0.88	0	0	0.00K	0.00K	
Unincorporated	9/16/2010	1	0	0	0.00K	0.00K	
Unincorporated	5/18/2013	1	0	0	0.00K	0.00K	
Unincorporated	6/15/2017	1	0	0	0.00K	5.00K	
Unincorporated	5/22/2016	1.5	0	0	0.00K	0.00K	
Unincorporated	5/30/2011	1.75	0	0	0.00K	0.00K	
Unincorporated	5/27/2013	2.75	0	0	0.00K	0.00K	
Unincorporated	4/12/2009	0.88	0	0	0.00K	0.00K	
Unincorporated	8/16/2013	0.88	0	0	0.00K	0.00K	
Unincorporated	6/19/2008	1	0	0	0.00K	0.00K	
Unincorporated	5/8/2015	2.5	0	0	15.00K	0.00K	Tennis ball size hail caused sporadic damage to vehicles along Highway 287 about 2.5 miles east-southeast of Childress.

Lightning

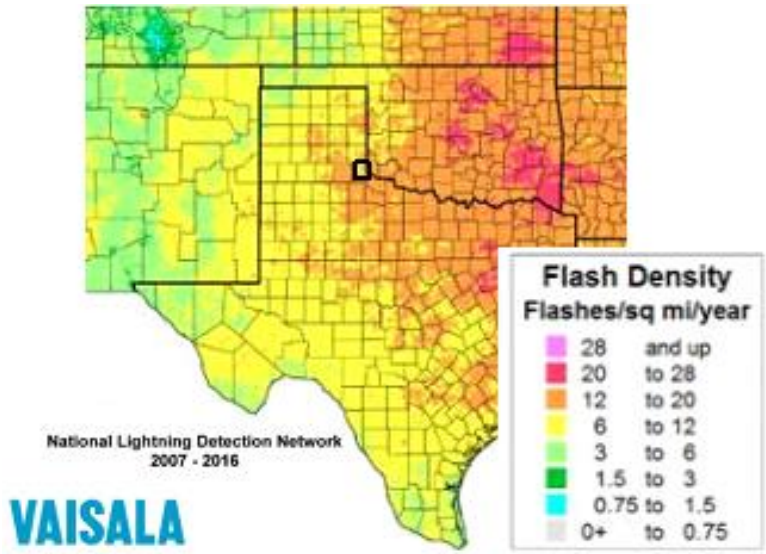
Description

Lightning events are generated by atmospheric imbalance and turbulence due to the combination of the following conditions: unstable warm air rising rapidly into the atmosphere; sufficient moisture to form clouds and rain; and upward lift of air currents caused by colliding cold and warm weather fronts, sea breezes or mountains. Lightning is generated by the buildup of charged ions in a thundercloud, and the discharge of a lightning bolt interacts with the best conducting object or surface on the ground. The air channel of a lightning strike reaches temperatures higher than 50,000 degrees Fahrenheit.

Dry lightning is lightning that occurs without rain nearby. The NOAA Storm Prediction Center routinely forecasts dry lightning because this kind is more likely to cause wildfires.

Location

The entire planning area is uniformly exposed to lightning which strikes in very small, specific geographic areas.



Lightning Activity Level (LAL)
Is a scale which describes lightning activity. Values are labeled 1-6:

LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater then 15 cloud to ground strikes in a 5 minute period.
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.

Extent

Lightning affects the entire county and can occur anywhere. Historical data from the National lightning Detection Network for the years 2007-2016 shows 6-12 strikes per year. Based on the frequency of lightning in the planning area, it falls under a scale of LAL4 in the Lightning Activity Level scale, meaning it is anticipated to experience 11-15 cloud to ground strikes in a 5 minute period.

Impact

April 29, 2017 – lighting strike hit several critical utility assets resulting in over $65,000 in repairs to the control systems. The same storm resulted in loss of electricity and damaged the repeater and several computers.

Lightning strike can ignite wildfires, direct strikes on water wells can put utilities out of commission for a significant period of time. Electronic equipment including communications, critical hospital equipment can be disabled if the building suffers a direct strike.

	Vulnerabilities
Unincorporated Area	• Power lines, transformers, transformer banks and power stations, to include power surges generated by a lightning strike, resulting in loss of electricity for critical systems such as the County 911 system, County Jail • County Radio tower, County communications system to include the disruption of emergency 911 systems
City of Childress	• Electrical surges for computer and other sensitive office equipment within City Hall, Police Department, Library, Fire Department, City Auditorium. Damage to Childress water and sewer control systems from lightning strikes on pumps and other electrical equipment causing malfunction/ work stoppage. • Radio tower, communications system, radar equipment located at the Police Department, Fire Department and EMS Barn causing disruption of service, possibly spark fires, and increase emergency response need • Power lines, transformers & transformer banks and several power stations. • Loss of outdoor recreational equipment; including lights, sound system. • Childress General Hospital – loss of electricity for patient care and critical equipment, data systems.
Childress ISD	• Childress ISD Campuses – damage to electronic control systems and sensitive electronic computer equipment housed in the 4 campuses and district service center.. • Serious injury of death to those not in a sheltered area by electrocution. • Damage to outside lighting structures for athletic fields. • Electrical outages could force school closure and ruin cafeteria refrigerated items.

Previous Occurrences

A lightning strike impacting one of the participants has occurred in every jurisdiction at least each year to date. As stated in the vulnerability chart, the municipal well systems are to be most affected.

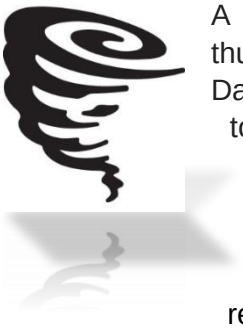
Probability of Future Events

Statewide Texas has a significant exposure to thunderstorms and lightning. Overall, lightning is the most constant and widespread threat to people and property during the thunderstorm season. The recurrence of lightning is high. Dry lightning has the likelihood of being the spark for large fires in the county. Reporting of lightning strikes to the weather service is very limited. A history based on repairs to government systems was used to develop the probability of future events and to also populate the previous occurrences.

Probability of a lightning event occurring anywhere in the planning area is 100% probable in the next 5 years.

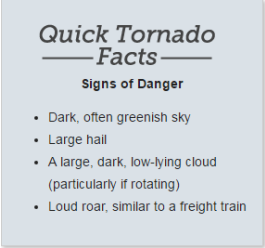
Tornado

Description



A **tornado** appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 300 miles per hour. Damage paths can be in excess of one mile wide and 50 miles long. Some tornadoes are clearly visible, while rain or nearby low-hanging clouds obscure others. Occasionally, tornadoes develop so rapidly that little, if any, advance warning is possible.

Each year, an average of over 1,000 tornadoes are reported nationwide, resulting in an average of 80 deaths and 1,500 injuries. They are more likely to occur during the spring and early summer months of March through June and can occur at any time of day, but are likely to form in the late afternoon and early evening.



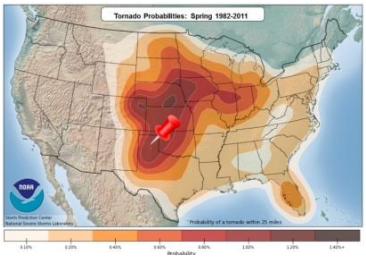
The Enhanced Fujita (EF) Scale for tornadoes was developed to measure tornado strength and associated damages; it is divided into six categories from zero to five representing increasing degrees of damage. Overall, most tornadoes (around 77 percent) in the U.S. are considered weak (EF0 or EF1) and about 95 percent of all U.S. tornadoes are below EF3 intensity. The remaining small percentage of tornadoes are categorized as violent (EF3 and above).

Enhanced Fujita (EF) Scale

Enhanced Fujita (EF) Scale		
Enhanced Fujita Category	**Wind Speed (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; mobile 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; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	**Severe damage** Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	**Devastating damage** Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200	**Incredible damage** Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd.); high-rise buildings have significant structural deformation; incredible phenomena will occur.

Location

The **entire** planning area is located in the middle of "Tornado Alley" making it highly susceptible to tornados. Since 2007 the planning area has experiences nearly one F0-F1 tornado every 1-2 years.



Extent

Although we have only experience EF0-EF1 tornados in the unincorporated area the entire planning area may experience up to an EF5. Several counties within a 75 mile range in both Texas and Oklahoma have experienced an F4 tornado within the last 15 years.

Impact

On June 16, 2008 an EF2 tornado left a 2.5 mile swath of damage through the City of Childress. Most significant damage occurred to the Childress High School Gymnasium. A nursing home was evacuate due to roof damage.

Recorded EF1 tornados have destroyed mobile homes, heavily damaged vehicles, fences and power poles; while the EF2 tornados have snapped power poles, lifted vehicles, moved large fuel tanks and stripped trees.

Tornado impacts on basic services can be devastating. Damage to businesses and residents can be immense, but a significant vulnerability can be the loss of basic services and a safe environment following a tornado.

Examples of potential losses are:

• Damage to infrastructure (e.g., storage tanks, hydrants, residential plumbing fixtures, distribution system) from a tornadic event can result in loss of service and/or reduced pressure throughout the system

• Restricted access to the facility due to debris and damaged roads

• Loss of power and communication lines

• Potential contamination due to chemical leaks from ruptured containers

• Severe water and pressure loss due to ruptured service lines in damaged buildings and broken fire hydrants from airborne debris

	Vulnerabilities
Unincorporated Area	• 1 Radio tower, communications system not covered or shielded, impact could be loss/interruption of communications • Windshield and body damage to vehicles on county roads and highways are vulnerable to hailstorm because they have to travel longer before reaching shelter. Impacts of damaged windshields could cause accidents and put the driver and passenger at risk. • Vehicle body and glass Windows: Specifically damage to 10 Sheriff's Office patrol cars, constable, OEM and 22 road and bridge vehicles required to still be out on the roads responding to calls during tornadic events. • Damage to 7 County buildings to include roof, windows and HVAC systems. • Crops & Agricultural accounts/economy: 33% of the "unincorporated" area is private farmland with a county annual income of over $29 million in agricultural accounts, crop damage is likely to occur in the event of a tornado.

City of Childress	• Roof, HVAC and window damage to critical city facilities to include city hall, police & fire department, Golf Course, parks playground and attractions.
	• Control systems and building damage at water and sewer plant.
	• Vehicle service/storage area, and several other city owned properties
	• Vehicle body and glass Windows: Specifically damage to Childress emergency response vehicles and public works vehicles which are required to be out on the roads responding to calls during tornadic events.
	• Potential damage to the 1 lift stations, 6 sewage pump, and 1 water tower.
	• Critical Hospital Facilities to include Hospital/ER, Fox Rural Health Clinic, Dialysis Clinic, Dr. Housing duplex, EMS barn, old clinic that is being rented out, houses other medical entities.
	  • 2 generators located on the ground level but they are covered
	  • Roof and windows in all buildings
	  • 5 large HVAC and 20 smaller HVAC systems on the roof of the hospital.
	• Equipment damage due to loss of power example CAT scan, Lab Equipment, PAC systems, Dialysis, ER.
	• Dialysis Clinic and Clinic are not on a generator. Loss of electricity would be critical.
	• Loss of water at the Dialysis would be critical. Water source comes from Donley county and loss of infrastructure between the three counties where the lines come in greatly increase the risk of a water breakdown.

Childress ISD	• Childress ISD Campuses (4 campuses), District Support Center, Maintenance Barn and Bus Barn. Damage to roofs, 110 uncovered HVAC's , Windows • Damage to school buses- 19 and the other 16 ISD vehicles. • Damage to the athletic fields (turf football field, baseball field, softball field) • Damage to outside lighting structures for athletic fields. • Impact could cause school closures, accidents and staff/student injuries • Electrical outages could force school closure and ruin cafeteria refrigerated items.

Probability of Future Events

Historical patterns are assumed to be a dominate factor in determining future tornado events. Based upon the historical instances of tornado events that have occurred with the planning area during the last 10 years, the annual probability of occurrence for these events and vulnerability are depicted below. The entire planning area lies in a high risk zone for tornados. By adding tornados that have occurred within a 25 mi radius to the county the probability increases to over 100%.

Probability of Future Events	Years in Record Span 2008-2018	No. of Events in the Span	Computation	Future Probability of 1 or more events year
Unincorporated Area	10	3	3/10) * 100=	30.00%
Childress & Childress ISD	All other jurisdictions within the planning area can be equally affected as tornadoes can go anywhere. The probability of future occurrence can be anticipated to impact all jurisdictions significantly at least once every year.			

Previous Occurrences

The county has experienced only 3 reported EF0 tornados in the last 10 years. These were spotted in the rural county land and had no reported damage.

Wildfire

Description

A **Wildfire** is "*An uncontrolled fire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Heavy fuels with high continuity, steep slopes, high temperatures, low humidity, low rainfall, and high winds all work together to increase risk of loss*."

Wildfires are part of the natural management of the Earth's ecosystems, but may also be caused by human factors. Wildfires may be described as follows:

- Wildfire - A fire occurring in a wildland area (e.g., grasslands, forests, brush lands). An exception to this definition is a prescribed burn.
- Prescription Burning ("Controlled Burning") – The process of igniting fires under selected conditions, in accordance with strict parameters. For example, this fire may be undertaken by land management agencies is.

Fire probability depends on local weather conditions, outdoor activities such as camping, debris burning, and construction, and the degree of public cooperation with fire prevention measures. Drought conditions and other natural disasters (e.g., tornadoes, hurricanes, etc.) increase the probability of wildfires by producing fuel in both urban and rural settings. Fire probability may be determined by using the Keetch-Byram Drought Index (KBDI)

The result of this system is a drought index number ranging from 0 to 800 that accurately describes the amount of moisture that is missing. A rating of zero defines the point where there is no moisture deficiency and 800 is the maximum drought possible.

