This is a ***draft*** of the Bowie County Hazard Mitigation Plan Five-year Update. It is posted on our county website so identified stakeholders and the public can review its contents. The posted draft is designed to give viewers an idea of what the completed, approved plan will look like.

Hazard Mitigation is defined as any sustained action taken to reduce or eliminate the long-term risk to life and property from hazard events. It is an on-going process that occurs before, during, and after disasters and serves to break the cycle of damage and repair in hazardous areas.

If you have any questions or comments, contact:

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HAZARD MITIGATION ACTION PLAN

FOR

BOWIE COUNTY TEXAS

AND THE JURISDICTIONS OF

DEKALB, HOOKS, LEARY, MAUD, NASH, NEW BOSTON, RED LICK, REDWATER, WAKE VILLAGE and TEXAMERICAS CENTER

Five Year Update

INCORPORATED AND UNINCORPORATED AREAS

DEVELOPED BY ARK-TEX COUNCIL OF GOVERNMENTS

2022

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PURPOSE

The goal of all mitigation efforts is long-term reduction. The emphasis on sustained actions to reduce long-term risk differentiates mitigation from preparedness and response tasks that are required to survive a disaster and from recovery tasks, which are essentially the return to pre-disaster status. Mitigation actions follow a disaster focus on making the situation safer and better than before the incident occurred. Mitigation is an essential component of emergency management. Effective mitigation actions can decrease the impact, the requirements and the expense of future hazard events. None of the communities in this plan have been designated for special consideration because of minority or economically disadvantaged populations.

Hazard mitigation planning is never ending. The primary purpose of this plan is to ensure that the residents, visitors, and businesses in Bowie County, Texas are safe and secure from natural hazards by reducing the risk and vulnerability before disasters happen, through federal, state, and local community communication, public education, research, and data analysis. This plan is intended to serve as a guide in coordinating and implementing hazard mitigation policies, programs, and projects.

The Bowie County Emergency Management Plan has been developed, and the assessment level of planning preparedness is intermediate. **The Hazard Mitigation Action Plan Update** will only serve to enhance the County's already considerable capabilities in recognizing, planning for, responding to, and recovering from disaster. The County's history of the careful development, monitoring, and integration of emergency management and hazard mitigation planning is testament to its standing commitment to make the jurisdictions as disaster-resistant as possible.

The Plans, ordinances, maps and codes were reviewed by the Hazard Mitigation Committee and staff before mitigation action items and implementation strategies were determined. Information gathered from the Plans, ordinances, maps, permits, and codes were considered and incorporated into this Hazard Mitigation Plan. The lack of various plans and codes were also considered. This was factored in when considering the various mitigation action items and implementation strategies.

We cannot control natural phenomena such as floods, tornadoes, winter storms, wildfires and other hazardous events. Despite their destructiveness, these occurrences are part of the natural system.

While we cannot prevent natural hazards, we can reduce some of their adverse consequences. We can avoid the worst-case scenario when a hazard does occur by managing the known characteristics of the hazard.

The following objectives will be addressed in the plan:

- What hazards could occur
- Frequency of occurrence
- Hazards impact on community and severity of impact
- Vulnerability to each hazard
- Hazards with greatest risks
- Prioritized mitigation actions

PLAN ORGANIZATIONAL STRUCTURE

Organizational Structure

Ark-Tex Council of Governments (ATCOG), is an organization comprised of city and county governments, colleges, service organizations, school districts, chambers of commerce, etc., with the goal to build strength through regional cooperation. It is through this regional cooperation that ATCOG can serve its members by working to continually improve the economic, social, educational, and safety aspects of life for citizens of Bowie County.

ATCOG served as the coordinating agency for the development of the plan. As the coordinator, ATCOG had many responsibilities including administration, content organization, and text development. The following is a brief summary of ATCOG's responsibilities for the plan:

- Assign a lead planning staff member to provide technical assistance and necessary data to the Bowie County Hazard Mitigation Planning Team (HMPT).
- Schedule, coordinate and facilitate community meetings with the assistance of the planning team.
- Provide any necessary materials, handouts, etc., necessary for public planning meetings.
- Work with the planning team to collect and analyze data and develop goals and implementation strategies.
- Prepare, based on community input and team direction, the first draft of the plan and provide technical writing assistance for review, editing and formatting.
- Coordinate with stakeholders within the cities and the unincorporated areas of County during plan development.
- Submit the final plan to the State of Texas and provide follow up technical assistance to the Bowie County Community Mitigation Planning Team to correct any noted deficiencies subsequent to the review of the plan by the State of Texas.

- Upon approval by the State of Texas, submit the updated plan to FEMA and provide follow up technical assistance to the Bowie County Community Mitigation Planning Team to address any noted deficiencies subsequent to the review of the plan by FEMA.
- Coordinate adoption and final approval process by all City and Town Councils and the Commissioners Court of the updated and approved FEMA plan.
- Submit a final plan, with adoption documentation and approval signatures, for all participating jurisdictions, to the State and FEMA and ensure plan is noted as complete and approved by both agencies.
- Prepare for and attend City Council/Commissioners Court/public meetings during plan consideration and plan adoption process.
- Complete and acquire approval of all necessary forms associated with the application for Bowie County's Multi-Jurisdictional Hazard Mitigation Grant.

A Multi-Jurisdictional Hazard Mitigation Planning Team (HMPT) was formed consisting of representatives appointed by local jurisdictions to work together with ATCOG in the plan development. The team's primary duties were:

- Ensure that the Bowie County HMPT includes representatives from the neighborhood stakeholder groups. Each participating city must provide at least one representative to the county team and provide active support and input. ATCOG will approve the final composition of the planning team.
- Assist ATCOG staff with identifying hazards and estimating potential losses from future hazard events.
- Assist ATCOG in developing and prioritizing mitigation actions to address the identified risks.
- Assist ATCOG in coordinating meetings to develop the plan.
- Identify the community resources available to support the planning effort.
- Assist with recruiting participants for planning meetings.
- Gain the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- After adoption, appoint members to a committee to monitor and work toward plan implementation.
- After adoption, publicize the plan to neighborhood interests and ensure new community members are aware of the plan and its contents.
- Subsequent to State of Texas and FEMA approval of the plan, assume responsibility for bringing the plan to life by ensuring it remains relevant by monitoring progress, through regular maintenance and implementation projects. Ensure that Bowie County HMPT includes representatives from the neighborhood stakeholders' groups. Each participating city must provide at least one representative to the county team and provide active support and input. ATCOG will approve the final composition of the planning team.

THE PLANNING PROCESS

Benefits of Mitigation Planning

1. Increases public awareness and understanding of vulnerabilities as well as support for specific actions to reduce losses from future natural disasters.

2. Builds partnerships with diverse stakeholders increasing opportunities to leverage data and resources in reducing workloads as well as achieving shared community objectives.

3. Expands understanding of potential risk reduction measures to include structural and regulatory tools, where available, such as ordinances and building codes.

4. Informs development, prioritization, and implementation of mitigation projects. Benefits accrue over the life of the project as losses are avoided from each subsequent hazard event.

The Multi-Jurisdictional Planning Process.
A multi-jurisdiction plan was chosen to best prepare the communities of Bowie County for Hazards. The Ark-Tex Council of governments worked hand in hand with the jurisdictions within the planning area of Bowie County to develop the current plan. It is through this regional cooperation that ATCOG can serve its members by working to continually improve the economic, social, educational, and safety aspects of life for citizens

Mitigation plans need to be a living document and to ensure this the plan must be monitored, evaluated, and updated on a five-year or less cycle. This includes incorporating the mitigation plan into county and local comprehensive or capital improvement plans as they are developed.

Organize Resources:
Effective planning efforts result in practical and useful plans, but written plans are only one element in the process. The planning process is as important as the plan itself. A successful planning process organizes resources by encouraging cooperation and bringing together a cross-section of government agencies, local entities, concerned citizens and other stake holders to reach consensus on how to achieve a desired outcome or resolve a community issue. Applying a community wide approach and including multiple aspects adds validity to the plan. Those involved gain a better understanding of the problem and how solutions and actions were devised. The result is a common set of community values and widespread support for directing financial, technical, and human resources to an agreed upon action.

- ✓ A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. This was done by having public meetings that were advertised with notices in public places and by media press releases.

- ✓ Each participant was explained the Hazard Mitigation Planning Process. These opportunities were also used to gather hazard information, develop mitigation strategies, and edit the plan during the writing process.
- ✓ The review and incorporation of appropriate existing plans, studies, reports, technical information, and other research was included into the plan during its drafting process.
- ✓ Support and information were obtained from other government programs and agencies such as the National Flood Insurance Program (NFIP), Natural Resources Conservation Service (NRCS), US Geological Survey (USGS), NOAA Weather, etc.

Risk and Vulnerability Assessment:

The plan must be reactive to hazards that face the community. It is not sufficient to just identify the hazards. The potential consequences of these hazards must be assessed. This phase included identifying and profiling all hazards, assessing vulnerability and risk. Research into the history of Bowie County to document past disasters was required. Local libraries, national weather records and the life experiences from local residents were used to assess the plan.

A general assessment included using local residents, historical data, Texas State Mitigation Plan, Local or Regional Reports, Strategic Plans, Flood Studies, and other data to establish the following:

- ♦ The type, location and extent of all hazards that can affect the jurisdiction, both historically and in the future.
- ♦ Past occurrences of hazard events in or near the community and the severity, duration, and the resulting influences on the area.
- ♦ Description of the jurisdictions vulnerability to those hazards including types and numbers of existing and future buildings, infrastructure and critical facilities in identified hazard areas.
- ♦ Probability or likelihood of hazard occurrence.
- ♦ General description of land uses and development trends for future land use decisions.

The development of a Multi-Jurisdictional Hazard Mitigation Plan involves the use of many types of information including historical data on previous disasters, information on critical infrastructures, zoning and flood plains maps, records, charts, etc., from many sources.

Develop Mitigation Strategies:

Written Strategies were developed to demonstrate how Bowie County, Texas intends to reduce losses identified in the Risk Assessment. It includes goals and objectives to guide the selection of mitigation activities and reduce potential losses. This is a blueprint for reducing the potential losses identified in the risk assessment. The Mitigation Strategy also includes:

- A description of mitigation objectives meant to reduce long-term vulnerabilities. These objectives were identified by the HMPT using hazard profiles, survey assessments, etc.
- Identification and a comprehensive analysis of a range of mitigation actions and projects.
- An Action Plan describing how the mitigation actions and projects were prioritized, and how they would be implemented and administered.

Resource Information

Resource information was obtained from the following government programs and agencies:

National Flood Insurance Program (NFIP), which provided information about flooding and actions needed to satisfy compliance with NFIP.

The US Geological Survey (USGS), provided information that was incorporated into the hazards of drought and flooding.

Natural Resources Conservation Service (NRCS), provided information about water management and climate change that are found in the identified hazards of drought and extreme heat.

The Texas Hazard Mitigation Plan helped to develop the common language used in the Bowie Mitigation Plans.

The Emergency Management Plan of Bowie County provided information regarding current emergency management preparedness. The information helped determine the most immediate needs relating to all identified mitigated hazards.

Fort Worth. Texas Mitigation Plan provided an example of action tables that was used to organize and clarify the actions.

Texas Wildfire Risk Assessment Portal (TXWRAP) provided statistical graphs and maps regarding wildfire activity in Bowie County. This information is found in the wildfire section of the Plan.

NOAA Weather web site provided information regarding climate data and global warming.

The US Census Bureau provided statistics and population information found throughout the plan.

Team Members were informed of the progress, discussed issues, and were notified of any changes to FEMA's guidelines for the creation of the plan. Existing plans were reviewed to determine how they might be incorporated into the HMAP. The Emergency Management Team Coordinator of Bowie County and the Mayors (or their appointees) of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and representative of TexAmericas Center will oversee the Mitigation Plan.

TexAmericas Center and New Boston are new participants to the Bowie County Hazard Mitigation Plan. Both New Boston and TexAmericas Center were actively involved in this 2022 update and met all participation requirements.

Adoption, Implementation and Maintenance:

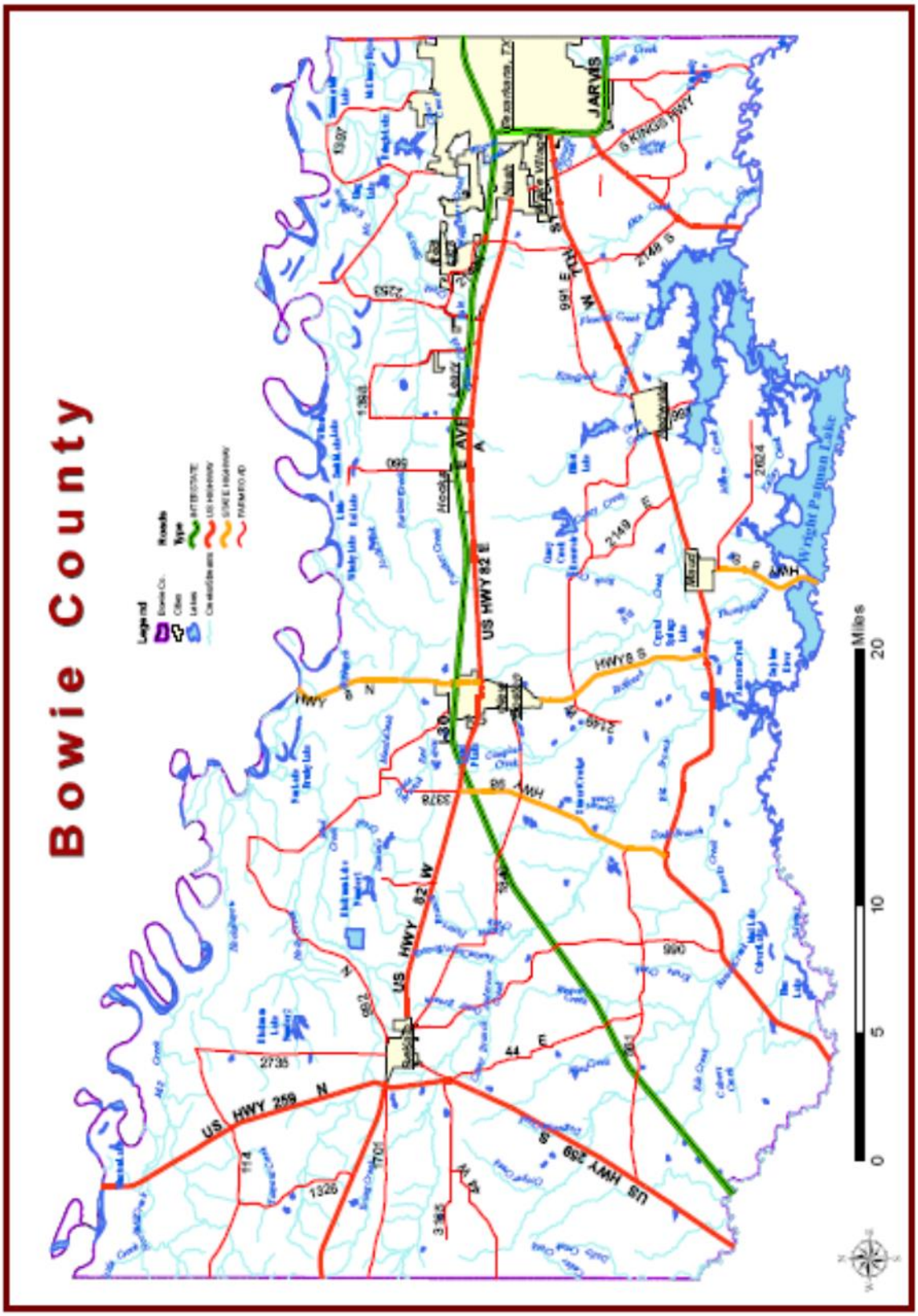
This describes the system Bowie County and the participating jurisdictions have established to monitor the plan; provides descriptions of how, when, and by whom the HMPT process and mitigation actions will be evaluated; presents the criteria used to evaluate the plan; and explains how the plan will be maintained and updated.

Through citizen involvement, the plan reflects community issues, concerns, and new ideas and perspectives on mitigation opportunities. Mitigation team members consist of representatives from various county departments and representatives from private organizations, businesses and various city government officials. Bowie County entered into a contract with The Ark-Tex Council of Governments in Texarkana, Texas, to develop the plan. The Mitigation Action Team assisted in developing plan goals and action items and shared their expertise to create a more comprehensive plan.

Newspaper postings helped publicize the meeting to neighboring counties and non-profits or other interested parties. The Ark-Tex Council of Governments staff has also met numerous times, had numerous telephone conversations, and worked individually with officials and employees from the County and each of the cities in gathering the data necessary for the plan.

Upon approval by FEMA the plan will be submitted to the County by the Mitigation Planner for final signatures. The plan will be available for public viewing online at the county seat and the city halls of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and at TexAmericas Center administration building.

BOWIE COUNTY TEXAS


Bowie County
Legend
Roads
Type
Miles
0
5
10
20
US HWY 82 E
US HWY 82 W
US HWY 259 N
US HWY 259 S
HWY 8 S
JARVIS
Wright Patman Lake

COUNTY GOVERNMENT

County government is spelled out in the Texas Constitution, which makes counties functional agents of the state. Thus, counties, unlike cities, are limited in their actions to areas of responsibility specifically spelled out in laws passed by the legislature.

At the heart of each county is the commissioner's court. Bowie County has four-precinct commissioners and a county judge who serve on this court. This body conducts the general business of the county and oversees financial matters. The major elective offices found include county attorneys, county and district clerks, county treasurer, tax assessor-collector, justices of the peace, and constables. There is an auditor appointed by the district courts.

Economic Considerations

Bowie County and many of the jurisdictions have limited revenues and the population is rural, so the needs of Bowie County remain simple. The county does not have a budget that allows for projects that can be tackled without assistance on the state or federal levels. The jurisdictions do not have elaborate local governments and the entire county is operated and maintained by a handful of dedicated workers.

Bowie County Jurisdictions Ranked by Population		
Ranking	Jurisdiction	Population
1	Unincorporated Bowie County	35,075
2	Wake Village	5,945
3	New Boston	4,612
4	Nash	3,814
5	Hooks	2,518
6	DeKalb	1,527
7	Maud	977
8	Red Lick	946
9	Redwater	853
10	Leary	433
	TexAmericas Center	N/A

The Bowie County Hazard Mitigation Plan consists of Bowie County and includes the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center.

The Hazard Mitigation Action Team assisted in developing plan goals and action items by using their own skills sets and knowledge to create a more comprehensive plan. A variety of backgrounds and experience were evident in the team members, thus provided an eclectic view of mitigation needs and solutions.

Team meetings, telephone calls and e-mail communication played a role in team member contact and plan completion. Three kick-off meetings were held with one via zoom on Friday, March 11, 2022 and two face to face meetings on March 18 & 29, 2022.

BOWIE COUNTY TEAM MEMBERS	
Name	**Title**
Lance Hall	Emergency Management Coordinator (Bowie County)
Lowell Walker	Mayor (Dekalb)
Brandon Whitehurst	(Hooks)
B.J. Martin	Mayor (Leary)
Randy Mansfield	City Administrator (Leary)
Johnny Nichols	Fire Chief (Maud)
Doug Bowers	City Manager (Nash)
Chris Taillon	Fire Chief (New Boston)
Ronald Humphrey	Mayor (New Boston)
Sandy Jackson	City Secretary (Red Lick)
Robert Lorance	Mayor (Redwater)
Hayden Moore	Assistant Fire Chief (Redwater)
John Moran	VP/Chief Financial Officer (TexAmericas Center)
Sheryl Collum	Mayor (Wake Village)
Jim Roberts	City Administrator (Wake Village)

A list of possible stakeholders was developed, and contacts were made by phone and/or by e-mail. The list includes the neighboring county judges and members of the school system, the local hospitals, and the local director of the Red Cross. A draft of the plan was posted on the Bowie County Website on INSERT DATE and notices were sent to stakeholders on INSERT DATE.

Bowie County Stakeholders				
Name	**Title**	**Company**	**Location**	**Type of Contact**
L.D. Williamson	County Judge	Red River County	Clarkesville, TX	Phone and email
Doug Reeder	Judge	Morris County	Daingerfield, TX	Phone and email
Becky Williams	Judge	Cass County	Linden, TX	Phone and email
Jason Adams	President	Christus St. Michael	Texarkana, TX	Phone and email
Tom Gilbert	President	Wadley Hospital	Texarkana, TX	Phone and email
Christal Prince	Director	American Red Cross	Texarkana, TX	Phone and email
Keith Minter	Superintendent	Hooks ISD	Hooks, TX	Phone and email.
Traci Drake	Superintendent	Hubbard ISD	Hubbard, TX	Phone and email
Chris Galloway	Superintendent	DeKalb ISD	DeKalb, TX	Phone and email
Jennifer Dear	Administrator	Leary ISD	Leary, TX	Phone and email
Stacy Starrett	Superintendent	Malta ISD	Malta, TX	Phone and email
Chris Bradshaw	Superintendent	Maud ISD	Maud, TX	Phone and email
Brian Bobbitt	Superintendent	New Boston ISD	New Boston, TX	Phone and email
Brandon Dennard	Superintendent	Red Lick ISD	Red Lick, TX	Phone and email
Kelly Burns	Superintendent	Redwater ISD	Redwater, TX	Phone and email
Rex Burks	Superintendent	Simms ISD	Simms, TX	Phone and email
Doug Brubaker	Superintendent	Texarkana ISD	Texarkana, TX	Phone and email

Public Participation

Public participation is a key component to strategic planning processes. Citizen participation offers citizens the chance to voice their ideas, interests, and opinions. Opportunities were given to the citizens of Bowie County to participate in planning and to review the plan.

On insert date a plan draft was posted on the Bowie County Website. Contact information was posted on the site. Notices were posted at the courthouse and the county clerk's office on insert date and in the local newspaper running insert dates. There were no public comments or suggestions offered during the plan development process.

SECTION II

HAZARD IDENTIFICATION AND ASSESSMENT

Extreme Weather and Climate Change

Currently there is a strong scientific consensus that the Earth is warming and that this warming is mainly caused by human activities. This consensus is supported by various studies of scientists' opinions and by position statements of scientific organizations, many of which explicitly agree with the Intergovernmental Panel on Climate Change (IPCC) synthesis reports.

Nearly all publishing climate scientist (97-98%) support the consensus on anthropogenic climate change, and the remaining 3% of contrarian studies either cannot be replicated or contain errors.

One of the most visible consequences of a warming world is an increase in the intensity and frequency of extreme weather events. The National Climate Assessment finds that the number of heat waves, heavy downpours, and major hurricanes has increased in the United States, and the strength of these events has increased, too.

There are no national or major scientific institutions anywhere in the world that would dispute the theory of anthropogenic climate change ***that will increase the likelihood of unstable weather patterns.***

Climate models have previously shown that Earth will see more heavy rainstorms as the atmosphere warms, but a new climate model developed by NASA researchers is the first to show the difference in strength between storms that occur over land and those over the ocean and how storms strengths will change in general.

These conclusions are particularly bad news for the storm-prone portions of the central and eastern United States, where strong winds are a major source of weather-related casualties. Also, according to NASA, Global warming will make severe thunderstorms and tornadoes a more common feature of U.S. weather.

The western United States won't catch a break either – while it is expected to get drier, the storms that so form are likely to have more lightning, which could then trigger more wildfires.

No single weather event can be directly attributed to climate change. But as the globe warms up, Americans can expect more storms bearing done on much of the United States, scientist say.

Even increased snowfall has a climate change connection. That's not because the Feb. 1, 2011 storm can be linked to rising atmospheric carbon dioxide levels or increasing global temperature – again, such a connection is impossible to make – but, according to climatologists, an increased propensity for winter storms is exactly what you'd expect in a warming climate.

"There's no consistency at all," Michael Mann, the director of the Penn State Earth System Science Center, told LiveScience. "If anything, this is what the models project: that we see more of these very large snowfalls."

"Drier conditions near the ground combined with higher lightning flash rates per storm may end up intensifying wildfire damage," said study leader Tony Del Genio of NASA's Goddard Institute for Space Studies in New York.

"Climate is the statistic of weather over the long term," Ken Caldeira, a senior scientist at the Carnegie Institute for Science at Stanford University, told LiveScience. "No specific weather event can by itself confirm or disprove the body of scientific knowledge associated with climate change."

Regardless of individual views regarding global warming, extreme weather patterns over the last ten years are self-evident. We can easily predict that continued extremes in weather, like those mentioned above, will occur in the foreseeable future.

Hazard Identification

All of Bowie County and the jurisdictions included in this plan are susceptible to several possible natural hazards. According to the FEMA National Risk Index Bowie Counties risk for all hazards is relatively moderate. 82.6% of U.S. Counties have a lower risk index and 72.4% of counties in Texas have a lower Risk Index. The Hazard Mitigation Team with the assistance of the Ark-Tex Council of Governments Hazard Mitigation planners conducted a comprehensive Hazard Analysis beginning March 21, 2022. The hazard analysis will be reviewed annually, and updated as needed during the formal review process.

The Hazard Mitigation Team identified the following hazards that had the potential to cause personal or property damage in the county:

- Flood
- Tornado
- Winter Storm
- Thunderstorm Winds
- Hailstorm
- Drought
- Wildfire
- Lightning
- Dam Failure
- Extreme Heat
- Earthquake

AREAS OF RISK

Hazards with distinct area of risk	Hazards without distinct area of risk
Flood	Tornado
Dam Failure	Drought
Wildfire	Lightning
Earthquake	Winter Storm
	Thunderstorm Winds
	Hailstorm
	Extreme Heat

Hazards Listed in the Texas Hazard Mitigation Plan Not Included in the Bowie County Plan

Hazard	Reason for Exclusion
Tropical storms	Bowie County is over 300 miles from the Texas coast. Tropical storms are not an issue for Bowie County. The planning area has no history of Tropical Storms hazards: therefore, no impacts are expected in the future.
Coastal erosion	Bowie County is over 300 miles from the coast. Coastal erosion is not an issue for Bowie County. The planning area has no history of Coastal erosion hazard: therefore, no impacts are expected in the future.
Expansive soils	There is no evidence that expansive soils are an issue for Bowie County. The planning area has no history of expansive soils hazard; therefore, no impacts are expected in the future.
Land subsidence	There is no evidence that land subsidence is an issue for Bowie County. The planning area has no history of Land Subsidence hazard; therefore, no impacts are expected in the future.

The process for identifying hazards included looking at historical data to determine which hazards seemed to occur in Bowie County. Sources used were newspaper articles, general local knowledge of jurisdictions' staff and local residents, NOAA Satellite and Information Service, National Climatic Data Center reports, and advice from FEMA Hazard Mitigation Plan reviewers and the Texas Department of Emergency Management staff.

Hazards How and Why

Hazard	How Identified	Why Identified
Flood	• Review Repetitive Flood Properties. • NOAA • Newspaper accounts • Input from public • Review of FIRMS	• The County contains many creeks, streams and rivers. • The County has experienced flooding in the past. • Flooding is a frequent issue.
Tornado	• Public Input • National Weather Service • Past History • NCDC Data Base	• Public Concern • Past History • Frequency
Winter Storm	• Past Disasters (2000 ice storm) costliest in recent memory. • Public input • NOAA • National Weather Center	• Little equipment to fight ice and snow. • Heavy psychological toll on population. • Population not educated about dealing with outages etc.
Thunderstorm Winds	• NOAA reports • Public Input • Newspaper Accounts	• Wind shears an ongoing problem • Severe thunderstorms with accompanying high winds occur every year.
Hail	• Newspaper accounts • NOAA • Input from public	• Frequency • Past History • Public Concern
Droughts	• History • Review of NCDC database • Public Input	• Costly to agri-business. • Drought common to state and county.
Extreme Heat	• History • Review of NCDC database • Public Input	• Costly to agri-business. • Extreme heat common to state and county.
Wildfire	• Fire databases • Public Input • Texas Forestry • Newspaper Articles	• More wildfire occurrences than any other natural disaster. • Can be common to drought and storms. • Rural areas most vulnerable.
Earthquake	• Public Input	• Concern that Bowie County is in moderate proximity to the New Madrid fault.
Dam Failure	• Public Input	• Dams in Texarkana and in the county pose possible threats to life and property.

Determining Risk

The following tables represent the factors used to calculate overall risk in Bowie County or in the participating jurisdictions.

Severity x .45 + Probability x .30 + Warning Time x .15 + Duration x .10 = Risk

Potential Severity of Impact: (45% of Priority Risk Index)	
SUBSTANTIAL Index Value = 4	• Possible fatalities • Complete shutdown of facilities for 30 days or more • More than 50 percent of property destroyed or with major damage
MAJOR Index Value - 3	• Possible permanent disability from injuries and illnesses • Complete shutdown of critical facilities for at least 2 weeks • More than 25 percent of property destroyed or with major damage
MINOR Index Value = 2	• Injuries and/or illnesses do no result in permanent disability • Complete shutdown of critical facilities for more than 1 week • More than 10 percent of property destroyed or with major damage
LIMITED Index Value = 1	• Injuries and/or illnesses are treatable with first aid • Shutdown of critical facilities and services for 24 hours or less • Less than 10 percent of property destroyed or with major damage

Probability of Future Events: (30% of Priority Risk Index)	
Highly Likely Index Value = 4	Event probable in the next year 1/1 = 1.00 (Greater than .33)
Likely Index Value = 3	Event probable in next 3 years 1/3 = .33 (Greater than 0.20, but less than or equal to 0.33)
Occasional Index Value = 2	Event probable in next 5 years 1/5 = 0.20 (Greater than 0.10, but less than or equal to 0.20)
Unlikely Index Value = 1	Event probable in next 10 years 1/10 = 0.10 90.10 or less)

Formula for probability: # events divided by the # of years on record i.e. 10 flood events in a 20-year period would give a 10/20 = .50 Value index of 4 (Highly Likely)

Warning Time: (15% of Priority Risk Index)	
Index Value = 4	Less than 6 hours
Index Value = 3	6 to 12 hours
Index Value = 2	12 to 24 hours
Index Value = 1	More than 24 hours

Duration: (10% of Priority Risk Index)	
Index Value = 4	More than a week
Index Value = 3	Less than a week
Index Value = 2	Less than 24 hours
Index Value = 1	Less than 6 hours

Priority Risk Index (PRI)

High Risk	PRI of 3.0 or greater
Medium Risk	PRI score 2.0 to 3.0
Low Risk	PRI score less than 2.0

PRI Value = (Impact x .45%) + (Probability x 30%) + (Warning Time x 15%) + (Duration x 10%)

Vulnerability is categorized as "Low" to "High". These terms are defined as follows:

Vulnerability	
LOW	Limited or no history of significant impacts to property, infrastructure and/or public safety.
MODERATE	People and facilities located in areas that have low levels of historic occurrence of impacts from hazard and/or in areas where impact is possible but not probable.
HIGH	People and facilities located in areas that have previously experienced impacts from hazards and/or in areas where impacts from hazards are possible and probable. Future damage to property and infrastructure is probable and/or a documented history of threat to public safety exists.

PROPRTY DAMAGE ASSESSMENT

The following damage assessment tables are used to estimate monetary loss due to natural hazards in Bowie County.

BOWIE COUNTY UNINCORPORATED				
Structure Type	$ Value	75%	50%	25%
Residential	$1,139,707,256	$854,780,442	$569,853,628	$284,926,814
Commercial	$63,120,483	$47,340,362	$31,560,242	$15,780,121
Industrial	$27,520,791	$20,640,593	$13,760,396	$6,880,198
Exempt Property	$930,769	$698,076.75	$465,385	$232,692
Totals	$1,231,279,300	$923,459,475	$615,639,650	$307,819,825

DEKALB				
Structure Type	$ Value	75%	50%	25%
Residential	$43,898,100	$32,923,575	$21,949,050	$10,974,525
Commercial	$15,711,473	$11,783,605	$7,855,737	$3,927,868
Industrial	$111,107	$83,330	$55,554	$27,777
Exempt Property	$279,868	$209,901	$139,934	$69,967
Totals	$60,000,548	$45,000,411	$30,000,274	$15,000,137

HOOKS				
Structure Type	$ Value	75%	50%	25%
Residential	$65,644,204	$49,233,153	$32,822,102	$16,411,051
Commercial	$10,948,332	$8,211,249	$5,474,166	$2,737,083
Industrial	$76,805	$57,604	$38,403	$19,201
Exempt Property	$0	$0.00	$0.0	$0.00
Totals	$76,669,341	$57,502,006	$38,334,671	$19,167,335

LEARY				
Structure Type	$ Value	75%	50%	25%
Residential	$10,098,241	$7,573,681	$5,049,121	$2,524,560
Commercial	$6,099,415	$4,574,561	$3,049,708	$1,524,854
Industrial	$0	$0	$0	$0
Exempt Property	$0	$0	$0	$0
Totals	$16,197,656	$12,148,242	$8,098,828	$4,049,414

MAUD				
Structure Type	$ Value	75%	50%	25%
Residential	$26,000,372	$19,500,279	$13,000,186	$6,500,093
Commercial	$2,723,010	$2,042,258	$1,361,505	$680,753
Industrial	$80,487	$60,365	$40,244	$20,122
Exempt Property	$0	$0	$0	$0
Totals	$28,803,869	$21,602,902	$14,401,935	$7,200,967

NASH				
Structure Type	$ Value	75%	50%	25%
Residential	$89,094,123	$66,820,592	$44,547,062	$22,273,531
Commercial	$30,886,390	$23,164,793	$15,443,195	$7,721,598
Industrial	$39,054,915	$29,291,186	$19,527,458	$9,763,729
Exempt Property	$0	$0	$0	$0
Totals	$159,035,428	$119,276,571	$79,517,714	$39,758,857

NEW BOSTON				
Structure Type	$ Value	75%	50%	25%
Residential	$126,622,007	$94,966,505	$63,311,004	$31,655,502
Commercial	$61,396,701	$46,047,526	$30,698,351	$15,349,175
Industrial	$474,478	$355,859	$237,239	$118,620
Exempt Property	$271,406	$203,554.50	$135,703.0	$67,852
Totals	$188,764,592	$141,573,444	$94,382,296	$47,191,148

RED LICK				
Structure Type	$ Value	75%	50%	25%
Residential	$67,804,352	$50,853,264	$33,902,176	$16,951,088
Commercial	$715,113	$536,335	$357,557	$178,778
Industrial	$723,231	$542,423	$361,616	$180,808
Exempt Property	$0	$0	$0	$0
Totals	$69,242,696	$51,932,022	$34,621,348	$17,310,674

REDWATER				
Structure Type	$ Value	75%	50%	25%
Residential	$19,103,053	$14,327,290	$9,551,527	$4,775,763
Commercial	$3,596,624	$2,697,468	$1,798,312	$899,156
Industrial	$85,924	$64,443	$42,962	$21,481
Exempt Property	$51,059	$38,294.25	$25,529.5	$12,764.75
Totals	$22,836,660	$17,127,495	$11,418,330	$5,709,165

WAKE VILLAGE				
Structure Type	$ Value	75%	50%	25%
Residential	$273,936,997	$205,452,748	$136,968,499	$68,484,249
Commercial	$29,015,734	$21,761,801	$14,507,867	$7,253,934
Industrial	$1,040,520	$780,390	$520,260	$260,130
Exempt Property	$18,975	$14,231.25	$9,487	$4,743.75
Totals	$304,012,226	$228,009,169.50	$152,006,113	$76,003,057

TEXAMERICAS CENTER				
Structure Type	$ Value	75%	50%	25%
Residential	$0	$0	$0	$0
Commercial	$0	$0	$0	$0
Industrial	$0	$0	$0	$0
Exempt Property	$23,336,568.16	$17,502,426.12	$11,668,284.08	$5,834,142.04
Totals	$23,336,568.16	$17,502,426.12	$11,668,284.08	$5,834,142.04

Hazard Assessment Elements

The Hazard Profiles, found in the following sections, were prepared for each identified natural hazard and assess the hazard per the following seven elements.