Keetch-Byram Drought Index

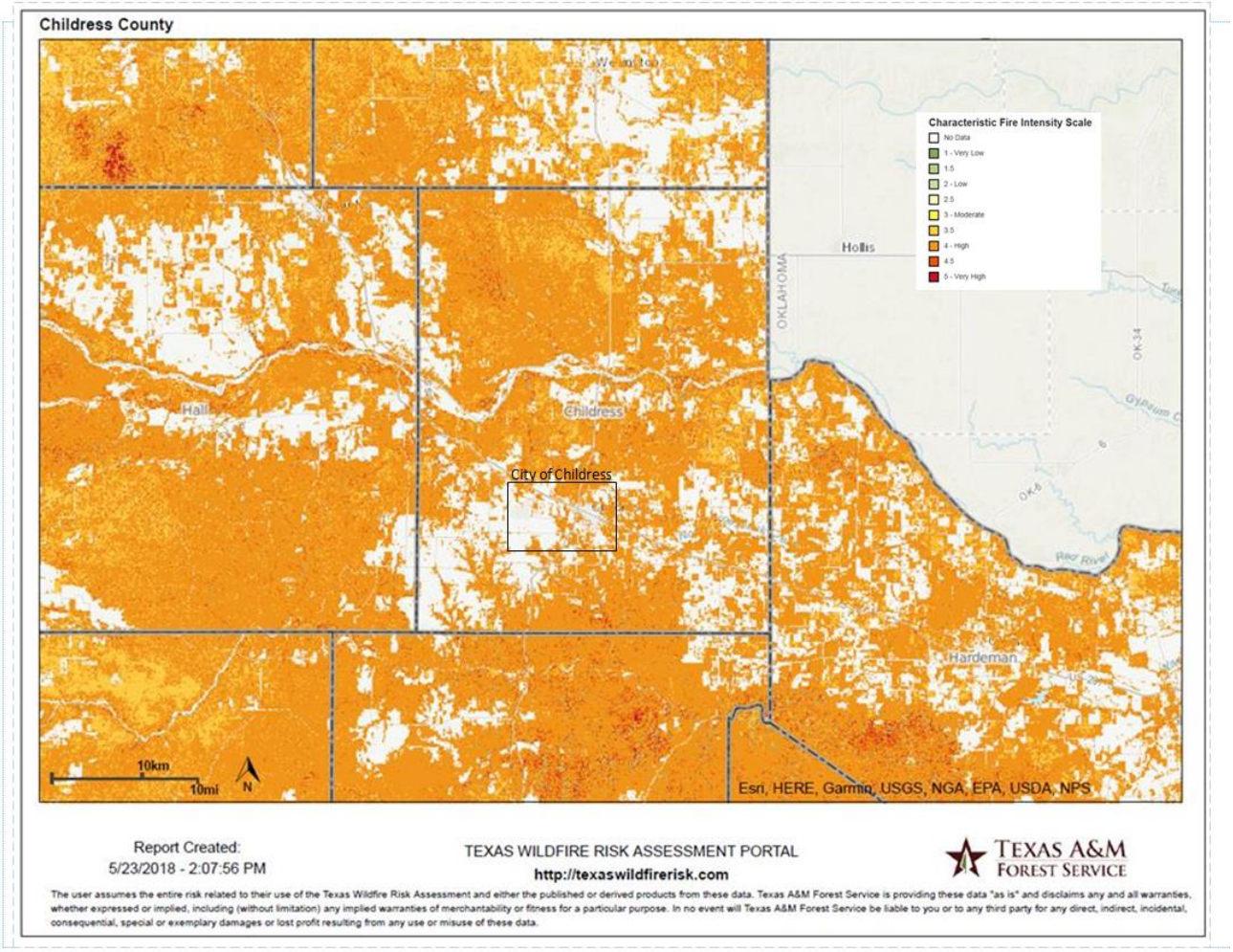
Keetch-Byram Drought Index	
Drought Index #	**Potential Fire Behavior**
0 - 200	Soil and fuel moisture are high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches.
200 - 400	Fires more readily burn and will carry across an area with no gaps. Heavier fuels will still not readily ignite and burn. Also, expect smoldering and the resulting smoke to carry into and possibly through the night.
400 - 600	Fire intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.
600 - 800	Fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn thorough the night and heavier fuels will actively burn and contribute to fire intensity.

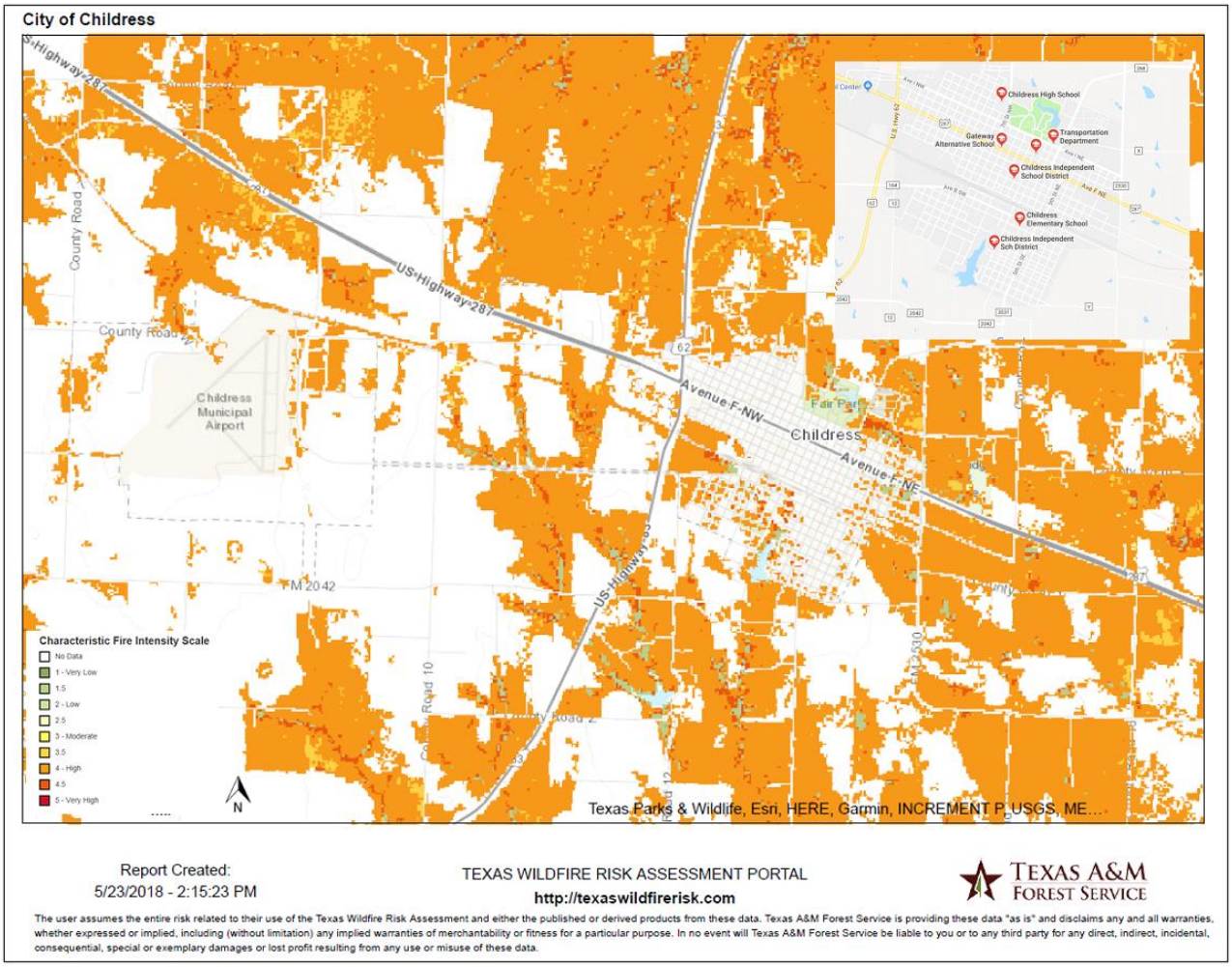
Source: http://www.wfas.us/content/view/32/49/

Location

The Fire Intensity Scale Maps provided for each jurisdiction identifies the potential fire intensity. The maps on the next page identify areas of significant fire behavior potential influenced by fuel hazards, high to extreme weather conditions, and topography. Fire Intensity Scale does not incorporate historical occurrence data; it only evaluates the fire risk for an area.

The City of Childress and Childress County (unincorporated) all have a Moderate to High Risk for wildfire as demonstrated by the yellow and orange colors on the maps. No data is available for the ISD's however; their close proximity to the identified risk areas, as well as hazardous terrain which limit the ability to stop forward movement of wildfires puts them at the same risk, moderate to high, as immediate surrounding communities.





Extent *(magnitude/intensity)*

FIS quantifies potential fire intensity based on high to extreme weather conditions, fuels, and topography. It is similar to the Richter scale for earthquakes, providing a standard scale to pleasure potential wildfire intensity by magnitude. FIS consist of 5 classes where the order of magnitude between classes is ten-fold. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 5, represents very high wildfire intensities. Childress County and all participants are shown to have a potential fire intensity of High (Class 4.5).

Impact

Extreme winds that tend to be prevalent in the planning area plus dry fire fuels contribute to the start of a fire and can quickly escalate the size of a wildfire in minutes. Damage caused by these fires is typically in open range lands, but can easily consume cattle, fencing and rural homesteads. The loss of fencing has a cost of $12,000/mile. Wildfires have been initiated by dry lightning, cotton module ignition, dragging metal or chains on US Hwy 287. Fast moving wildfires can contribute to Hwy 287 being closed. Hwy 287 is a heavily driven highway that connect north texas and the metroplex with Colorado. Road closure can have an enormous impact on commodity transportation.

Due to the similar characteristics of each participating jurisdiction, the entire planning are can be impacted in the following ways:

- Loss of power and communication lines
- Severe water and pressure loss due to high use of water resources.
- Loss of cattle and miles of fencing.
- Highway dangers due to blowing smoke
- Death and injuries to responder due to fast moving fire or changing winds.

	Vulnerabilities
Unincorporated Area	• Power lines, transformers, transformer banks and power stations have the ability to spark with high winds – thus being the igniter of grass fires. • Livestock and housing/fencing for ranchers • Loss and/or smoke damage to 7 county buildings • Loss or damage to Sheriff's vehicles and road & bridge maintainers, etc when responding to wildfires. • Increased population in Childress should Hwy 287 be closed down do to blowing smoke across highway.

City of Childress	• Roof, HVAC and window damage to critical city facilities to include city hall, police & fire department, Golf Course, parks playground and attractions.
	• Control systems and building damage at water and sewer plant.
	• Vehicle service/storage area, and several other city owned properties
	• Fire damage to Childress emergency response vehicles and public works vehicles which are required to be out on the roads responding to calls during wildfires.
	• Potential damage to the 1 lift stations, 6 sewage pump, and 1 water tower.
	• Ems barn, duplex and clinic are at risk are on the edge of town. The old country club with 60 acres of grasses is directly behind the hospital and can put the medical center properties at risk. Fuel mitigation for this property is contracted out
	• Critical Hospital Facilities to include Hospital/ER, Fox Rural Health Clinic
	  • 2 generators located on the ground level but they are coverend
	  • Roof and windows in all buildings
	  • 5 large HVAC and 20 smaller HVAC systems on the roof of the hospital.
	• Equipment damage due to loss of power example CAT scan, Lab Equipment, PAC systems, Dialysis, ER.

Childress ISD	• Childress ISD Campuses (4 campuses), District Support Center, Maintenance Barn and Bus Barn. Damage to roofs, 110 uncovered HVAC's , Windows • Damage to school buses ( ) • Damage to the athletic fields (turf football field, baseball field, softball field) • Damage to outside lighting structures for athletic fields. • Impact could cause school closures, accidents and staff/student injuries • Smoke damage which would require school closures as duct work is cleaned.

Probability of Future Events

Wildfires can occur with some frequency in the planning area. This vulnerability and the annual probability of occurrence for these events are estimated as follows.

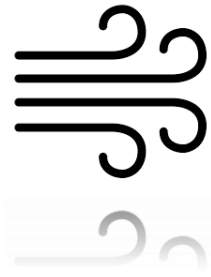
Probability of Future Events	Years in Record Span 2008-2018	No. of Significant Events in the Span	Computation	Future Probability of 1 or more events year
Unincorporated Area	10	2	(10/2) * 100=	20.00%
A wildfire events are not as prevalent within the planning area. This is due to the vast majority of the county being agricultural and heavily cultivated. This does not prevent wildfires coming from the neighboring counties and impacting rural areas nor fire starting in the small percentage of grassland.. The southern part of the county has many draws and hills; fires that begin in those areas are usually inaccessible and will require TFS assistance.				

Wildfire Significant Event History (2008-2018)

	Date	Mag	Dth	Inj	PrD	CrD	Damage Impact Narrative
Unincorporated Area	3.15.2018	200 acres	0	0	0.00K	0.00K	**A large wildfire started at 1500 CST approximately four miles north of Wolf Creek Park just north of Farm to Market Road 2711 and just west of County Road 24 and then spread northeast to Farm to Market Road 377. The wildfire burned nine hundred acres and was reported contained at 1800 CST. The wildfire burned mainly wheat stubble and some corn stubble...otherwise no damage or injuries were reported.**
	2.20.2016	3000 Acres	0	0	0.00K	0.00K	Texas Forest Service responded along with local fire department to prevent the spread of this fast moving fire.

Windstorms

Description

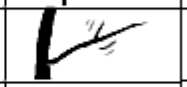


Winds begin with differences in air pressures. Pressure that is higher at one place than another sets up a force pushing from high pressure towards low pressure. The greater the difference in pressures the stronger the force. Wind is used to describe the prevailing direction from which the wind is blowing with the speed given usually in miles per hour or knots. A Wind Advisory is issued when winds are forecast to be sustained at 25 to 39 mph and/or gusts to 57 mph.

Windstorms may present themselves in many forms such as high winds or downbursts. A major concern of a wind storm is wind speed and duration. It may be a 2 minute average speed or an instantaneous speed. The problems that windstorms create can be damaged roof top equipment, broken windows, and down powerlines.

The **Beaufort Scale** is a a system for estimating wind strengths based on the effects wind has on the physical environment. This scale is provided below.

Beaufort Scale

Beaufort number	Wind Speed (mph)	Seaman's term		Effects on Land
0	Under 1	Calm		Calm; smoke rises vertically.
1	1-3	Light Air		Smoke drift indicates wind direction; vanes do not move.
2	4-7	Light Breeze		Wind felt on face; leaves rustle; vanes begin to move.
3	8-12	Gentle Breeze		Leaves, small twigs in constant motion; light flags extended.
4	13-18	Moderate Breeze		Dust, leaves and loose paper raised up; small branches move.
5	19-24	Fresh Breeze		Small trees begin to sway.
6	25-31	Strong Breeze		Large branches of trees in motion; whistling heard in wires.
7	32-38	Moderate Gale		Whole trees in motion; resistance felt in walking against the wind.
8	39-46	Fresh Gale		Twigs and small branches broken off trees.
9	47-54	Strong Gale		Slight structural damage occurs; slate blown from roofs.
10	55-63	Whole Gale		Seldom experienced on land; trees broken; structural damage occurs.
11	64-72	Storm		Very rarely experienced on land; usually with widespread damage.
12	73 or higher	Hurricane Force		Violence and destruction.

In addition to the windstorms derived from thunderstorms or sustained high winds due to other conditions, the following specific wind activities could also occur.

Macroburst is a convections downdraft with an affected outflow area of at least 2.5 miles wide and peak winds lasting between 5 to 20 minutes. Macro burst may cause tornado-force damage of up to EF3 intensity.

Microburst is a convective downdraft with an affected outflow are of less than 2.5 miles wide and peak winds lasting less than 5 minutes. Microbursts may induce dangerous horizontal/vertical wind shears, which can adversely affect aircraft performance and cause property damage.

Burst Swaths can range from about 50 to 150 yards in length. The damage they produce may resemble that caused by a tornado.

Red Flag Warnings are frequently issued in the planning area when the conditions are ideal for wildland fire combustion, and rapid spread. These warnings are typically sent out when the conditions stated are coupled with high or erratic winds. The Red Flag Warning becomes a critical statemetn for firefighting agences.

Location

It cannot be predicted when or where a windstorm will occur, but the entire planning area can be impacted.

Extent

All participating jurisdictions in the planning area can expect to see wind gusts up to 54 mph multiple times a year the year which is a nine on the Beaufort scale. However, in 2014 the county did experience 78 mph winds which is an 11 on the Beaufort scale. This wind event took down power poles that served the hospital causing the electricity to be out for 5 days and blocking the hospital entrance

Impact

Wind can cause considerable damage to property. Injuries and deaths can occur as direct result both to people due to flying debris. High Winds can cause severe visibility issues on highways, contributing to deadly vehicle accidents. Damage to roof mounted equipment including communications equipment can put the jurisdiction at risk due to inability to reach public services.

With the type of force that can be applied, as described from the Beaufort Scale, homes and the mobile homes will always be the first to sustain damage, and possible injury from loose debris such as sheet metal or fallen trees. Since critical facilities are constructed to withstand at least medium forces, damage would be to roof mounted equipment, roof and landscaping to some degree.