1. **Description:** Identification and description of hazards likely to affect the multi-jurisdictional area along with the sources used to identify these hazards.
2. **Location:** The location or geographic area affected by each natural hazard along with a map of the area affected.
3. **Impact:** Impact describes the hazard's potential severity of impact that the hazard event is capable of inflicting upon the county and jurisdictions. Classification methods such as the Fujita Scale and Richter Scales are used to illustrate extent. Due to the limited amount of county and city specific documented data, some of the analysis for determining potential severity was limited to obtaining opinion and information furnished by local residents, emergency responders, and the county and city Emergency Management Coordinators.
4. **Previous Occurrences:** Previous Occurrences describes the hazard in terms of what, when, and where past events have occurred and the extent of damages.
5. **Probability of Future Events**: Probability of Future Events described the probability that the hazard will occur within the county and jurisdictions.
6. **Vulnerability:** Vulnerability describes how exposed or susceptible to damage the county is in terms of why and where the hazard can occur within the county and/or the other jurisdictions. The vulnerability is the risk of future occurrences. HAZUS, THMP, and other local data were used to establish a base map and conduct risk assessments.
7. **Overall Summary of Vulnerability and Impacts:** This section summarizes the vulnerability of the entire county and the possible impacts of the natural disaster.

HAZARD ANALYSIS

Simply put, hazard analysis is an evaluation of the types of hazards (emergencies) that have occurred in the past or could occur in the future, identification of the population at risk, and an evaluation of the hazards versus the population to determine overall vulnerability.

The following steps were taken:

- Identification of the Hazards. Determination of the hazards, both natural and technical, that could affect the county.
- Profiling the Hazard Events. Determination of how bad a hazard can get.
- Inventorying Assets. Determination of where and/or to what extent the hazards can affect the assets of the county/city.
- Estimating Losses. Determining how the hazards will affect the county/city.

SECTION III

HAZARD DESCRIPTIONS

FLOOD

Floods are the most common natural disaster in the United States. They have brought destruction to every state and nearly every county, and in many areas, they are getting worse. As global warming continues to exacerbate sea level rise and extreme weather, our nation's floodplains are expected to grow by approximately 45 percent by century's end. (www.nrdc.org)

FLOOD TYPES

Flash Flood: A flash flood generally results from a torrential rain on a relatively small drainage area. Runoff from these rainfalls results in high floodwater that can cause destruction of homes, buildings, bridges, and roads. Flash floods are a threat to public safety in areas where the terrain is steep and surface runoff rates are high.

Riverine Floods: Riverine floods are caused by precipitation over large areas and differ from flash floods in their extent and duration. Floods in large river systems may continue for periods ranging from a few hours to many days.

FLOODPLAINS

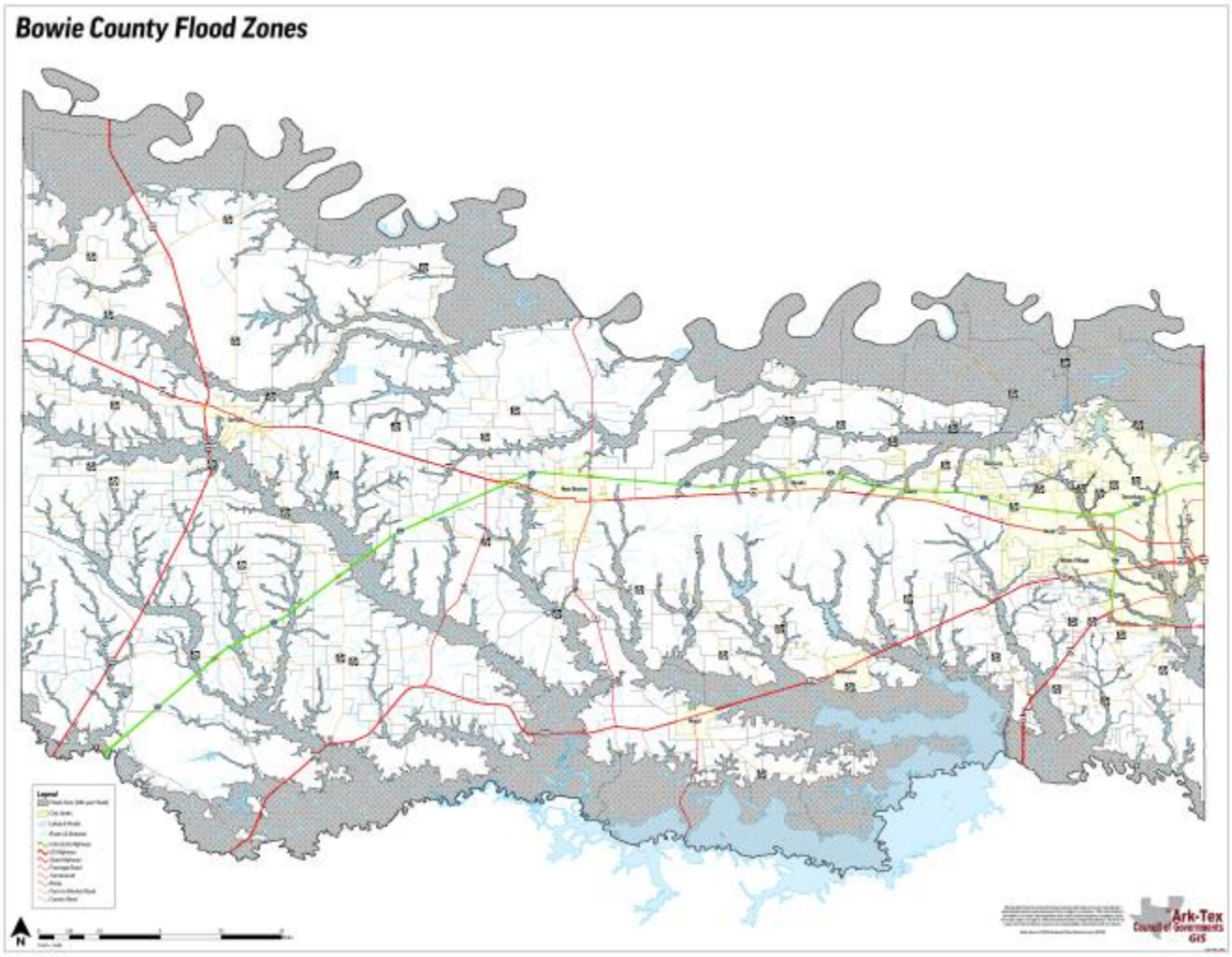
The lowland and flat areas adjoining inland and coastal waters including, at a minimum, that area subject to a one percent or greater chance of flooding in any given year.

100-Year Flood: There is one chance in 100, or a 1% chance of a flood of such magnitude or greater occurring in any given year. There is no guarantee that a similar flood will not occur in the next year, or in the next month.

Floodway: That portion of the floodplain which is effective in carrying flow, within which this carrying capacity must be preserved and where water depths and velocities are the greatest. It is the area along the channel that provides for the discharge of the base flood so the cumulative increase in water surface elevation is no more than one foot.

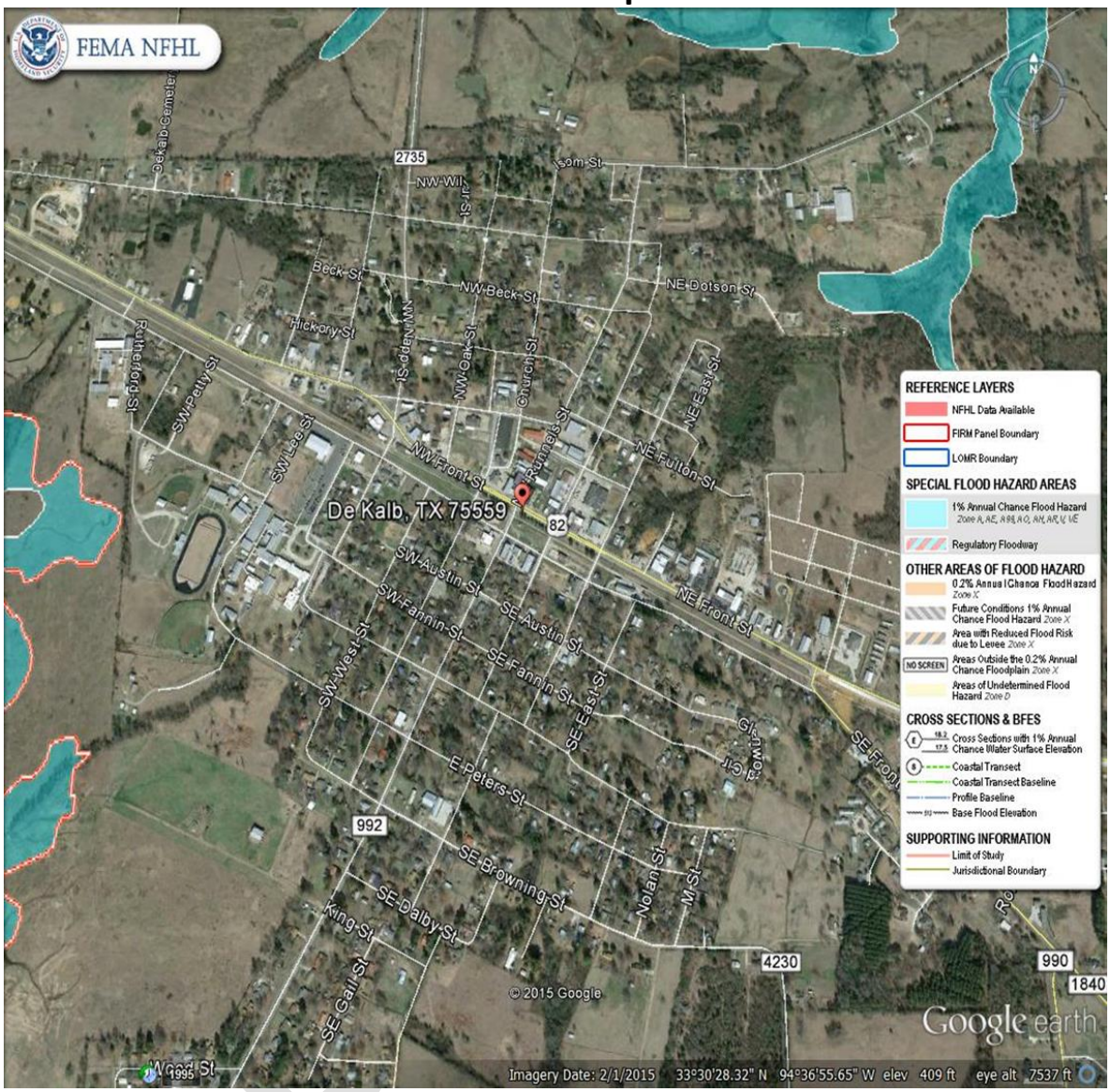
Impact: The magnitude of observed or forecast flooding is conveyed using flood severity categories. These flood severity categories include minor flooding, moderate flooding, and major flooding. Each category has a definition based on property damage and public threat. Minor damage is defined as minimal or no property damage, but possibly some public threat or inconvenience. Moderate damage is defined as some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations are necessary. Major damage is defined as extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations. The impact of floods varies locally.

Bowie County Flood Zones

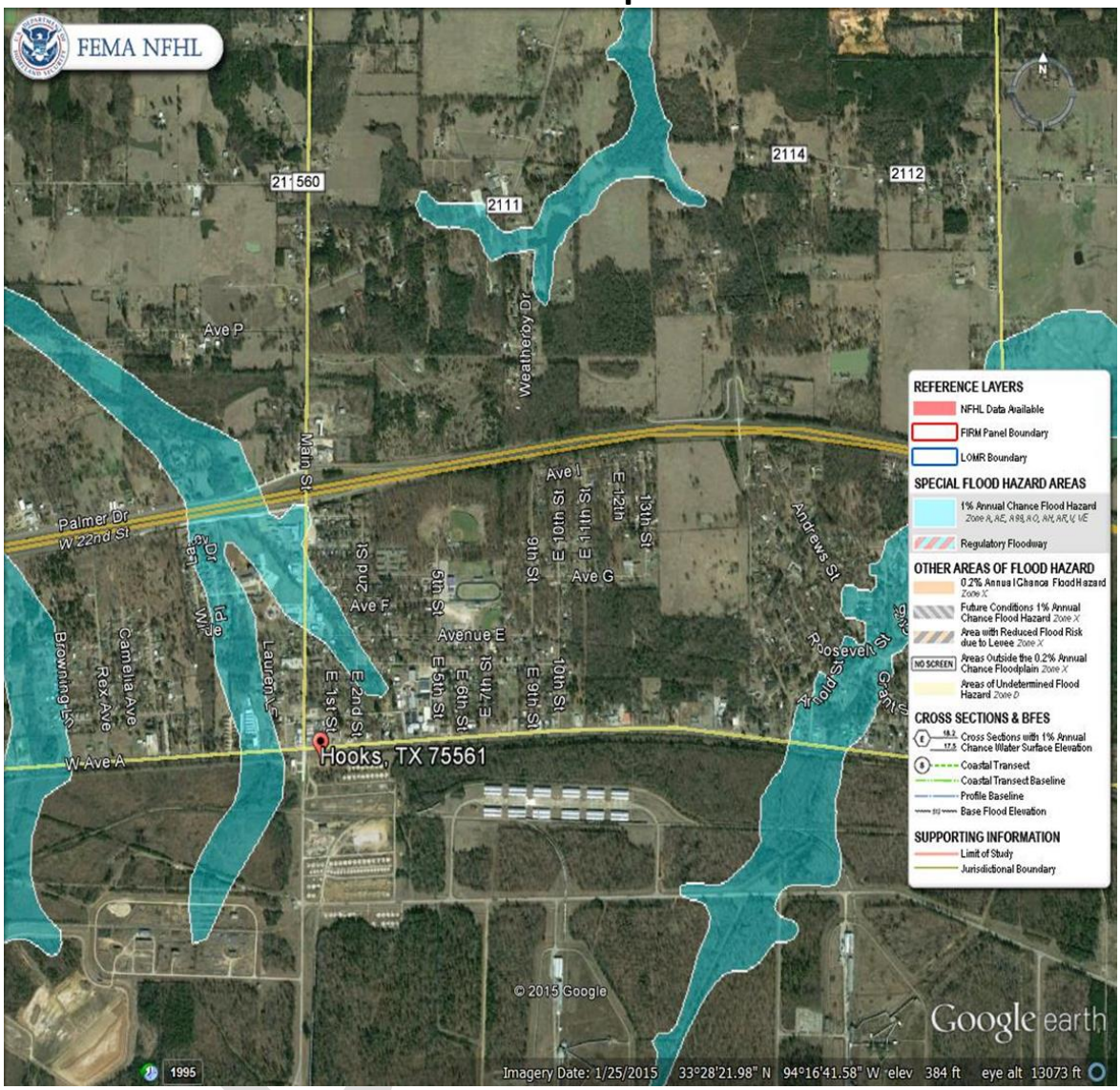


The following are floodplain maps for DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center.

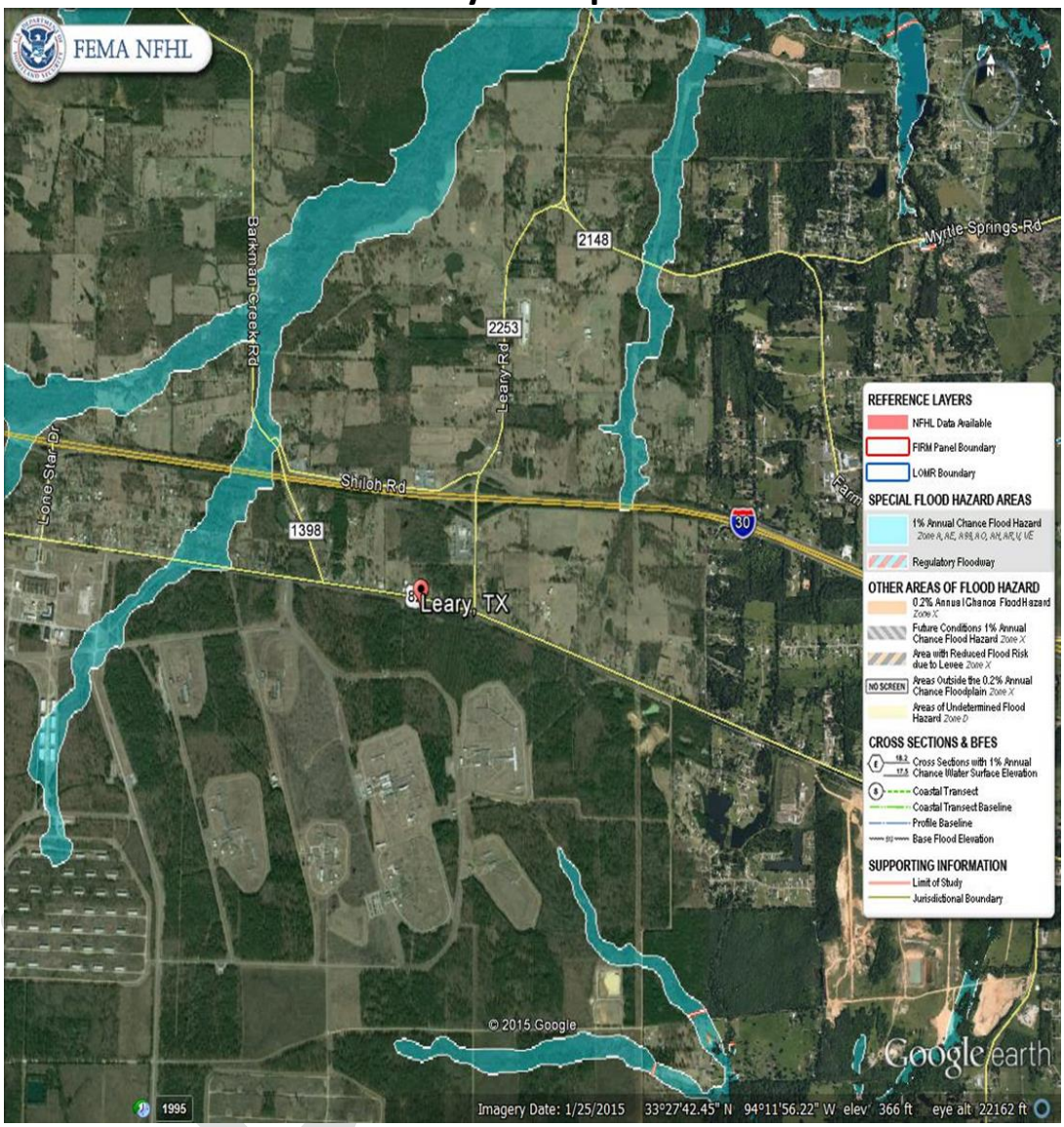
DeKalb Floodplain



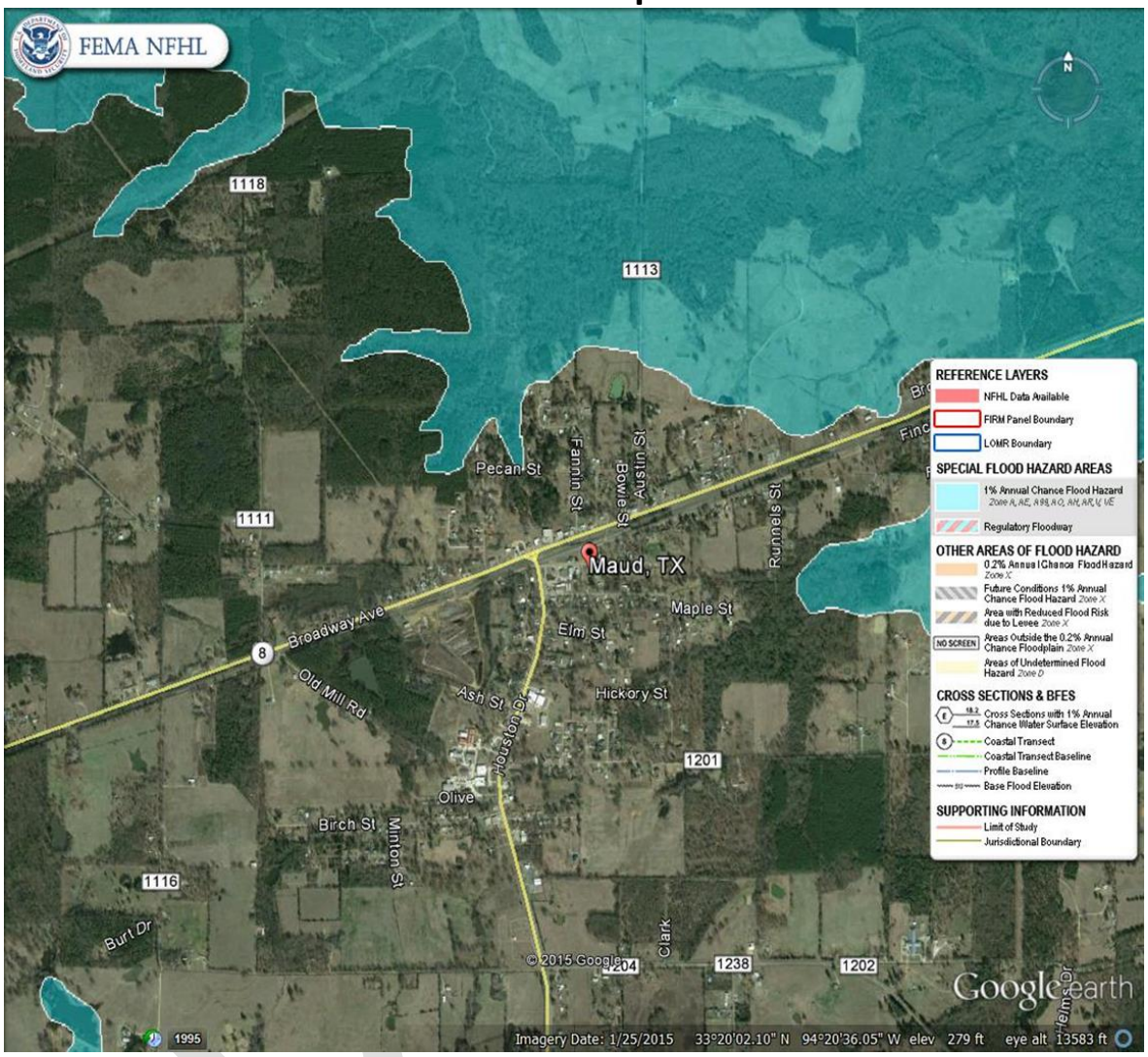
Hooks Floodplain



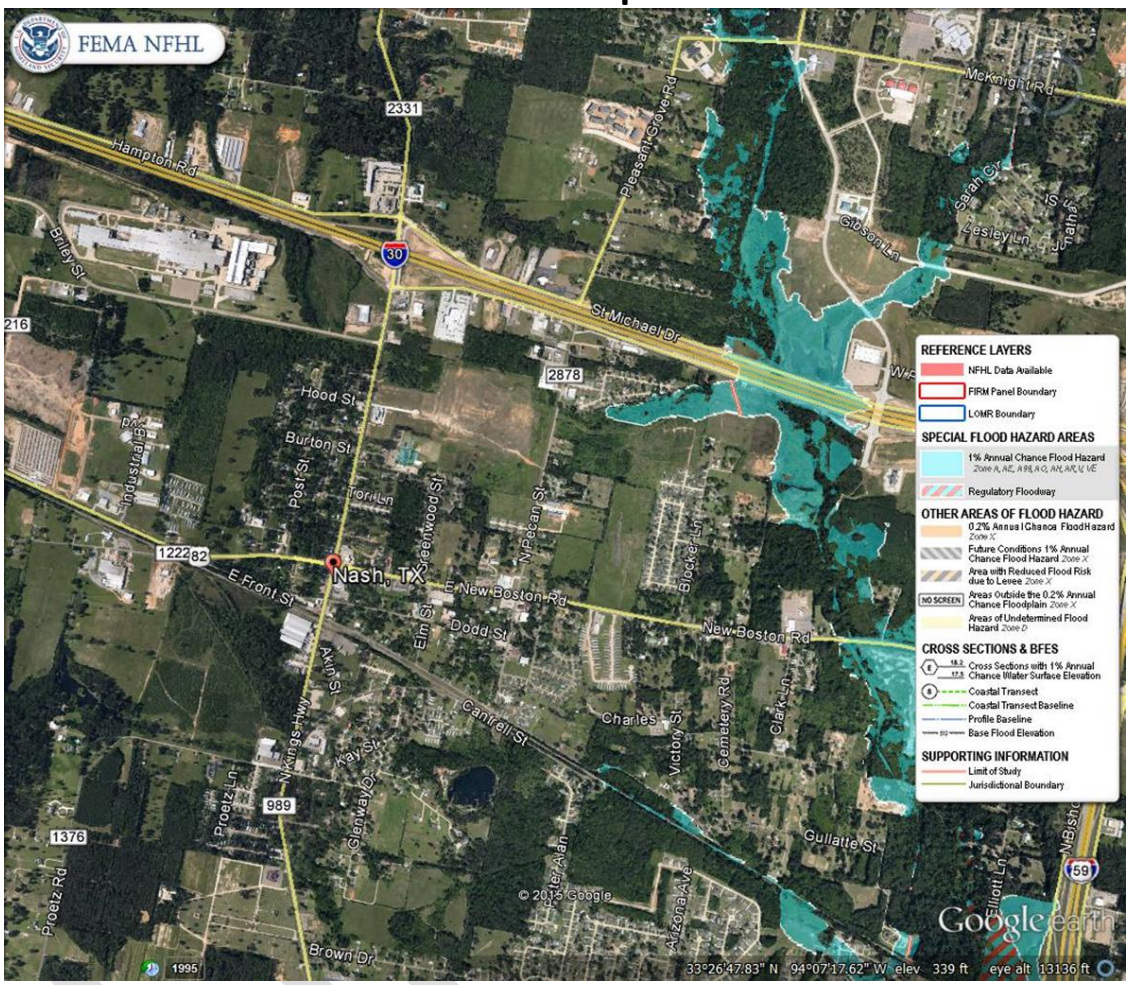
Leary Floodplain



Maud Floodplain

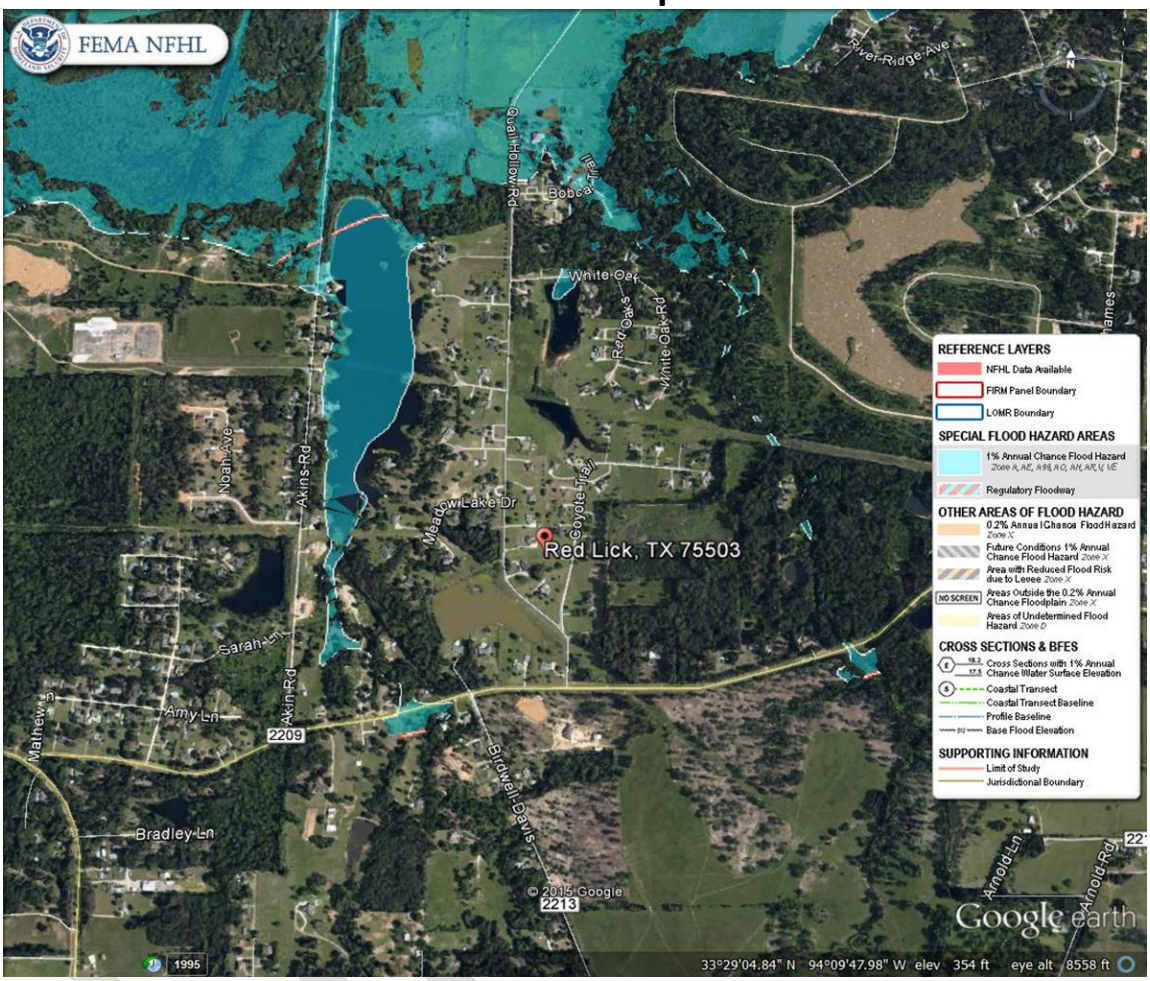


Nash Floodplain

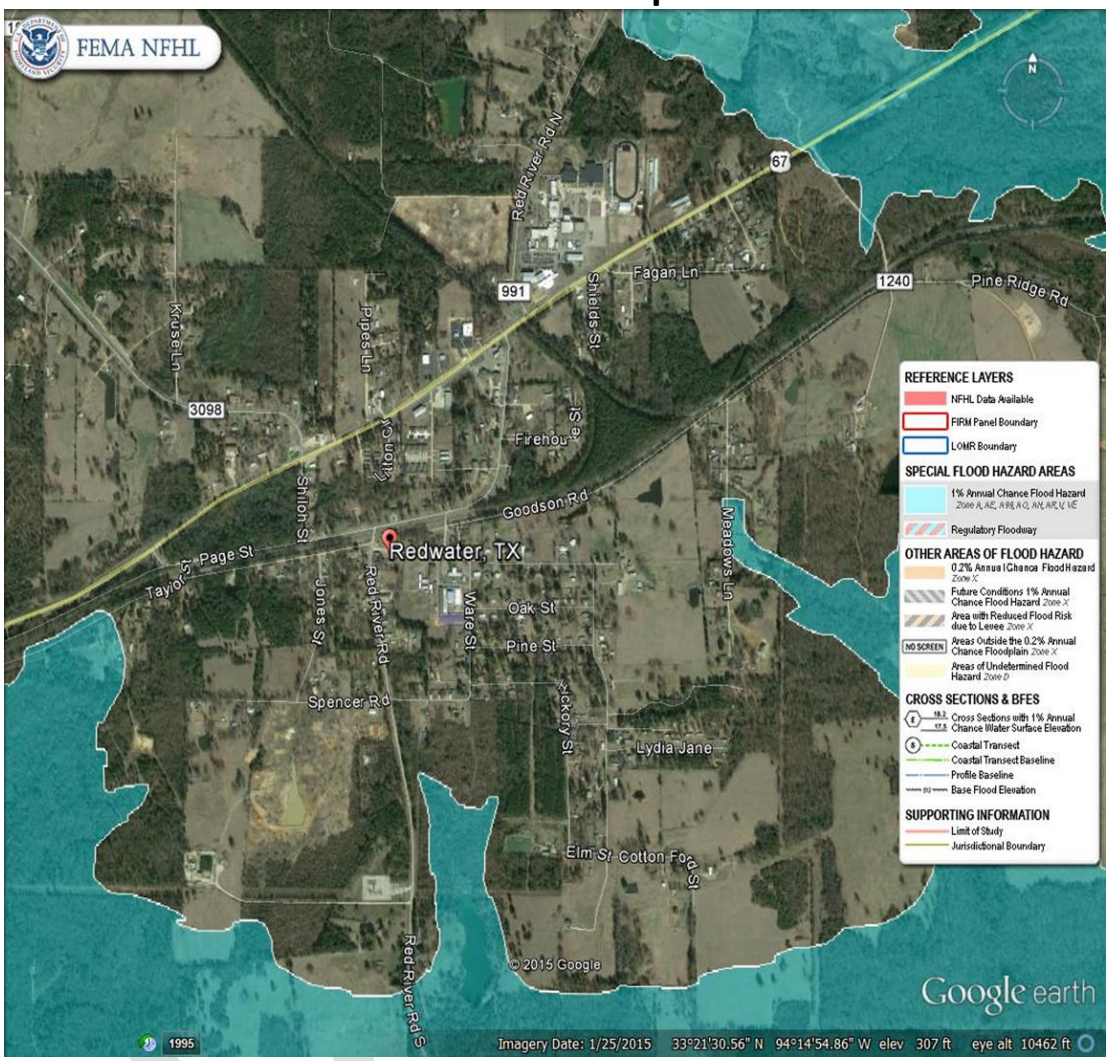


New Boston Floodplain

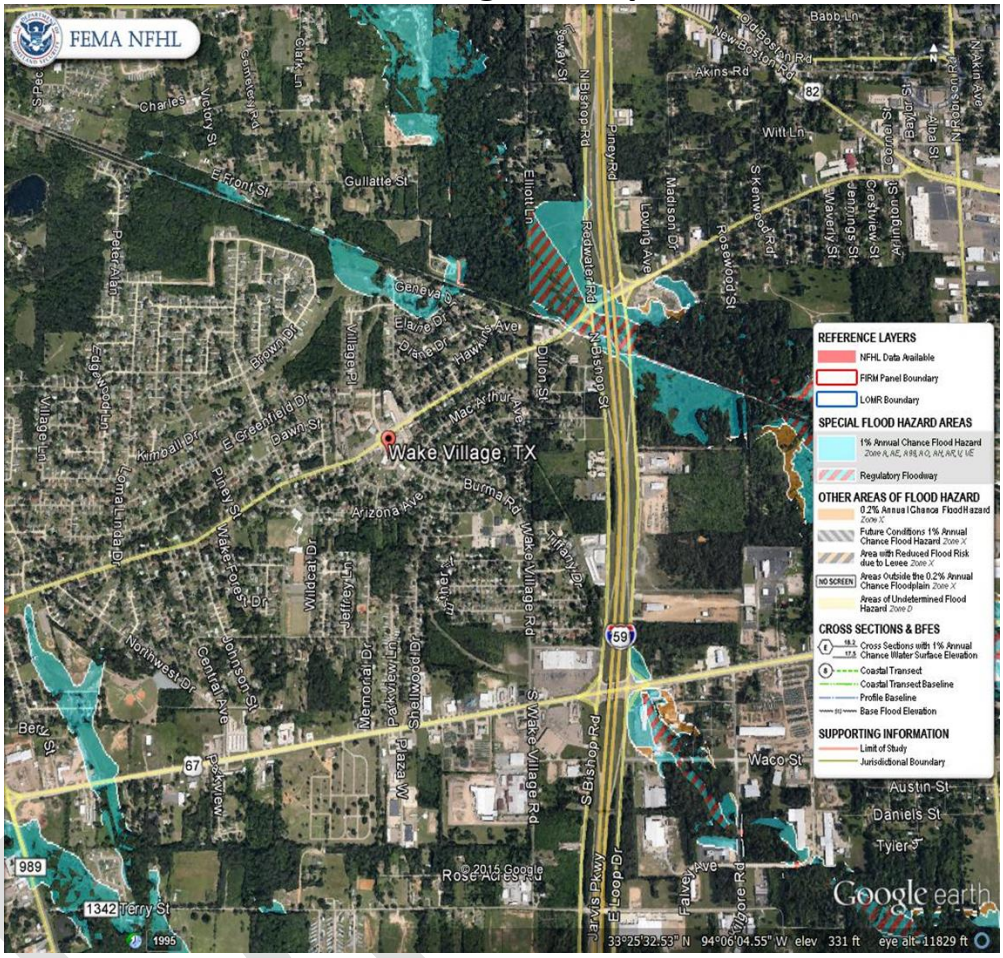
Red Lick Floodplain



Redwater Floodplain



Wake Village Floodplain



TexAmericas Center Floodplain

Flood Plain Maps Narrative

Bowie County and the jurisdictions of Hooks, Leary, Maud, Nash, New Boston, Redwater, and Wake Village participate in the NFIP program. They have flood plain maps and a designated representative to monitor new construction to prevent anyone from developing in low areas. Priority was given to each action by the HMPT. Each NFIP action was weighted regarding ultimate impact on buildings and infrastructure. These participating jurisdictions are taking positive steps to remain in compliance such as widening ditches and revising building codes. These jurisdictions will use NFIP community workshops to provide information and incentives for property owners to acquire flood insurance and taking action to minimize the effects of flooding on people, property, also, through measures including flood warning, emergency response, and evacuation planning.