Since the intensity of the various types of windstorms can generate the damage force of a F3 tornado, this would cause considerable damage. Roofs would be torn off well-constructed houses; older foundations of frame homes would shift; mobile homes would be completely destroyed; large trees would be snapped or uprooted; light object missiles would be generated; and cars lifted off the ground.

	Vulnerabilities
Unincorporated Area	• 1 Radio tower, communications system not covered or shielded, impact could be loss/interruption of communications • Windshield and body damage to vehicles on county roads and highways are vulnerable to hailstorm because they have to travel longer before reaching shelter. Impacts of damaged windshields could cause accidents and put the driver and passenger at risk. • Vehicle body and glass Windows: Specifically damage to 10 Sheriff's Office patrol cars, constable, OEM and 22 road and bridge vehicles required to still be out on the roads responding to calls during tornadic events. • Damage to 7 County buildings to include roof, windows and HVAC systems.

City of Childress	• Roof, HVAC and window damage to critical city facilities to include city hall, police & fire department, Golf Course, parks playground and attractions.
	• Control systems and building damage at water and sewer plant.
	• Vehicle service/storage area, and several other city owned properties
	• Vehicle body and glass Windows from blowing debris: Specifically damage to Childress emergency response vehicles and public works vehicles which are required to be out on the roads responding to calls during windstorms.
	• Potential damage to the 1 lift stations, 6 sewage pump, and 1 elevated water tower.
	• Critical Hospital Facilities to include Hospital/ER, Fox Rural Health Clinic, Dialysis Clinic, Dr. Housing duplex, EMS barn, old clinic that is being rented out, houses other medical entities.
	  • 2 generators located on the ground level but they are coverend
	  • Roof and windows in all buildings
	  • 5 large HVAC and 20 smaller HVAC systems on the roof of the hospital.
	• Equipment damage due to loss of power example CAT scan, Lab Equipment, PAC systems, Dialysis, ER.
	• Dialysis Clinic and Clinic are not on a generator. Loss of electricity would be critical.

Childress ISD	• Childress ISD Campuses (4 campuses), District Support Center, Maintenance Barn and Bus Barn. Damage to roofs, 110 uncovered HVAC's , Windows • Damage to school buses- 19 and the other 16 ISD vehicles. • Damage to the athletic fields (turf football field, baseball field, softball field) • Damage to outside lighting structures for athletic fields. • Impact could cause school closures, accidents and staff/student injuries • Electrical outages could force school closure and ruin cafeteria refrigerated items.

Probability of Future Events

Since 2008 the planning area has experienced at least one significant wind event per year. As significant winds impact the entire county the probability is over 100% that the entire planning area will experience a wind event exceeding 50 MPH.

Probability of Future Events	Years in Record Span 2008-2018	No. of Events in the Span	Computation	Future Probability of 1 or more events year
Unincorporated Area	10	24	(24/10) * 100=	240.00%
All other jurisdictions within the planning area can be equally affected. The probability of future occurrence can be anticipated to impact all jurisdictions significantly at once every year.				

Previous Occurrences

In the past 10 years the planning area has had 37 significant high wind events. Although there have been no reported injuries or deaths, property damage has totaled over $87,000.

Date	Mag	Dth	Inj	PrD	CrD	Impact Narrative
3/2/2008	36 kts.	0	0	4K	0	Local officials reported that damaging winds snapped a power pole near the Wal-Mart in Childress.
4/1/2008	52 kts.	0	0	0	0	
5/6/2008	54 kts.	0	0	0	0	
6/15/2008	70 kts.	0	6	16M	1M	1,821 homes and more than 200 businesses were impacted by the storm. Damages to 247 homes were deemed major with six homes totally destroyed. Four rooms in a local motel collapsed, and more than half a million dollars in damages were inflicted upon a local hospital. Medical patients from both the hospital and a nearby nursing home were evacuated to neighboring communities. Up to sixty utility poles and a number of signs were additionally destroyed. Six persons were injured by flying debris during the storm.
2/21/2009	50 kts.	0	0	0	0	
4/9/2009	54 kts.	0	0	0	0	
5/12/2009	56 kts.	0	0	0	0	
6/1/2009	50 kts.	0	0	5K	0	
6/6/2009	56 kts.	0	0	50K	0	Thunderstorm winds damaged utility poles and lines just southeast of Childress shortly after 17:30 CST. The damages resulted in widespread power outages between Childress and Kirkland.
7/29/2009	89 kts.	0	3	2M	0	Damage across the northwestern half of the city was extensive. Three people were injured when the walls of a motel collapsed just off of U.S. Highway 287. Two other hotels sustained heavy damages. Minor roof damage was additionally reported at the Childress Regional Medical Center and the Childress HS
8/19/2009	53 kts.	0	0	0	0	
9/8/2009	58 kts.	0	0	0	0	
1/6/2010	43 kts.	0	0	50K	0	The winds damaged transmission lines south of Childress, and resulted in a short-lived power outage.
3/27/2010	54 kts.	0	0	0	0	
4/23/2010	51 kts.	0	0	0	0	
5/10/2010	51 kts.	0	0	0	0	
6/13/2010	59 kts.	0	0	0	0	
7/11/2010	62 kts.	0	0	0	0	
8/17/2010	52 kts.	0	0	1K	0	

Date	Mag	Dth	Inj	PrD	CrD	Impact Narrative
4/15/2011	58 kts.	0	0	0	0	
6/10/2011	55 kts.	0	0	0	0	
7/11/2011	58 kts.	0	0	0	0	
7/11/2011	52 kts.	0	0	0	0	
11/7/2011	50 kts.	0	0	0	0	
12/31/2011	53 kts.	0	0	0	0	
1/22/2012	58 kts.	0	0	15K	0	
2/20/2012	51 kts.	0	0	0	0	
4/9/2012	50 kts.	0	0	10K	0	
6/3/2012	55 kts.	0	0	0	0	
6/15/2012	63 kts.	0	0	0	0	
6/15/2012	54 kts.	0	0	0	0	
12/14/2012	61 kts.	0	0	2K	0	
5/27/2013	52 kts.	0	0	0	0	
6/17/2013	58 kts.	0	0	0	0	
8/8/2013	52 kts.	0	0	10K	0	Officials reported an semi truck blown over on Highway 287 just east of Childress as severe thunderstorm winds occurred.
2/20/2014	54 kts.	0	0	0	0	
5/7/2014	55 kts.	0	0	0	0	
6/23/2014	52 kts.	0	0	1K	0	
8/28/2014	52 kts.	0	0	0	0	
4/24/2015	52 kts.	0	0	50L	0	Scattered roof and tree damage in the city of Childress. Some roof debris was blocking portions of Main Street.
10/21/2015	61 kts.	0	0	50K	0	A small severe storm damaged 13 utility poles along a stretch of US Highway 62 in extreme northeast Childress County. One of these poles fell and damaged a truck that had stopped off the road to let the storm pass. The driver was not injured. The highway was closed for just over one hour until crews could clear live wires and poles from the road.
5/11/2016	61 kts.	0	0	20K	0	The Childress County EM reported 16 power poles that were toppled by a bow echo thunderstorm.
5/23/2016	56 kts.	0	0	0	0	
6/15/2016	51 kts.	0	0	0	0	
7/6/2016	67 kts.	0	0	750K	0	A destructive downburst with peak winds around 80 mph traveled across the city of Childress causing extensive damage. The winds damaged several small structures, awnings, trees, utility poles, knocked down billboards and road signs, and even toppled two gas station pumps. One brick building had its southwest-facing wall collapse and hundreds of homes suffered light to moderate roof damage from the long duration of severe winds.
7/6/2016	73 kts.	0	0	0	0	
7/6/2016	66 kts.	0	0	0	0	
7/15/2016	56 kts.	0	0	0	0	
11/2/2016	57 kts.	0	0	0	0	
4/30/2017	50 kts.	0	0	0	0	
5/3/2017	55 kts.	0	0	0	0	
6/15/2017	56 kts.	0	0	0	0	
6/15/2017	55 kts.	0	0	0	0	
5/18/2018	74 kts.	0	0	1K	0	Straight line winds lifted a pole barn at the ATV park and dropped it back.

Winter Storm

Description

A **Winter Storm** is, "…*an event in which the varieties of precipitation are formed that only occur at low temperatures, such as snow or sleet, or a rainstorm where ground temperatures are low enough to allow ice to form (i.e. freezing rain). In temperate continental climates, these storms are not necessarily restricted to the winter season, but may occur in the late autumn and early spring as well*." The difference between a blizzard and winter storms lies in the presence and strength of winds. Blizzards are massive snow storms with strong winds.

The chart below distinguishes a number of the chief characteristics of both types of storms.

Comparison of Blizzard to a Winter Storm

	BLIZZARD	WINTER STORM
Occurrence:	Winter	Winter, spring, autumn
Characteristics:	Severe storm with strong winds, severe temperatures and heavy snow.	Cold storm with low temperature, sleet, snow, rain and ice formations can be seen throughout the planning area
Economic impact:	Blizzards harm local economies and cause paralysis of normal life for days.	Infections due to frostbites, death from hypothermia, power outage, car accidents on slippery roads, fires, carbon monoxide poisoning etc. lead to disruption of life until conditions improve.
Effect:	Blizzard gives rise to a white out with minimum visibility.	Avalanches, cornices and spring flooding are common in winter storms.
Types:	Traditional and ground blizzards	Snow storm, Freezing rain storm or wintry mixes.
Forms of precipitation:	Snow	Snow, rime, ice pellets, rain, graupel (snow pellets)

Source: http://www.diffen.com/difference/Blizzard_vs_Winter_Storm

Winter storms that impact the planning area can include:

Freezing Rain - Rain that falls on a surface with a temperature below freezing, forming a glaze of ice. Even small accumulations of ice can cause a significant hazard, especially on power lines and trees.

Heavy Snow Snowfall accumulating to 4" or more in depth in 12 hours or less; or snowfall accumulating to 6" or more in depth in 24 hours or less

Blizzard Conditions- Considerable falling or blowing snow with winds in excess of 25 mph and visibilities of less than ¼ for at least 3 hours.

The SPIA index chart allow for a community to prepare for a winter or an ice storm event. These events are infrequent but can cause damage. The primary areas of concern are on bridges, roadways and utility infrastructure including electric and natural gas supply lines.

Sperry-Piltz Ice Accumulation Index

The Sperry-Piltz Ice Accumulation Index, or "SPIA Index" – Copyright, February, 2009

ICE DAMAGE INDEX	DAMAGE AND IMPACT DESCRIPTIONS
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

(Categories of damage are based upon combinations of precipitation totals, temperatures and wind speeds/directions.)

Location

Winter storms can affect the entire planning area often and with enough severity to be a threat to people and property. Generally, the winter storm season runs from late November to mid-March, although severe winter weather has occurred as early as October and as late as May in some locations.

Extent

The entire planning area can be impacted by extreme icing, heavy snow and white out conditions due to high winds. Ice accumulations on power lines and trees have been 1" and resulted in millions of dollars to the electrical coops. Therefore the planning area can expect up to 1" of accumulation on power lines. Snow accumulations can reach up to 5"..High winds in up to 58 MPH during snow events have contributed to road closures including heavily traveled US Hwy 287. Therefore the planning area can expect up to 58mph.

Impact

Due to high winds that frequently blow over 30 MPH with gusts exceeding 50 MPH, residents are a risk for frequent electrical outages due to lines down or transformer damage – roads are greatly impacted with freezing ice and blowing snow.

On Christmas Eve 2009 Childress County additionally experience more than 50 accidents along U.S. Highway 287 in blizzard white-out conditions. Wind gusts were clocked as high as 58 mph causing over $500K in property damage.

On December 20, 2013 roughly 16 hours of freezing rain fell in Childress from the afternoon of the 20th before ending late in the morning on the 21st. Exposed objects such as trees, power lines and fences in Childress County ended up with 0.1 to nearly 0.3 inches of ice. The ice buildup on power lines resulted in over 700 residents in Childress losing power.

Hwy 287 is a heavily driven highway that connects North Texas/Dallas area with Colorado. Road closure due to blizzard and icy conditions can have an enormous impact on commodity transportation.

	Vulnerabilities
Unincorporated Area	• Power lines, transformers, transformer banks and power stations damage due to ice. • Radio tower, communications system damage due to ice. • Impassable US Hwy 287 due to white out conditions or ice. Stranded motorists • Vehicle damage to 10 Sheriff's Office patrol cars, constable, OEM and 22 road and bridge vehicles required to still be out on the roads responding to calls during tornadic events. • Damage to 7 County buildings to include roof due to heavy snow and loss of electricity.
City of Childress	• Roof and HVAC damage to critical city facilities to include city hall, police & fire department, Golf Course, parks playground and attractions due to heavy snow, ice accumulations and electrical outages. • Control systems and building damage at lift stations and sewer plant due to power outages. Loss of services to residents. • Damage to generators due to long term use following electrical outages. • Damage to Childress emergency response vehicles and public works vehicles which are required to be out on the roads responding to calls during winter storm events. • Radio towers, communications system and radar equipment damage due to ice. • Power lines, transformers & transformer banks and several power stations damage due to ice.
Childress ISD	• Childress ISD Campuses (4 campuses), District Support Center, Maintenance Barn and Bus Barn. Damage to roofs & 110 uncovered HVAC's due to heavy snowfall • Damage to school buses due to accidents 19 buses and 15 other school vehicles. • Damage to the athletic fields (turf football field, baseball field, softball field) • Impact could cause school closures, accidents and staff/student injuries • Electrical outages could force school closure and ruin cafeteria refrigerated items.
Childress Regional Medical Center	• Critical Hospital Facilities to include Hospital/ER, Fox Rural Clinic, EMS Barn, Dr. Housing, Dialysis. • Clearing of snow and ice in ER parking lots is on a slope on north/west side of hospital • Heavy snow on the roof could affect HVAC on the roof, weight load on roof potentially could cause issues • Long Term Food Supply, Feeding in hospital and staff. • Oxygen supply issue if they can't deliver to us. Once a month. • Generator Fuel – old one is natural gas. New one is diesel. • Loss of electricity or water source for dialysis to continue operations.

Probability of Future Events

Historical patterns are assumed to be a dominant factor in determining future winter storm events. Based upon the historical instances of winter storm events that have occurred in the area during the last 10 years, the annual probability of occurrence for these events was estimated as follows.

Since 2008, at least one winter storm occurred in the planning area in each of those 10 years. Based on this data, the MAT estimates the probability for a winter storm in any given year to be around 100%.

Probability of Future Events	Years in Record Span 2008-2018	No. of Events in the Span	Computation	Future Probability of 1 or more events year
Unincorporated Area	10	24	(24/10) * 100=	240.00%
All other jurisdictions within the planning area can be equally affected. The probability of future occurrence can be anticipated to impact all jurisdictions significantly at once every year.				

Previous Occurrences

The table below summarizes the winter storm events recorded for the planning area between the years 2008 and 2018. During that 10-year span, the planning area witnessed 24 separate severe winter storm events.

Report Year	No. of Events	Prevalent Impact
2008	1	Minimal winter weather impact – 2” snow
2009	3	The December storm had 2-4 “ of snow with blizzard conditions which contributed to more than 50 accidents along US Hwy 287. Wind gusts were clocked as high as 59 mph.
2010	2	1-2”"of snow. The entire city of Childress (Childress County) was rendered without power and communications for an extended period of time. The January Ice-related damage was widespread there, and included the collapse of a radio tower.
2011	2	2-3" of snow during a February storm causing rolling electrical blackouts also were reported in Childress (Childress County). This as water and utility companies across the region reported record usage which strained systems
2012	1	5" under blizzard conditions..
2013	4	4-5" of snow with blizzard conditions in a February storm. The December ice storm had ice buildup on power lines resulted in over 700 residents in Childress losing power
2014	3	2-4” snow, ¼” of ice
2015	4	2-5" of snow. Storms occurred in November, December, January & March. The November ice storm contributed to hundreds of people in Childress County being without power for up to 3 days as power lines suffered extensive damage spanning a considerable distance. Over $50K in property damage. .
2016	1	Minimal winter weather impact < 1”
2017	3	Occurring in December and January. 2.5” – 3.5” of snow. Ice accumulations totaled 0.16 at Childress Municipal Airport.

NFIP Insured Structures and Severe Repetitive Loss (B4):

Through the Severe Repetitive Loss (SRL) Grant Program FEMA provides federal funding to assist to states and communities in implementing mitigation measures to reduce or eliminate the long-term risk of flood damage to severe repetitive loss residential structures insured under the National Flood Insurance Program (NFIP). The TWDB administers the SRL grant program for the State of Texas.

Severe Repetitive Loss properties are defined as residential properties that are:

a) covered under the NFIP and have at least four (4) flood related damage claim payments (building and contents) over $5,000.00 each, and the cumulative amount of such claims payments exceed $20,000; or

b) for which at least two (2) separate claim payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

According to the NFIP, between 1978 and 2016,
Childress County has had 0 repetitive loss flood damage claims.

Vulnerable Assets and Potential Losses:

The table displays building counts, and building values, summarized for Childress County. Building counts and values are also presented by their occupancy type.

List of Critical Infrastructure/Key Resources (CI/KR)

	Childress County		City of Childress	
Critical Facilities	**No.**	**PV**	**No.**	**PV**
Government	7	$7,930,971	7	$4,452,636
Law Enforcement	1	$9,000,000	1	$842,017
Fire Stations			1	$468,406
Recreational/Other			17	$7,264,411
Utilities/Other			9	$2,955,629
Airport			5 fac.	$1,427,604
Hospitals/Medical				$22,790,274
Schools			8	$45,000,000

Note: Critical Facilities estimates includes building value only

The table above provides estimates of the current Present Values (PV) of some of the more critical infrastructure in the planning area. It should be noted that based on current construction costs, it could easily cost 2 – 3 times the present value to replace structures identified on this list.

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Element C – Mitigation Strategy

Existing Authorities, Policies, Programs and Resources (C1):

Existing Plans and Ordinances

Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, drainage, wildfire	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other: Annual Budget Review
Childress County	N	N	N	N	N	N	Y	Y	Y	Y	N	N	Y
City of Childress	Y	Y	Y	N	N	Y	Y	Y	Y	Y	N	N	Y
Childress ISD	NA	NA	NA	NA	NA	NA	Yes	NA	Yes	Yes	NA	NA	Yes

This table summarizes the current authorities and capabilities that could support each jurisdiction's efforts to implement the mitigation actions they've identified in this document. The matrix lists common planning tools/mechanisms which FEMA suggests as being contributive to local mitigation activities.

The most powerful mechanism available to them is motivating the public by improving their understanding of the natural hazards they face and by providing them with practical, cost-effective, actions that can be self-implemented to reduce their risks to those hazards should be one of the most effective tools each can use in achieving their mitigation goals in their jurisdiction.

Although funding to create or expand code and zoning enforcement positions may be limited, each jurisdiction can still utilize the table above to discuss methods on implementing no or low cost strategies for planning mechanisms such as formal capital improvement or comprehensive plans.

The ability for each jurisdiction to expand on the capabilities they currently have will be addressed in the council and commissioners court.

The **unincorporated area of Childress County** does not have code enforcement authority but as current weather and KDBI conditions dictate, will issue burn bans as necessary.

The **City of Childress** is the only jurisdiction in Childress County that currently maintains a structured/staffed building code enforcement program. The City of Childress' Code Enforcement Program abides by the following standards.

- 2006 International Codes; Building, Fire, Residential, Plumbing, Mechanical, Gas
- 2008 International Electric Code
- 2006 International Residential Code

The City also employs a qualified fire marshal/inspector. New facility designs are reviewed to ensure they meet current fire codes; non-residential structures are inspected at least once per year. Home inspections are conducted at the request of the homeowner.

The City is served by a Planning & Zoning Commission. Both groups help to ensure the City's building codes remain current and relevant and that they are fairly and properly enforced.

Capital Improvement Plans (CIP):

None of the jurisdictions in Childress County has developed a Capital Improvement Plan. To a certain extent, this MAP serves as a CIP for Childress and Childress County, at least for the purpose of directing long/short-term hazard mitigation activities.

Any time capital improvements are being contemplated by either the City of the County, local officials will reference this document to determine how or if certain mitigation actions can be incorporated into the proposed project. If specific actions cannot be undertaken as part of the improvement, most certainly the officials will at the very least ensure that the project will not have an adverse effect in compounding local hazard risks.

As indicated in the Mitigation Actions section of this MAP, Childress County and the City of Childress intend to use the issues identified in this plan, supported by back-up data, to justify needs under various grant programs beyond those available from FEMA. The development of this update has been a challenging task for each jurisdiction involved; therefore each intends get as much mileage out of this document as possible.

Childress ISD As the ISD reviews capital improvement plans, the mitigation strategies that were developed in this plan will be referred to and prioritized based on the needs of all the campuses. Childress ISD will continue to seek available grants to help in fund mitigation projects based on this prioritization.

National Flood Insurance Program (NFIP) (C2)

As described later in this document, flooding occurs occasionally within the County with most of these events being flash floods. Both the County and City participate in the NFIP. The Texas Water Development Board (TWDB) maintains a current list of County Flood Plain Administrators (FPA). The FPA list below is current as of August of 2016

County Flood Plan Administrators

CID	Community	Status	Firm Status	Map Date	Flood Plain Adminr. (FPA) & Title
481170	Childress County	Participating in the Emergency Program	Never Mapped		CEO Jay Mayden FPA Jay Mayden
480125	City of Childress	Participating	Mapped	8/1/87	CEO Carey Preson

Childress County

Childress County participates in the NFIP program, however, FEMA has not completed a study to determine flood hazard for Childress County; therefore a flood map (flood plain) has not been published.

Since Childress County is not mapped but is a participant, it will assume the whole county is equally at risk to flooding and therefore will continue to regulate all development as such. Childress County will continue to follow current ordinances and seek to adopt more stringent floodplain ordinances for future development. The county will also work towards being officially mapped by FEMA to identify flood plains.

City of Childress

City of Childress currently participates in the National Flood Insurance Program and have established the authority to enforce ordinances or orders in the Flood Plain. The City ensures its ordinance is properly enforced as part of its building code program; ensuring that all new structures are suitably elevated/flood-proofed and that no watercourse or natural drainage will be altered or relocated as a result of a proposed development. All new development within the planning area during the past five years has occurred in the City of Childress. It's anticipated that all future development during the life of this update will likewise occur in and around the City. Therefore, it's highly unlikely that the City will be called on to exercise its flood plain enforcement powers during the life of this update.

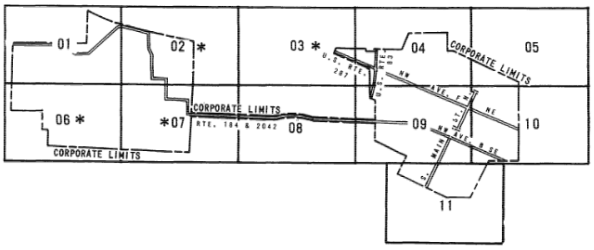
ISD's do not participate in NFIP.

These maps may not include all Special Flood Hazard Areas in the community. After a more detailed study, the Special Flood Hazard Areas shown on these maps may be modified, and other areas added.

Consult NFIA Servicing Company or local insurance agent or broker to determine if properties in this community are eligible for flood insurance.

Initial Identification Date: JUNE 14, 1974

COMMUNITY No. 480125A



LEGEND

Levee

Sea Wall

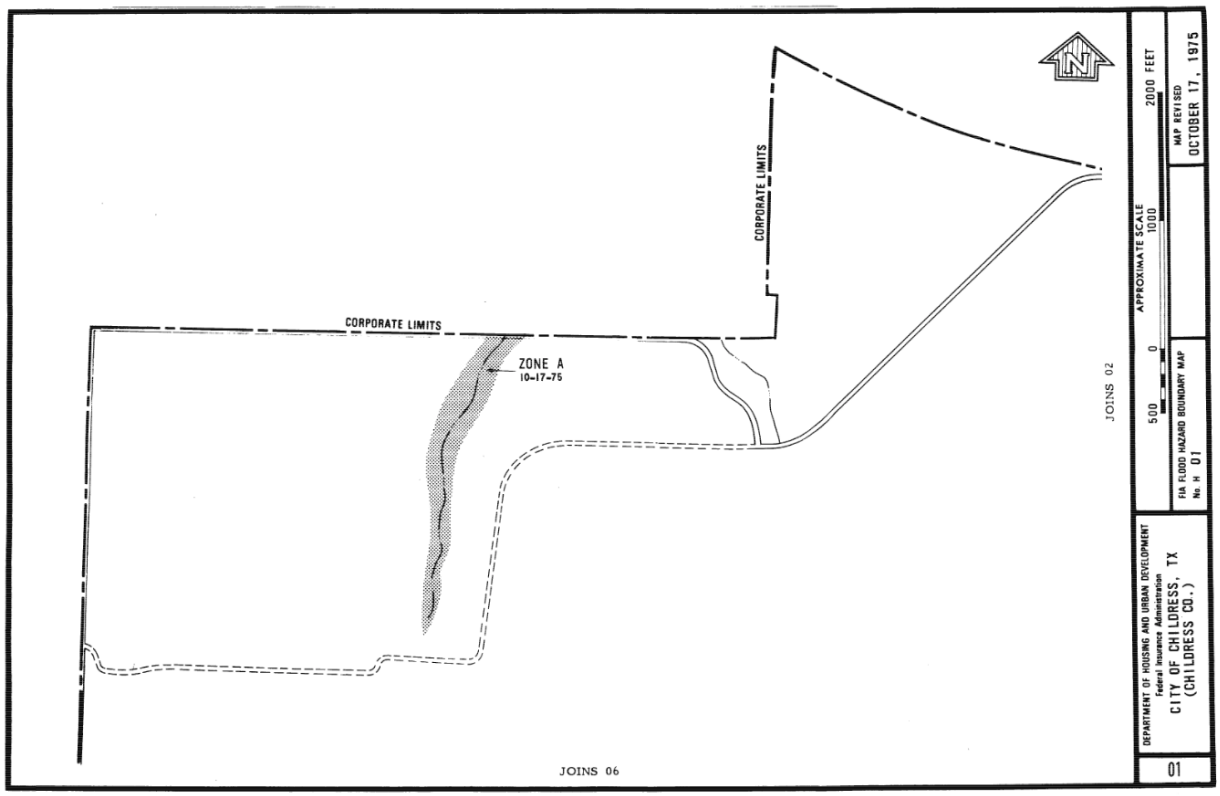
SPECIAL FLOOD HAZARD AREA ZONE A
IDENTIFICATION DATE: (DATE)

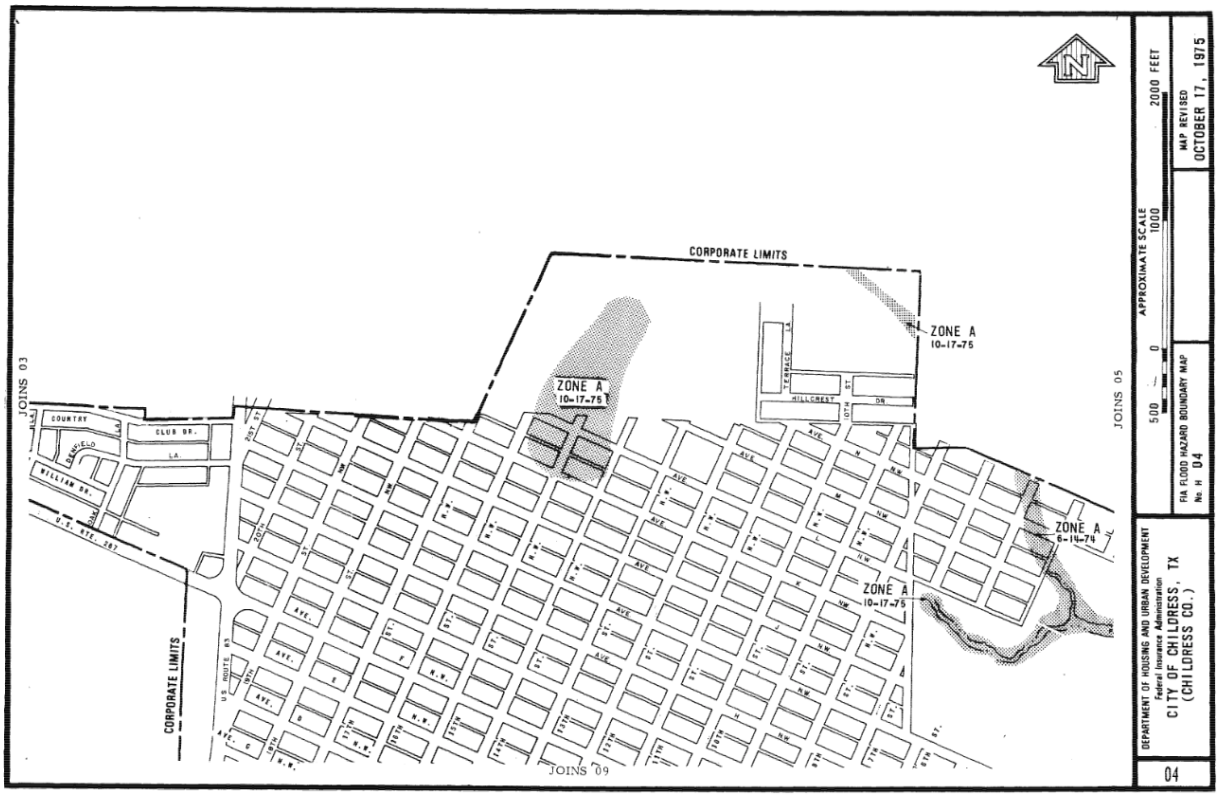
CONVERTED BY LETTER
EFFECTIVE 8/1/87

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
CITY OF CHILDRESS, TX
(CHILDRESS CO.)
MAP INDEX
FIA FLOOD HAZARD BOUNDARY MAPS
No. H 01-11

*NOT PRINTED (NO SPECIAL FLOOD HAZARD AREA)

MAP REVISED OCTOBER 17, 1975 ; SHOW CURVILINEAR BOUNDARY, ADD SFHA, REDUCE SFHA, CHANGE COMMUNITY BOUNDARY.