As a special district, TexAmericas Center is not eligible to participate in the NFIP program. DeKalb and Red Lick are not participating in the national flood insurance program at this time due to oversight and lack of understanding of importance. DeKalb and Red Lick will have an action of becoming a member of the NFIP program.

A repetitive Loss Structure is an NFIP-insured structure that has had at least 2 paid flood losses of more than $1,000 each in any 10-year period since 1978. Unincorporated Bowie County, DeKalb, Leary, Maud, Red Lick, and Redwater have no repetitive flood properties on record. The jurisdictions of Hooks, Nash, New Boston and Wake Village have the following.

Repetitive Loss Structures

Source: Repetitive Loss Structures (arcgis.com)

Hooks: Repetitive Loss Structures: **1** Total Losses: **2** Total Paid: **$57,764.69**
Nash: Repetitive Loss Structures: **2** Total Losses: **8** Total Paid: **$291,885.11**
New Boston: Repetitive Loss Structures: 1 Total Losses: 2 Total Paid: **$26,180.41**
Wake Village: Repetitive Loss Structures: **2** Total Losses: **5** Total Paid: **$27,523.89**

Bowie County Unincorporated
Bowie County Unincorporated has a total of 557,760 acres. The total taxable value of all property in the unincorporated cities is approximately 1.2 billion dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There is no record of repetitive flood loss.

DeKalb
The City of Dekalb has a total of 876 acres inside the city limits. The 100-year flood plain covers approximately .8 acres or .09% of the total acreage. The total taxable value of all property in the city is approximately 59.7 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. No record of repetitive flood losses.

Hooks
The city of Hooks has a total of 1,338 acres inside the city limits. The 100-year flood plain covers approximately 184.5 acres or 13.7% of the total acreage. The total taxable value of all property in the city is approximately 76.5 million dollars. So, the approximate amount of damage experienced in a 100-year flood event as a percentage of acreage would be approximately 21 million dollars, or moderate damage. There would be some inundation of structures and roads near streams. There is record of repetitive flood losses with one structure.

Leary
The city of Leary has a total of 838 acres inside the city limits. The 100-year flood plain covers approximately 260.7 acres or 37% of the total acreage. The total taxable value of all property in the city is approximately 16 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. No record of repetitive flood losses.

Maud
The city of Maud has a total of 954 acres inside the city limits. The 100-year flood plain covers approximately 24 acres or 2.5% of the total acreage. The total taxable value of all property in the city is approximately 28.8 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. No record of repetitive flood losses.

Nash
The city of Nash has a total of 2,867 acres inside the city limits. The 100-year flood plain covers approximately 57 acres or 1.9% of the total acreage. The total taxable value of all property in the city is approximately 159 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or

no property damage, but possibly some public threat or inconvenience. There have been two structures with repetitive flood losses. Nash contains a regulatory floodway.

New Boston

The city of New Boston has a total of 2,579 acres inside the city limits. The total taxable value of all property in the city is approximately 188.7 million. Due to the location of the observed flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There is one structure with repetitive flood loss.

Red Lick

The city of Red Lick has a total of 1,235 acres inside the city limits. The 100-year flood plain is not listed for the city. The total taxable value of all property in the city is approximately 69 million dollars. Due to the location of the observed flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. No record of repetitive flood losses.

Redwater

The city of Redwater has a total of 1,274 acres inside the city limits. The 100-year flood plain covers approximately 53.6 acres or 4.4% of the total acreage. The total taxable value of all property in the city is approximately 22.7 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. No record of repetitive flood losses.

W**ake Village**

The city of Wake Village has a total of 1,914 acres inside the city limits. The 100-year flood plain covers approximately 46 acres or 2.4% of the total acreage. The total taxable value of all property in the city is approximately 303.9 Million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. There are two repetitive loss properties in Wake Village. Wake Village contains a regulatory floodway.

TexAmericas Center

The jurisdiction of TexAmericas has a total of 12,000 acres that are separated into three campuses', East: 8,900 acres rail serviced, heavy utilities, 80,000lb truck routes, Central: 765 acres rail serviced, heavy utilities, 80,000lb truck routes, and West: 2,900 acres Rural, future development. The property also includes a Golf Course, PX and On-Site Police, Fire and Emergency Rescue services. The total value of all properties at TexAmericas Center is approximately 23.3 million dollars.

PAST OCCURANCES OF FLOODING IN BOWIE COUNTY

(Data from National Climatic Data Center)

Ten Year Profile

April 25, 2011: (New Boston) Moderate street flooding was occurring along Hwy. 82...Hwy 8 and many smaller streets in the central portion of the county.

June 9, 2014: (Nash) High water was reported on Hwy. 82 between Kings Highway and the Wal-Mart in Nash, Texas. (Texarkana) Seventh Street near the Railroad Bridge was flooded/closed.

May 11, 2015: (New Boston) Several roads were flooded and closed in and around the community.

May 25, 2015: (Wamba) Excessive heavy rainfall closed Richland Road near Pleasant Grove. (Texarkana) Numerous roads and highways were flooded and closed due to excessive heavy rainfall.

July 4, 2015: (DeKalb) Hwy. 82 was flooded between DeKalb and Malta, Texas. High water was reported over Hwy. 82 and FM. 1840.

March 8, 2016: (Wake Village) Deep water reported at the intersection of New Boston Road and North Robison Road. (Hooks) Severe flooding was reported on Hwy. 82 between Hooks and New Boston, Texas.

February 21, 2018: (College Hill) A vehicle was washed off of County Road 4115 off of FM 990 southeast of Dekalb.

January 10, 2020: (DeKalb) Farm to Market Road 1840 was flooded between County Road 4201 and County Road 4112.

May 16, 2020: (Oak Grove) County Road 4321 between Avery and Dekalb was impassable due to flooding.

May 26, 2021: (Eylau) 7th Street was covered in high water along an extended stretch of the roadway. West 7th Street was closed at the Kansas City Southern underpass, the 40th Street and Potomac Street intersection. (DeKalb) Widespread flash flooding across much of Bowie County resulted in the closure of numerous roads. A few water rescues were also needed from stranded vehicles. Water entered several structures throughout the county as well.

December 16, 2021: (Nash) Numerous roads were flooded and closed due to high water, with several vehicles stranded in high water. High water rescues were needed from some of the stranded vehicles.

Bowie County Flood Risk					
Jurisdiction	**Impact (45%)**	**Probability (30%)**	**Warning Time (15%)**	**Duration (10%)**	**PRI Score**
Bowie County	Major PRI=3	Highly Likely PRI=4	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	High 3.35
DeKalb	Limited PRI=1	Unlikely PRI= 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Hooks	Limited PRI=1	Unlikely PRI= 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Leary	Limited PRI = 1	Unlikely PRI = 1	<6 hrs. PRI = 4	< 24 hrs. PRI = 2	Low 1.55
Maud	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Nash	Limited PRI=1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
New Boston	Limited PRI=1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Red Lick	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Redwater	Limited PRI=1	Occasional PRI = 2	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.85
Wake Village	Limited PRI = 1	Occasional PRI = 2	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.85
TexAmericas Center	Limited PRI=1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55

BOWIE COUNTY CRITICAL FACILITIES

Facility	Bowie Co	DeKalb	Hooks	Leary	Maud	Nash	New Boston	Red Lick	Redwater	Wake Village	Tex Americas Center
City Hall		1	1	1	1	1	1	1	1	1	
Fire Station	1	1	1			1	1	1	1	1	
Civic Center											
Govt. Facility							4				
Wastewater plant											1
Corrections Facility							1				
Hospital											
Maintenance Barn											
Post Office	1	1	1		1	1	1		1		
Water Tower	1	1									
Police Station		1	1		1	1	1			1	
Sheriff Office							1				
EMS											
Public School	3	3	3	1	2	1	3	2	1	1	
Water Treatment Plant											1
County Seat							1				

Location: Historically, the entire County has suffered from flash flooding. If future trends occur as they have in the past, the County area will continue to have floods. Countywide, the highways and county roads will continue to flood. Based on past occurrences, DeKalb, Hooks, Nash, and New Boston have had several occasions of flooding on Highway 82.

Probability: Flash floods are highly likely county wide. Bowie County could see heavier rainfall as climate change impacts the region. The county roads are much more prone to flood than streets within a jurisdiction. According to FEMA National Risk Index Bowie County has a relatively moderate risk for Riverine Flooding.

Estimated Property Damage from Flood at 75%

Bowie County Unincorporated	$923,459,475
DeKalb	$45,000,411
Hooks	$57,502,006
Leary	$12,148,242
Maud	$21,602,902
Nash	$119,276,571
New Boston	$141,573,444
Red Lick	$51,932,022
Redwater	$17,127,495
Wake Village	$228,009,170
TexAmericas Center	$17,502,426

Impact: The rural areas of Bowie County will continue to have issues with flooding. The flood severity category is major for the unincorporated county and limited impact for the city jurisdictions. The impact of flash floods varies locally. Roads may flood in rural county areas after heavy rains. In the entire planning area, there are two repetitive loss properties, no reported deaths or injuries due to flooding with minimal financial loss. In the participating jurisdictions improvements such as new culverts and the retrenching of ditches could help to minimize the problem, however, should it rain hard enough in a short period of time, streets will flood. All the jurisdictions are responsive to the dangers of high water and know to place warning signs out for motorists when needed. The Assessment Damage Tables on page 25-27 address the amount of loss that can occur with flooding.

EXTENT: Possible Amounts of Flooding Within Jurisdictions		
Jurisdiction	**From**	**To**
Bowie County Unincorporated	¼ inch	3 feet
DeKalb	¼ inch	1 foot
Hooks	¼ inch	4 feet
Leary	¼ inch	1 foot
Maud	¼ inch	1 foot
Nash	¼ inch	1 foot
New Boston	6 inches	8 inches
Red Lick	¼ inch	1 foot
Redwater	¼ inch	1 foot
Wake Village	¼ inch	4 feet
TexAmericas Center	¼ inch	2 feet

Vulnerability: Flash flooding and the inability to accommodate the existing drainage on some of the FM roads is a constant problem. Over 2 to 3 inches of rain per hour is considered a heavy rain in Bowie County. Flooding is likely to occur in many areas should that amount fall for several hours.

Summary: Historically, Bowie County has suffered from flooding. If future trends continue, Bowie and rural county roads will continue to flood during periods of heavy rains. Countywide, the FM roads have seen flooding in the past and will continue to do so. Farm to Market roads and state highways are depicted on the Bowie County map on page 15.

TORNADOES

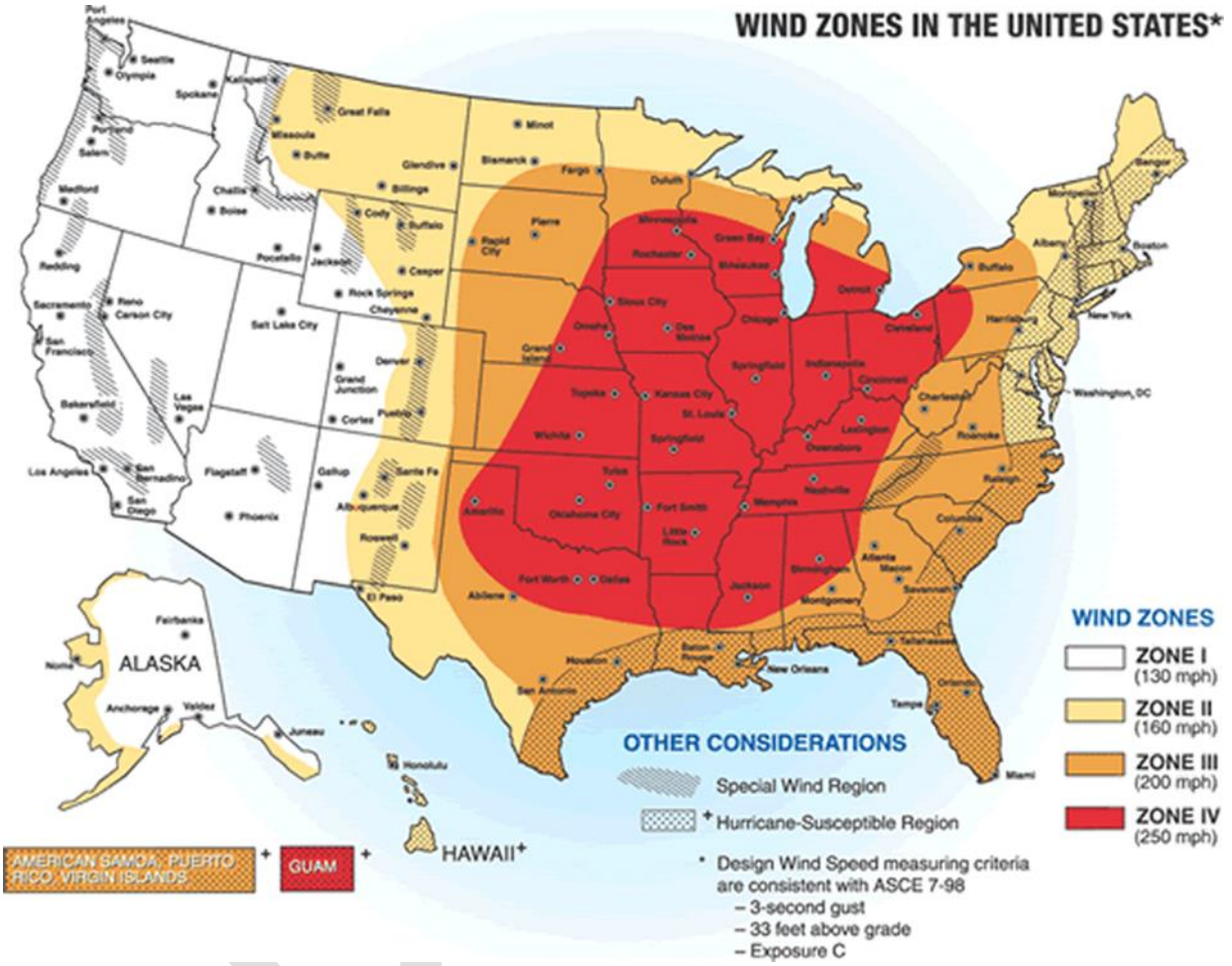
A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of the high wind velocity and wind-blown debris. According to Wikipedia, most tornados have wind speeds of less than 110 miles per hour, are about 250 feet across, and travel a few miles before dissipating. The most extreme tornado can attain wind speed of more than 300 miles per hour, are more than two miles in diameter, and stay on the ground for dozens of miles.

On earthnetworks.com it states wind shear is one of the most critical components for the formation of a tornado. Wind shear is the change of direction and speed of the wind with height. This can create a horizontal spinning effect within a storm cell. The rotating air of an updraft meets the rotating air of a downdraft and creates that iconic and scary funnel cloud. Tornadoes are visible because, nearly all the time they have a condensation funnel made up of water droplets, dust, dirt, and debris.

Tornado season is from March through August, although tornadoes can occur at any time of the year. They tend to occur in the afternoons and evenings while over 80 percent of all tornadoes strike between noon and midnight.

Compared to other States, Texas ranks number one for frequency of Tornadoes, number one of deaths, number one of injuries and number one for cost of damages. When compared to other States by the frequency per square mile, Texas ranks number 10 for the frequency of tornadoes, number 16 for fatalities, number 21 per area and number 21 for cost per area.

According to homefacts.com, Bowie County, Texas is listed as high risk for Tornadoes. The largest tornado in the Bowie County area was an F4 in 1971 that caused 5 injuries and 1 death. There have been 114 tornados since 1950.


WIND ZONES IN THE UNITED STATES*
WIND ZONES
ZONE I (130 mph)
ZONE II (160 mph)
ZONE III (200 mph)
ZONE IV (250 mph)
OTHER CONSIDERATIONS
Special Wind Region
+ Hurricane-Susceptible Region
* Design Wind Speed measuring criteria are consistent with ASCE 7-98
– 3-second gust
– 33 feet above grade
– Exposure C
ALASKA
HAWAII+
GUAM +
AMERICAN SAMOA, PUERTO RICO, VIRGIN ISLANDS +

The **Enhanced Fujita Scale**, or **EF Scale** shown below, is the scale for rating the strength of tornadoes in the United States estimated via the damage they cause. Implemented in place of the Fujita scale, it was used starting February 1, 2007. The scale has the same basic design as the original Fujita scale, six categories from zero to five representing increasing degrees of damage. It was revised to reflect better examinations of tornado damage surveys, so as to align wind speeds more closely with associated storm damage. The new scale considers how most structures are designed, and is thought to be a much more accurate representation of the surface wind speeds in the most violent tornadoes.

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.
source: http://en.wikipedia.org/wiki/Enhanced_Fujita_Scale		

TORNADO PAST OCCURANCES IN BOWIE COUNTY

(Data from National Climatic Data Center)

Ten Year Profile

April 4, 2012: (Dalby Springs) The tornado touched down 8 miles southwest of Dekalb, Texas, just west of CR 4306 where a few trees were snapped and uprooted. The tornado crossed CR 4306 and traveled east northeast, remaining over open country where more trees were snapped and uprooted. The tornado lifted just west of the intersection of CR 4305 and U.S. Hwy 259. The maximum winds are estimated at 65-75 mph.

May 9, 2016: (Spring Hill) An EF-1 tornado with estimated winds between 85-95 mph touched down along Farm to Market Road 2735 just east of Highway 259 before lifting along County Road 3313. Primary damage was snapped and uprooted trees and one home had minor siding loss and one outbuilding was damaged.

May 9, 2016: (Beaverdam) An EF-1 tornado with estimated winds between 85-95 mph touched down along County Road 3303, snapping and uprooting several trees.

January 21, 2018 (College Hill) An EF-2 tornado with maximum estimated winds around 125 mph touched down along Highway 259 just southwest of Dekalb and tracked northeast across the intersection of County Road 4231 and Farm to Market Road 44. Here, it caused damage to a two-story home shifting it off its foundation, and damaging eight chicken houses, two of which were destroyed. The tornadic storm continued northeast where it crossed County Road 4230 and significantly damaged the Dekalb Water Treatment Plant, before crossing the intersection of Farm to Market Road 990 and Farm to Market Road 1840 where a one-story home had its roof removed and several hardwood and softwood tress were snapped and uprooted. As the tornado tracked across County Road 4228, there were signs of it widening where the snapped hardwood trees and downed power lines were more noticeable. Once the tornado tracked across Hwy 82, hardwood trees snapped at its base and significant damage to roofs of a church and nearby one- and two-story homes were prevalent. It continued to move northeast across County Road 3201 where numerous hardwood trees were downed and a camper was destroyed. The tornado continued northeast where it crossed County Road 3203, uplifting a metal roof from a home and destroyed seven chicken farm buildings. Once it crossed northeast across 3203, it split and twisted hardwood trees and destroyed an outbuilding before finally dissipating. The Dekalb Water Treatment Plant suffered about $500,000 in damage, with another $500,000 damage done to the chicken houses that were destroyed, as well as to an auto repair shop and a gun shop that were significantly damaged. Approximately 200,000 chickens and 1 cow were killed.

May 16, 2020: (Redwater) This is the continuation of the EF-Unknown tornado (waterspout) on Lake Wright Patman from extreme Northern Cass County. This waterspout was documented moving northwest across the lake, before lifting prior to reaching the land areas. This waterspout was rated as EF-Unknown, 2.63 miles across Cass and Bowie Counties.

May 16, 2020: (Wamba) An EF-1 tornado with estimated winds near 95 mph briefly touched down and was documented on a smart phone camera crossing from Clem Ranch and moving northwest adjacent to a pond. The tornado tore portions of the roof off of a single-family home and topped off the trunks of two trees before lifting as it crossed Akin Road.

Tornadoes in Bowie County 2011-2021
Probability Severity

Fujita Scale	Tornados	Estimated Damage
EF0	3	$65,000
EF1	3	$30,000
EF2	1	$2,500,000
EF3	0	$0
EF4	0	$0
EF5	0	$0
EF unknown	1	$0
Total	8	$2,595,000

Bowie County Tornado Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Bowie Unincorporated	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< 6 hrs. PRI=1	High 3.7
DeKalb	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Medium 2.8
Hooks	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
Leary	Substantial PRI=4	Unlikely PRI=1	<6hrs. PRI=4	<6 hrs. PRI=1	Medium 2.8
Maud	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Medium 2.8
Nash	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
New Boston	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
Red Lick	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
Redwater	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
Wake Village	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
TexAmericas	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8

BOWIE COUNTY CRITICAL FACILITIES

Facility	Bowie Co	DeKalb	Hooks	Leary	Maud	Nash	New Boston	Red Lick	Redwater	Wake Village	Tex Americas Center
City Hall		1	1	1	1	1	1	1	1	1	
Fire Station	1	1	1			1	1	1	1	1	
Civic Center											
Govt. Facility							4				
Wastewater plant											1
Corrections Facility							1				
Hospital											
Maintenance Barn											
Post Office	1	1	1		1	1	1		1		
Water Tower	1	1									
Police Station		1	1		1	1	1			1	
Sheriff Office							1				
EMS											
Public School	3	3	3	1	2	1	3	2	1	1	
Water Treatment Plant											1
County Seat							1				

Tornadoes can strike anywhere in Bowie County. All critical facilities are vulnerable to the destructive forces of a tornado.

Location: All of Bowie County can be affected. Tornadoes have an unpredictable pattern, so the entire County is subject to being hit by a tornado. All the jurisdictions and the unincorporated parts of Bowie County could be affected.

Probability: Tornadoes are most frequent in the months of April, May and June. While tornadoes can occur at any time during the day or night, they tend to form during the late afternoon and into the evening. Based on a historical trend over the past 10 years, there is a 50% chance that Bowie County will experience a tornado touchdown in a given year. The expected tornado size would range between 25 to 1000 yards wide, with a path from one to several miles long. Most tornadoes are expected to touchdown for relatively short periods of time in a bounce type pattern. The possibility of a tornado touchdown on an annual basis is considered highly likely for the County. According to the FEMA National Risk Index, Bowie County risk for tornado is relatively high.

Vulnerability: Due to the frequency and unpredictable pattern of tornadoes, all of Bowie County is vulnerable to tornado-induced damages. The damage potential is high due to the concentrations of populated areas, number of mobile homes, older wood framed homes and manufactured housing units throughout the county. The jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village are made up primarily of older

business districts that were not built to any code, making them particularly vulnerable to tornadic activity. Winds in the lowest EF0 range could destroy these structures. TexAmericas Center has 3 million square feet of office, manufacturing, warehouse and storage space that could be damaged by a tornado. The tornado vulnerability level is rated HIGH for the county and all jurisdictions.

Impact: Based on a historical trend over the past 10 years, Bowie County can experience one or more tornadoes annually. Most tornadoes are expected to touchdown for relatively short periods of time in a bounce type pattern. An EF1 tornado could destroy the small participating jurisdictions. Small towns can experience a complete loss of communications. Roads could be blocked by downed trees and building debris. The Damage Assessment Tables on pages 25-27 demonstrate the amount of loss that can occur from a tornado. The extent of damage can be substantial.

Estimated Property Loss at 50%	
Bowie County Unincorporated	$615,639,650
DeKalb	$30,000,274
Hooks	$38,334,671
Leary	$8,098,828
Maud	$14,401,935
Nash	$79,517,714
New Boston	$94,382,296
Red Lick	$34,621,348
Redwater	$11,418,330
Wake Village	$152,006,113
TexAmericas Center	$11,668,284

Historically the severity has ranged from EF0 to EF2 on the Enhanced Fujita (EF) Scale. The entire scale presented is used to determine ranges and severity. The expected tornado size would range between 25 to 1000 yards wide, with a path from one to several miles long. The full range of 65 (EF0) to 200 mph (EF5 +) are possible in Bowie County and its jurisdictions.

Summary: Bowie County is located in tornado alley. There have been 8 tornado events in Bowie County with no deaths recorded over the last 10 years. Warning sirens, safe rooms, enforced modern building codes and generators for emergency power are needed safeguards for the communities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center to help protect its citizens from tornadoes.

DeKalb Business District 1999

DeKalb Elementary School 1999

Texarkana Gazette, Thursday May 6, 1999

PICKING UP THE PIECES

On Tuesday afternoon, folks in DeKalb bent their heads to their radios and televisions to hear the latest on the weather. Warned all day that a storm with a nasty disposition would be heading their way, they readied themselves as best they could.

When it was finally upon them, they sought refuge in churches and in hallways and in their homes, hoping to wait out the power of the storm that was at times as loud as a freight train and at others, as hushed as a barely audible whisper.

They huddled over their children and hoped.

In a matter of minutes, the tornado wracked the town to its core, shattering glass and hurling bricks, utterly destroying everything in its path.

Nothing was stronger than the tornado that day. Nothing material.

When it had passed as quickly as it had arrived, the town's school children and day care workers, business owners and townspeople crept outside to observe a cruel war zone, so much of the old town gone.

On Wednesday, DeKalb started over.

THUNDERSTORM WINDS

Thunderstorms winds are typically straight-line winds and do most of the damage when accompanying a thunderstorm. Sometimes people think that a tornado has struck because the straight-line winds can be as powerful as a strong tornado but straight-line winds do not spin. A downburst is an example of a straight-line wind. A downburst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm that produces a violent, localized downdraft covering 2.5 miles or less. Wind speeds in some of the stronger downbursts can reach 100 to 150 miles per hour.

According to research by Jeremy Pal, a professor of civil engineering and environmental science at Loyola Marymount University, severe thunderstorms with accompanying high winds are predicted to increase dramatically in the United States and in some cities, like Atlanta, Ga., New York, and Dallas, storms are expected to double by the end of the century.

The Beaufort Scale below is the standard for measuring wind effects on both land and sea.

Beaufort Scale

Beaufort Number	Wind Speed	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	Violence and destruction.

Source: www.mountwashington.org

THUNDERSTORM WINDS PAST OCCURANCES IN BOWIE COUNTY
(Data from National Climatic Data Center)

Ten Year Profile

There have been 47 days of recorded events 12 of those days had reported property damage in the last ten years. Property damage was estimated to be $988,000. This is a list of events with property damage.

April 14-15, 2011: Several trees were downed in Dekalb, Texas. There was a report of damage to one outbuilding on Hwy. 44. In New Boston, a large tree was downed near FM 1840 which downed powerlines at that location. A large tree limb fell at South Merrill across the street from the football stadium. Several homes lost roofing material from the strong winds. A tree was downed on a mobile home on Litton Circle in Redwater, Texas. The mobile home was totaled but there were no injuries reported. Property damage 41K.

August 23, 2011: Several trees and powerlines were downed in and near the community of Malta near County Road 3103. The winds destroyed one 180x50 steel frame shed, one 12x12 wood frame shed, one 20x40 horse covered stall, one 8x8 well house and one 40x60 pole barn. There were no injuries reported. Property damage 100K.

April 2, 2012: Widespread tree damage was reported across all of Northeast Texas. Trees were downed on houses in the Nash and Wake Village areas. Another tree was downed on a car in the Liberty-Eylau community. Property damage 60K.

June 12, 2012: Several trees were downed across town including one that fell on a home on North Bowie Road. The top of a tree was snapped off and landed on top of a house just east of Maud, Texas. Numerous trees down in the Liberty-Eylau community including one that fell on a home on Macedonia Street. A tree also fell on a barn off of County Road 2516 at the end of Ryan Loop Road. Thunderstorm wind gusts peeled back the roof of an apartment complex off of Main street in Texarkana, Texas. Property damage 110K.

January 29, 2013: Numerous trees were downed across the county. An 18-wheeler was blown over in New Boston, Texas. Property damage 10K.

April 10, 2013: Vehicle windows were blown out in the parking lot of Liberty-Eylau High School. Property damage 1K.

May 21, 2013: A large oak tree was split in half and downed on a carport roof and a pickup truck in Old Boston, Texas. A tree was downed on a house on FM 1849 near New Boston, Texas. There were no reports of injuries. Property damage 35K.

October 2, 2014: Damaging thunderstorm wind gusts resulted in a roof being blown off a house and the siding ripped off the southwest side of a building on Broadway Avenue in Maud, Texas.

A large doughnut sign was also shifted from a fixed position on top of an eatery in Maud. A tree fell on top of a car in Maud, Texas. There was no report of injuries. Property damage 70K.

December 27, 2015: A NWS Storm Survey team determined that damage along the west side of Dekalb, Texas was consistent with that of rear flank storm damage. This rear flank was the remaining remnant of a tornado that touched down earlier west of this location. The rear flank downdraft caused sporadic damage in the city of Dekalb. Several trees were uprooted. Numerous homes withstood light shingle damage. A light pole at the city park was snapped and the metal roof from one of the downtown buildings was lifted off. Property damage 50K.

May 9, 2016: Widespread tree damage occurred just east northeast of Hooks. Several trees were uprooted, all of which pointed to the south southeast. One tree landed on a corner of a house. Property damage 40K. Several trees were snapped or uprooted on Garden Road in Hooks. One tree fell on a pergola and outdoor garden. Property damage 1K. Widespread tree damage occurred along Garden Road in Hooks. Several trees were uprooted here, one tree fell on a home, and another fell on a vehicle. Property damage 125K. In Leary, a single wide home with an additional roof structure built over the home had this portion of the roof tossed approximately 100 feet and destroyed. Property damage 25K. In Nash, numerous very large hardwood trees were snapped and uprooted. One very large tree fell onto a house causing major damage to structure. The front face of a paint store was blown away when the winds hit two pillars of the façade which extended several feet above the roof and was completely exposed to the high winds. Property damage 300K.

August 6, 2016: The storms produced strong and damaging wind gust along with some locally heavy rainfall. In Hooks, one tree fell on a home but there were no reports of injuries. Property damage 20K.

Bowie County Thunderstorm Winds Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Bowie Unincorporated	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI=3	<6 hrs. PRI=1	Medium 2.65
DeKalb	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI=3	<6 hrs. PRI=1	Medium 2.65
Hooks	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI=3	<6 hrs. PRI=1	Medium 2.65
Leary	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI=3	<6 hrs. PRI=1	Medium 2.65
Maud	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI=3	<6 hrs. PRI=1	Medium 2.65
Nash	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI=3	<6 hrs. PRI=1	Medium 2.65
New Boston	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI=3	<6 hrs. PRI=1	Medium 2.65
Red Lick	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI=3	<6 hrs. PRI=1	Medium 2.65
Redwater	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI=3	<6 hrs. PRI=1	Medium 2.65
Wake Village	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI=3	<6 hrs. PRI=1	Medium 2.65
TexAmericas	Minor PRI=2	Highly Likely PRI=4	6-12 hrs. PRI =3	<6 hrs. PRI=1	Medium 2.65

BOWIE COUNTY CRITICAL FACILITIES

Facility	Bowie Co	DeKalb	Hooks	Leary	Maud	Nash	New Boston	Red Lick	Redwater	Wake Village	Tex Americas Center
City Hall		1	1	1	1	1	1	1	1	1	
Fire Station	1	1	1			1	1	1	1	1	
Civic Center											
Govt. Facility							4				
Wastewater plant											1
Corrections Facility							1				
Hospital											
Maintenance Barn											
Post Office	1	1	1		1	1	1		1		
Water Tower	1	1									
Police Station		1	1		1	1	1			1	
Sheriff Office							1				
EMS											
Public School	3	3	3	1	2	1	3	2	1	1	
Water Treatment Plant											1
County Seat							1				

Critical Facilities: All critical facilities located in Bowie County unincorporated and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village and TexAmericas Center are vulnerable to some structural damage from high winds.