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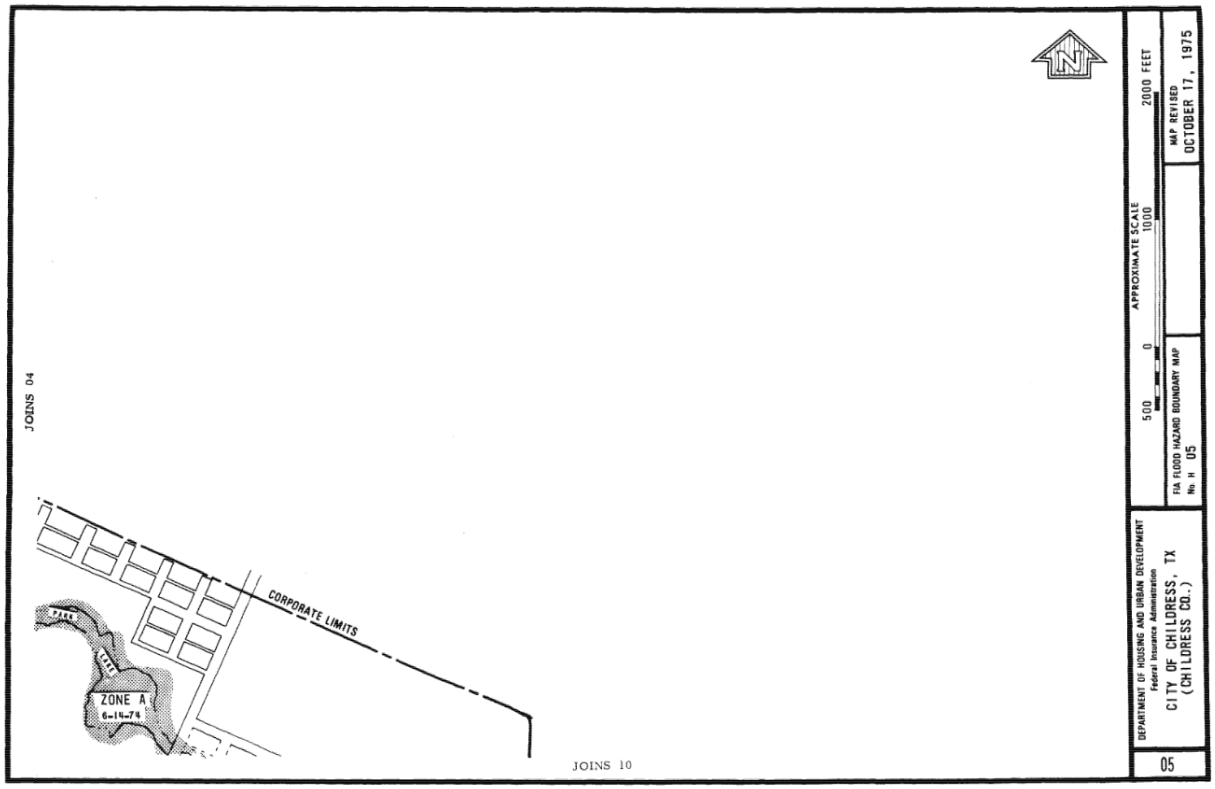
ZONE A
10-17-75
ZONE A
10-17-75
ZONE A
10-17-75
ZONE A
6-14-74
JOINS 03
JOINS 05
JOINS 09
CORPORATE LIMITS
COUNTRY
CLUB DR.
LA.
WILLIAM DR.
U.S. RTE. 287
U.S. ROUTE 83
HILLCREST
TERRACE
DR.
APPROXIMATE SCALE
500 0 1000 2000 FEET
MAP REVISED
OCTOBER 17, 1975
FIA FLOOD HAZARD BOUNDARY MAP
No. H 04
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
CITY OF CHILDRESS, TX
(CHILDRESS CO.)
04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LAKE
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Federal Insurance Administration
CITY OF CHILDRESS, TX
(CHILDRESS CO.)
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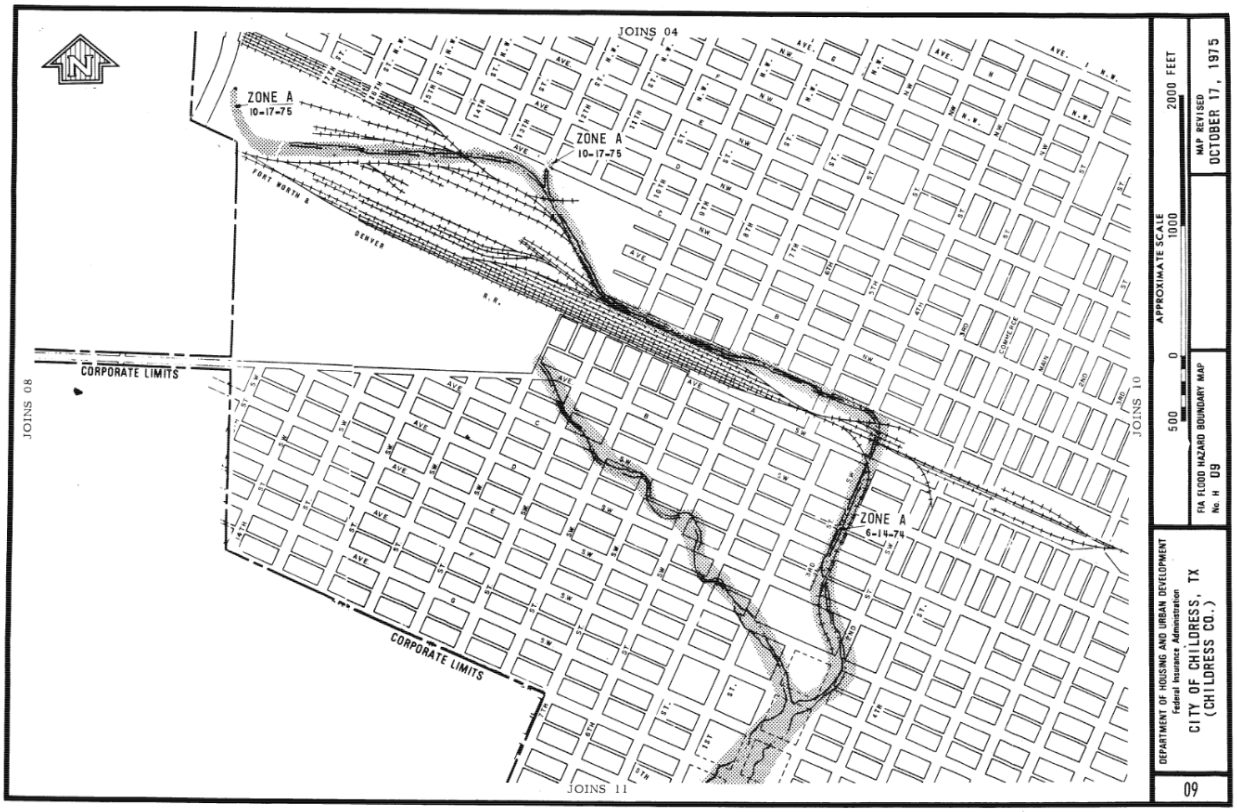
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JOINS 11
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ZONE A
10-17-75
ZONE A
6-14-74
CORPORATE LIMITS
CORPORATE LIMITS
FORT WORTH & DENVER R.R.
APPROXIMATE SCALE
500 0 1000 2000 FEET
MAP REVISED
OCTOBER 17, 1975
FIA FLOOD HAZARD BOUNDARY MAP
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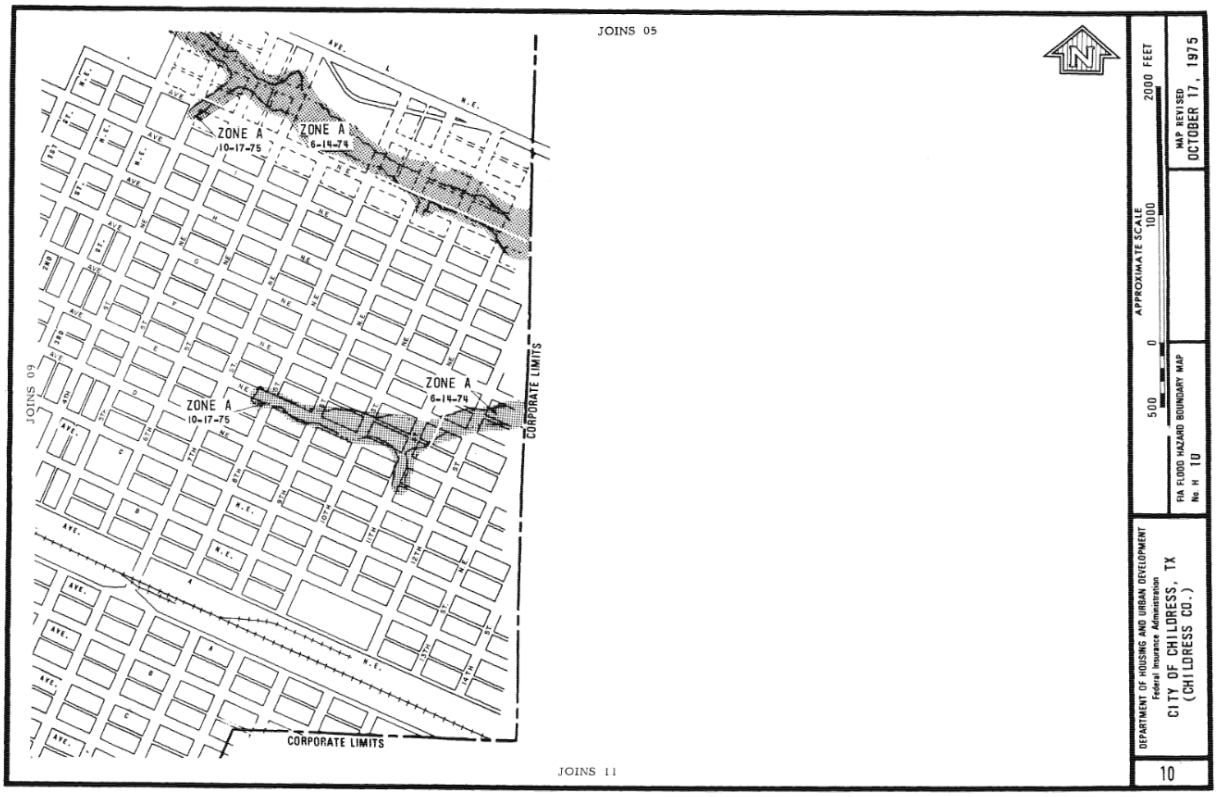
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
CITY OF CHILDRESS, TX
(CHILDRESS CO.)
09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CORPORATE LIMITS
CORPORATE LIMITS
APPROXIMATE SCALE
500 0 1000 2000 FEET
MAP REVISED
OCTOBER 17, 1975
FIA FLOOD HAZARD BOUNDARY MAP
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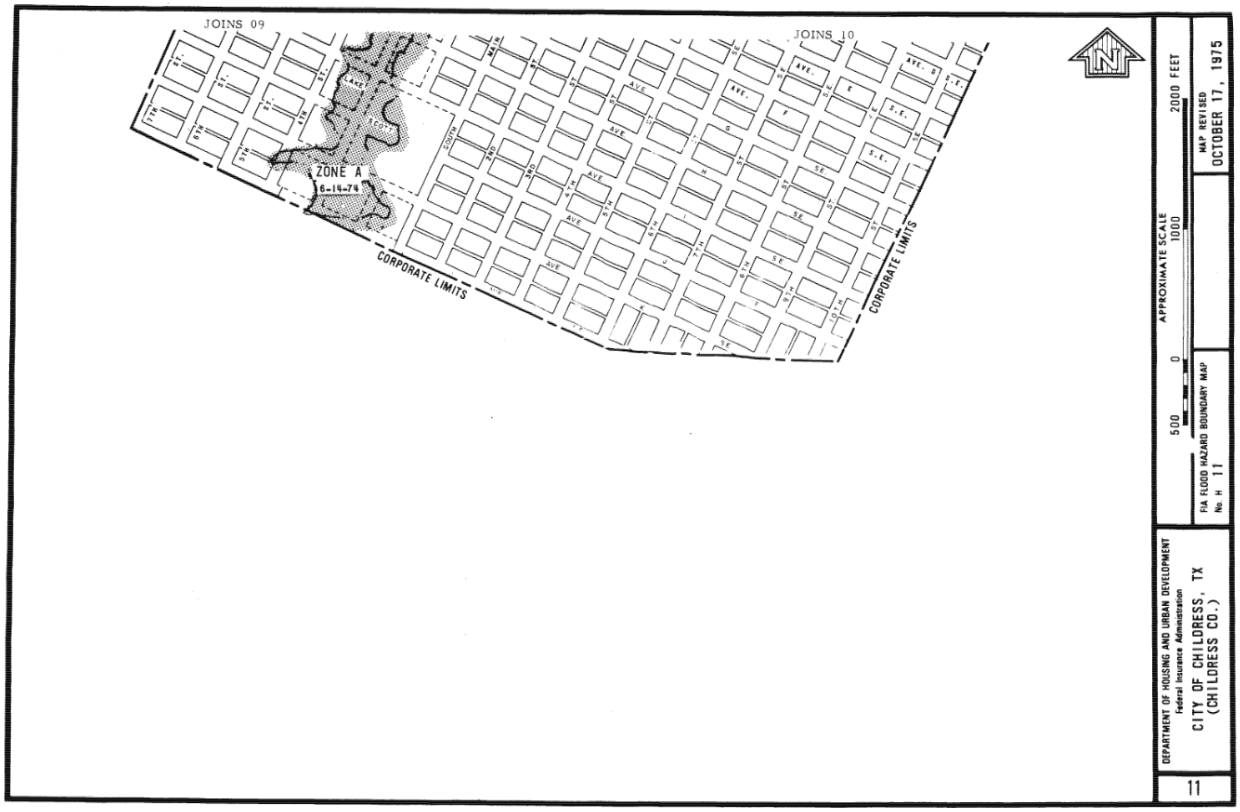
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
CITY OF CHILDRESS, TX
(CHILDRESS CO.)
10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JOINS 10
ZONE A
6-14-74
CORPORATE LIMITS
CORPORATE LIMITS
APPROXIMATE SCALE
500 0 1000 2000 FEET
MAP REVISED
OCTOBER 17, 1975
FIA FLOOD HAZARD BOUNDARY MAP
No. H 11
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration
CITY OF CHILDRESS, TX
(CHILDRESS CO.)
11

Goals to Reduce/Avoid Long –Term Vulnerabilities (C3)

The goals and objectives of this MAP reflect goals similar to those found in the State of Texas Mitigation Plan and the National Flood Insurance Program.

The MAT began the development of the updated MAP by agreeing to a common set of goals and objectives, flexible enough they could be used to formulate customized mitigation actions for local implementation. The goals and objectives of the planning area are provided below.

Goal 1: Protect public health and safety

Objective 1.1: Advise the public about health and safety precautions to guard against injury and loss of life from hazards.

Objective 1.2: Maximize the use of modern technology to provide adequate warning, communication, and mitigation of hazards events.

Objective 1.3: Reduce the danger to, and enhance protection of, dangerous areas during hazard events.

Objective 1.4: Protect critical infrastructure facilities and critical services.

Goal 2: Protect existing and new properties

Objective 2.1: Use the most cost-effective approaches to protect existing and new building and public infrastructure from hazards.

Objective 2.2: Work to develop local guidance to ensure that development will not inadvertently endanger the public or increase threats to existing and new properties.

Goal 3*:* Increase public understanding, support, and demand for hazard mitigation

Objective 3.1: Increase public awareness of the full range of natural and man-made hazards they face.

Objective 3.2: Educate the public on actions they can take to prevent or reduce the loss of life or property from all hazards.

Objective 3.3: Publicize and encourage the adoption of appropriate hazard mitigation measures.

Objective 3.4: Encourage public policy to promote mitigation activities among the local jurisdictions.

Goal 4: Promote growth in a sustainable manner.