Probability: Given the climate and history, thunderstorms are highly likely during the storm season. Thunderstorms and their accompanying high winds are most prolific in the spring and summer months; however, they may occur at any time in Bowie County given the right conditions. FEMA National Risk Index for Strong Wind in Bowie County is relatively moderate.

Vulnerability: Bowie County and its' jurisdictions are susceptible to damage from thunderstorm winds. Microburst and downburst produce winds severe enough to be mistaken for tornadoes. The entire county is vulnerable to high winds associated with thunderstorms.

Impact: According to NOAA Satellite and Information Service of the National Climatic Data Center, there were 47 thunderstorm wind events reported in Bowie County between 2011 and 2021. Damage was recorded on 12 of the 47 days. The magnitudes ranged from 52 knots to 83 knots or 59 mph to 95 mph.

There were no reported injuries and no deaths from thunderstorm wind events in Bowie County. Storms cause power outages, disruptions of transportation and property damage. Historical data indicates that the entire county is susceptible to windstorms during the thunderstorm season and, depending on the severity, costs will vary. See the Damage Assessment Tables on pages 25-27 demonstrating possible loss for the county and each participating jurisdiction.

Estimated Property Loss at 15%	
Bowie County Unincorporated	$184,691,895
DeKalb	$9,000,082
Hooks	$11,500,401
Leary	$2,429,648
Maud	$4,320,580
Nash	$23,855,314
New Boston	$28,314,689
Red Lick	$10,386,404
Redwater	$3,435,499
Wake Village	$45,601,834
TexAmericas Center	$3,500,485

Location: Historically, all of **Bowie County** has been affected by thunderstorms winds. If this trend continues, the entire County will be subject to their damage. This would include the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center.

Summary: High winds in Bowie County can be a destructive force associated with thunderstorms. Thunderstorms also spawn tornadoes. Deteriorating infrastructure, mobile homes, business signage and crops are most susceptible to damage. DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, TexAmericas Center, and Bowie County residents share susceptibility to thunderstorm wind damage.

LIGHTNING

Description

Lightning is a massive electrostatic discharge between electricity charged regions within clouds, or between a cloud and the earth's surface. Lightning can strike communications equipment like radiocommunication and emergency response. Lightning strikes can also cause significant damage to buildings, critical facilities, and infrastructure, largely by igniting a fire. Lightning can strike and kill people. It can also ignite wildfire.

The National Lightning Safety Institute (http://lightningsafety.com) defines the following forms of lightning:

Direct Strike: This is the most dangerous hazard, wherein the person or structure is in a direct path for lightning currents. The magnitude of the current determines its effects. A typical amperage of 20kA acting on a ground of 10 ohms creates 200,000V. A large strike can attain 150kA levels. More than 50 volts will drive a potentially lethal current through the body.

Side Strike: This hazard results from the breakup of the direct strike when alternate parallel paths of current flow into the ground via a person or structure. When the initial current path offers some resistance to current flow, a potential above ground current develops and the person or structure's resistance to ground becomes the alternate path of conduction.

Conducted Strike: This hazard occurs when lightning strikes a conductor which in turn introduces the current into an area some distance from the ground strike point. Unprotected connected equipment can be damaged and personnel may be injured if they become an indirect path in the completion of the ground circuit.

Structure Voltage Gradient: Current passing through two or more structures create momentary voltage differential. Poor interconnect bonding may cause a completed circuit potential difference. The same hazard is created, for example, by a person touching an ungrounded object while they are grounded. The electrical circuit is completed through the person, sometimes with fatal consequences.

Induced Effects: Lightning can induce electric field and magnetic field coupling into structures and into wiring. Magnetic coupling is transformer action, and the common laws for transformers prevail.

Streamer Conductor: The streamer hazard occurs when a lightning leader influences electric behavior of objects on the Earth. Even streamers which do not become a part of the main channel can contain significant amounts of current. Streamer current exposure can affect people and sensitive electronics.

Sequelae: These secondary effects are many. Forest and grass fires, explosive steam conditions in masonry, trees and other water-bearing objects, and consequences of the thunderclap starling a person into inadvertently throw a switch are examples.

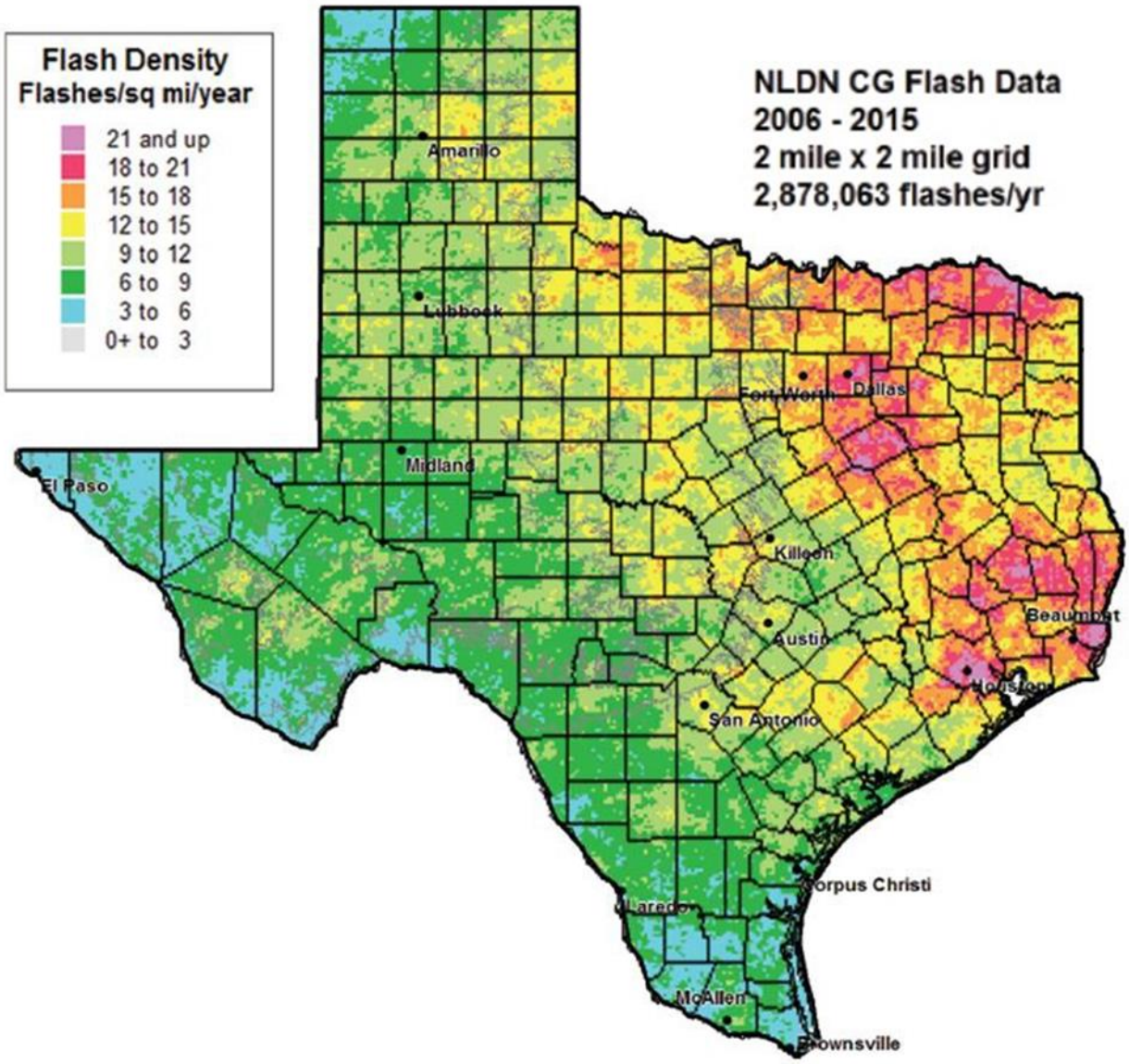
Step Voltage/Touch Voltage: This hazard occurs as a result of a lightning strike dissipating its energy through the ground. The ground current creates a voltage drop across the surface of the Earth. A person standing within several hundred feet from the lightning strike point can have several hundred volts generated between their feet. This hazard is identical to a person being grounded while touching two live wires, one with each hand.

Lightning Activity Level (LAL)

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 5-minute period.
LAL 3	Wildly 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 than 15 cloud to ground strikes in a 5-minute period.
LAL 6	Dry lightning (same as LAL 3 without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red

Lightning can happen anywhere in the state of Texas. Bowie County can expect a flash density 12 to 21 cloud to ground strikes per square mile per year. According to the map the incidence of strikes increases traveling East to West.

Lightning Incidences in Texas (2006-2015)



Bowie County Lightning Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Bowie Unincorporated	Major PRI=3	Unlikely PRI=1	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
DeKalb	Major PRI=3	Unlikely PRI=1	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
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Nash	Major PRI=3	Unlikely PRI=1	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
New Boston	Major PRI=3	Unlikely PRI=1	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
Red Lick	Major PRI=3	Unlikely PRI=1	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
Redwater	Major PRI=3	Unlikely PRI=1	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
Wake Village	Major PRI=3	Unlikely PRI=1	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
TexAmericas Center	Major PRI=3	Unlikely PRI=1	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35

BOWIE COUNTY CRITICAL FACILITIES

Facility	Bowie Co	DeKalb	Hooks	Leary	Maud	Nash	New Boston	Red Lick	Redwater	Wake Village	Tex Americas Center
City Hall		1	1	1	1	1	1	1	1	1	
Fire Station	1	1	1			1	1	1	1	1	
Civic Center											
Govt. Facility							4				
Wastewater plant											1
Corrections Facility							1				
Hospital											
Maintenance Barn											
Post Office	1	1	1		1	1	1		1		
Water Tower	1	1									
Police Station		1	1		1	1	1			1	
Sheriff Office							1				
EMS											
Public School	3	3	3	1	2	1	3	2	1	1	
Water Treatment Plant											1
County Seat							1				

Critical Facilities: All critical facilities located in unincorporated Bowie County and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center are subject to some damage from intense lightning.

Estimated Property Loss at 15%		
Bowie County Unincorporated	Residential	$170,956,088
DeKalb	Residential	$ 6,584,715
Hooks	Residential	$ 9,846,631
Leary	Residential	$ 1,514,736
Maud	Residential	$ 3,900,056
Nash	Residential	$ 13,364,118
New Boston	Residential	$18,993,301
Red Lick	Residential	$ 10,170,653
Redwater	Residential	$ 2,865,458
Wake Village	Residential	$ 41,090,550
TexAmericas Center	Residential	N/A

Historical Occurrences: In the past ten years there have been no recorded lightning event reported in Bowie County based on the NCEI records which includes the NOAA storm events data base. It is highly likely multiple lightning occurrences have gone unreported before and during the recording period. The flash density for the planning area along with input from local team members indicates regular lightning occurrences that simply have not been reported to the weather service.

Location: Lightning can strike in any geographic location and is considered a common occurrence in Texas. The Bowie County planning area, and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center are susceptible to lightning strike. Therefore, lightning could occur at any location within the entire planning area. It is assumed that the Bowie County planning area is uniformly exposed to the threat of lightning.

Extent: According to the NOAA, the average number of cloud-to-ground flashes for the State of Texas between 2007 and 2016 was 11.3 flashes per square mile. The National Lightning Detection Network lightning flash density map shows a range of up to eighteen to twenty-one cloud-to-ground lightning flashes per square mile per year for the entire Bowie planning area. The power of lightning can run the full extent of the Lightning Activity Level (LAL 1-LAL 6). See page 65 for review of the Lightning Activity Level (LAL) table.

Probability: According to FEMA National Risk Index Bowie County risk for lightning is Very Low. Based on historical records and input from the planning team the probability of occurrence for future lightning events in Bowie County, including the jurisdiction of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center are likely,

however, the likely hood of it damaging a building or a critical facility is unlikely. The planning team stated that lightning occurs regularly in the area.

Vulnerability: Texas leads the nation in the number of annual lightning strikes. During a thunderstorm lightning may strike anywhere in Bowie County.

Impact: Although there are no recorded deaths or monetary losses due to lightning in Bowie County the probability and potential of death and property loss remain palpable.

Summary: Lightning can strike anywhere in Bowie County. When damage occurs, it is important to report the incident to NOAA to establish credible data. Actions in this plan reflect sensible measures to take to lower the risks of lightning strikes in Bowie County.

WINTER STORMS

Description:

Winter Storms are a hazard that poses a threat to the entirety of the planning area. Winter Storms in the context of this document refers to Freezing Rain, Ice Storms, Blizzards, and Heavy Snow events that may occur during the winter months in Bowie County. The National Weather Service (NWS) glossary defines Ice Storms, Blizzards, and Heavy Snow events as:

Freezing Rain is "rain that falls as a liquid but freezes into glaze upon contact with the ground."

"An **ice storm** is an occasion when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication. These accumulations of ice make walking and driving extremely dangerous. Significant ice accumulations are usually accumulations of ¼" or greater."

"A **blizzard** means that the following conditions are expected to prevail for a period of 3 hours or longer:

- Sustained wind or frequent gusts to 35 miles an hour or greater; and
- Considerable falling and/or blowing snow (i.e., reducing visibility frequently to less than ¼ mile)."

"A **heavy snow** generally means...

- 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"

In forecasts, snowfall amounts are expressed as a range of values, e.g., "8 to 12 inches." However, in heavy snow situations where there is considerable uncertainty concerning the range of values, more appropriate phrases are used, such as "...up to 12 inches..." or alternatively "...8 inches or more..."

The following National Weather Service warnings detail the potential extent of a storm.

National Weather Service WATCH: A message indicating that conditions favor the occurrence of a certain type of hazardous weather. For example, a severe winter weather watch means that a severe winter weather event is expected in the next six hours or so within an area approximately 120 to 150 miles wide and 300 to 400 miles long (36,000 to 60,000 square miles). The NWS Storm Prediction Center issues such watches. Local NWS forecast offices issue other watches 12 to 36 hours in advance of a possible hazardous- weather or flooding event. Each local forecast office usually covers a state or a portion of a state.

NWS WARNING: Indicates that a hazardous event is occurring or is imminent in about 30 minutes to an hour. Local NWS forecast offices issue warnings on a county-by-county basis.

Winter Storm WATCH: A winter storm is occurring, or will soon, occur, in your area.

Winter Storm WARNING: Means sustained winds or frequent gusts to 35 miles per hour or greater and considerable falling or blowing snow (reducing visibility to less than a quarter mile) are expected to prevail for a period of three hours or longer, and dangerous wind chills are expected in the warning area.

The *Wind Chill* temperature is simply a measure of how cold the wind makes real air temperature feel to the human body. Since wind can dramatically accelerate heat loss from the body, a blustery 30° day would feel just as cold as a calm day with 0° temperatures. The index was created in 1870, and on November 1, 2001, the National Weather Service released a more scientifically equation, which is used today. Below is a chart for calculating wind chill. (Please note that it is not applicable in calm winds or when the temperature is over 50°.)

Wind Chill Chart

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

Frostbite Times: 30 minutes | 10 minutes | 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph) Effective 11/01/01

Source: National Weather Service and NOAA

Ice storms most commonly develop along a line stretching from northern Texas to Newfoundland in slow-moving low-pressure systems where there is a large temperature difference between the warm Gulf air and cold Arctic air. Local accumulations of ice may be heavy if the storm stalls over a region for an extended time. Ice storms lasting 12 hours or more generally produce ice accumulations several centimeters thick. The typical ice storm swath is 30 miles wide and 300 miles long. Ice storms generally warrant major headlines only one year in three.

Ice storms typically begin with snow and strong easterly winds conditions well ahead of an approaching warm front. The snow, however, changes briefly to sleet and then to rain that freezes on impact, coating all exposed surfaces with a growing layer of ice.

For drivers, the consequences of icing can be serious, for stopping distances on ice are ten times greater than on dry pavement, and double that on packed snow.

Power and communication systems using overhead lines are perhaps hardest hit by ice storms. Hanging wire cables collect ice until the cable breaks or the rain stops. Animal and plants may be killed or injured by ice accumulation. Damage to trees rival's disease and insects as destructive agents.

The Christmas Day storm of 2000 clobbered counties along a 260-mile stretch of the Red River. Bowie County was one of several counties declared a disaster area.

Back-to-back December weather fronts slammed North Texas with ice that produced the perfect ice storm. Many electric cooperatives were sent to their knees by the fury of the storms.

Potential Damage/Loss Due to Ice Storms

Life and Property

Slick roads and other surfaces cause traffic accidents resulting in death and injury. People shoveling snow have heart attacks. Property is at risk from flooding. Trees, power lines, telephone lines and subject to damage from accumulation of ice and snow. Trees fall on utility lines and houses.

Roads and Bridges

Fallen trees across roads can block access to emergency services. The ability to travel after an ice storm is a priority issue for hospitals, utilities and emergency service vehicles.

Power Lines

Falling trees are a major cause of power outages resulting in interruption of services and damaged property. Downed power lines also create the danger of electrical shock.

Water Lines

Cast iron mainlines frequently break during severe freezes. Also, residential water lines often fail. The potential for severe winter storms is high and records indicate that the cost can be in the millions of dollars, depending on the severity of the storm.

PAST OCCURANCES OF WINTER STORMS IN BOWIE COUNTY
(Data from National Climatic Data Center)
Ten Winter Storms in the last ten years. Total property damage loss for the ten-year period were $1,000,000.

January 09, 2011: Winter Storm, Generally, one quarter to one half inch of freezing rain and sleet was reported initially across the northern half of Northeast Texas with the snow being the predominant precipitation type during the afternoon and evening of January 9th with up to 7 inches of snow recorded in Bowie County. There were numerous reports of traffic accidents across the northern half of Northeast Texas with isolated power outages as well.

February 03, 2011: Winter Storm, A large area of precipitation, mostly in the form of snow, developed across Central Texas during the late-night hours of February 3rd and moved quickly northeast into Northeast Texas, accumulating snow was the result across much of the area with a mixture of sleet and freezing rain across portions of East Central Texas and Central Louisiana with Bowie County Reporting up to 5 inches of snow.

December 25, 2012: Winter Storm, accumulating snow was common across several counties in Northeast Texas. This heavy wet snow resulted in several trees downed along with powerlines which cut power to many locations across Northeast Texas. There were also several accidents reported from the accumulating snow on area roadways and bridges. Up to 8.5 inches of snow was recorded in Bowie County.

March 02, 2014: Winter Storm, Temperatures cooled enough in the lower levels of the atmosphere such that freezing rain transitioned over to sleet across much of the area. Widespread sleet accumulations of one half to one inch were reported. There were some isolated areas with total sleet accumulations near 2 inches. Further east where temperatures were not cold enough aloft for sleet, freezing rain was the dominant precipitation type accumulations near one quarter to one half inch. The freezing rain and sleet accumulations resulted in numerous automobile accidents along with power outages from falling limbs and trees throughout the northern half of Northeast Texas.

February 23, 2015: A cold dome of arctic air spilled southward providing the necessary lift to generate widespread winter precipitation across the region in the form of freezing rain and sleet. Temperature during the predawn hours were mostly just above freezing but once the precipitation moved in from the west, the precipitation quickly changed over to freezing rain mixed with sleet as the temperatures fell during the day. Freezing rain accumulations across Northeast Texas, mainly along and north of the Interstate 20 corridor were near one tenth of an inch or less. Sleet accumulations along and north of Interstate 20 corridor ranged from near one half inch to near one and one-half inch.

February 25, 2015: Cold artic air remained in place across the region and there was already ice on the ground from sleet accumulation from Feb 23rd. The precipitation began as a mixture of light rain or freezing rain after midnight. The precipitation quickly transitioned over to sleet and eventually moderate to heavy snow across a good portion of the region after sunrise on the 25th. Snowfall accumulations were 5 inches for Avery, Texas.

March 4, 2015: The precipitation began as a cold rain but quickly transitioned to sleet during the late-night hours of the 4th and transitioning over to snow during the morning hours of the 5th. Freezing rain amounts were near one tenth of an inch with sleet accumulations mainly less than one half inch. Snow amounts were less than 4 inches with widespread one to three inches reported across the northern half of northeast Texas.

January 15, 2018: A trough of low pressure spread east across the Southern Plains with an arctic air mass quickly spilling into the Ark-La-Tex behind a strong cold front. Ice accumulation of up to a tenth of an inch were common among the western sections of Northeast Texas, with snowfall accumulations of one to two inches, with isolated higher amounts observed. This caused significant travel impacts across much of Northeast Texas, with rain and melted snow quickly freezing into black ice on many roadways, bridges, and overpasses, as temperatures plummeted into the upper teens to lower 20s by daybreak on the 16th. Here are some of the snowfall totals in Bowie County: 2 miles east of Leary recorded 3 inches of snow, , 1 mile southeast of New Boston recorded 1.1 inches, Dekalb recorded .7 inches of snow.

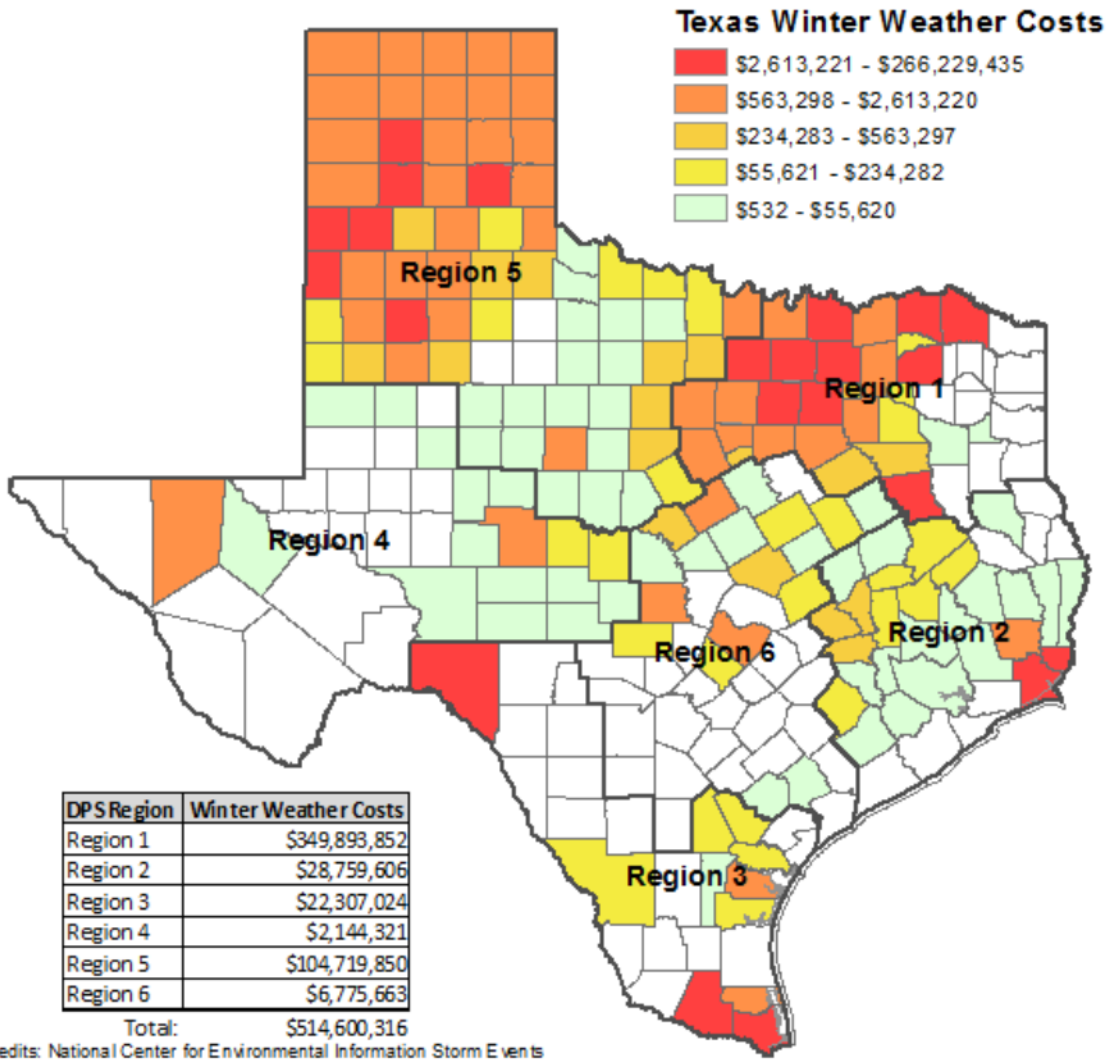
February 14, 2021: Widespread snow and sleet amounts ranged from 5 to 10 inches across East and Bowie County: New Boston: 9 inches, Hooks: 8.5 inches, Maud: 8 inches, Dekalb: 8 inches.

February 16, 2021: Snowfall total for Bowie County: 1 Wake Village: 9.7 inches, New Boston: 4inches, Dekalb: 2.3inches, 2 E Dekalb: 1.6 inches. When combined with the previous winter storm on the 14th and 15th these totals made driving nearly impossible, with rolling blackouts further aggravated by the additional power outages the snows were responsible for. In addition, the weight of the snow from these two back to back winter storms also resulted in numerous metal carport canopies collapsing across extreme Northeast Texas, with many homes and cars damaged.

Bowie County Winter Storms Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Bowie County Unincorporated	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
DeKalb	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Hooks	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Leary	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Maud	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Nash	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
New Boston	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Red Lick	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Redwater	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
Wake Village	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55
TexAmericas Center	Minor PRI = 2	Highly Likely PRI = 4	> 24 hrs. PRI = 1	< a week PRI = 3	Medium 2.55

BOWIE COUNTY CRITICAL FACILITIES

Facility	Bowie Co	DeKalb	Hooks	Leary	Maud	Nash	New Boston	Red Lick	Redwater	Wake Village	Tex Americas Center
City Hall		1	1	1	1	1	1	1	1	1	
Fire Station	1	1	1			1	1	1	1	1	
Civic Center											
Govt. Facility							4				
Wastewater plant											1
Corrections Facility							1				
Hospital											
Maintenance Barn											
Post Office	1	1	1		1	1	1		1		
Water Tower	1	1									
Police Station		1	1		1	1	1			1	
Sheriff Office							1				
EMS											
Public School	3	3	3	1	2	1	3	2	1	1	
Water Treatment Plant											1
County Seat							1				



DPS Region	Winter Weather Costs
Region 1	$349,893,852
Region 2	$28,759,606
Region 3	$22,307,024
Region 4	$2,144,321
Region 5	$104,719,850
Region 6	$6,775,663
Total:	$514,600,316

Data Credits: National Center for Environmental Information Storm Events Database, usng a subset of events from 1996 to 2017. Data available from https://www.ncdc.noaa.gov/stormevents.

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Critical Facilities: All critical facilities located in unincorporated Bowie County and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center are subject to some damage from winter storms.

Location:
Winter Storms have no distinct geographic boundary. They can occur in every area of the county including the Northeast Texas region.

Impact: Although East Texas does not have severe winters it is not immune from some of the hazards of cold weather. Every year, winter weather indirectly kills hundreds of people in the U.S, primarily from automobile accidents but from overexertion, and hypothermia as well.

Heavy accumulations of ice can bring down trees and power lines, disabling electric power and communications for days. Heavy snow or ice can immobilize communities by shutting down transportation into, out of, and within the county. In rural areas and smaller communities' homes and farms may be isolated for days. Livestock and other animals can die from exposure. When the event happens in the early spring, crops such as fruit can be destroyed. Bowie County and its jurisdictions can expect ice accumulations on streets, power lines and trees that will range from ¼ to ¾ of an inch.

Bowie county and participating jurisdictions could lose power to their sewage and water plant. They could lose power to homes and experience damage to city infrastructure. The elderly could suffer from lack of heat and lighting during a winter storm. The small business in the jurisdictions could experience lost revenue due to reduced traffic during winter storm events. Falling trees and tree limbs could damage property and block roadways in both jurisdictions. Auto accidents related to travel on the icy roads increase.

Estimated Property Loss at 15%	
Bowie County Unincorporated	$184,691,895
DeKalb	$9,000,082
Hooks	$11,500,401
Leary	$2,429,648
Maud	$4,320,580
Nash	$23,855,314
New Boston	$28,314,689
Red Lick	$10,386,404
Redwater	$3,425,499
Wake Village	$45,601,834
TexAmericas Center	$3,500,485

The Damage Assessment tables found on Pages 25-27 demonstrate the amount of damage that can be possible. A temperature between 32 degrees f. and 10 degrees f. is the range of temperature anticipated county wide that would create conditions for winter storms. (see the windchill chart on page 71)

Probability: According to FEMA National Risk Index the risk for Winter Weather in Bowie County is relatively moderate and the risk for Ice Storm is relatively high. The probability of the occurrence of a freeze is high, given historical weather patterns. Ten winter storms have occurred between 2011 and 2021. It is highly likely that a winter storm will occur in any given year. Bowie County and the participating jurisdictions share the same likelihood of experiencing a winter storm.

Vulnerability: Bowie County has a significant amount of acreage designated as conservation, public lands and agricultural land uses. The small towns and communities are always vulnerable to power outages, icy roads and delayed emergency services.

Summary: In rural east Texas, when moist gulf air meets arctic temperatures winter storms can occur. The storms usually take their toll from heavy accumulations of ice that form, often overnight, on trees, power lines and structures. In the more remote areas of the county homes may be without electrical power for days but critical facilities in most urban areas are operating within a few days. DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center and rural Bowie County may have power outages lasting one to two weeks.

Ice Storms Devastated Bowie County in 2000

■ Weather chills plans for exams 3A
■ Slick roads gum area traffic 3A
■ Emergency rooms stay quiet 8A

Nearly 30,000 without power after artic blast

By JEFF MINOR
and JOHN FOOKS 12-14-00
Of the Gazette Staff

Utility officials say it make take up to seven days to restore electricity to some area homes after Wednesday's early morning ice storm knocked out power to more than half its customers.

"This ice storm has just devastated the system," said Scott McCloud, spokesman for AEP-Southwestern Electric Power. "It just physically destroyed our transmission circuits, and it would have been worse if the sleet and rain had continued."

At one point, 235,000 customers were without power, which is more than half the utility company's customer base.

McCloud said about 30,000 customers were without power in the Texarkana area, which would include its service areas in Bowie County and Arkansas cities like Mena, De Queen and Ashdown.

Staff photo by GREG FELKINS

Tim Bingaman Jr., Billy DeLoach of AEP-Southwestern Electric Power, and Adrian Nicholson examine a tree and power lines late Wednesday afternoon. Nicholson was getting ready to climb the tree and cut off branches.

AEP-SWEPCO officials say they "made pretty good progress" Wednesday toward restoring power to Texarkana-area customers.

"This is the highest classification of storms that we use internally for our emergency preparedness, and the estimated time to get power back to all our customers is up to seven days," McCloud said.

As of 11 a.m., AEP-SWEPCO reported 235,000 customers were without power. As of 4 p.m., 232,000 were still without power.

"It's easily the worst outage we've ever had," said Mike Young, AEP-SWEPCO's communications manager.

Please see POWER on Page 9A

HAILSTORM

Description:

Hail is a form of precipitation that occurs at the beginning of thunderstorms. It is in the form of balls or lumps of ice, usually called hailstones. Hail is formed when raindrops pass through a belt of cold air on their way to earth. This belt of cold air causes the raindrops to freeze into small blocks of ice. The formation of hail requires the presence of cumulonimbus or other convective clouds with strong updrafts. The air turbulence that accompanies thunderstorms aids the formation of hailstones. The water that goes into the formation of hailstones is super-cooled water, that is to say, it is at a temperature below freezing point but still in the form of a liquid. Hailstones start falling when they become too heavy to be supported by air currents.

Hailstones are not formed of single raindrops. However, the process of formation of a hailstone does start with the freezing of a single raindrop. This may be carried by a strong current to the level where rain is still falling as drops. And as this again passes through the cold air belt, new raindrops may cling to the frozen hailstone, thus increasing its size. Hailstones grow in size by repeated collisions with super-cooled water. This water is suspended in the cloud through which the particle is traveling. Those single frozen raindrops that do not get carried back to the raindrop level remain as smaller hailstones.

Hailstorms are very common in middle latitudes and a heavy shower generally lasts around 15 minutes. Hailstorms generally occur during mid to late afternoon. Big hailstones falling with force are known to have caused fatalities to humans and animals.