Objective 4.1: Incorporate hazard mitigation into the long-range planning and development activities

Objective 4.2: Encourage developers to voluntarily use codes and standards that will help to prevent the creation of future hazards to life and property

Goal 5: Maximize the use of outside sources of funding

Objective 5.1: Maximize the use of outside sources of funding

Objective 5.2: Maximize participation of residents in protecting their welfare and their properties

Objective 5.3: Maximize insurance coverage to provide financial protection against hazard events

Criteria for Prioritizing Actions

Considering detailed benefit/cost or cost-effectiveness analysis for every possible mitigation activity can be time consuming and may not always be practical. In using the criteria and scoring below, the MAT was able to consistently score each action as High, Medium or Low.

Evaluation Worksheet		
Rank each of the criteria with a -1, 0, or 1 using the following scale: • 1 = Highly effective or feasible • 0 = Neutral • -1 = Ineffective or not feasible		
Score	**Criteria**	**Description**
	Life Safety	How effective will the action be at protecting lives and preventing injuries?
	Property Protection	How significant will the action be at eliminating or reducing damage to structures and infrastructure?
	Technical	Is the mitigation action technically feasible? Is it a long-term solution?
	Political	Is there overall public support for the mitigation action? Is there the political will to support it?
	Legal	Does the community have the authority to implement the action?
	Environmental	What are the potential environmental impacts of the action? Will it comply with environmental regulations
	Social	Will the proposed action adversely affect one segment of the population?
	Administrative	Does the community have the personnel and administrative capabilities to implement the action and maintain it?
	Local Champion	Is there a strong advocate for the action or project among local departments and agencies that will support the action's implementation?
	Other Community Objectives	Does the action advance other community objectives, such as capital improvements, economic development, environmental quality, or open space preservation?
	Total Score	
Score Key High = 6-10 Medium = 3-5 Low = <3		

Comparison of the 2006 & 2018 Criteria for prioritizing actions										
2018	Life Safety	*Property Protection*	*Technical*	*Political*	*Legal*	*Environmental*	*Social*	*Administrative*	*Local Champion*	*Other*
2006			*Technical*	*Political*	*Legal*	*Environmental*	*Social*	*Administrative*	*Social Political*	*Economic*

The planning area agreed to use the new criteria as it added the life safety and property protection. For deferred actions – using the 2018 scoring criteria did not change the outcome of the actions priority.

Mitigation Action Items (C4/5)

Hazards Addressed	Drought, Hailstorm, Flooding, Lightning, Severe Winter Storm, Tornado, Wildfire, Windstorms
Educate the public on mitigation strategies for the above referenced hazards.	
Participating Jurisdiction/s	*Childress County, City of Childress and Childress ISD*
Objective(s) Addressed:	1.1, 1.2, 3.1, 3.2, 3.3, 3.4, 5.2
Priority (High, Medium, Low):	High
Estimated Cost:	$1,000
Potential Funding Source(s):	Local budget, Grant funds, Volunteer Hours, Business Donations
Lead Agency/Department Responsible:	County EMC, City Fire Department, ISD Superintendent
Implementation Schedule:	Throughout the 5-year update period
Cost Effectiveness: Outreach activities are very cost effective; they can be used to engage the public at-large in their own protection by educating them on the risks associated with the hazards and the actions they can take to avoid those risks.	
Discussion: Safety brochures, warning signs at parks, and educating school children can all help increase public awareness of hail dangers. The objective of this action is to make residents aware that hail is a hazard that should be taken seriously; failure to do so can result in serious injury or death.	

Hazards Addressed	**Drought, Hailstorm, Flooding, Lightning, Severe Winter Storm, Tornado, Wildfire, Windstorms**
Purchase public alert/warning systems for locations throughout the entire planning area. Cost Share programs for NOAA "All Hazard" radios.	
Participating Jurisdiction	*Childress County, City of Childress and Childress ISD*
Objective(s) Addressed:	1.1, 1.2, 1.3, 2.1, 3.1, 5.1
Priority (High, Medium, Low):	Medium
Estimated Cost:	$10,000
Potential Funding Source(s):	Grant fund, Local budget, Volunteer Hours, Business Donations
Lead Agency/Department Responsible:	County EMC, ISD Superintendent
Implementation Schedule:	Within 12 months of securing the necessary funding
Cost Effectiveness: *The use of NOAA All-Hazards Weather Radios provides a cost-effective method for alerting the public to specific issues with multiple hazards. Enhancement of the PARIS Mass Notification/ISD Notification and integration of IPAWS will continue to expand the planning area notification platforms.*	
Discussion: *Purchase public warning systems to alert residents to a potential emergencies or directions for all hazards. Systems would include: NOAA Weather Radios, Mass Notification Systems, Social Media and IPAWS.*	

Hazard Addressed	Drought
Integrate the use of water efficient fixtures, appliances and systems (e.g., low-flow toilets, faucet aerators, on-demand recirculation system) into new/existing construction projects to reduce water consumption	
Participating Jurisdiction/s	*Childress County, City of Childress and Childress ISD*
Objective(s) Addressed:	1.2, 4.1
Priority (High, Medium, Low):	Medium
Estimated Cost:	TBD
Potential Funding Source(s):	Grant Funds, Local budget, Volunteer Hours, Business Donations
Lead Agency/Department Responsible:	County Commissioners Court, City Management, ISD Superintendent
Implementation Schedule:	5-year
Cost Effectiveness: Using water-efficient equipment and smart conservation techniques will reduce the amount of water being used at jurisdiction facilities. In time, the reduction in the jurisdiction's monthly water bills will more than offset the costs of the equipment.	
Discussion: The use of LEED-like construction practices is becoming more prevalent nationwide. The evidence is clear that water conservation is practical and cost-effective. The jurisdiction should be a leader in this regard; demonstrating that these practices will not only work at government facilities but also residential homes.	

Hazard Addressed	Flooding
Conduct a comprehensive analysis of road locations that are prone to flash flooding/flooding. Conduct drainage improvements and other mitigation projects to enhance safety at these locations.	
Participating Jurisdictions	*Childress County, City of Childress and Childress ISD*
Objective(s) Addressed:	1.2, 1.3, 1.4, 4.1, 5.1
Other Hazards(s) Addressed:	Flooding Only
Priority (High, Medium, Low):	High
Estimated Cost:	Pending Evaluation
Potential Funding Source(s):	County and Grant Funding
Lead Agency/Department Responsible:	County Commissioners, City Council
Implementation Schedule:	Pending Evaluation
Cost Effectiveness: Completion of a comprehensive analysis will allow for an informed, logical prioritization of projects.	
Discussion: Development of a comprehensive analysis of flooding issues will allow for prioritization of projects to mitigate flooding issues on County roadways and locations.	

Hazard/s Addressed	Hailstorm, Windstorm, Tornados
Install hail resistant vehicle covering at their facilities.	
Participating Jurisdiction/s	*Childress County, City of Childress and Childress ISD*
Objective(s) Addressed:	1.4, 2.1, 4.1
Priority (High, Medium, Low):	High
Estimated Cost:	TBD
Potential Funding Source(s):	Grant funds, Local budget
Lead Agency/Department Responsible:	County Commissioners, City Council, ISD Board
Implementation Schedule:	Implementation based on need and availability of funding
Cost Effectiveness: Installation of covered parking would minimize damage not only to County, City & ISD vehicles but also to the vehicles of the employees that work at the facilities to be equipped.	
Discussion: Installation of covered parking in strategic areas would save the jurisdiction and its employees the expense of having to repair hail damage to vehicles. The covering will also provide temporary shelter to individuals who were caught in the storm before making it indoors.	

Hazard/s Addressed	Hailstorm, Windstorm, Tornados
Install hail resistant roofing and window coverings on critical facilities/structures	
Participating Jurisdiction/s	*Childress County, City of Childress and Childress ISD*
Objective(s) Addressed:	1.4, 2.1, 5.3, 5.4
Priority (High, Medium, Low):	High
Estimated Cost:	Annual review cost: $0.00. Replacement cost for county buildings: $10 million
Potential Funding Source(s):	Grant fund, Local budget
Lead Agency/Department Responsible:	County Commissioners, City Council, City Management, ISD Board
Implementation Schedule:	Throughout the 5-year update period
Cost Effectiveness The entire planning area is in a high-frequency zone for hailstorms that can cause substantial damage. Protecting critical facilities not only helps to reduce the potential for insurance claims but helps to ensure those facilities remain operable after they're endured a major hail event.	
Discussion: The planning area is frequently pounded by hailstorms. As documented earlier in this update, very often the hailstones are large and capable of producing considerable damage. Protecting the outer envelope of critical facilities will help to mitigate these damages but more importantly, help to ensure they remain functional after the storms pass.	

Hazard/s Addressed	Hailstorms, Tornados
Follow building codes that require construction of safe rooms in new school campuses; and assist where possible, with retrofitting new/existing school campuses with shelters.	
Participating Jurisdiction/s	*Childress ISD*
Objective(s) Addressed:	1.2, 1.4, 2.2
Priority (High, Medium, Low):	Medium
Estimated Cost:	$750,000 per campus for existing campuses; $300,000 per campus for new campuses
Potential Funding Source(s):	Grant funds / District funds
Lead Agency/Department Responsible:	Local Independent School District
Implementation Schedule:	Upon approval of funds
Cost Effectiveness: ISD can incorporate multi-purpose safe rooms into new/retrofit projects so that they can be used to provide shelter as needed but also support everyday scholastic activities; in effect, the investment will return daily benefits.	
Discussion: The 2015 IBC will require that educational institutions with an aggregate occupancy of 50 or more that are located in tornado zones where the design wind speed is 250 mph must incorporate shelters into newly constructed facilities, built to hold the occupancy of the institution in accordance with ICC 500. The purpose of this action is to support the local ISDs in their efforts to meet this requirement.	

Hazard/s Addressed	Flooding, Hailstorm, Lightning, Tornados, Windstorms, Wildfire, Severe Winter Storm
Install emergency generators at water distribution facility and city well fields	
Participating Jurisdiction	*City of Childress and Unincorporated communities*
Objective(s) Addressed:	1.2, 1.4, 2.1, 4.1, 5.1
Priority (High, Medium, Low):	High
Estimated Cost:	~$250,000
Potential Funding Source(s):	Grant funds, Local budget
Lead Agency/Department Responsible:	City Utilities, Unincorporated communities leaders
Implementation Schedule:	Within 6 months of securing the necessary funding
Cost Effectiveness: Ensuring that water is available to the city and unincorporated communities and its citizens makes the cost irrelevant.	
Discussion: Installation of emergency generators at the city's water distribution facility and two well fields will ensure that water can still be treated and delivered without power.	

Hazard/s Addressed	Flooding, Hailstorm, Lightning, Tornados, Windstorms, Wildfire, Severe Winter Storm
Upgrade existing Supervisory Control And Data Acquisition (SCADA) system for a more robust monitoring and inspection system for pipes and pipe networks in existing water and wastewater infrastructure systems.	
Participating Jurisdiction	*City of Childress and Unincorporated communities.*
Objective(s) Addressed:	1.2, 1.4, 2.1, 4.1, 5.1
Priority (High, Medium, Low):	High
Estimated Cost:	~$250,000
Potential Funding Source(s):	Grant funds, Local budget
Lead Agency/Department Responsible:	City Utilities
Implementation Schedule:	Within 6 months of securing the necessary funding
Cost Effectiveness: Ensuring that water is available to the city and unincorporated communities and its citizens makes the cost irrelevant.	
Discussion: Upgrading the existing SCADA system at the city's water distribution facility, wastewater plant and well fields will ensure that utilities can be monitored more effectively,	

Hazard/s Addressed	Hailstorm, Windstorm, Wildfire, Tornado
Expand the outdoor warning system for the city.	
Participating Jurisdiction	*City of Childress*
Objective(s) Addressed:	1.1, 1.2, 1.3, 1.4
Priority (High, Medium, Low):	High
Estimated Cost:	$30,000 per siren
Potential Funding Source(s):	Grant funds, Local budget
Lead Agency/Department Responsible:	City Council
Implementation Schedule:	Within 6-12 months of securing the necessary funding
Cost Effectiveness: Although costly, outdoor warning systems are an essential part of the City public alerting/warning system and are effective in warning the public. For the most part, residents in this part of the State associate a siren tone with a tornado so sirens are particularly effective with tornado events.	
Discussion: Adding more sirens in areas where coverage is currently lean and improving and updating aging warning sirens would save lives/reduce injuries in a hazard event by providing proper and easily recognizable warning to residents.	

Hazard/s Addressed	Severe Winter Weather, Tornados
Develop/maintain a list of Functional Needs residents for the conduct welfare checks during prolonged winter storm events and identify locations of personal underground shelters for welfare checks following a tornado.	
Participating Jurisdiction/s	*Childress County, City of Childress and Childress ISD*
Objective(s) Addressed:	1.3, 1.4, 5.1
Priority (High, Medium, Low):	Medium
Estimated Cost:	$200 for volunteer recruitment; $2,400 for portable generators
Potential Funding Source(s):	Grant funds, Local budget
Lead Agency/Department Responsible:	County EMC, City Manager, City Volunteers
Implementation Schedule:	Within 6 months of securing the necessary funding
Cost Effectiveness This is a low-cost option that could be used to identify local volunteers that could be used for a variety of purposes	
Discussion: There are a number of aging, vulnerable residents residing within the jurisdiction. The purpose of this action is to develop a mechanism to check on their wellbeing during winter events that may keep them housebound for several days or longer. Some of those residents may rely on electricity for medical devices so the jurisdiction will maintain a small cache of portable generators that can be used to provide temporary power when winter storms result in power outages that may place these residents at risk.	

Hazard/s Addressed	Flooding, Hail Storms, Lightning, Tornados, Windstorms, Severe Winter Storms
Supply critical facilities with back-up power supply	
Participating Jurisdiction/s	*Childress County, City of Childress, Childress ISD and Childress Regional Medical Center*
Objective(s) Addressed:	1.4, 2.1, 5.1
Priority (High, Medium, Low):	High
Estimated Cost:	$45,000
Potential Funding Source(s):	Grant funds / Local Budget
Lead Agency/Department Responsible:	County EMC, City Manager, ISD Superintendent, Hospital COO
Implementation Schedule:	Within 6 months of securing the necessary funding
Cost Effectiveness: Action is projected to have a benefit greater than the cost of the equipment; from avoided damages to internal systems/equipment that could otherwise result from a power loss.	
Discussion: The participant must maintain electrical power at its critical facilities (e.g., fires stations, county barns, safe rooms etc.) at all times in order to run its emergency operations or to protect students; particularly during winter weather events.	

Hazard/s Addressed	Wildfire, Windstorms,
Establish & maintain a fire-safe defensible space around critical facilities in sectors in or bordering WUI areas	
Participating Jurisdiction/s	*Childress County, City of Childress and Childress ISD*
Objective(s) Addressed:	1.3, 2.2, 4.1
Priority (High, Medium, Low):	Medium
Estimated Cost:	$5,000 in annual costs
Potential Funding Source(s):	Local budget
Lead Agency/Department Responsible:	County Facilities Maintenance /County EMC, FD, ISD Maintenance Dept.
Implementation Schedule:	Within 3 months
Cost Effectiveness: Establishing and maintaining a fire-safe defensible space around critical facilities is an easy, low-cost way to create a buffer zone and limit the potential for wildfire damages.	
Discussion: Establishing and maintaining fire-safe defensible space will reduce the likelihood that a critical facility, such as a fire station, will be affected by this type of hazard event. This will also reduce the potential threat of this type of hazard on people inside the facility and increase the jurisdiction's ability to adequately respond event during this type of hazard.	