The following chart shows the Combined NOAA/TORRO Hailstorm Intensity Scales:

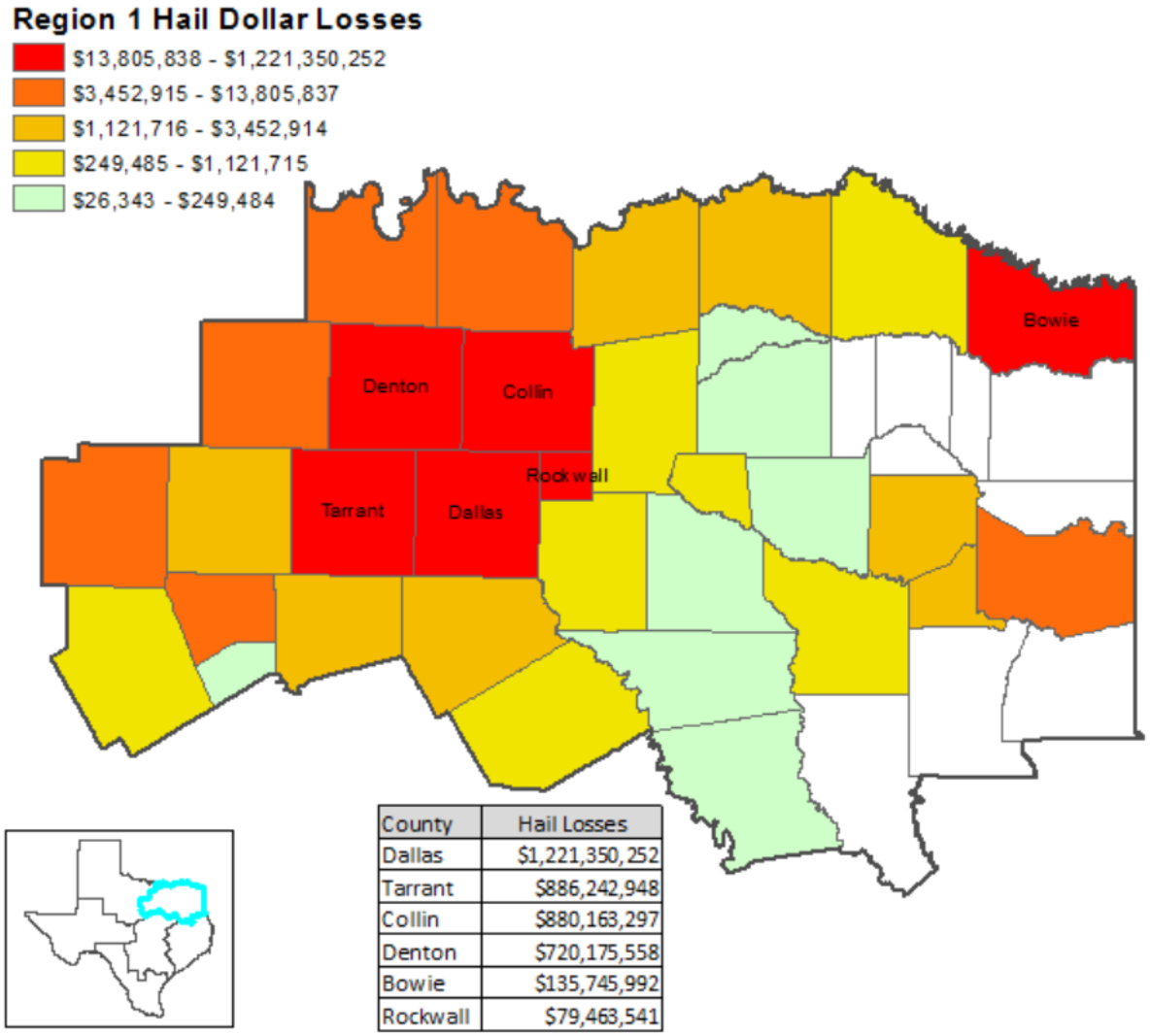
Combined NOAA/TORRO Hailstorm Intensity Scales

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 or even fatal injuries to persons caught in the open

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

HISTORY OF HAILSTORMS IN BOWIE COUNTY

The NOAA Satellite and Information Service, National Climatic Data Center, reports that there have been 31 days of hail events reported between January 2011 and December 2021 in Bowie County. Nine (8) of those events reported a magnitude of 1.75 inches within the cities of Dekalb, Hooks, New Boston, and Simms. The smallest magnitude reported was .75 inches.



County	Hail Losses
Dallas	$1,221,350,252
Tarrant	$886,242,948
Collin	$880,163,297
Denton	$720,175,558
Bowie	$135,745,992
Rockwall	$79,463,541

Data Credits: National Center for Environmental Information Storm Events Database, usng a subset of events from 1996 to 2017. Data available from https://www.ncdc.noaa.gov/stormevents.

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Bowie County Hailstorm Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Bowie Unincorporated	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
Dekalb	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
Hooks	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
Leary	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
Maud	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2..35
Nash	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
New Boston	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
Red Lick	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
Wake Village	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
Redwater	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35
TexAmericas Center	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI=4	<6 hrs. PRI=1	Medium 2.35

BOWIE COUNTY CRITICAL FACILITIES

Facility	Bowie Co	DeKalb	Hooks	Leary	Maud	Nash	New Boston	Red Lick	Redwater	Wake Village	Tex Americas Center
City Hall		1	1	1	1	1	1	1	1	1	
Fire Station	1	1	1			1	1	1	1	1	
Civic Center											
Govt. Facility							4				
Wastewater plant											1
Corrections Facility							1				
Hospital											
Maintenance Barn											
Post Office	1	1	1		1	1	1		1		
Water Tower	1	1									
Police Station		1	1		1	1	1			1	
Sheriff Office							1				
EMS											
Public School	3	3	3	1	2	1	3	2	1	1	
Water Treatment Plant											1
County Seat							1				

Critical Facilities: All critical facilities located in unincorporated Bowie County and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center are subject to some damage from an intense hailstorm. It is hard to imagine a hailstorm severe enough to render a critical facility damaged to the point of not being able to provide the needed services or functions.

Location: Hailstorms can strike anywhere in Bowie County including the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center.

Probability: The probability of a hailstorm strike in Bowie County is highly likely. The jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center share the same probability and risk. According to the FEMA National Risk Index the risk for Hail in Bowie County is relatively high.

Impact: The impact of a hailstorm has historically been limited. Hail can damage autos, roofs, siding and crops. A 2% loss to residential property in the county could result in a monetary value of $37,238,174. See the tables on page 25-27 for a more comprehensive look at possible damage values.

Estimated Property Loss at 25%		
Bowie County Unincorp.	Residential	$284,926,814
DeKalb	Residential	$10,974,525
Hooks	Residential	$16,411,051
Leary	Residential	$2,524,560
Maud	Residential	$6,500,093
Nash	Residential	$22,273,531
New Boston	Residential	$31,655,502
Red Lick	Residential	$16,951,088
Redwater	Residential	$4,775,763
Wake Village	Residential	$68,484,249
TexAmericas Center	Residential	N/A

Vulnerability: Buildings, autos, and crops, can be damaged by hail. Hail is often part of thunderstorm activity. In rare cases hail can cause physical injury. The overall vulnerability level in Bowie County and the jurisdictions is high.

Summary: Hailstorms are unpredictable and often associated with thunderstorm activity. Thunderstorms have historically occurred throughout the county, and if the trend continues, all of Bowie County and its jurisdictions could be affected by hailstorms.

DROUGHT

Description

A drought is a period of abnormally dry weather that persists long enough to produce a serious hydrologic imbalance (for example crop damage, water supply shortage, etc.) The severity of the drought depends upon the degree of moisture deficiency, the duration and the size of the affected area.

There are four different ways that drought can be defined:

- **Meteorological** – a measure of departure of precipitation from normal. Due to climatic differences what is considered a drought in one location may not be a drought in another location.
- **Agricultural** – refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop.
- **Hydrological** – occurs when surface and subsurface water supplies are below normal.
- **Socioeconomic** – refers to the situation that occurs when physical water begins to affect people.

Drought is a period when precipitation falls below normal levels.

Defining the beginning or the end of a drought can be difficult. Some droughts may be short in duration, but more severe in their intensity. Low humidity and high temperatures usually accompany droughts, which means that any additional moisture evaporates quickly before it has the chance to improve conditions.

Droughts not only lead to water shortages, but they produce widespread crop failure and environmental stress, and in recent years have caused more than 300 Texas cities and utilities to resort to ordinances or other measures to limit water use. The extreme heat associated with some droughts has led to heat related deaths, job losses among agricultural workers, and significant acreage and property destroyed by wildfires.

Climate change has further altered the natural pattern of droughts, making them more frequent, longer, and more severe. Since 2000, the western United States is experiencing some of the driest conditions on record. The southwestern U.S., in particular, is going through an unprecedented period of extreme drought. This will have lasting impacts on the environment and those who rely on it. (ww.usgs.gov)

Drought ends when it rains. When enough precipitation has fallen, a region's soil moisture profile will improve enough to sustain plants and crops. Once recovery continues to the extent that the water levels of lakes, rivers, wells and reservoirs have returned to normal, then a drought is considered over.

Types of Drought Impacts

Drought impacts are often grouped as economic, environmental, and social. The economic impact of droughts in East Texas includes:

- Farmers may lose money if a drought destroys their crops or stunts the crops' growth, causing lower yields and poor crop quality. If a farmer's water supply is too low, the farmer may have to spend more money on irrigation or to find new water sources, like wells.
- Ranchers may lose livestock, or they might have to spend more money on feed and water for their animals.
- People who work in the timber industry may be affected when trees, especially young trees, die, or wildfires destroy stands of timber.
- Businesses that manufacture and sell recreational equipment, like boats and fishing equipment, may not be able to sell some of their goods because drought has dried up lakes and other water sources.
- Businesses that depend on agricultural productions, like tractor manufacturers and companies that process food, may lose business when drought damages crops or livestock.
- Power companies that normally rely on hydroelectric power (electricity that is created from the energy of running water) may have to spend more money on other fuel sources if drought dries up too much of the water supply. The power companies' customers would also have to pay more.
- Water companies may have to spend money on new or additional water supplies.
- Barges and ships may have difficulty navigating streams, rivers, and canals because of low water levels, which would also affect businesses that depend on water transportation for receiving or sending goods and materials.
- People may have to pay more for food.

Drought also causes environmental losses because of forest fires; soil erosion; damage to plants, animals, and their habitat; and air and water quality decline. Sometimes the damage is only temporary, and conditions return to normal when the drought is over. But sometimes drought's impact on the environment can last a long time, or may even become permanent if, for example, an endangered species was lost because of low stream flows. Examples of environmental impacts include:

- Losses or destruction of fish and wildlife habitat
- Lack of food and drinking water for wild animals
- Increase in disease in wild animals because of reduced food and water supplies
- Migration of wild animals, leading to loss of wildlife in some (drought-stricken) areas and too much wildlife in areas not affected by drought
- Increased stress on endangered species
- Lower water levels in reservoirs, lakes, and ponds
- Loss of wetlands
- More fires
- Wind and water erosion of soils, reduced soil quality

Social impacts of drought include public safety, health, conflicts that arise between people when there is not enough water to go around, and changes in lifestyle. Many of the impacts that we consider economic and environmental also have social impacts. Examples of social impact include:

- Mental and physical stress on people (for example, people may experience anxiety or depression about economic losses caused by drought)
- Health problems related to low water flows (for example, low water supplies and water pressure make fire-fighting more difficult)
- Loss of human life (from heat stress and suicides for example)
- Threat to public safety from an increased number or forest and range fires
- Reduced incomes
- Population migration (from rural to urban areas)
- Fewer recreational activities

All these impacts were considered in planning for and responding to drought conditions.

According to the National Climate Data Center

The wide variety of disciplines affected by drought, its diverse geographical and temporal distribution, and the many scales drought operates on make it difficult to develop both a definition to describe drought and an index to measure it. Many quantitative measures of drought have been developed in the United States, depending on the discipline affected, the region being considered, and the particular application. Several indices developed by Wayne Palmer, as well as the Standardized Precipitation Index, are useful for describing the many scales of drought.

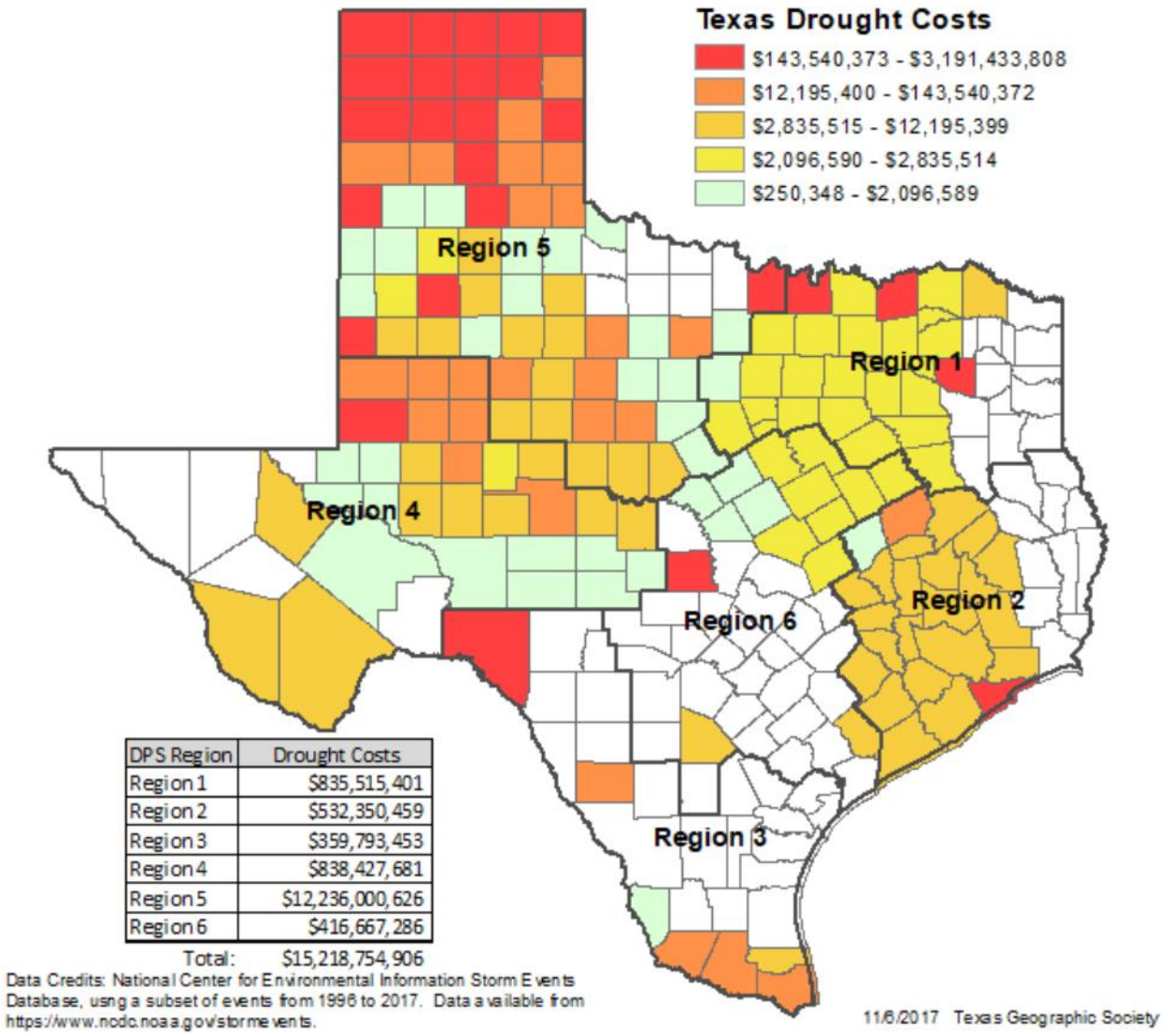
Common to all types of drought is the fact that they originate from a deficiency of precipitation resulting from an unusual weather pattern. If the weather pattern lasts a short time (say, a few weeks or a couple months), the drought is considered *short-term*. But if the weather or atmospheric circulation pattern becomes entrenched and the precipitation deficits last for several months to several years, the drought is considered to be a *long-term* drought. It is possible for a region to experience a long-term circulation pattern that produces drought, and to have short-term changes in this long-term pattern that result in short-term wet spells. Likewise, it is possible for a long-term wet circulation pattern to be interrupted by short-term weather spells that result in short-term drought

Any party which takes credit for the rain must not be surprised if its opponents blame it for the drought.

Dwight Morrow

Historical Dollar Losses

The following map illustrates the total county losses (property plus crop losses) from drought or abnormal dryness over the period (1996-2016). The different colors on the map represent the relative losses between counties within the state; white signifies zero dollars lost. The inset table reports total dollar losses for each region over the 21-year base period.



DPS Region	Drought Costs
Region 1	$835,515,401
Region 2	$532,350,459
Region 3	$359,793,453
Region 4	$838,427,681
Region 5	$12,236,000,626
Region 6	$416,667,286
Total:	$15,218,754,906

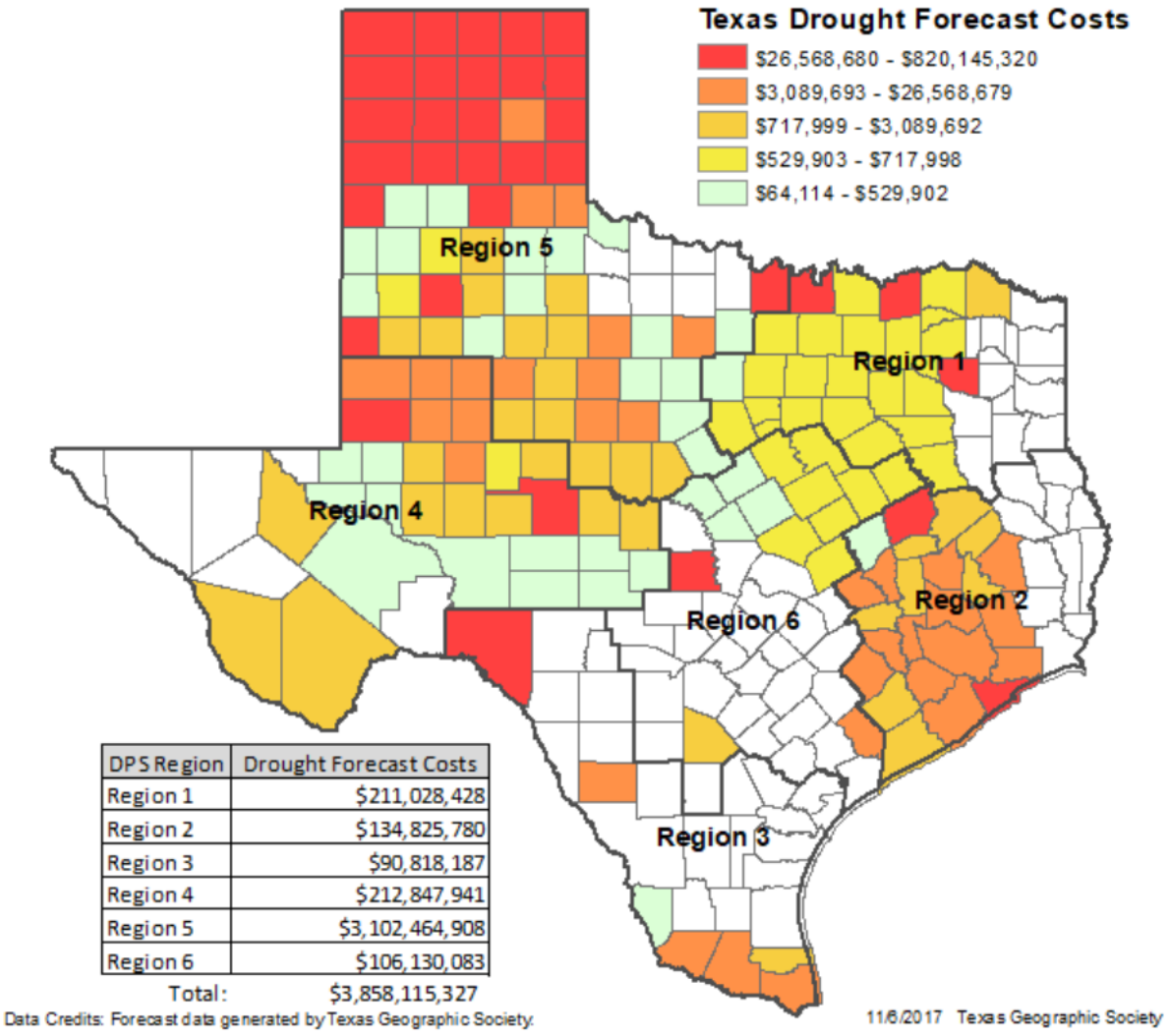
Data Credits: National Center for Environmental Information Storm Events Database, usng a subset of events from 1996 to 2017. Data available from https://www.ncdc.noaa.gov/stormevents.

County Dollar Loss Forecast

This map shows the results of the forecast model for 2019-2023 for drought and abnormal dryness dollar losses at the county level. These are based on the locations of impacts in the base period and the likely locations of future losses.

Drought/Abnormal Dryness Dollar Loss Forecast

The forecast is an estimate of damages that are likely to occur if similar weather events re-occur in or near previously impacted areas during the base period. Future drought or abnormal dryness dollar losses will not necessarily be in the same places that they were in the past, but a strong correlation is likely.



DPS Region	Drought Forecast Costs
Region 1	$211,028,428
Region 2	$134,825,780
Region 3	$90,818,187
Region 4	$212,847,941
Region 5	$3,102,464,908
Region 6	$106,130,083
Total:	$3,858,115,327

Data Credits: Forecast data generated by Texas Geographic Society.

PAST OCCURANCES OF DRIUGHT IN BOWIE COUNTY

(Data from National Climatic Data Center)

January 2011 – March 2012 The entire state recorded drought conditions at one point This drought reached historical proportions creating severe drought conditions throughout the state of Texas.

November 2012 – January 2013 D2 Severe Drought conditions developed during the early part of the month in Bowie County.

August 2013- September 2013 Severe to extreme drought conditions expanded to encompass much of the northeast half of the state.

August 2015 – October 2015 Flash drought conditions developed across Bowie County during the middle of August. D2 Severe Drought conditions began to materialize in September and September 8th, D3 Extreme Drought conditions began to materialize. Drought conditions continued to worsen during the first half of October with D2 Severe Drought conditions noted. D3 Extreme Drought conditions encompassed Bowie County. By October 20th, drought conditions continued to deteriorate such that Bowie County was classified at D4 Exceptional Drought conditions.

October 2016-December 2016 Bowie County was classified with D2 Severe Drought conditions on Oct. 25th and continuing beyond the month of October. Severe drought conditions (D2) continued during November 2016, as monthly temperatures remained two to four degrees above normal and below normal rainfall continued. Severe (D2) drought conditions continued to start December, before widespread rainfall of an inch to an inch and a half fell across much of this area during the first week of the month.

November 2017-December 2017 Severe (D2) drought conditions developed across Eastern Bowie County in Northeast Texas to start the second week of November. As a result of the drought, planting of winter wheat pastures was delayed or little growth occurred, stock ponds receded significantly. Severe (D2) drought conditions continued across much of Northeast Texas to start December, before widespread rainfall of an inch to an inch and a half fell across much of this area during the first week of the month the month.

August 1, 2018 – August 15, 2018 Extreme (D3) and severe (D2) drought conditions continued through the first two weeks of August across Bowie County Texas, as very little rainfall fell through the first week of the month.

November 2021-December 2021 Severe (D2) drought conditions developed across Bowie County by the very end of November and continued into December, in response to a prolonged period of dryness which began in late July, coupled with above normal temperatures which persisted through the Fall months.

Bowie County Drought Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Bowie County Unincorporated	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
DeKalb	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Hooks	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Leary	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Maud	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Nash	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
New Boston	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Red Lick	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Redwater	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Wake Village	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
TexAmericas Center	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55

BOWIE COUNTY CRITICAL FACILITIES

Facility	Bowie Co	DeKalb	Hooks	Leary	Maud	Nash	New Boston	Red Lick	Redwater	Wake Village	Tex Americas Center
City Hall		1	1	1	1	1	1	1	1	1	
Fire Station	1	1	1			1	1	1	1	1	
Civic Center											
Govt. Facility							4				
Wastewater plant											1
Corrections Facility							1				
Hospital											
Maintenance Barn											
Post Office	1	1	1		1	1	1		1		
Water Tower	1	1									
Police Station		1	1		1	1	1			1	
Sheriff Office							1				
EMS											
Public School	3	3	3	1	2	1	3	2	1	1	
Water Treatment Plant											1
County Seat							1				

Critical Facilities: Drought can impact the availability of water to citizens. Wastewater treatment plants and potable water sources may be impacted by lingering drought. DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, TexAmericas Center and the unincorporated portions of Bowie County are equally susceptible to drought.

Probability: Droughts will continue to occur in Bowie County and the participating jurisdictions when the conditions are right. It is a normal, recurrent feature of climate. A drought will affect Bowie County and its participating jurisdictions. Historically a drought can last from a few days to several months. According to FEMA National Risk Index the risk for drought in Bowie County is low.

Vulnerability: The region is vulnerable when there is a deficiency of precipitation over an extended period of time. All of Bowie County and its jurisdictions are vulnerable to drought. For DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center droughts have a social dynamic that includes affecting the elderly and young, causing depression, creating job loss, requiring residents to relocate due to economic impact and rising costs for food.

Impact: Bowie County drought defined: Drought is determined by using the Palmer Drought Index. It is based on precipitation and temperature date for the area. The scale ranges from 3.99, which is very wet to -4.00 or less, which is considered extreme drought. The scale is most accurate when used to determine drought over a period of months. The extent of drought experienced in Bowie County and its jurisdictions will range from ***0 Abundantly Dry to 4 Exceptional Drought.***

The impact of a drought on Bowie County and all the participating jurisdictions include economic problems due to high food prices, the water from municipal works can drop in quality causing illness, lawns and other plants are impacted. Public safety can be threatened by the increased likelihood of wildfires. If the water levels of Lake Wright Patman become low there would be a decrease in recreational activities such as fishing and swimming.

Location: Historically, drought has affected all of Bowie County including the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center. The agricultural areas, which include the rural parts of the County, would be affected more so than the urban areas.

Summary: Drought is seen as an issue for Bowie County, DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center. The drought of 2011 actually covered 15 months and impacted the entire state. Rationing water remains a real possibility due to climate change. New precautions should be considered to mitigate changing weather patterns.

EXTREME HEAT

Description

Heat kills by taxing the human body beyond its abilities. In a normal year, about 175 Americans succumb to the demands of summer heat. Among the large continental family of natural hazards, only the cold of winter-not lighting, hurricanes, tornadoes, floods, or earthquakes-takes a greater toll. In the 40-year period from 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the disastrous heat wave of 1980, more than 1,250 people died. These are the direct casualties. No one can know how many more deaths are advanced by heat wave weather-how many diseased or aging hearts surrender that under better conditions would have continued functioning.

North American summers are hot; most summers see heat waves in one section or another of the United States. East of the Rockies, they tend to combine both high temperature and high humidity although some of the worst have been catastrophically dry.

The stagnant atmospheric conditions of the heat wave trap pollutants in urban areas and add the stresses of severe pollution to the already dangerous stresses of hot weather, creating a health problem of undiscovered dimensions. The high inner-city death rates also can be read as poor access to air-conditioned rooms. While air conditioning may be a luxury in normal times, it can be a lifesaver during heat wave conditions. The cost of cool air moves steadily higher, adding what appears to be a cruel economic side to heat wave fatalities. Indications from the 1978 Texas heat wave suggest that some elderly people on fixed incomes, many of them in buildings that could not be ventilated without air conditioning, found the cost too high, turned off their units, and ultimately succumbed to the stresses of heat. Elderly persons, small children, chronic invalids, those on certain medications or drugs (especially tranquilizers and anticholinergics), and persons with weight and alcohol problems are particularly susceptible to heat reactions, especially during heat waves in areas where a moderate climate usually prevails.

Based on the latest research findings, the National Weather Service has devised the Heat Index (HI). The HI, given in degrees F, is an accurate measure of how hot it really feels when relative humidity (RH) is added to the actual air temperature. Exposure to full sunshine can increase HI values by up to 15 degrees Fahrenheit. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.

Bowie County Extreme Heat

All of Bowie County including the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center will suffer from the impact of heat. Extreme heat is often categorized in terms of weather events with drought.

In Bowie County those at greatest risk of death due to excessive heat are the urban dwelling elderly without access to an air-conditioned environment for at least part of the day. Thus, the issues of prevention and mitigation combine issues of the aging and public health.

Further Economic impact occurs when stress is placed on automobile cooling systems, diesel trucks and railroad locomotives. This leads to an increase in mechanical failures. Train rails develop sun kinks and distort. Refrigerated goods experience a significant greater rate of spoilage due to extreme heat. Additional impact will be felt as food prices rise due to crop loss.

The demand for electric power during heat waves is well documented. According to the Institute for Research in the Atmosphere at Colorado State University, “In 1980, consumers paid $1.3 billion more for electric power during the summer than the previous year. The demand for electricity, 5.5% above normal, outstripped the supply, causing electric companies to have rolling black outs.”

Extreme Heat Past Occurrences

Date	Highest Temperature	Days Over 90
June 2011	103	26
July 2011	106	27
August 2011	111	30
June 2012	107	28
July 2012	103	31
August 2012	101	30
June 2013	100	25
July 2013	100	27
August 2013	101	25
June 2014	94	10
July 2014	100	16
August 2014	97	24
June 2015	96	16
July 2015	101	29
August 2015	106	25
June 2016	96	22
July 2016	103	28
August 2016	101	18
June 2017	94	9
July 2017	97	25
August 2017	96	13
June 2018	97	27
July 2018	104	26
August 2018	101	24
June 2019	94	10
July 2019	96	19
August 2019	100	27
June 2020	94	12
July 2020	96	28
August 2020	96	18
June 2021	96	18
July 2021	96	22
August 2021	98	23

* National Weather Service

"Extreme heat is **a period of high heat and humidity with temperatures above 90 degrees for at least two to three days**. In extreme heat your body works extra hard to maintain a normal temperature, which can lead to death." (*ready.gov)*

The following shows heat index/heat disorders.

NOAA's National Weather Service Heat Index

Temperature (°F)

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

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution Extreme Caution Danger Extreme Danger

To find the Heat Index temperature, look at the Heat Index chart above. For example, if the air temperature is 96 degrees F and the relative humidity is 65%, the heat index – how hot it feels – is 121 degrees F.

BOWIE COUNTY EXTREME HEAT RISK					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Bowie Unincorporated	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
DeKalb	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Hooks	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Leary	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Maud	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Nash	Limited PRI	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
New Boston	Limited PRI	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Red Lick	Limited PRI	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Redwater	Limited PRI	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Wake Village	Limited PRI	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
TexAmericas	Limited PRI	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1

BOWIE COUNTY CRITICAL FACILITIES

Facility	Bowie Co	DeKalb	Hooks	Leary	Maud	Nash	New Boston	Red Lick	Redwater	Wake Village	Tex Americas Center
City Hall		1	1	1	1	1	1	1	1	1	
Fire Station	1	1	1			1	1	1	1	1	
Civic Center											
Govt. Facility							4				
Wastewater plant											1
Corrections Facility							1				
Hospital											
Maintenance Barn											
Post Office	1	1	1		1	1	1		1		
Water Tower	1	1									
Police Station		1	1		1	1	1			1	
Sheriff Office							1				
EMS											
Public School	3	3	3	1	2	1	3	2	1	1	
Water Treatment Plant											1
County Seat							1				

Critical Facilities: Extreme heat can impact overall well-being of citizens. Wastewater treatment plants and potable water sources may be impacted by lingering drought associated with extreme heat. DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, TexAmericas Center, and the unincorporated portions of Bowie County are equally susceptible to extreme heat.

Probability: According the FEMA National Risk Index risk for Heat Waves in Bowie County is relatively moderate. Extreme heat is a normal, recurrent feature of climate. Bowie County typically has three or four extreme heat occurrences every summer. It is highly likely that Bowie County and its jurisdictions will experience extreme heat. According to the State of Texas Hazard Mitigation Plan, Texas currently averages more than 60 dangerous heat days a year; by 2050, the state is projected to see 115 such days a year, second only to Florida. (reportcard.statesatrisk.org)

Vulnerability: The region is vulnerable when there is a deficiency of precipitation over an extended period of time and high temperatures. The extent of damage or injury increases with the temperature and relative humidity levels. All of Bowie County and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center are vulnerable. The elderly, young and ill are most vulnerable to extreme heat. Crops and livestock are stressed during extended periods of extreme heat. Extreme heat causes heat stroke, time lost on the job and psychological stress.

Impact: According to the NOAA weather service in Shreveport, Louisiana, extreme, heat by definition, exists when over a two-day period, the heat index high reaches 105-109 with a minimum evening index temperature of 75 degrees or better. The heat index is calculated by combining air temperature and humidity levels. The full range of the heat index on the preceding page is applicable for Bowie County and its jurisdictions. There is no specific history regarding property or crop damage due to excessive heat available. For a better idea of the possible property losses see Damage Assessment Tables on pages 25-27 for examples of loss in dollars. The Heat Index will be mitigated to any combination of temperature and humidity that ranges from 100 degrees F to 114 degrees F.

Location: The entire county would be affected by extreme heat. All the jurisdictions suffer from the impact of extreme heat.

Summary: Hot temperatures are part of the East Texas landscape. During the months of June, July and August we can expect temperatures of over 100 degrees. The citizens who live in Bowie County and the participating jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center are aware of extreme heat's lethal potential and take precautions to prevent overheating and heat related strokes. Models produced by the environmental sciences project increase incidents of extreme temperature climate change due to global warming. Mitigation actions should take place now to prepare for rising temperatures.

EARTHQUAKES

Description

An earthquake is a motion or trembling that occurs when there is a sudden breaking or shifting of rock material beneath the earth's surface. This breaking or shifting produces elastic waves which travel at the speed of sound in rock. These waves may be felt or produce damage far away from the epicenter-the point on the earth's surface above where the breaking or shifting actually occurred.

Earthquakes do occur in Texas. Within the 20th century, there have been more than 100 earthquakes large enough to be felt; their epicenters occur in 40 of Texas's 257 counties. Four of these earthquakes have had magnitudes between 5 and 6, making the large enough to be felt over a wide area and produce significant damage near their epicenters. There have been historical earthquakes in four regions within Texas which indicate potential earthquake hazard. The greatest hazard in Northeastern Texas is from very large earthquakes (magnitude 7 or above) which might occur outside of Texas, particularly in Oklahoma or Missouri-Tennessee.

Modified Mercalli Intensity Scale

Mercalli Intensity **(at epicenter)**	**Magnitude**	**Witness Observations**
I	1 to 2	Felt by very few people; barely noticeable.
II	2 to 3	Felt by a few people, especially on upper floors.
III	3 to 4	Noticeable indoors, especially on upper floors, but may not be recognized as an earthquake.
IV	4	Felt by many indoors, few outdoors. May feel like heavy truck passing by.
V	4 to 5	Felt by almost everyone, some people awakened. Small objects moved. Trees and poles may shake.
VI	5 to 6	Felt by everyone. Difficult to stand. Some heavy furniture moved, some plaster falls. Chimneys may be slightly damaged.
VII	6	Slight to moderate damage in well built, ordinary structures. Considerable damage to poorly built structures. Some walls may fall.
VIII	6 to 7	Little damage in specially built structures. Considerable damage to ordinary buildings, severe damage to poorly built structures. Some walls collapse.
IX	7	Considerable damage to specially built structures, buildings shifted off foundations. Ground cracked noticeably. Wholesale destruction. Landslides.
X	7 to 8	Most masonry and frame structures and their foundations destroyed. Ground badly cracked. Landslides. Wholesale destruction.
XI	8	Total damage. Few, if any, structures standing. Bridges destroyed. Wide cracks in ground. Waves seen on ground.
XII	8 or greater	Total damage. Waves seen on ground. Objects thrown up into air.

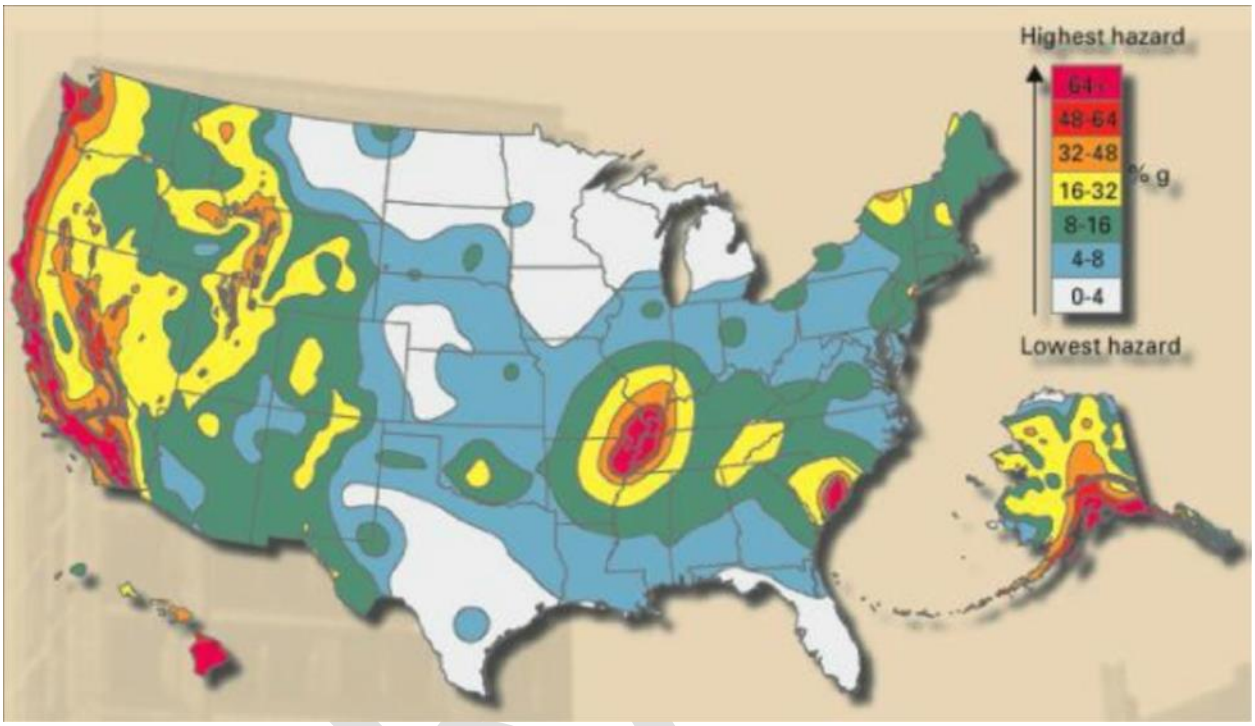
Earthquake Magnitude

Magnitude is measure of the strength of an earthquake or strain energy released by it, as determined by seismographic observations. This is a logarithmic value originally defined by Charles Richter (1935). An increase of one unit of magnitude (for example, from 4.6 to 5.6) represents a 10-fold increase in wave amplitude on a seismogram or approximately a 30-fold increase in the energy released. In other words, a magnitude 6.7 earthquake releases over 900 times (30 times 30) the energy of a 4.7 earthquake - or it takes about 900 magnitude 4.7 earthquakes to equal the energy released in a single 6.7 earthquake! There is no beginning nor end to this scale. However, rock mechanics seems to preclude earthquakes smaller than about -1 or larger than about 9.5. A magnitude -1.0 event release about 900 times less energy than a magnitude 1.0 quake. Except in special circumstances, earthquakes below magnitude 2.5 are not generally felt by humans.

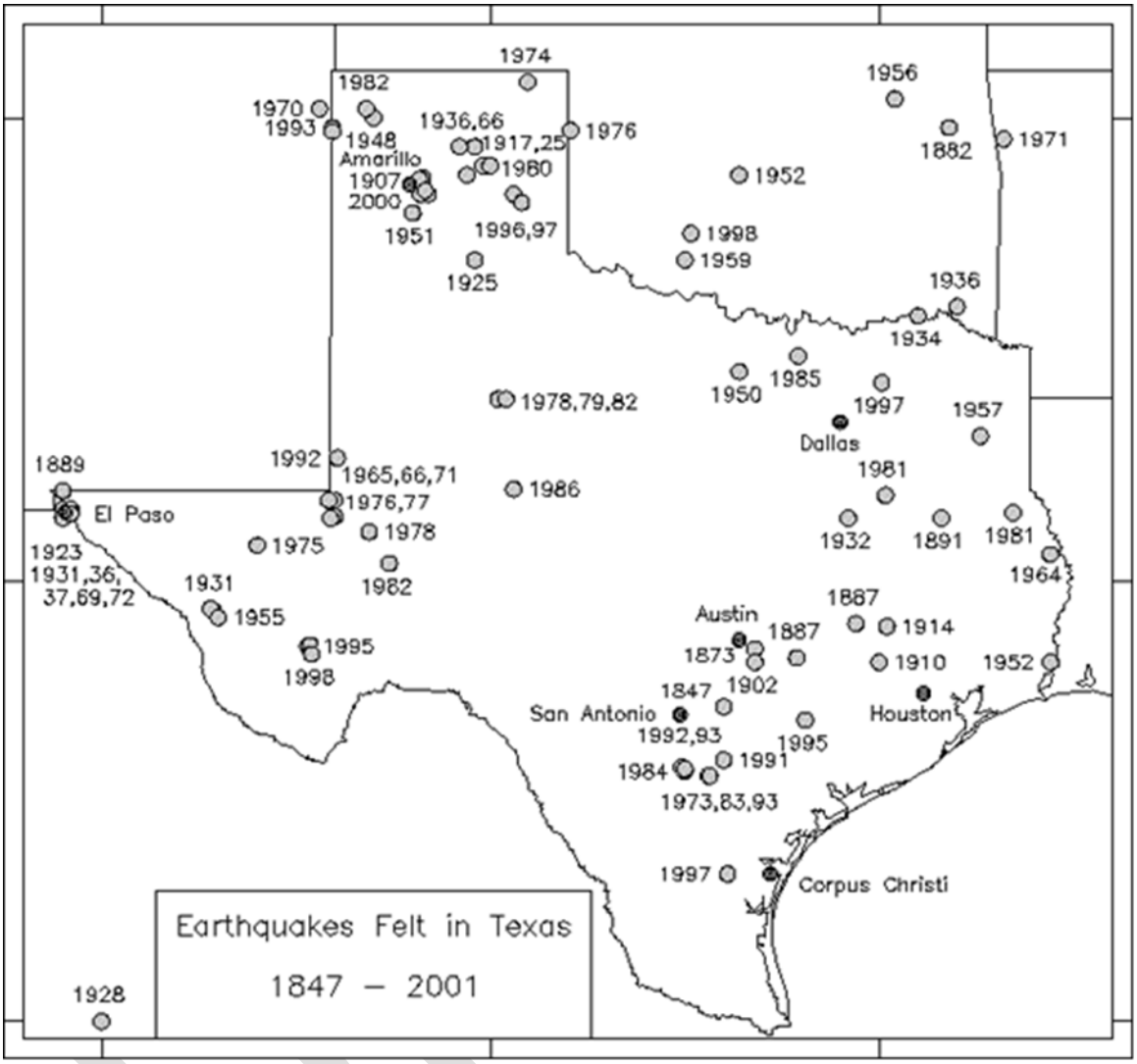
Magnitude (Richter Scale)	Effects	Number per year
less than 2	Not felt by humans. Recorded by instruments only.	Numerous
2-3	Felt only by the most sensitive. Suspended objects swing	300,000
3-4	Felt by some people. Vibration like a passing heavy vehicle	49,000
4-5	Felt by most people. Hanging objects swing. Dishes and windows rattle and may break	6,200
5-6	Felt by all; people frightened. Chimneys topple; furniture moves	800
6-7	Some panic. Buildings may suffer substantial damage	120
7-8	Widespread panic. Few buildings remain standing. Large landslides; fissures in ground	18
8-9	Complete devastation. Ground waves	1 every few years

Earthquake Risk

Earthquake risk is the probable building damage, and number of people that are expected to be hurt or killed if a likely earthquake on a particular fault occurs. Earthquake risk and earthquake hazard are occasionally incorrectly used interchangeably.



The map above indicates that the Northeast Texas area poses more of an increased threat than some areas in the United States due to the fact that it is bordered by three states that are ranked the same as our area. You will notice that these states have had activity in the past. Also, due to the fact that aftershocks can occur, the threat lingers.

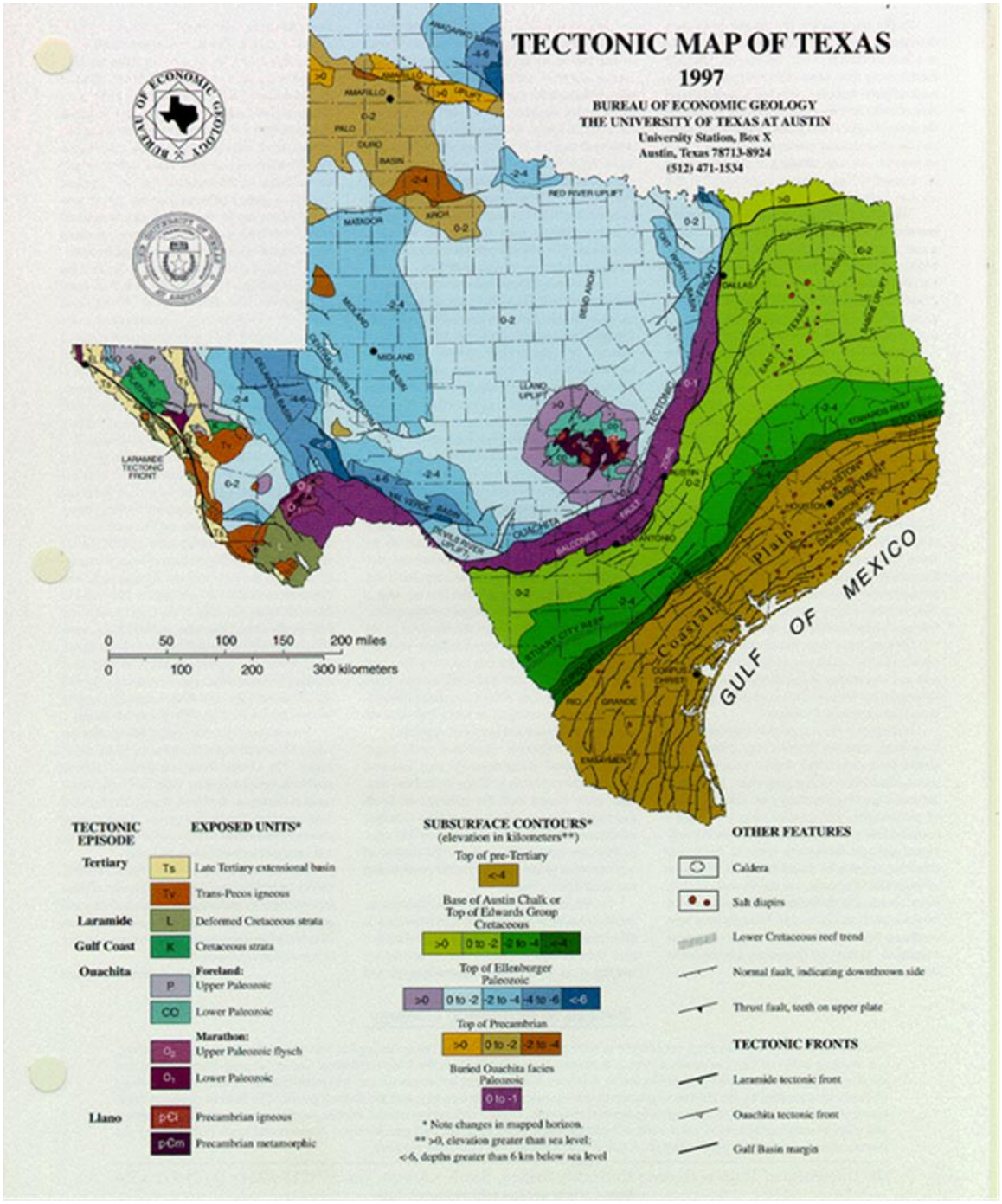


Various ongoing natural processes produce stress that occasionally cause the underlying rock material to break or shift in an earthquake. Rock material is most likely to break where it is highly stressed or where it has broken before, as along a preexisting fault. Earthquakes are most common along very large, well-developed faults (such as the San Andreas Fault in California) which divide the earth into huge, country-sized relatively stable regions, called tectonic plates. The majority of the world's earthquakes, such as most reported in Mexico, California, Alaska, and Japan, occur along plate boundaries.

However, not all earthquakes occur at plate boundaries; in regions like Texas many also occur far away from plate boundary faults. Sometimes these "plate interior" earthquakes are quite large; for example, in 1811-1812 three earthquakes with magnitude above 8 occurred near the Missouri-Tennessee boundary. These quakes were as large as any historic earthquakes that have occurred in California, or anywhere else in the U.S. outside of Alaska. While Texans haven't

experienced such large quakes in historic times, smaller quakes do occur naturally along faults in several regions of Texas.

While all earthquakes occur on faults, not all faults have earthquakes. A fault is simply a fracture in rock material accompanied by displacement along the two sides of the fracture. If the displacement occurs slowly enough, no earthquake waves are generated. And, often the displacement may have occurred millions of years ago, so that the fault remains but there is no present earthquake threat. Finally, many faults go undiscovered because they lie far beneath the surface, covered by soil. It is not accident that fault maps show the most faults in regions where bedrock is exposed at the surface.



In the central U.S., the USGS assesses the greatest hazard in the Missouri-Tennessee area, where three earthquakes with magnitude of 8 or greater occurred in 1811 and 1812. In the 20th century, the largest earthquake in the Missouri-Tennessee area only had a magnitude of about 5.5. The very rarity of large earthquakes makes hazard analysis an inexact science. In the 20th century, hundreds of man-made lakes and reservoirs have been constructed in Texas; in some cases, these pose a special hazard, particularly if there are population centers downstream. Large very distant earthquakes sometimes have surprisingly low-frequency effects. Earthen or earth-filled dams are of special concern since intense shaking or sloshing could cause dam failure.

Historical Earthquakes in Northeast Texas

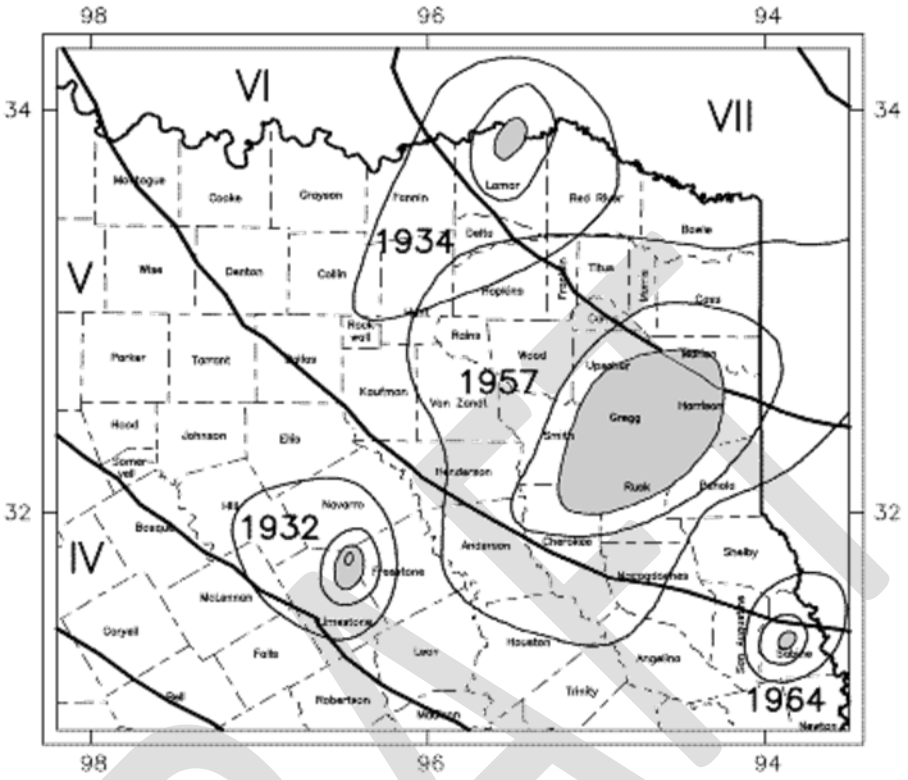
The Northeast Texas region is at risk from very large, distant earthquakes which might occur in Missouri-Tennessee or Oklahoma; the earthquakes that pose such a hazard are rare, probably occurring only once per 500 years or less. Such distant earthquakes would be most likely to damage large buildings or poorly reinforced masonry structures. Earthquakes with epicenters within this region are rare and small. Several earthquakes with magnitudes 3 to 4.5 will probably occur each century. These pose little or no risk unless their epicenters are extremely close to poorly built or very sensitive structures.

Throughout most of this region, the most intense shaking experienced over the past two centuries originated from several earthquakes with magnitude about 8 which occurred in Missouri-Tennessee in 1811-1812, or an earthquake with magnitude 5.6 which occurred in eastern Oklahoma in 1882. Although such distant earthquakes are unlikely to produce severe damage, they can cause failure in very large structures, or structures which are designed with absolutely no earthquake-resistant features.

Small earthquakes with epicenters in this region occasionally do occur, some of natural origin and some apparently induced by petroleum production. These include:

- A magnitude 4.0 earthquake with an epicenter near Mexia, probably induced by oil production, that occurred on April 9, 1932.
- A magnitude 4.2 earthquake centered in Lamar County north of Paris that occurred on April 12, 1934.
- A magnitude 3.0 earthquake that occurred in Gregg County near Gladewater on March 19, 1957. This quake may have been induced by petroleum production in the East Texas Field.
- A series of earthquakes in 1964 with magnitudes of 4.0 and higher near Hemphill-Pineland in Sabine County.
- A magnitude 3.3 earthquake centered near Jacksonville in Cherokee County, which occurred on November 7, 1981.
- A magnitude 3.3 earthquake in Cooke and Denton County near Pilot Point and Valley View, which occurred on September 18, 1985.
- A magnitude 3.4 earthquake centered near Commerce in Hunt County; this occurred on May 27, 1997.

Events of these magnitudes seldom produce damage further than about a few miles from the epicenter. Below shows the felt areas of representative historical earthquakes in Northeast Texas.



Felt areas of representative historical earthquakes in northeastern Texas. Shaded regions indicate areas of intensity V and above for earthquakes of 1932 (Limestone County), 1934 (northern Lamar County), 1957 (Gregg County), and 1964 (Sabine County). Thick lines indicate estimated boundaries of Modified Mercalli Intensities for the 1811-1812 Missouri-Tennessee earthquakes.

While Texas does face some earthquake hazard, this hazard is very small in comparison to that in many other states, including California, Missouri, Montana, South Carolina, and Washington. In most parts of Texas, earthquake hazard is also small compared to the hazard attributable from other natural phenomena, such as hurricanes, tornadoes, and floods. There is no need for Texas to enact sweeping changes in construction practices or take other drastic measures to mitigate earthquake hazard.

Northeast Texas Earthquakes of Magnitude 3 or Greater

The University of Texas at Austin, Jackson School of Geosciences, Institute for Geophysics, Texas Division of Emergency Management.

*Imax = Maximum Modified Mercalli intensity reported in Texas.

**Cause: T = probably tectonic in origin. M = probably man-made (induced). ? = poorly constrained event, insufficient or conflicting evidence.

Date	Origin time (UTC)	Lat. °N	Long. °W	Magnitude	Imax *	Felt area (km2)	Cause**	Location	County
16 Dec. 1811	08:15	90.0	8.1	VII	5,000,000	T	New Madrid, MO		
23 Jan. 1812	89.6	7.8	VII	5,000,000	T	New Madrid, MO			
07 Feb. 1812	89.6	8.0	VII	5,000,000	T	New Madrid, MO			
	Comments: Probably felt in Texas, but no verifiable accounts known. The formation of Caddo Lake in northeast Texas has been attributed to these earthquakes, but accounts of the lake exist prior to 1811.								
22 Oct. 1882	95.1	5.6	V	740,000	T	Ft. Gibson, OK			
	Comments: Previously listed as occurring near Paris, TX. Bricks were shaken loose from walls and chimneys at Bonham, TX.								
08 Jan. 1891	95.2	4.0	VI	—	T	Rusk	Cherokee		
Comments: Several chimneys thrown to the ground.									
09 Apr.1932	96.4	4.0	VI	6,400	M	Wortham-Mexia	Limestone		
Comments: In Wortham, bricks from several chimneys were shaken loose. The mortar of one building was cracked.									
12 Apr.1934	95.5	4.2	V	13,000	T	Trout Switch	Lamar		
Comments: One house needed releveling after the shock.									
20 Mar.1950	97.8	3.3	IV	—	?	Chico	Wise		
09 Apr.1952	97.8	5.5	V	640,000	T	El Reno, OK			
Comments: Intensities III-V noted in much of north Texas. Felt as far south as Austin, TX.									
19 Mar. 1957	94.7	4.7	V	45,000	M	Gladewater	Gregg		
19 Mar. 1957	94.7	3.0	III	3,000	M	Gladewater	Gregg		
19 Mar. 1957	94.7	3.0	III	3,000	M	Gladewater	Gregg		
19 Mar. 1957	94.7	3.0	III	3,000	M	Gladewater	Gregg		
24 Apr. 1964	93.9	3.7	V	—	T	Hemphill	Sabine		
24 Apr. 1964	93.9	3.7	IV	—	T	Hemphill	Sabine		
24 Apr. 1964	93.8	3.2	IV	—	T	Hemphill	Sabine		

27 Apr. 1964	93.8	3.2	IV	—	T	Hemphill	Sabine		
28 Apr. 1964	93.8	4.4	VI	2,700	T	Hemphill	Sabine		
Comments: A small fissure opened up in the yard of a Plainview resident on April 27. Wallpaper and plaster cracked during the April 23 shock.									
30 Apr. 1964	93.8	3.0	III	—	T	Hemphill	Sabine		
07 May 1964	94.0	3.2	V	—	T	Hemphill	Sabine		
02 June 1964	94.0	4.2	V	—	T	Hemphill	Sabine		
03 June 1964	94.0	4.2	V	—	T	Hemphill	Sabine		
03 June 1964	93.9	3.1	III	—	T	Hamphill	Sabine		
03 June 1964	94.0	3.6	IV	—	T	Hemphill	Sabine		
09 June 1981	94.28	3.2	III	—	T	Center	Shelby		
06 Nov. 1981	95.92	3.3	V	800	T	Jacksonville	Anderson		
Comments: Reports of minor damage include cracks in concrete patios and windows and a broken water pipe.									
18 Sept. 1985	15:54:04	33.47	97.04	3.3	V	700	T	Valley View	Cooke
31 May 1997	03:26:41	33.2	96.1	3.4	IV	1,100	T	Commerce	Hunt
Comments: Slight damage reported.									
31 Oct. 2008	97.03	3.0	IV	—	M	DFW airport	Tarrant		
16 May 2009	97.02	3.3	IV	—	M	DFW airport	Tarrant		
16 May 2009	97.10	3.0	-	—	M	DFW airport	Tarrant		
17 Jul. 2011	97.08	3.0	IV	—	M	Cleburne	Johnson		
18 Jan. 2012	97.49	3.3	IV	—	M	Cleburne	Johnson		
15 Jun. 2012	97.27	3.3	IV	—	M	NW of Cleburne	Johnson		
24 Jun. 2012	97.29	3.5	IV	—	M	NW of Cleburne	Johnson		
30 Sep. 2012	96.98	3.4	IV	—	M	DFW airport	Tarrant		
30 Sep. 2012	96.96	3.1	-	—	M	DFW airport	Tarrant		

Past Occurrence of Earthquake in Bowie County

Bowie County will continue to monitor earthquake activity. There is no record of earthquake in Bowie County.

Bowie County Earthquake Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Bowie Unincorporated	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Low 1.45
DeKalb	Limited PRI=1	Unlikely PRI=1	<6 hrs. PRI=4	< 6 hrs. PRI=1	Low 1.45
Hooks	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Low 1.45
Leary	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Low 1.45
Maud	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Low 1.45
Nash	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Low 1.45
New Boston	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Low 1.45
Red Lick	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Low 1.45
Redwater	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Low 1.45
Wake Village	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Low 1.45
TexAmericas Center	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Low 1.45

BOWIE COUNTY CRITICAL FACILITIES

Facility	Bowie Co	DeKalb	Hooks	Leary	Maud	Nash	New Boston	Red Lick	Redwater	Wake Village	Tex Americas Center
City Hall		1	1	1	1	1	1	1	1	1	
Fire Station	1	1	1			1	1	1	1	1	
Civic Center											
Govt. Facility							4				
Wastewater plant											1
Corrections Facility							1				
Hospital											
Maintenance Barn											
Post Office	1	1	1		1	1	1		1		
Water Tower	1	1									
Police Station		1	1		1	1	1			1	
Sheriff Office							1				
EMS											
Public School	3	3	3	1	2	1	3	2	1	1	
Water Treatment Plant											1
County Seat							1				

Probability: The Northeast Texas region is at risk from very large, distant earthquakes which might occur in Missouri-Tennessee or Oklahoma; the earthquakes that pose such a hazard are rare, probably occurring only once per 500 years or less. Such distant earthquakes would be most likely to damage large buildings or poorly reinforced masonry structures. Earthquakes with epicenters within this region are rare and small. These pose little or no risk unless their epicenters are extremely close to poorly built or very sensitive structures. The FEMA National Risk Index is very low for Earthquakes in Bowie County.

Location: All of Bowie County including the participating jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village and TexAmericas Center could experience earthquake activity.

Vulnerability: The principal hazard is from rare, distant, but very large earthquakes occurring outside of Texas. Bowie County and its participating jurisdictions share a vulnerability rating of low. There is no history of significant impacts to property, infrastructure or public safety.

Impact: There has never been an earthquake in Bowie Count and the County would probably receive minimal damage from distant earthquakes. If an earthquake did occur the damage would be significant local families, business, and schools.

Estimated Structure loss at 25%	
Bowie Co Unincorporated	$284,926,814
DeKalb	$15,000,137
Hooks	$19,167,335
Leary	$4,049,414
Maud	$7,200,967
Nash	$39,758,857
New Boston	$47,191,148
Red Lick	$17,310,674
Redwater	$5,709,165
Wake Village	$76,003,056
TexAmericas Center	$5,834,142

Earthquakes can result in the ground shaking, soil liquefaction, landslides, fissures, avalanches, fires and tsunamis. The **extent** of destruction and harm caused by an earthquake depends on:

- magnitude
- intensity and duration
- the local geology
- the time of day that it occurs
- building and industrial plant design and materials
- the risk-management measures put in place.

It is unlikely that a major earthquake would occur in Bowie County, but it is possible. A level IV found on the Modified Mercalli Intensity Scale on page 99 would be significant for this area. Taking reasonable precautions seem to be the best mitigation for such an event.

Summary: Architects and planners should be informed about the possibility of distant earthquakes that could affect large and sensitive structures in Northeast Texas. Sensitive structure, including dams, towers, very tall buildings, bridges, and highway overpasses, should be constructed with the possibility of earthquakes in mind. Residents should understand that small earthquakes occasionally do occur in this region. They should be informed that the principal hazard is from rare, distant, but very large earthquakes occurring outside of Texas in neighboring states.

DAM FAILURE

Description

A dam is "any barrier, including one for flood detention, designed to impound liquid volumes and which has a height of dam greater than six feet. This does not include highway, railroad or other roadway embankments, including low water crossing that may temporarily detain floodwater, levees designed to prevent inundation by floodwater, closed dikes designed to temporarily impound liquids in the event of emergencies, or off channel impoundments authorized by the commission in accordance with the Texas Water Code, Chapter 26, or the Texas Solid Waste Disposal Act, Texas Civil Statutes Article 4477-7". (Regulations section 229.1)

There are 92,065 dams in the United States, according to FEMA and the National Inventory of Dams. Dam failure or levee breeches can occur with little warning. Intense storms may produce a flood in a few hours or even minutes for upstream locations. Flash floods occur within six (6) hours of the beginning of heavy rainfall, and dam failure may occur within hours of the first signs of breaching. Other failures and breeches can take much longer to occur, from days to weeks, as a result of debris jams or the accumulation of melting snow.

There have been no recorded dam failures in Bowie County. However, dam failure is being profiled as a hazard at the suggestion of Mr. Van Meredith, Mitigation Plan Reviewer for FEMA, since dam failure was mentioned under the profiled hazard "Earthquakes". The statement was made that "Earthen or earth-filled dams are of special concern since intense shaking or sloshing could cause dam failure."

Each dam in the *National Inventory of Dams* is assigned a downstream hazard classification based on the potential for loss of life and damage to property should the dam fail. The classification has nothing to do with the condition or structure of the dam or whether the dam is about to collapse. Dams are classified by size and hazard potential:

Size Classification		
Category	**Storage (ac-ft)**	**Height (ft)**
Small	Less than 1000	Less than 40
Intermediate	1000-49,999	40-99
Large	50,000+	100+

Height of dam is "the vertical distance from the effective crest of the dam to the lowest elevation on the centerline or downstream toe of the dam including the natural stream channel. Texas Water Code, Chapter 26, or the Texas Solid Waste Disposal Act, Texas Civil Statutes Article 4477-7. Regulations section 299.1).

Hazard Classification (Severity)		
Category	**Loss of Life**	**Economic Loss**
Low (L)	None Expected	Minimal
Significant (S)	Possible, but none expected	Appreciable
High (H)	Expected	Excessive

Texas has more dams listed in the National Inventory of Dams than any other state. Currently, there are 7,377 dams listed in the National Inventory of Dams, and 21 of those dams are located within Bowie County.

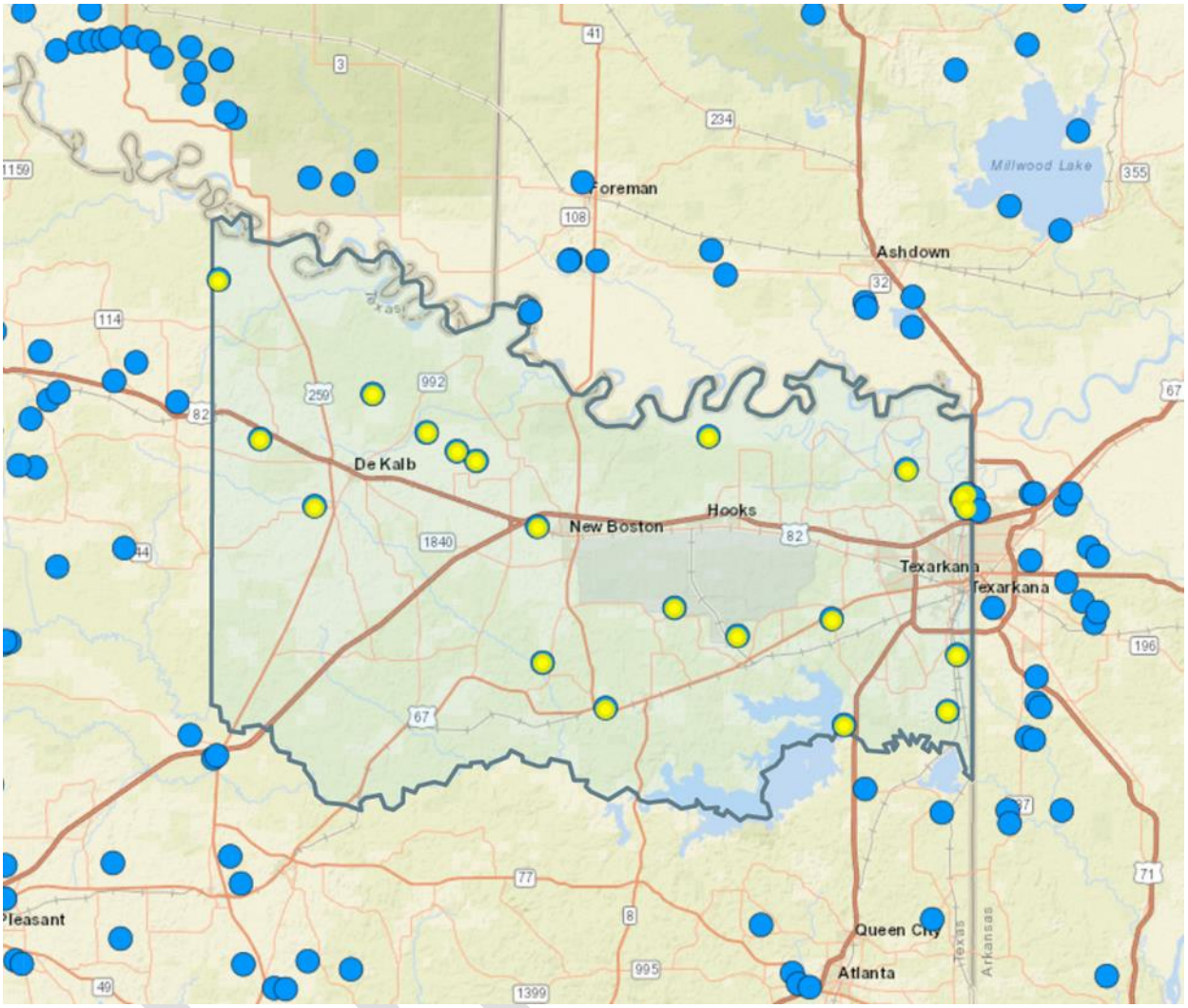
The following table lists the dams in Bowie County.