Hazards Addressed	Flood
Improve storm water drainage/control systems; particularly in flood prone areas of the County, City, ISD Campus, by adding or enlarging guttering, culverts, bar ditches to direct water to safe discharge areas.	
Participating Jurisdiction/s	*Childress County, City of Childress and Childress ISD*
Objective(s) Addressed:	1.2, 1.3, 1.4, 4.1, 5.1
Other Hazards(s) Addressed:	Flooding Only
Priority (High, Medium, Low):	Medium
Estimated Cost:	$100,000.00- $500,000.00 as currently estimated
Potential Funding Source(s):	Grant funds, local budget
Lead Agency/Department Responsible:	County Commissioners Court / Road & Bridge Superintendent, City Council, City Management, ISD Board and Superintendent
Implementation Schedule:	Within 12 months as local or grant funds become available.
Cost Effectiveness: Over time, the one-time cost of making improvements to a roadway frequently damaged by flashfloods will be less than the cumulative costs of making repairs to the road following each flooding event.	
Discussion: To support this action, the participant will initiate a centralized data collection program that matches precinct road maintenance logs with citizen complaints to isolate road sections/areas subject to recurring flood. A cost/benefit analysis can be used to stack the areas in priority order of cost-effectiveness so they can be programmed into the budget as funds become available.	

Hazard/s Addressed	Severe Winter Storms
Use weather-resistant paving materials on resurfacing/road construction projects to minimize surface damage due to winter storms	
Participating Jurisdiction/s	*Childress County, City of Childress and Childress ISD*
Objective(s) Addressed:	1.2, 1.3, 5.1
Priority (High, Medium, Low):	Medium
Estimated Cost:	TBD; based on the length/width of the roadway project
Potential Funding Source(s):	Grant funds/ Local budget
Lead Agency/Department Responsible:	County Commissioners' Court , County Road & Bridge, City Council, City Management, ISD Board and Superintendent
Implementation Schedule:	Within 12 months of securing the necessary funding
Cost Effectiveness: There are a number paving products available that are designed to withstand the harshest of weather and yet are economical and durable. Their cost is offset by reduced maintenance and replacement costs.	
Discussion: Recent advancements in asphalt pavement technology can be applied when resurfacing local roads helping them to stand up better to freeze/thaw cycles and safer to drive in winter weather. This technology could greatly reduce the frequency and cost of maintenance. Keeping the roads in better repair will make them safer to travel under any weather condition	

Hazard/s Addressed	Wildfires
Identify and map tanks, ponds and other available locations for obtaining water to fight wildfires in rural areas of the County.	
Participating Jurisdiction/s	Childress County, City of Childress
Objective(s) Addressed:	2.1
Priority (High, Medium, Low):	Medium
Estimated Cost:	$50,000.00
Potential Funding Source(s):	Grant Funds/Local Budge
Lead Agency/Department Responsible:	County Commissioners' Court , County Road & Bridge, City Fire Department
Implementation Schedule:	Within 12 months of securing funding
Cost Effectiveness: This action will enable firefighters to more quickly identify sources of water while fighting wildfires which will help to hasten the time it takes to control/extinguish fires; resulting in less property loss.	
Discussion: With this action, the county proposes to map the various privately-owned wells/tanks in the County and develop agreements with the property owners that would enable volunteer firefighters to egress onto their property to supply tenders as fires are being fought within the vicinity of the property.	

Hazard/s Addressed	Flood
Install flood gauge markers along still unmarked, flood prone roads in the City	
Participating Jurisdiction	City of Childress
Objective(s) Addressed:	1.1, 3.1, 3.2, 3.3 5.1, 5.2
Priority (High, Medium, Low):	Medium
Estimated Cost:	$10,000.00 (mainly, to cover the cost of shooting flood elevations)
Potential Funding Source(s):	PDM, HMGP, matched with General Funds as necessary
Lead Agency/Department Responsible:	Childress City Council / Childress City Manager
Implementation Schedule:	6 months after funding is secured
Cost Effectiveness: This would be a one-time investment that would continue return benefits throughout the life of the markers	
Discussion: This is one of the deferred items from the City's 2006 mitigation action list. The City has not yet been able to locate the resources necessary to carry this activity out but is hopeful that can occur sometime during the 5-year life of this update.	

Hazard/s Addressed	Flood
Install pumps for rainwater diversion in low lying areas	
Participating Jurisdiction	City of Childress
Objective(s) Addressed:	1.3, 1.4, 2.1, 5.1
Priority (High, Medium, Low):	High
Estimated Cost:	$40,000 - $ 50,000
Potential Funding Source(s):	HMGP, PDM, CDBG, SWCD, General Fund contributions as necessary
Lead Agency/Department Responsible:	Childress City Council / Childress City Manager
Implementation Schedule:	12-24 months after securing funding
Cost Effectiveness: Pumps will allow for the speedy removal of backlogged water to prevent further damages and to reduce public safety risks.	
Discussion: The two underpasses in Childress frequently fill with water during heavy rain events; making the roadways impassable until the water subsides. Currently, depending on the amount of rain-fall received, it can take hours to days for subsidence to occur. With this action, the City is proposing to install pumps at these two locations. As the underpasses begin to fill, the water will be pumped off and redirected to no/low impact areas. The exact path of diversion will be determined after a study has been completed to identify the optimal route and destination for the run off.	

City of Childress	Tornados, Wildfires, Winter Storms
Implement a tree trimming program that routinely clears tree limbs hanging in right-of-way	
Participating Jurisdiction/s	City of Childress
Objective(s) Addressed:	1.3, 1.4, 5.1
Priority (High, Medium, Low):	Medium
Estimated Cost:	$40,000.00 (purchase of a wood chipper)
Potential Funding Source(s):	HMGP, PDM, TCEQ Solid Waste funds; matched by City funds as may be required
Lead Agency/Department Responsible:	Childress City Council / Childress Public Works
Implementation Schedule:	12 months after funding is secured
Cost Effectiveness: This project will help to reduce the potential for communications / power loss due to lines downed by falling limbs and branches	
Discussion: Routinely trimming tree limbs that could cause damage, either to adjacent properties or to overhead utility lines, would help to mitigate the potential for damage. Project could also be used to support a wood waste diversion program in the City, thereby mitigating another in-town hazard from fires.	

Hazard/s Addressed	Hail, Tornado, Severe Winter Weather, Wind
Obtain emergency lighting system equipped with its own power supply	
Participating Jurisdiction/s	City of Childress
Objective(s) Addressed:	1.3, 1.4, 5.1
Priority (High, Medium, Low):	High
Estimated Cost:	$50,000.00
Potential Funding Source(s):	HMGP, PDM; matched with General Funds as required
Lead Agency/Department Responsible:	Childress City Council / Childress Public Works
Implementation Schedule:	Within 12 months of securing funding
Cost Effectiveness: This action will provide benefit in the aftermath of a devastating tornado to speed night time search & rescue efforts. It will also have some conventional application for other municipal purposes	
Discussion: This equipment will help to speed local search & rescue operations in the aftermath of any severe wind event. This will result in the more rapid discovery of storm victims, securing of utilities, and other such actions that help to prevent the loss of life and contribute to the stabilization of utility services.	

Hazard/s Addressed	Hail, Tornado, Severe Winter Weather, Wind
Obtain a water tank to store up to 10,000 gallons for emergency short term water supply	
Participating Jurisdiction/s	City of Childress, Childress Regional Medical Center
Objective(s) Addressed:	1.4, 5.1
Priority (High, Medium, Low):	High
Estimated Cost:	$15,000.00
Potential Funding Source(s):	HMGP, PDM; matched with General Funds as required
Lead Agency/Department Responsible:	Childress City Council / Childress Public Works, Childress Regional Medical Center COO
Implementation Schedule:	Within 12 months of securing funding
Cost Effectiveness: This action will provide benefit in the aftermath of a devastating tornado, winter storm or other hazard that impacts the delivery of potable water to the city and the hospital	
Discussion: Potable water is critical for the residents of the City of Childress and also for the Childress Regional Medical Center Dialysis Clinic. 2 gallons per minute of water is required to conduct dialysis for a patient typically over a 4 hour period 3 times a week. The loss of water to provide this life saving measure would be critical as the hospital is the only provider in the area.	

Integrating Mitigation Plan In To Other Planning Mechanisms (C6)

Similar to the methods that the jurisdictions utilized when creating the original Plan – the County, City/s and ISD/s will do the following to integrate the data, information, and hazard mitigation goals and actions into other planning mechanisms.

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 is made by posting the agenda on a public bulletin board in the City Hall (Childress) or County Courthouse (Childress) and ISD/s Board. Change will also be posted on the agency's that have website. Notice may also be printed in the local newspaper.
4. Proposal is discussed at the public meeting, including any comments by members of the public in attendance.
5. Proposal is voted on by the governing body.
6. If the proposal is passed, the change is implemented by the appropriate local authority

Childress County (Unincorporated Area)
7 of the 18 mitigation action items that were included in the 2015 Hazard Mitigation Plan were completed and 7 were incorporated in the 2018 Plan as ongoing projects. By utilizing the risk assessment in the previous plans, the jurisdiction was able to prioritize actions and complete them as local funding came available. County Judge, EMC and Commissioners, placed a high priority on establishing an ongoing all-hazard education program and updating their mutual aid documents. These actions were assigned to the EMC to coordinate. This progress was evaluated in Commissioner's court and voted on to continue this strategy on an annual basis.

The updated Hazard Mitigation plan and its actions will be reviewed by the County EMC. Useful information will be included in the update of the Childress County Interjurisdictional EOP's Hazard Mitigation section. The County EMC will maintain the Interjurisdictional Emergency Operation Plan and implement some of the mitigation strategies that have already been identified and seek out new strategies as they present themselves. County Commissioners will integrate this plan as they develop capital improvement goals.

City of Childress
The City of Perryton has completed 9 out of 23 strategies from 2015 and 11 have been incorporated as ongoing projects. By utilizing the risk assessment in the previous plans, the jurisdiction was able to prioritize actions and complete them as local funding came available.. Due to the cost of the other projects, the city was unable to complete them, but did attempt to find funding sources and continued to have them on their capital improvement list.

The City views their building codes and enforcement efforts as a mandated service to their citizens, to help assure that the receive what they believe they are paying for and to have structurally sound and safe facilities for years to come.

The Emergency Operations Plan is an interjurisdictional plan (County and all cities within), the City of Childress actions will be integrated into the EOP.

Childress ISD

Childress ISD employs a maintenance department for their campus/s. To ensure that the goals and objectives of this plan along with the new mitigation action items are visible, a Mitigation Team Member will be included in any plan development or capital improvement planning. In addition, the Hazard Mitigation Plan will be cited as a technical reference and data source for any updates or future planning processes. Integration of actions will be presented to the School Board for prioritization. The ISD Superintendent will implement actions as funding becomes available via the budget, bond or pursuit of grants. Student and parent education and grounds maintenance will act on actions that can be implemented in their day-to-day activities to mitigate against many of the hazards.

Childress ISD did not participate in the 2015 plan.

Element D – Plan Review, Evaluation and Implementation

Development Trends (D1/3)

Childress County

Still, the population of the planning area is not expected to increase significantly during the 5-year life of this plan. The Childress MAT estimates a 1.43% rate of growth by 2022. This estimate is in line with projections provided by both the CEDC and the Comptroller's Office. Therefore, the stock of housing in the County has not increased appreciably since 2015. The new housing data below was provided by Texas A&M University and can be found at:

Report Year	New Single Family Homes Built
2008	0 buildings
2009	6 buildings, average cost: $182,500
2010	3 buildings, average cost: $125,000
2011 - 2018	0 buildings

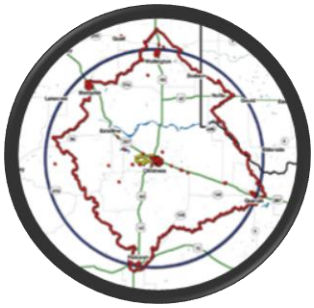
In summary, no significant population growth is expected to occur in the County during the life of this update. However, new/expanded retail facilities opened in 2017 on the Hwy 287 corridor that runs through the City of Childress and new commercial facilities will be taking advantage of the space available in the Childress Industrial Park. A Pilot and Taco Bell opened in 2015 and a Pac-a-Sac opened in 2016.

As with the major construction projects completed in 2008/2009; environmental impact assessments will be conducted to ensure that any new construction will have no adverse impact on the environment including the flood hazard areas in the City. New construction will follow the 2006 International Building Code for Commercial Facilities; ensuring that the buildings are properly designed to handle the wind loads inherent to the planning area and to accommodate local seismic conditions.

The level of vulnerability has not changed due to development changes.

<u>City of Childress</u>

Nearly 87% of the planning areas current population resides within the City of Childress which is the only incorporated community in Childress County. Childress supports an active economic development program through the Childress Economic Development Corp (CEDC). The primary goal of the CEDC is to maintain existing employers while expanding the economic base of the City. In so doing, the CEDC is helping to contribute to the growth of the City.



The graphic to the right depicts the 30-mile Primary Trade Area (PTA) identified for Childress in a 2012 study commissioned by the CEDC. Among other things, the study provided that, "*Childress is already the dominant retail, medical and business hub within the greater southeastern portion of the Texas panhandle. The newer hotels and businesses*

(Hampton Inn, Holiday Inn, Tractor Supply, Walmart Supercenter) that are open within Childress are filling a portion of the existing retail needs, however, it is estimated that there is a short term unmet retail need/leakage of $19,009,292 which equates to approximately 63,000 square feet of needed retail space. The categories with the most opportunities include: 1) automobile dealers ($19M); 2) other motor vehicle dealers ($18.3M); 3) grocery stores ($3.0M); 4) clothing stores ($1.8M); and, 5) full-service restaurants ($1.6M). Since the City of Childress is the dominant retail draw within the PTA it is expected that the majority of new regional retail goods and services businesses will locate within the City of Childress."

The City's vulnerability has not changed since the 2015 Hazard Mitigation Plan.

Childress ISD

Childress Independent School District will continually strive to ensure the safety of our students and community by providing a safe and secure environment. We are a community that values the lives of not only our children but our neighbors as well. Over the last 5 years the ISD has held steady in the area of student population. Due to frequent hail damage, the ISD board approved construction of bus and other ISD vehicle shelters.

Due to improvements that have been made to the school and the purchase of HVAC coverings, Childress ISD feels that they are slightly less vulnerable to natural disasters.

Participating Jurisdictions

During the life of this MAP update, the participating jurisdictions will work to ensure that as new developments occur, it meets the appropriate standards in existence at the time of construction, that the development will not aggravate or contribute to hazard conditions in the area and that to extent possible, the new development will support the goals and objectives of this update.

Mitigation Strategy Implementation

Through the involvement of this planning process, each jurisdiction was able to review existing mechanisms for identifying their existing status and hopes for the future. Although each jurisdiction has an informal process that can be related to a comprehensive plan or a capital improvement plan – through this planning process, they have become more focused on developing more formal plans. This document and the mitigation strategies that were conceived in this plan will be a guiding factor for the jurisdiction's improvement.

The following pages show the mitigation actions that were generated in 2006. This was the planning area's first hazard mitigation plan. The jurisdictions were able to identify which strategies were actually implemented over the last 10 years.

Through the plan review and a better understanding of this plans goals – jurisdictions were able to prioritize incomplete actions and move them in to the 2017 plan and eliminated those that did not have high value for mitigation. A new prioritization evaluation worksheet was used, which clearly defined the criteria's, thus allowing each jurisdiction to determine the effectiveness of the strategy.