DAMS IN BOWIE COUNTY
Source: nid.sec.usace.army.mil

Dam Name	NID ID
T and P Lake Dam	TX00361
De Kalb Lake Dam	TX05196
Smith Club Dam	TX00368
Ashford Lake Dam	TX05197
Pecos Crow Ranch Dam	TX06783
Anderson Lake Dam	TX00369
Kennedy Dam	TX00364
Elkins Lake Dam	TX05195
Gifford-Hill Dam	TX00365
Hatchel Farm Lake Dam	TX00371
Crystal Springs Dam	TX00360
Malta Farm Lake Dam No 2	TX00370
Dam At Hle	TX07552
Tranturn Lake Dam	TX07324
Boot Lake Dam	TX07325
Elliott Creek	TX00363
Malta Farm Lake Dam No 1	TX05937
Caney Creek	TX00362
Audie Lake Dam	TX09616
Wright Lake Dam	TX00366
Wright Patman Dam	TX00021

Dams in Bowie County

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



BOWIE COUNTY DAM FAILURE RISK					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Bowie Unincorporated	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
DeKalb	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
Hooks	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
Leary	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
Maud	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
Nash	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
New Boston	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
Red Lick	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
Redwater	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
Wake Village	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
TexAmericas Center	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45

BOWIE COUNTY CRITICAL FACILITIES

Facility	Bowie Co	DeKalb	Hooks	Leary	Maud	Nash	New Boston	Red Lick	Redwater	Wake Village	Tex Americas Center
City Hall		1	1	1	1	1	1	1	1	1	
Fire Station	1	1	1			1	1	1	1	1	
Civic Center											
Govt. Facility							4				
Wastewater plant											1
Corrections Facility							1				
Hospital											
Maintenance Barn											
Post Office	1	1	1		1	1	1		1		
Water Tower	1	1									
Police Station		1	1		1	1	1			1	
Sheriff Office							1				
EMS											
Public School	3	3	3	1	2	1	3	2	1	1	
Water Treatment Plant											1
County Seat							1				

Location: As of April, 2022, the U.S. Army Corp of Engineer's (USACE) National Inventory of Dams (NID) database indicates there are 22 dams in Bowie County.

Wright Patman Lake (formerly known as Texarkana Reservoir or Lake Texarkana) is located about eleven miles southwest of Texarkana in Bowie and Cass Counties, TX on the Sulphur River, a tributary of the Red River in Arkansas.

The dam is maintained by the USACE – Ft. Worth District. It consists of a rolled-earth structure 18,500 feet long with a maximum height of 100 feet and the top of dam is at the elevation 286 feet above mean sea level. The reservoir has a capacity of 2,607,118-acre feet encompassing a surface area of 119,700 acres at spillway crest elevation of 259.5 feet above mean sea level for the flood control purpose. The maximum design water surface is at the elevation of 278.9 feet above mean sea level.

Probability: There is no local history of a dam breaking in Bowie County and it is unlikely that a dam will break anywhere in the county. The region is at risk of dam failure if there is ever a large, distant earthquake which might occur in Missouri-Tennessee or Oklahoma. The hazard is rare and poses little or no risk. Historically, since there have been no dam failures in Bowie County, the probability is unlikely.

Vulnerability: According to the Texas Dam Safety Program, heavy rains after a severe drought leave earthen dams vulnerable.

Impact: The severity of a dam failure event depends on several factors, including the size of the dam, the extent of the failure, the velocity of the floodwater released, and the density of built environment and populations downstream. There is the potential for total collapse of a dam, but less significant failures are more likely as a result of overtopping, foundation defects, or seepage. Overtopping of a dam during a flood event due to clogged debris has the potential to be catastrophic.

The classification of "high hazard" reflects only the possible damage if the structure were to fail, and does not take in to account the likelihood that this will occur (i.e. the condition of the dam and the kind of hazard event that may cause it to fail are not factors in the classification). It should be noted that there is a of the lack of significant built areas or populations in the potential inundation area if the dam were to fail.

The *2018 State of Texas Hazard Mitigation Plan Update* was also reviewed to determine the dam failure risk. Review of the State Plan indicates that in Texas the high-risk dam area is concentrated along a generally north –south band across the central portion of the State. Sections of this band include densely populated areas combined with a high number of dams. The Bowie County and participating jurisdictions are well outside this band.

Estimated Property Loss at 25%		
Bowie County Unincorporated	Residential	$284,926,814
DeKalb	Residential	$10,974,525
Hooks	Residential	$16,411,051
Leary	Residential	$2,524,560
Maud	Residential	$6,500,093
Nash	Residential	$22,273,531
New Boston	Residential	$31,655,502
Red Lick	Residential	$16,951,088
Redwater	Residential	$4,775,763
Wake Village	Residential	$68,484,249
TexAmericas Center	Residential	N/A

Summary: It is unlikely that a dam break will occur that would have more than a limited effect on most of the County.

WILDFIRE

Description

Wildfires typically start in woodland or prairie areas. They can occur naturally though they are often exacerbated by human activities. Wildfires can be hard to control as they threaten homes and communities located nearby. Wildfires happen in every state, and they do not respect county or state lines. The impact of fire reaches well beyond the initial flames and smoke. Even if firefighters are able to protect homes and business, the aftermath of wildfire can be just as devastating as floods.

In Texas, the greatest high-danger fire threats are forest, brush and grass fires. The East Texas Piney Woods belt of commercial timber is most susceptible to forest fires. In East Texas, the most monetary damage was caused by arson. Arsonists were responsible for 1 of every 4 fires. Debris burning is and continues to be the major cause of fires. Other causes such as control burns, construction fires and other miscellaneous fires rank second.

There is not a direct relationship between climate change and fire, but researchers have found strong correlations between warm summer temperatures and large fire years, so there is general consensus that fire occurrence will increase with climate change. (www.usgs.gov)

A HISTORY OF WILDFIRES IN TEXAS

Texas has had some significant fires in the urban wild land interface areas, where combustible homes meet combustible fuels. In 1996, the Poolville Fire burned 141structures and 16,000 acres in Parker and Wise counties west of Fort Worth. During the 2000 fire season, 48 homes were lost to wildfires in Texas that burned more than a quarter of a million acres.

In 1996, an historical record number of fires and losses in terms of acreage lost due to fires that burned across the state during a four-month period of the traditional fire season in the state. A total of 113 homes and 170,000 acres were lost due to fire in what is undoubtedly the worst siege of fire in the history of Texas. Over three hundred- trained fire fighters were brought in from across the nation to assist and supplement the Texas Forest Service personnel in control of these fires. The Southern States Forest Fire Compact was invoked in order for Texas to receive help in terms of personnel and equipment from neighboring states.

“The Bastrop County Complex fire was a major wildfire that struck Bastrop County, Texas**,** between September and October 2011. Three separate fires started on September 4, 2011, during Labor Day weekend, and merged into one large blaze that burned east of the city of Bastrop. 1,691 homes were destroyed by the fire, making it the most destructive single wildfire in Texas history. After being largely contained in late September, the fire was finally declared controlled on October 10, and declared extinguished on October 29, having killed two people and inflicted an estimated $325 million of insured property damage.

On September 20, 2011, fire officials reported that the likely cause of the blaze was sparks from electric power lines. 30-mile-per-hour gusts of wind on September 4 apparently toppled trees which tumbled into electrical lines at two locations, creating sparks that fell onto and ignited the dry grass and leaf litter below." (Wikipedia)

Should any part of the State of Texas experience extended periods of fair, windy weather, implementation of countywide bans on outdoor burning may be advised as a Wildfire prevention tool in that area. The Texas Forest Service recommends that local governments consider a KBDI of 600 and above for imposition of burn bans. Other indicators that dictate the need for a burn ban include: 1000 HR fuel moisture, Energy Release Component and run occurrence of local fire departments.

The Keetch-Byram Drought Index (KBDI) is basically a mathematical system for relating current and recent weather conditions to potential or expected fire behavior. The KBDI is the most widely used drought index system by fire managers in the south. It is also one of the only drought index systems specifically developed to equate the effects of drought with potential fire activities. 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.

ISO FIRE PROTECTION CLASSES FOR BOWIE COUNTY

Fire Protection Area	Protection Class	Primary Fire Response
DeKalb	5	VFD DeKalb FD
Hooks	5	VFD Hooks FD
Leary	4	C-5 VFD
Maud	6	VFD Maud FD
Nash	2	Nash FD
New Boston	6	VFD New Boston FD
Red Lick	4	C-5 VFD
Redwater	4	VFD Redwater FD
Wake Village	2	Wake Village FD
TexAmericas Center	5,4,5	Hooks, C-5 and Redwater

Expected Fire Conditions with Varying KBDI Levels	
0 – 200 Low Fire Danger	Soil and fuel moisture is 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 Moderate Fire Danger	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 smokes to carry into and possibly through the night.
400 – 600 High Fire Danger	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 Extreme Fire Danger (600 – 800 continued)	Surface litter and most organic layers are consumed. 1000-hour fuels contribute to intensity. Stumps will burn to the end of roots underground. Any dead snag will ignite. Spotting from snags is a major problem if close to line. Expect dead limbs on trees to ignite from sparks. Expect extreme intensity on all fires that makes control efforts difficult. With winds above 10 miles per hour, spotting is the rule. Expect increased need for resources for fire suppression. Direct initial attack is almost impossible. Only rapid response time to wildfire with complete mop-up and patrol will prevent a major fire situation from developing.

Potential Wildfire Damages and Losses in Bowie County

The "urban wildfire interface" is the geographical area where combustible homes are mixed with combustible vegetation. The determination of specific wildfire hazard sites depends on several factors.

- Topographic location and fuels
- Site/building construction and design
- Defensible space
- Accessibility
- Fire protection response
- Water availability

PAST OCCURANCES OF WILDFIRE IN BOWIE COUNTY
(Data from National Climatic Data Center)

August 6, 2011 Ambient temperatures near 107 degrees, relative humidity values near 20 percent and drought conditions were the ingredients needed for a grass fire which quickly burned out of control across Bowie County during the afternoon of August 6th. The wildfire...while only 50 acres in size, consumed two homes, a barn and a storage building. The fire started near County Road 2148. The United States Forest Service used helicopters to drop large containers of water on the fire. 300K Property Damage

August 17, 2011 Excessive heat and severe drought conditions were all the ingredients needed to cause a grass fire to get out of control in Bowie County. In the Wake Village community, a local family are counting their losses after a brush fire burned up more than 10 acres of family-owned land. Two homes were consumed by the flames. No family living in the area was harmed by the fire, but the loss of a special collection has led to some heavy hearts. The fire destroyed a classic car collection owned by a local family in which 30 cars were destroyed. The value of the cars was estimated at $150,000. Two firefighters suffered heat exhaustion while trying to battle the fire. 400K Property Damage

September 5, 2011 Strong sustained winds and wind gusts, made landfall across the south central and southeast Louisiana gulf coast, were felt across all of Northeast Texas on September 4th and 5th. These winds, along with low humidity values and exceptional drought conditions across Northeast Texas, resulted in wildfire threat being met across the region. A wildfire began in Bowie County on September 5th near Simms, Texas. It was determined that this fire was started by an electrical line. This fire, while small in size, threatened 3 structures and burned one barn. The fire only burned 50 acres near County Road 4239 and was contained on the same day. 20K Property Damage.

September 11, 2011 Strong winds, low humidity and drought conditions across Northeast Texas were all the ingredients needed for a critical wildfire threat across the region. A wildfire began near Maud and Douglassville, Texas on September 11th. This fire consumed 160 acres of timberland and threatened several homes near the two communities. Two brush trucks, and one tender truck was called into help fight the blaze including Fire Departments from Douglassville, Marietta, Bryans Mill and Naples. Three plows were needed as well as one helicopter and one plane.

October, 7 2011 Very breezy conditions, warm temperatures and low humidity values were the ingredients needed for the rapid spread of a wildfire in Bowie County, Texas near the town of Dekalb. The fire was reportedly started by the use of a cutting torch near a heavily wooded area near Hwy. 259 and C.R. 2735. Strong winds caused the fire to spread rapidly with near 1000 acres of timberland and grassland consumed. Ten separate fire departments were called in to battle the blaze. There were reports of injuries to Texas Forest Service personnel who were burned while battling the fire.

BOWIE COUNTY PAST OCCURANCES OF WILDFIRE 2013-2022

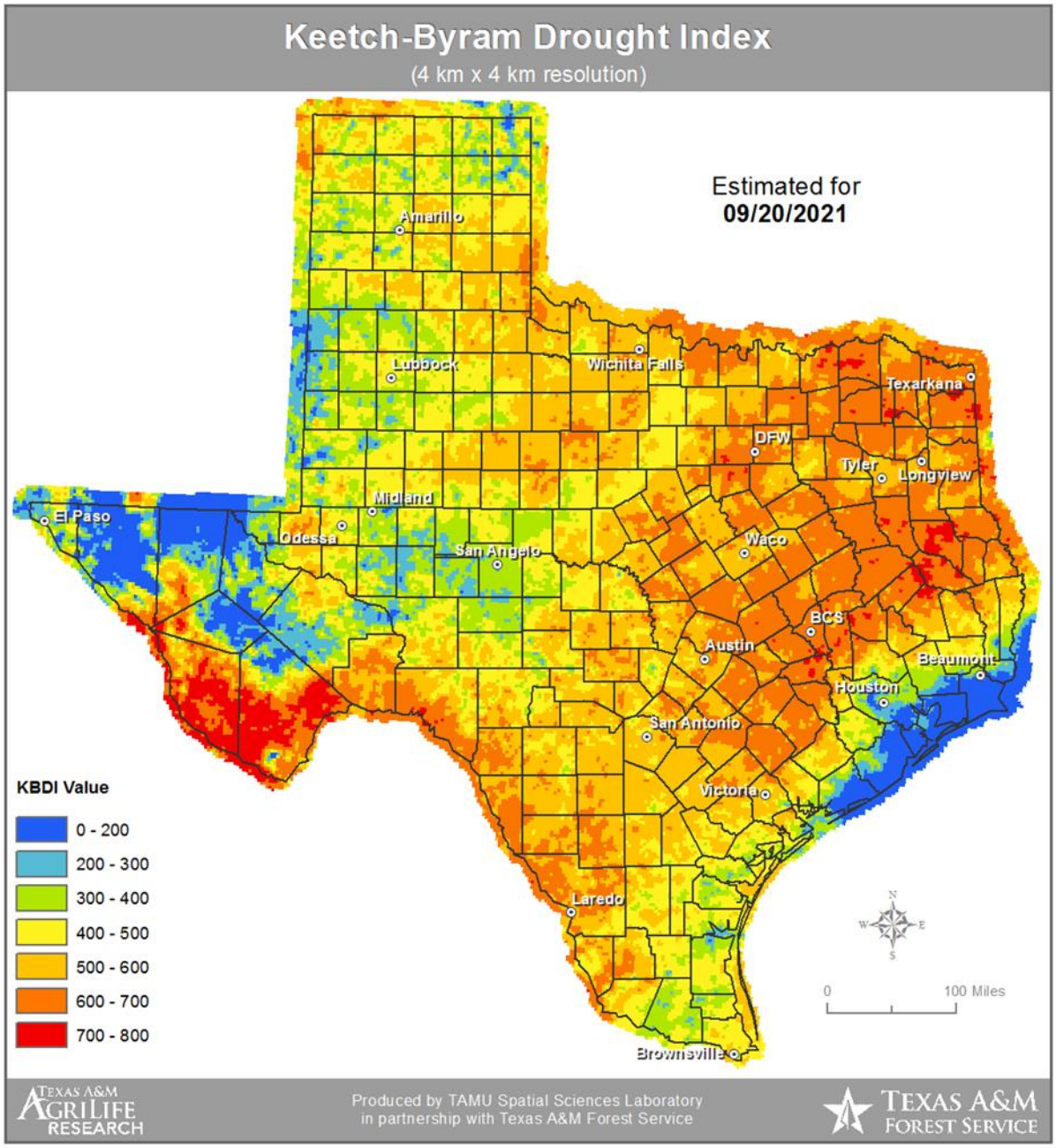
Source: Texas A & M Forest Service

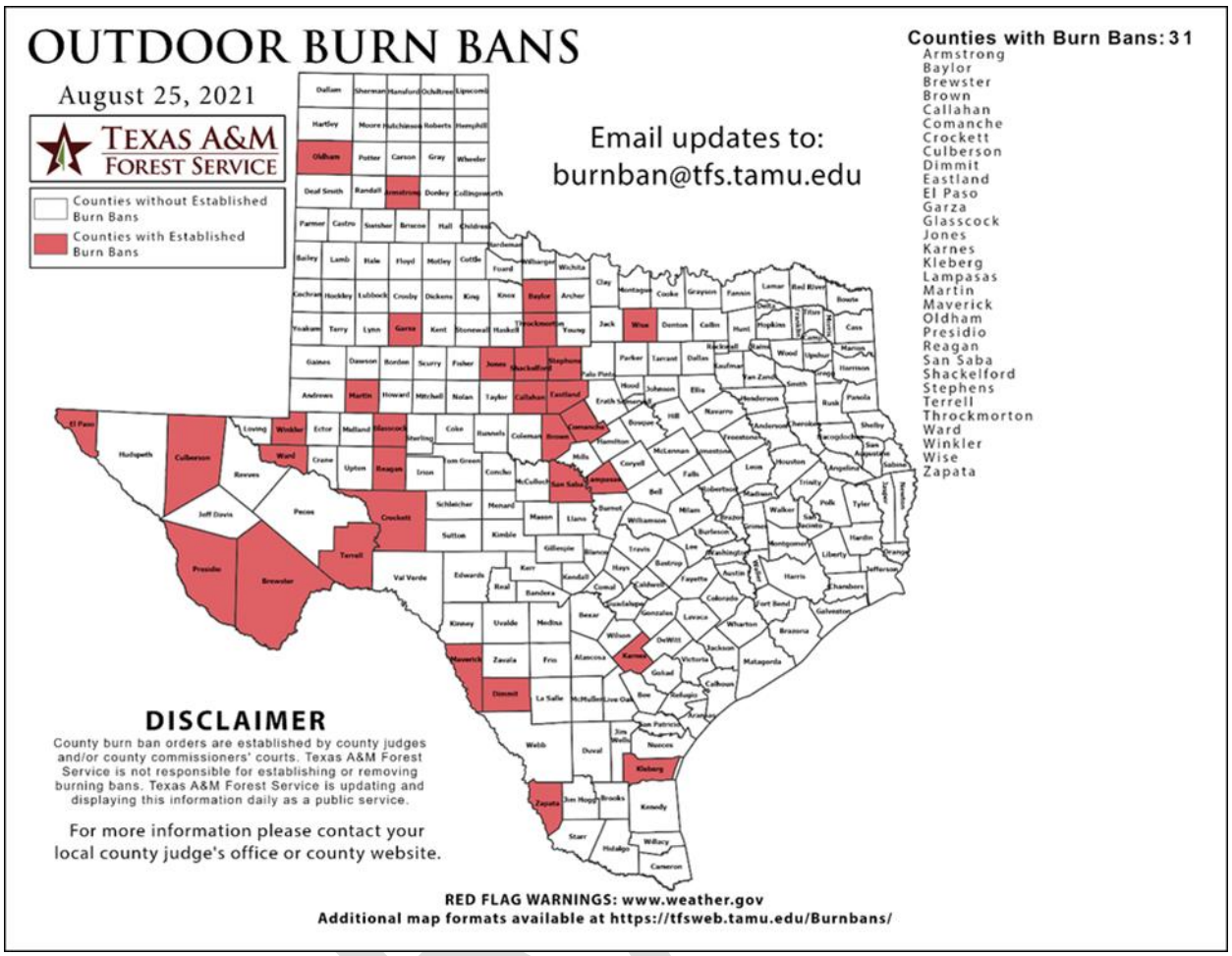
Type of Fire	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Arson	1	0	6	2	0	0	1	1	0	0
Campfire	0	0	0	1	0	1	0	0	1	2
Children	0	0	0	0	0	0	0	0	1	18
Debris burning	22	15	17	18	16	9	6	10	9	0
Equipment use	1	0	5	1	0	2	1	0	3	0
Fireworks	0	0	0	0	0	0	0	1	0	0
Lightning	0	0	0	3	0	0	1	0	0	0
Miscellaneous	9	5	2	3	1	1	2	0	1	1
Powerlines	1	4	3	2	3	2	0	0	0	0
Railroads	0	0	0	0	0	1	0	0	0	0
Structure	0	0	1	1	1	0	0	1	2	0
Unable to Determine	0	1	2	2	2	0	2	2	2	3
Under Investigation	0	0	0	0	0	0	0	0	0	2
Total	34	25	36	33	23	16	13	15	19	26

Keetch-Byram Drought Index (KBDI) is an index used to determining forest fire potential. The drought index is based on a daily water balance, where a drought factor is balanced with precipitation and soil moisture (assumed to have a maximum storage capacity of 8-inches) and is expressed in hundredths of an inch of soil moisture depletion.

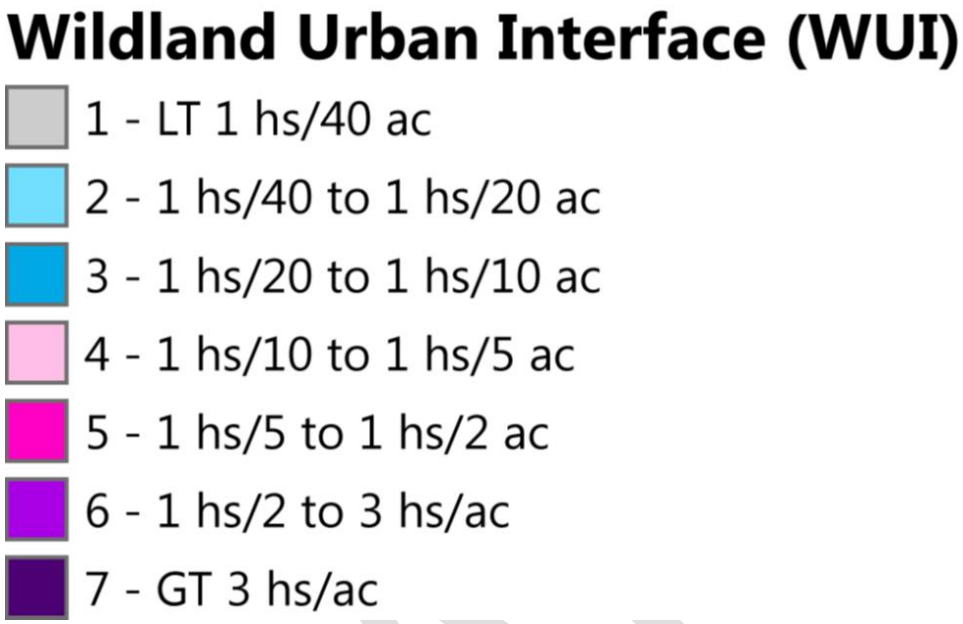
The drought index ranges from 0 to 800, where a drought index of 0 represents no moisture depletion, and an index of 800 represents absolutely dry conditions. Presently, this index is derived from ground based estimates of temperature and precipitation derived from weather stations and interpolated manually by experts at the Texas Forest Service (TFS) for counties across the state. Researchers at Texas A&M University are working with the TFS to derive this index from AVHRR satellite data and NEXRAD radar rainfall within a GIS.

The map below shows the current (September 20, 2021) KBDI for Bowie County at 600-700.




OUTDOOR BURN BANS
August 25, 2021
TEXAS A&M FOREST SERVICE
Counties without Established Burn Bans
Counties with Established Burn Bans
Email updates to:
burnban@tfs.tamu.edu
Counties with Burn Bans: 31
Armstrong
Baylor
Brewster
Brown
Callahan
Comanche
Crockett
Culberson
Dimmit
Eastland
El Paso
Garza
Glasscock
Jones
Karnes
Kleberg
Lampasas
Martin
Maverick
Oldham
Presidio
Reagan
San Saba
Shackelford
Stephens
Terrell
Throckmorton
Ward
Winkler
Wise
Zapata
DISCLAIMER
County burn ban orders are established by county judges and/or county commissioners' courts. Texas A&M Forest Service is not responsible for establishing or removing burning bans. Texas A&M Forest Service is updating and displaying this information daily as a public service.
For more information please contact your local county judge's office or county website.
RED FLAG WARNINGS: www.weather.gov
Additional map formats available at https://tfsweb.tamu.edu/Burnbans/

Legend for the following Urban Interface maps



Legend:

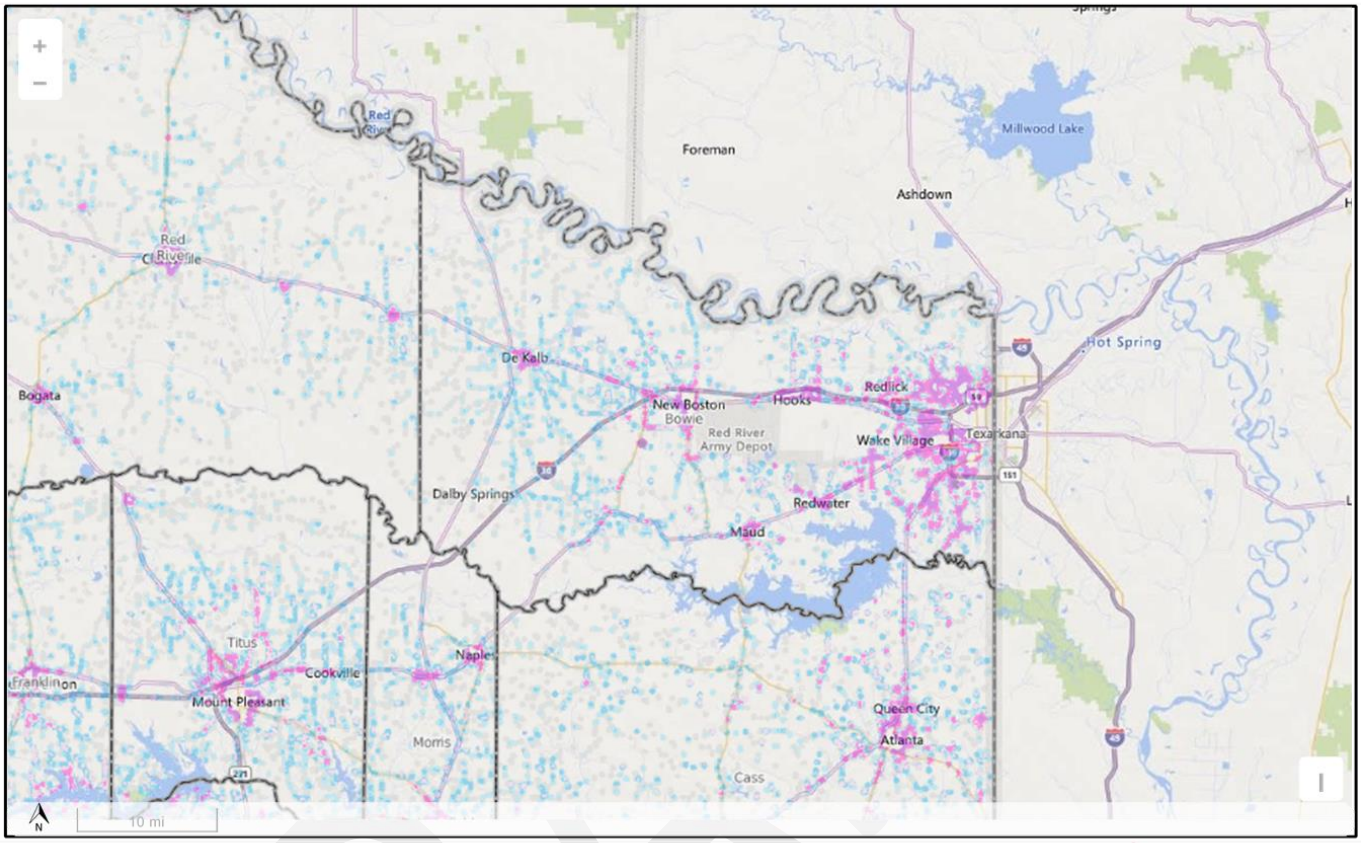
LT=less than

hs=house

ac=acre

GT=greater than

Bowie County, TX WUI



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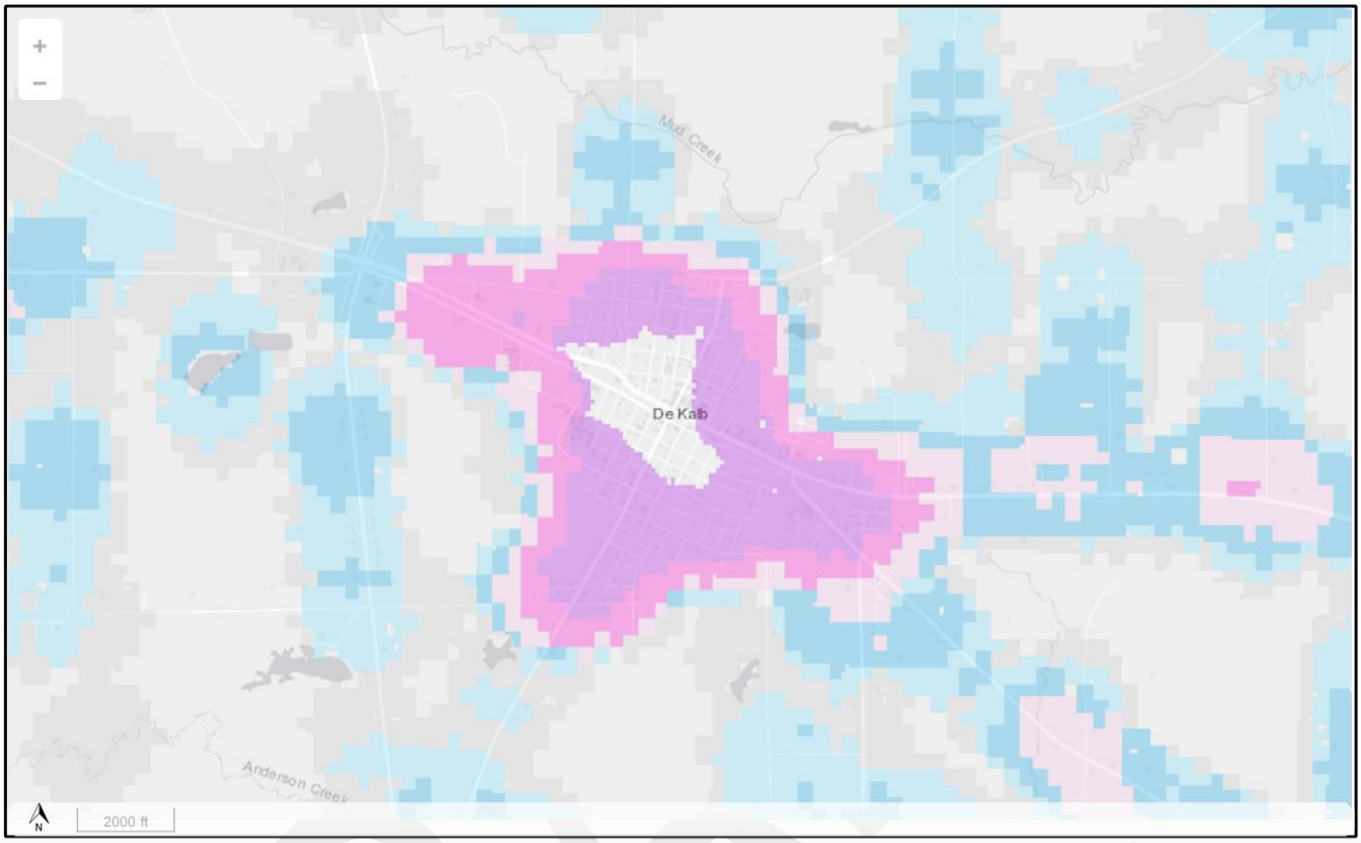
Texas Wildfire Risk Explorer
https://wrap.texaswildfirerisk.co m

TEXAS A&M FOREST SERVICE

De Kalb, TX WUI



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Texas Wildfire Risk Explorer
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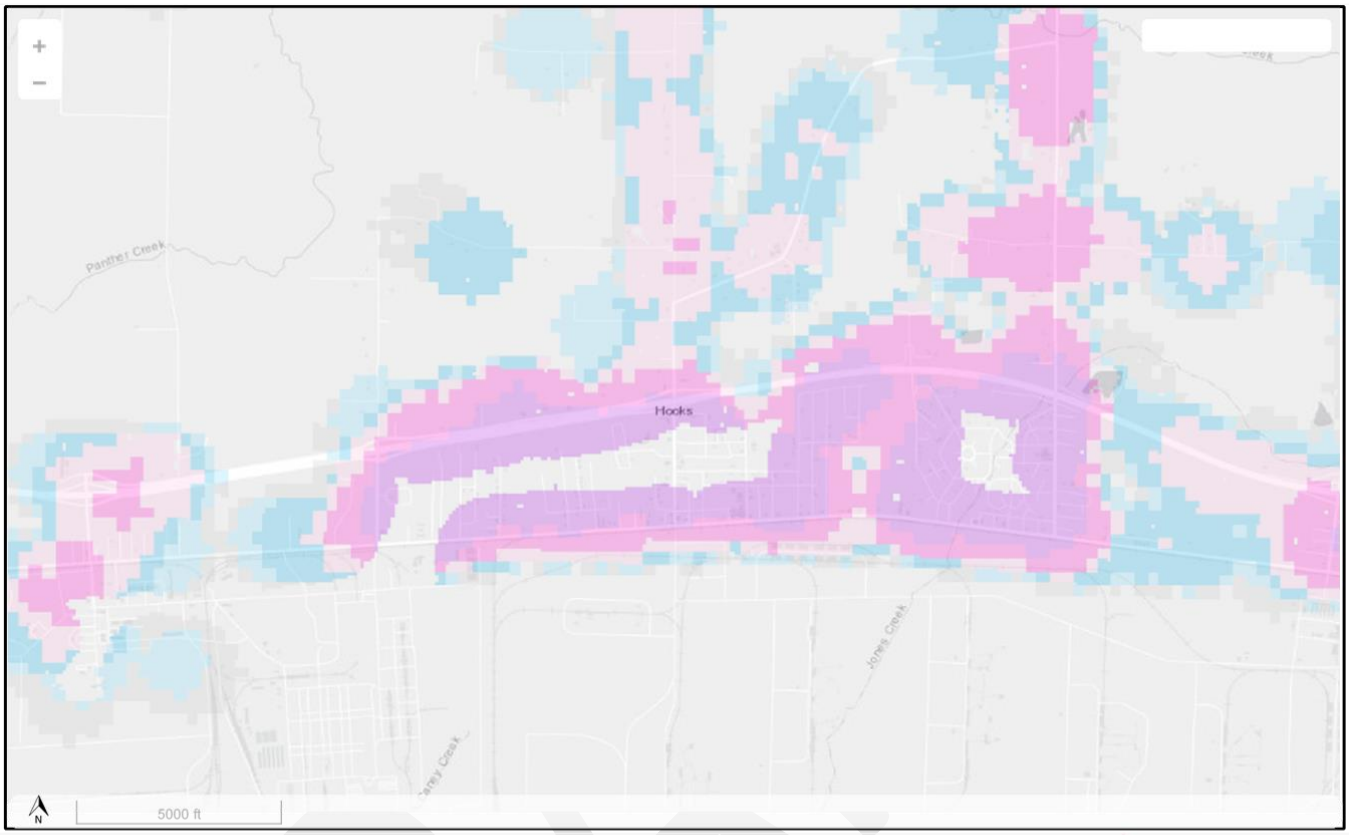
TEXAS A&M FOREST SERVICE