2015 Mitigation Actions (D2)

Hazard	Childress County 2015 Mitigation Action	Completed, Deleted or Deferred
Drought	*Develop and distribute public education materials on water metering/leak detection programs*	Deferred
Drought	*Implement measures to reduce the water usage of the irrigation systems at County-owned facilities*	Deferred
~~Earthquake~~	~~*Replacing/Bracing of windows on the Childress County Courthouse*~~	Delete Less than a 1.5% chance of occuring
~~Earthquake~~	~~*Inform residents that earthquakes can and do occur in the County.*~~	Delete Less than a 1.5% chance of occuring
Flooding	*Install culverts or drainage structures in flood prone areas of the County's road system*	Deferred
Flooding	*Educate residents on the NWS Turn Around/Don't Drown program.*	Completed & Ongoing
Hail	*Develop public education campaign to encourage hail resistant roofing in new construction and replacement of citizens residing in the County*	Completed & Ongoing
Hail	*Where a determination of cost-effectiveness has been made, install hail resistant roofing and window coverings with a focus on critical county structures.*	Deferred

Hazard	Childress County 2015 Mitigation Action	Completed, Deleted or Deferred
Hail	*Implement a public education campaign to encourage local agricultural producers to ensure their crops/herds are well insured against hail damage*	Deferred
Hail	*Construct a hail-resistant cover/shelter outside County facilities to protect county-owned/employee-owned vehicles and equipment from hail damage (e.g., Sheriff's Office)*	Deferred
Severe Thunderstorm	*Annually review insurance policies to ensure County facilities are adequately covered against hail/high wind damages*	Completed & Ongoing
Severe Thunderstorm	*Encourage local farmers/ranchers to ensure they're carrying an adequate level of Production insurance (PI)*	Completed & Ongoing
Tornado	*Promote resident participation in the Regional Residential Safe Room Rebate program*	Completed & Ongoing
Tornado	*Promote citizen registration in the PARIS Regional Public Mass Notification and Alerting System*	Completed & Ongoing
Wildfire	*Disseminate public information on the use of defensible space in rural areas*	Completed & Ongoing
Wildfire	*Identify and map tanks, ponds and other available locations for obtaining water to fight wildfires in rural areas of the County.*	Deferred
Winter Storm	*Supply critical county facilities with back-up power supply*	Deferred
Winter Storm	*Ensure an adequate stock of snow and ice removal equipment and supplies and road clearing equipment*	Action Deleted – Considered Response

Hazard	City of Childress 2015 Mitigation Action	Completed, Deleted or Deferred
Drought	*Educate the public on water conservation techniques that can be voluntarily implemented to effectively reduce water consumption.*	Completed & Ongoing
Drought	*Implement measures to reduce the water usage of the irrigation systems at County-owned facilities*	Deferred
~~Earthquake~~	~~*When applicable, replace outdated, fragile underground water and sewer lines with piping fabricated out of a highly ductile, shear-resistant material*~~	Delete Less than a 1.5% chance of occurring
~~Earthquake~~	~~*Structurally reinforce masonry buildings when public facility renovations and/or new construction projects are undertaken*~~	Delete Less than a 1.5% chance of occurring
Flooding	*Educate residents on the NWS Turn Around/Don't Drown program.*	Completed & Ongoing
Flooding	*Install improved drainage features/structures in/around SFHA areas in the City and in other locations where run-off ponding frequently occurs.*	Deferred
Flooding	*Install flood gauge markers along still unmarked, flood prone roads in the City*	Deferred
Flooding	*Install pumps for rainwater diversion in low lying areas*	Deferred
Hail	*Construct a hail-resistant cover/shelter outside municipal facilities to protect city-owned/ employee-owned vehicles and equipment from hail damage (e.g., City barn on Ave B SW)*	Deferred
Hail	*Educate the public on the value of using of hail resistant roofing products when replacing damaged roofing on existing structures and when installing roofing on new structures*	Completed & Ongoing

Hazard	City of Childress 2015 Mitigation Action	Completed, Deleted or Deferred
Hail	*Encourage residents to verify the efficacy of potential contractors with consumer reporting agencies (e.g., Panhandle BBB) to avoid cascading damages from hailstorm events*	Completed & Ongoing
Severe Thunderstorm	*Implement a tree trimming program that routinely clears tree limbs hanging in right-of-way*	Deferred
Severe Thunderstorm	*Implement a cost-share program that would allow residents, schools, businesses to obtain NOAA "All Hazard" radios*	Deferred
Tornado	*Upgrade existing sirens in the City's public outdoor warning system for system-wide interoperability.*	Deferred
Tornado	*Promote resident participation in the Regional Residential Safe Room Rebate program*	Completed & Ongoing
Tornado	*Obtain emergency lighting system equipped with its own power supply*	Deferred
Tornado	*Construct a community shelter to serve Childress ISD and travelers that frequent the Fair Park trailer park.*	Deferred
Wildfire	*Educate residents on the fire-prevention value of keeping their properties clear of junk and other combustible materials*	Completed & Ongoing
Wildfire	*Educate area residents/business on the value of having fire suppression systems and/or fire extinguishers on premises*	Completed & Ongoing
Wildfire	*Promote the Ready, Set, Go program to ensure residents are well familiar of the procedures they ought to follow when fire evacuation measures have to be taken*	Completed & Ongoing
~~Wildfire~~	~~*Procure a brush truck to mitigate WUI fires and wildfires in order to minimize potential property losses and human costs*~~	Action Deleted Considered Response
Winter Storm	*Develop/maintain a list of Functional Needs residents for the conduct welfare checks during prolonged winter storm events*	Partially Completed
Winter Storm	*Develop public education to stress the need for wrapping exterior lines a pipes to prevent water line breaks during extended periods of hard freeze*	Deferred

Element E – Plan Adoption (E1)

Plan Adoption Summary

Plan Adoption

This plan was formally adopted by Childress County, the City of Childress, and Childress ISD after the document had been reviewed by both the Texas Division of Emergency Management (TDEM) and the Federal Emergency Management Agency (FEMA) to ensure it met current state and federal guidelines governing local MAPs.

The evidence of local adoption was sent to both agencies; essentially marking the conclusion of the planning process and the start of the plan's implementation phase. The plan was finally adopted as of the dates shown below.

Jurisdiction/Agency	Resolution Number	Adoption Date
Childress County	NA	November 13th, 2018
City of Childress	1118	November 19th, 2018
Childress ISD	NA	October 15th, 2018

Childress County Commissioners Court Adoption

NOTICE OF A PUBLIC HEARING ON THE ADOPTION
OF THE CHILDRESS COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

The Childress County Commissioners Court will conduct a public hearing before considering final adoption of the recently completed 2018 Childress County Hazard Mitigation Plan Update on November 13th, 2018 in the Commissioners' Court Chambers of the Childress County Courthouse located at 100 Avenue E. NW Childress, Texas. This plan incorporates mitigation actions intended to minimize the impacts of certain natural hazards on the residents of the County.

The Disaster Mitigation Act of 2000, as amended, requires that local governments, develop, adopt, and update natural hazard mitigation plans in order to receive certain federal assistance. A Mitigation Action Team ("MAT") comprised of representatives from Childress County, the City of Childress and Childress ISD, was convened to assess the risks from and vulnerabilities to natural hazards that are endemic to the Childress County area, and to make recommendations on mitigating the effects of such hazards. The original Hazard Mitigation plan was adopted in 2006 and in order to maintain its approved status by the Federal Emergency Management Agency (FEMA), it has to be updated every five (5) years.

A copy of the Childress County plan update is now available for review in the Childress County Judge's office, Childress City Hall, ISD Administration Building, or it may be reviewed online at:

https://prod.i-info.com/document/Home.aspx?pid=002Y

The meeting is open to the public and members of the community are encouraged to attend to offer feedback and comment.

RESOLUTION NO: _____

A RESOLUTION BY THE COMMISSIONERS' COURT OF CHILDRESS COUNTY, TEXAS, ADOPTING THE 2018 UPDATED CHILDRESS COUNTY HAZARD MITIGATION PLAN

WHEREAS, certain areas of Childress County, Texas, are vulnerable and subject to a variety of natural hazards which pose a potential threat to the welfare, safety and property of the County's residents; and,

WHERAS, to the extent practical, Childress County intends to prepare for and mitigate against such hazards; and,

WHEREAS, under the Disaster Mitigation Act of 2000 (P.L. 106-390), as of November 1, 2004, the Federal Emergency Management Agency (FEMA) now requires that local jurisdictions maintain a FEMA-approved Hazard Mitigation Plan as a condition of receiving certain Federal mitigation grant funding; and,

WHEREAS, Childress County participated in the updating of the Childress County Hazard Mitigation Plan which includes the unincorporated areas of the County.

NOW, THEREFORE, BE IT RESOLVED BY THE COMMISSIONERS' COURT OF THE CHILDRESS COUNTY, TEXAS, THAT:

1. The County hereby adopts the 2018 updated Childress County Hazard Mitigation Plan which will have a five-year lifespan from the date upon which the update is finally approved by FEMA.
2. The County's Emergency Management Coordinator is instructed to ensure the updated Plan is reviewed at least annually and that any proposed revisions to the County's portion of the Childress County Mitigation Action Plan are presented to the Commissioner's Court for consideration of approval.
3. The County agrees to take such other official action as may be deemed reasonably necessary to carry out the goals, objectives and mitigation actions of the updated Childress County Hazard Mitigation Plan.

CONSIDERED AND APPROVED THIS 13th DAY OF November, 2018.

Jay Mayden, County Judge
Childress County

ATTEST:

Barbara Spitzer, County Clerk
Childress County

Childress City Council Adoption

NOTICE OF A PUBLIC HEARING ON THE ADOPTION
OF THE CHILDRESS COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

The City of Childress City Council will conduct a public hearing before considering final adoption of the recently completed 2018 Childress County Hazard Mitigation Plan Update on (Date) in the Council Chambers of the Childress City Hall located at 315 Commerce St. Childress, Texas. This plan incorporates mitigation actions intended to minimize the impacts of certain natural hazards on the residents of the City.

The Disaster Mitigation Act of 2000, as amended, requires that local governments, develop, adopt, and update natural hazard mitigation plans in order to receive certain federal assistance. A Mitigation Action Team ("MAT") comprised of representatives from Childress County, the City of Childress and Childress ISD, was convened to assess the risks from and vulnerabilities to natural hazards that are endemic to the Childress County area, and to make recommendations on mitigating the effects of such hazards. The original Hazard Mitigation plan was adopted in 2006 and in order to maintain its approved status by the Federal Emergency Management Agency (FEMA), it has to be updated every five (5) years.

A copy of the Childress County plan update is now available for review in the Childress County Judge's office, Childress City Hall, ISD Administration Building, or it may be reviewed online at:

https://prod.i-info.com/document/Home.aspx?pid=002Y

The meeting is open to the public and members of the community are encouraged to attend to offer feedback and comment.

RESOLUTION NO: 1118

A RESOLUTION BY THE CITY COMMISSION OF THE CITY OF CHILDRESS, TEXAS, ADOPTING THE 2018 UPDATED CHILDRESS COUNTY HAZARD MITIGATION PLAN

WHEREAS, certain areas of City of Childress, Texas, are vulnerable and subject to a variety of natural hazards which pose a potential threat to the welfare, safety and property of the City's residents; and,

WHERAS, to the extent practical, the City of Childress intends to prepare for and mitigate against such hazards; and,

WHEREAS, under the Disaster Mitigation Act of 2000 (P.L. 106-390), as of November 1, 2004, the Federal Emergency Management Agency (FEMA) now requires that local jurisdictions maintain a FEMA-approved Hazard Mitigation Plan as a condition of receiving certain Federal mitigation grant funding; and,

WHEREAS, The City of Childress participated in the updating of the Childress County Hazard Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF CHILDRESS, TEXAS, THAT:

1. The City hereby adopts the 2018 updated Childress County Hazard Mitigation Plan which will have a five-year lifespan from the date upon which the update is finally approved by FEMA.
2. The City Emergency Management Coordinator is instructed to ensure the updated Plan is reviewed at least annually and that any proposed revisions to the City's portion of the Childress County Mitigation Action Plan are presented to the City Commission for consideration of approval.
3. The City agrees to take such other official action as may be deemed reasonably necessary to carry out the goals, objectives and mitigation actions of the updated Childress County Hazard Mitigation Plan.

CONSIDERED AND APPROVED THIS 19 DAY OF Nov, 2018.

Cary Preston, Mayor
City of Childress

ATTEST:

D'Linda Dockery, City Clerk
City of Childress

Childress ISD Board or Trustees Adoption

NOTICE OF A PUBLIC HEARING ON THE ADOPTION
OF THE CHILDRESS COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

The Childress ISD Board of Trustees will conduct a public hearing before considering final adoption of the recently completed 2018 Childress County Hazard Mitigation Plan Update on October 15th, 2018. in the Childress ISD Administration Building located at 800 J NW Avenue, Childress, Texas. This plan incorporates mitigation actions intended to minimize the impacts of certain natural hazards on the residents of the City and our school district

The Disaster Mitigation Act of 2000, as amended, requires that local governments, develop, adopt, and update natural hazard mitigation plans in order to receive certain federal assistance. A Mitigation Action Team ("MAT") comprised of representatives from Childress County, the City of Childress and Childress ISD, was convened to assess the risks from and vulnerabilities to natural hazards that are endemic to the Childress County area, and to make recommendations on mitigating the effects of such hazards. The original Hazard Mitigation plan was adopted in 2006 and in order to maintain its approved status by the Federal Emergency Management Agency (FEMA), it has to be updated every five (5) years.

A copy of the Childress County plan update is now available for review in the Childress County Judge's office, Childress City Hall, ISD Administration Building, or it may be reviewed online at:

https://prod.i-info.com/document/Home.aspx?pid=002Y

The meeting is open to the public and members of the community are encouraged to attend to offer feedback and comment.

Resolution Number:_____

A RESOLUTION BY THE CHILDRESS INDEPENDENT SCHOOL DISTRICT BOARD OF TRUSTEES, CHILDRESS, TEXAS, ADOPTING THE 2018 UPDATED CHILDRESS COUNTY HAZARD MITIGATION PLAN

The **Childress Independent School District** resolves as follows:

Whereas, certain areas of City of Childress are vulnerable and subject to a variety of natural hazards which pose a potential threat to the welfare, safety and property of the City's residents; and our school district,

Whereas, the Childress Independent School District has determined that it is in the best interest of the District to have an active hazard mitigation planning effort to reduce the long term risks from natural hazards to school facilities, and

Whereas, the Childress Independent School District recognizes that the Federal Emergency Management Agency (FEMA) requires the district to have an approved hazard mitigation plan as a condition of applying for and receiving FEMA mitigation project grant funding.

NOW, THEREFORE, BE IT RESOLVED BY BOARD OF TRUSTEES OF THE CHILDRESS INDEPENDENT SCHOOL DISTRICT THAT:

The Childress Independent School District hereby adopts the 2018 Updated Childress County Hazard Mitigation Plan which will have a five-year lifespan from the date upon which the update if finally approved by FEMA.

CONSIDERED AND APPROVED THIS 15th DAY OF October, 2018

Insert signature(s) and title(s) below.

Carol Truman - Secretary

Mark Hays - Pres.

Note: *the school board's resolution is best done after FEMA approves the submitted plan because FEMA may require changes to be made to the submitted plan. With adoption after FEMA approval, the district's plan becomes active as of the adoption date and the plan must then be updated by the 5th anniversary of the adoption date. A plan update requires much less effort than creating the initial hazard mitigation plan.*