Hooks, TX WUI



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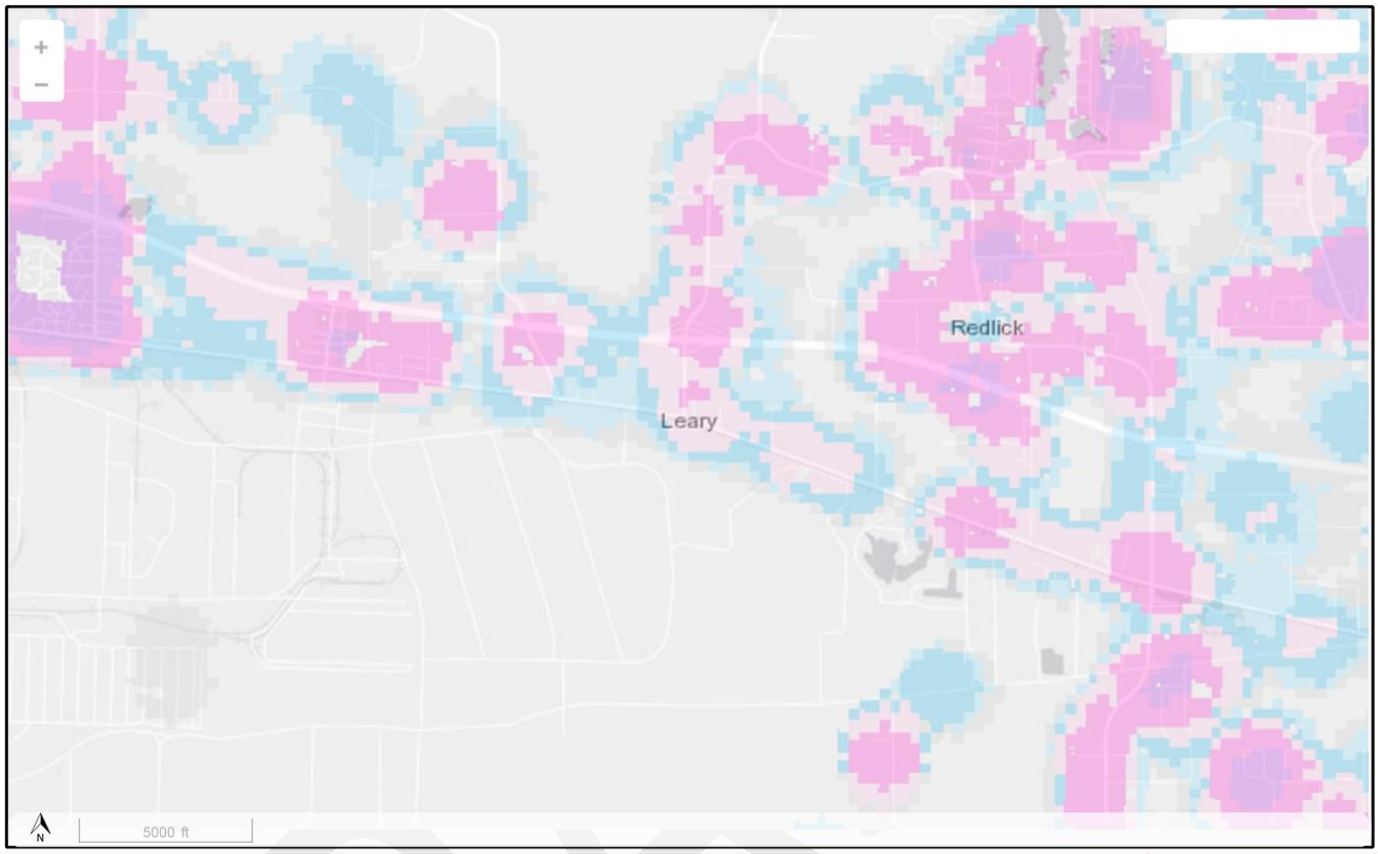
Texas Wildfire Risk Explorer
https://wrap.texaswildfirerisk.co m

TEXAS A&M FOREST SERVICE

Leary, TX WUI



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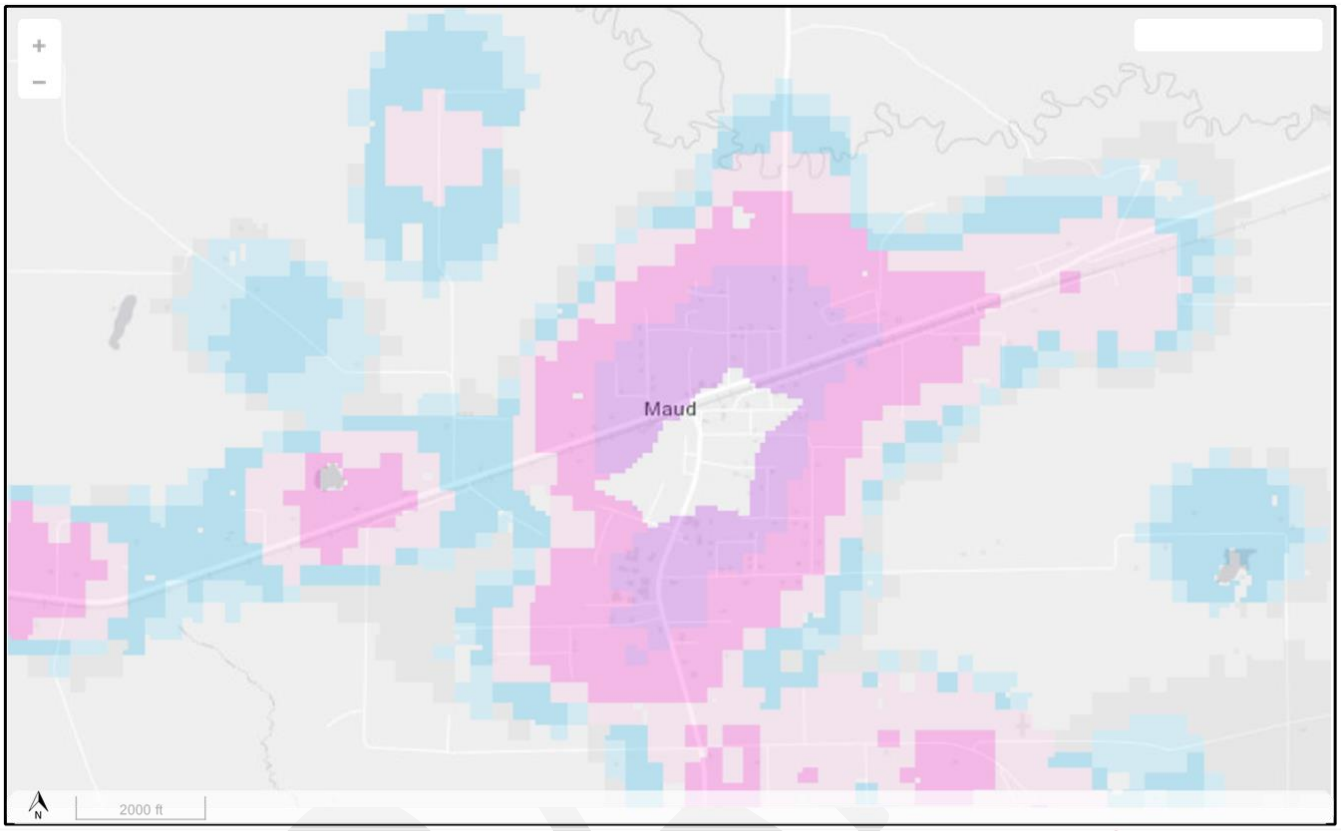
TEXAS A&M FOREST SERVICE

Maud, TX WUI



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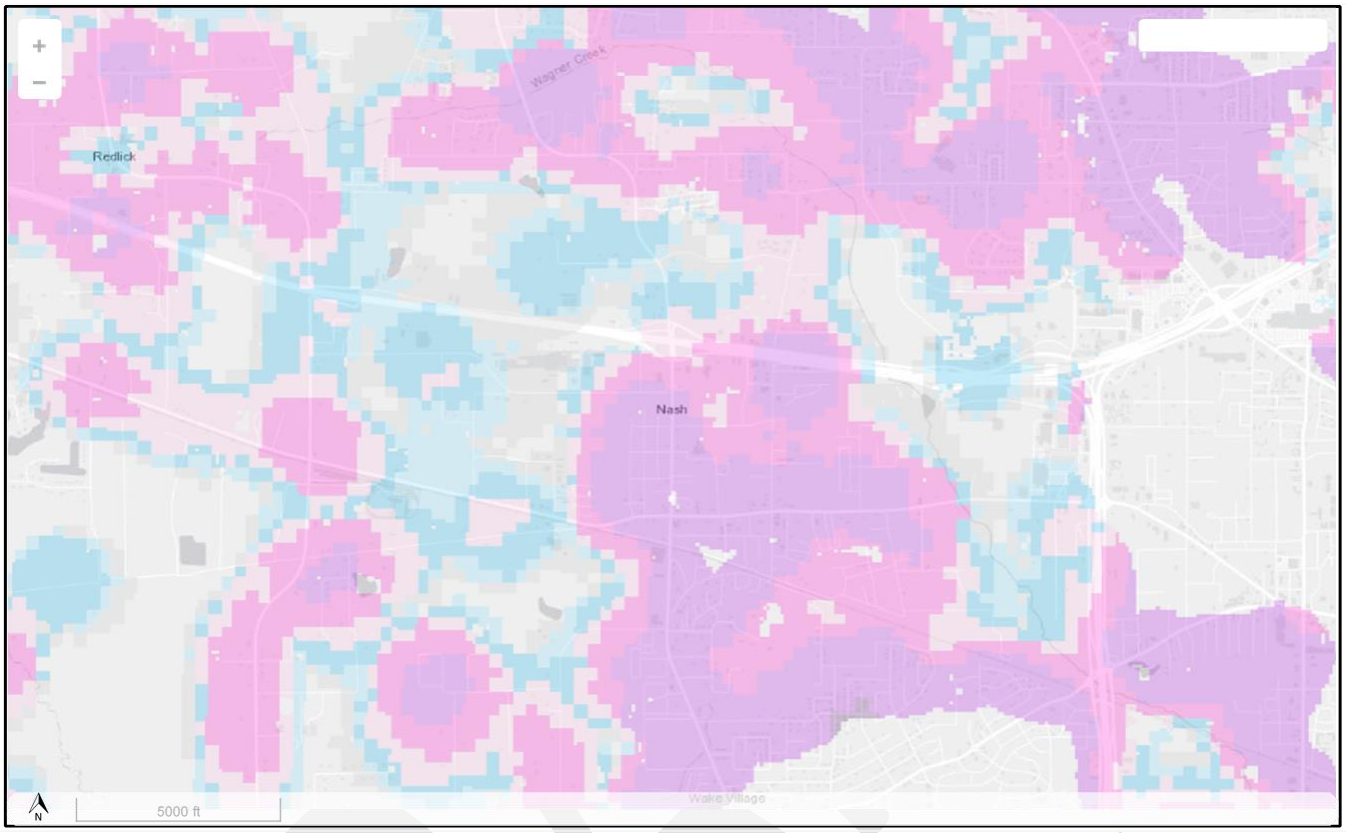
TEXAS A&M FOREST SERVICE

Nash, TX WUI



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Texas Wildfire Risk Explorer
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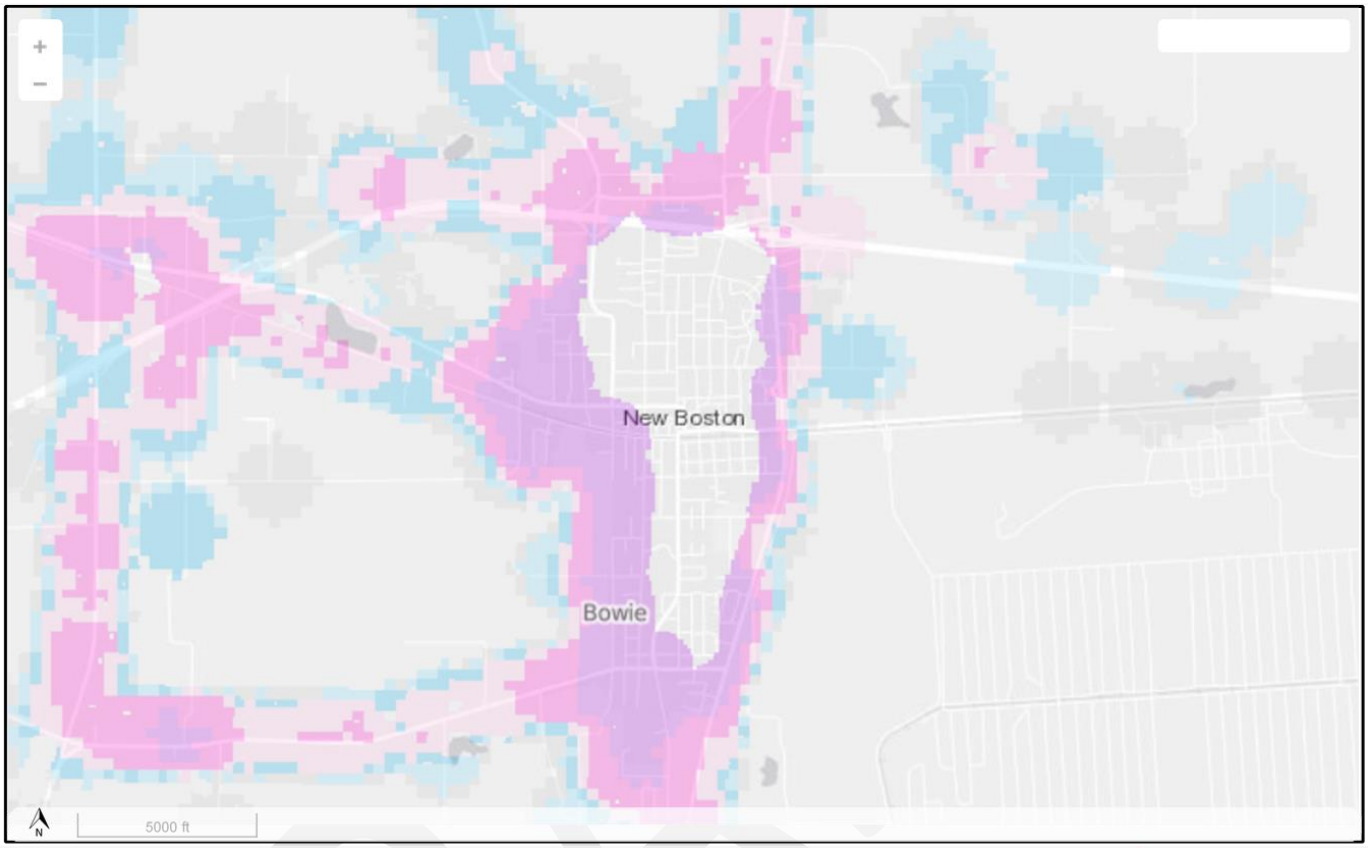
TEXAS A&M FOREST SERVICE

New Boston, TX WUI



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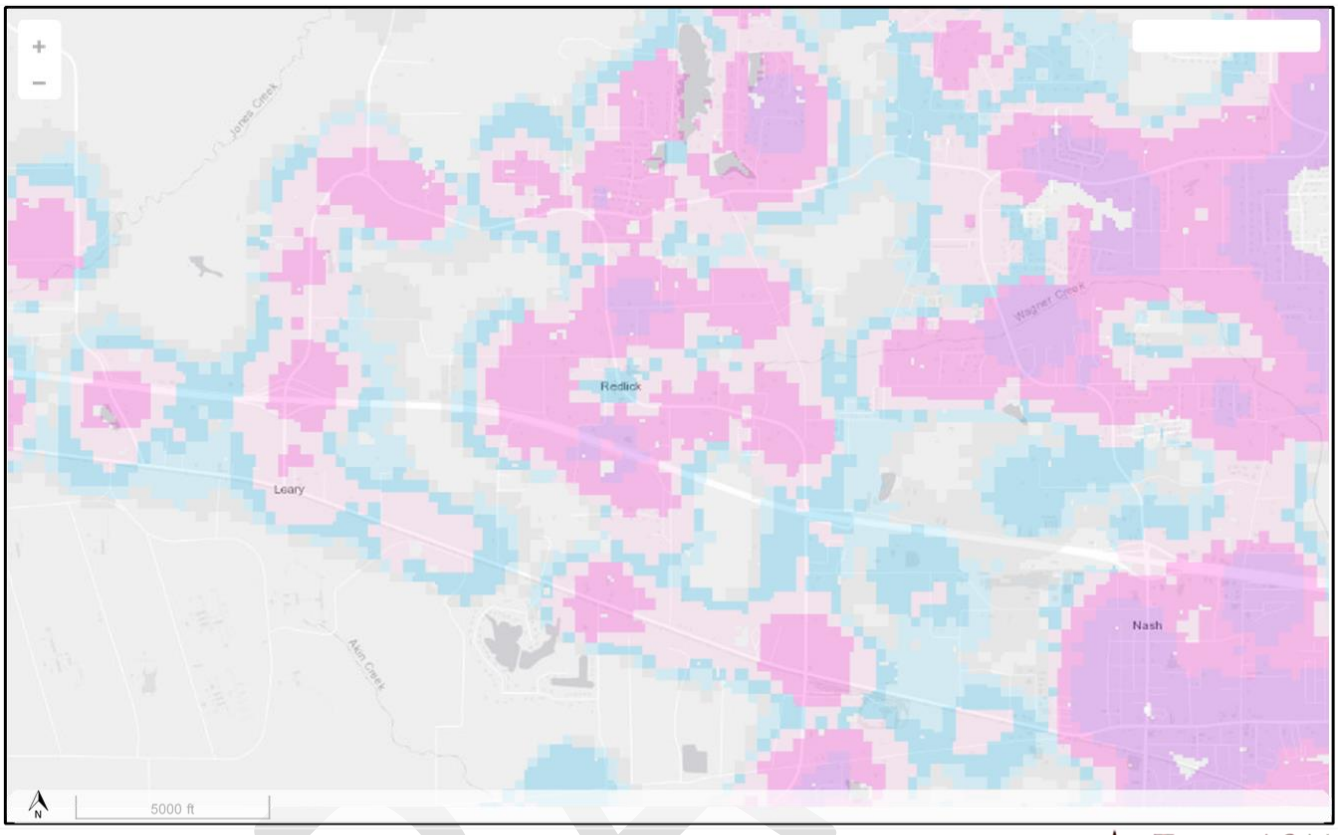
TEXAS A&M FOREST SERVICE

Red Lick, TX WUI



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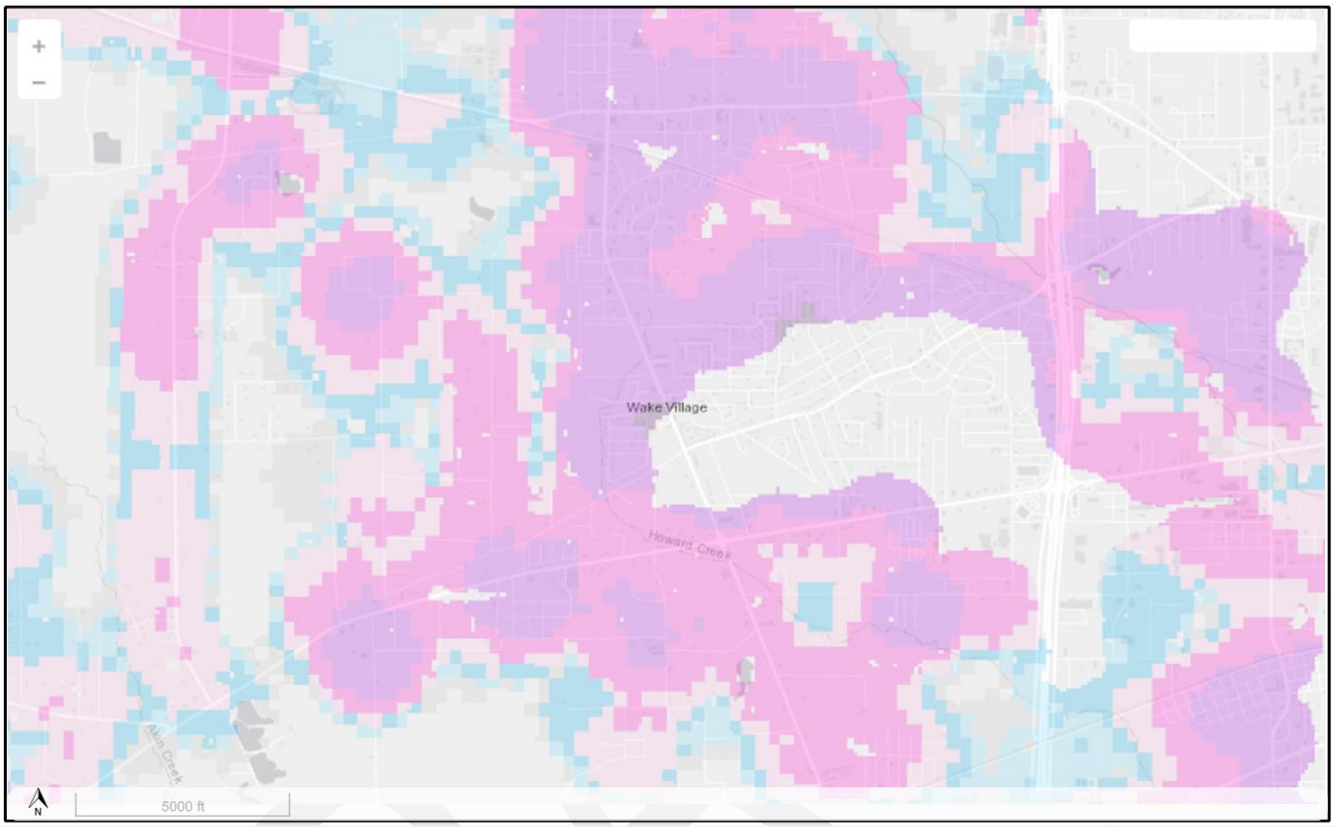
TEXAS A&M FOREST SERVICE

Wake Village, TX WUI



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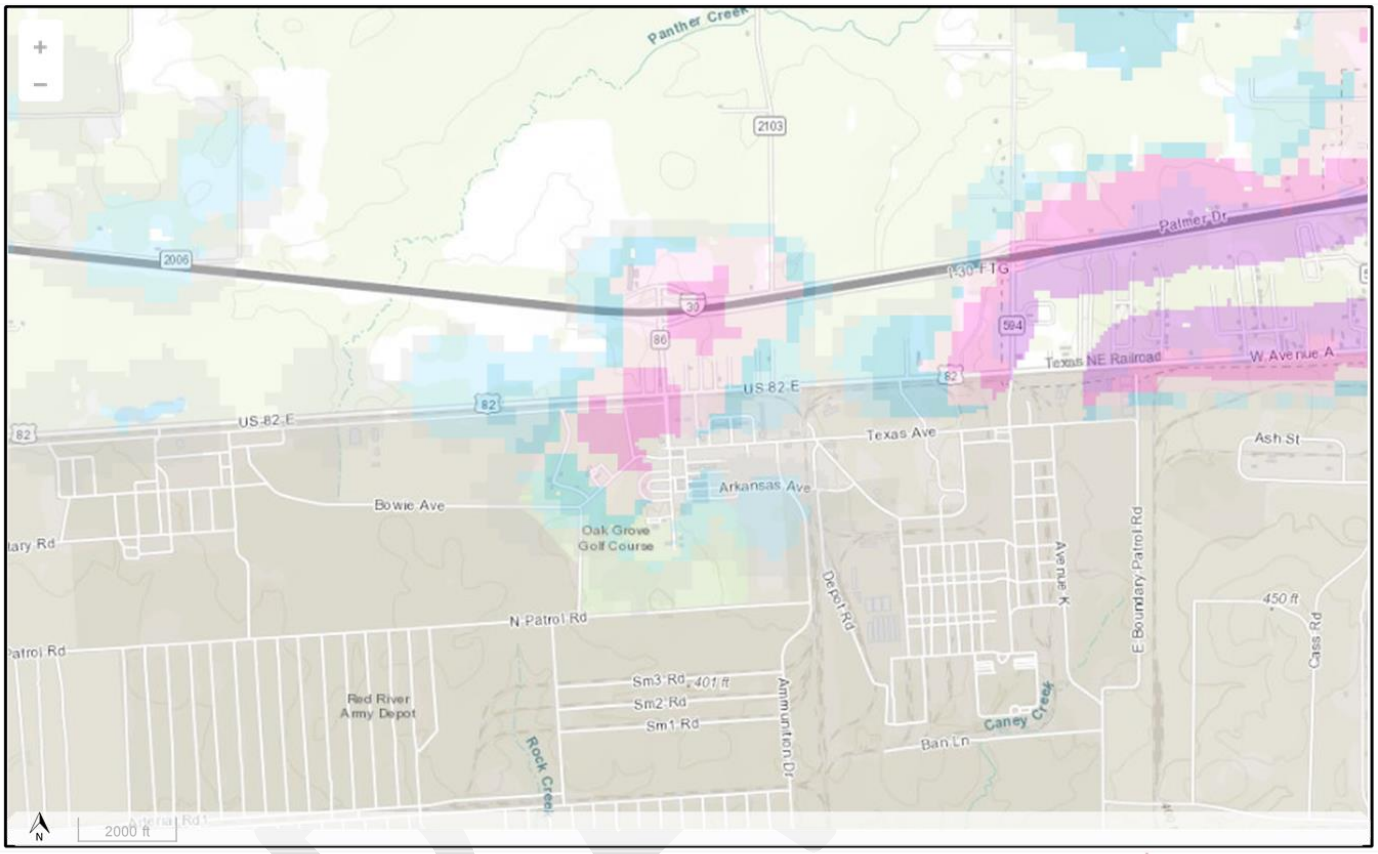
TEXAS A&M FOREST SERVICE

TexAmericas Center WUI



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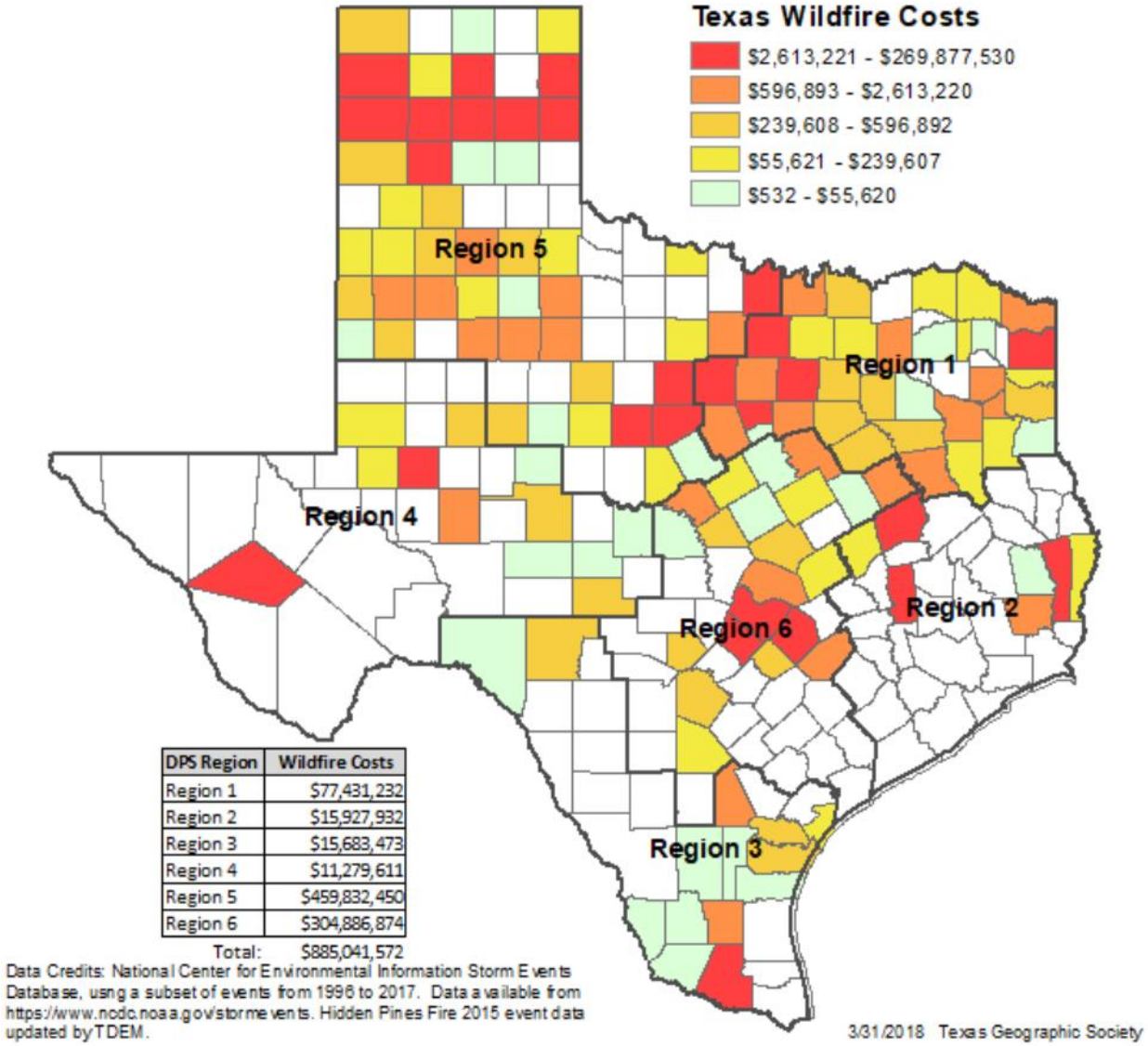
Texas Wildfire Risk Explorer
https://wrap.texaswildfirerisk.co m

TEXAS A&M FOREST SERVICE

Historical Dollar Losses

This map illustrates the total county losses (property plus crop losses) from wildfires over the 21-year base period (1996 thru 2016). The different colors on the map represent the relative losses between counties within the state; white signifies zero dollars lost. The inset table reports total dollar losses for each region over the 21-year base period.



DPS Region	Wildfire Costs
Region 1	$77,431,232
Region 2	$15,927,932
Region 3	$15,683,473
Region 4	$11,279,611
Region 5	$459,832,450
Region 6	$304,886,874
Total:	$885,041,572

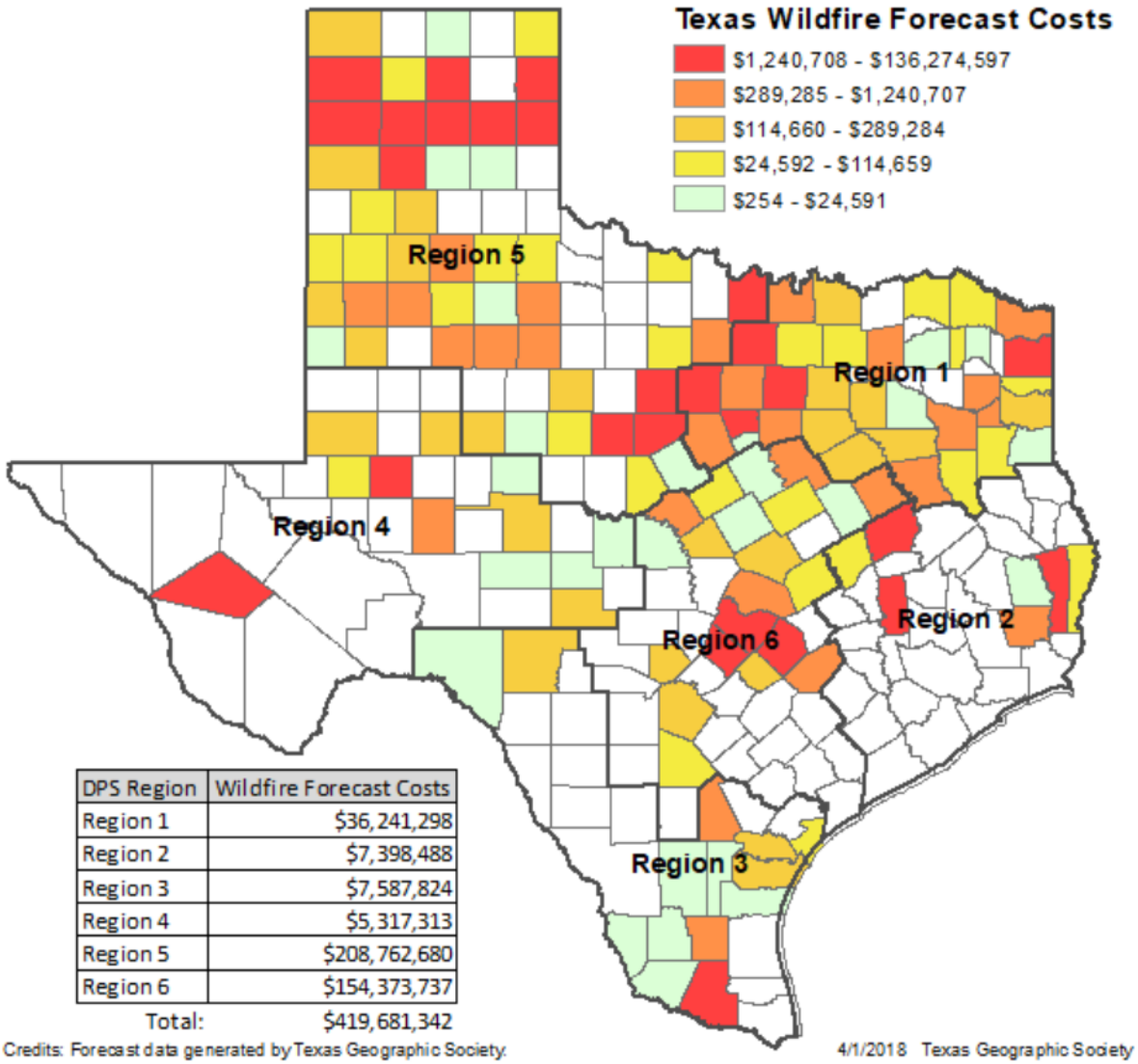
Data Credits: National Center for Environmental Information Storm Events Database, using a subset of events from 1996 to 2017. Data available from https://www.ncdc.noaa.gov/stormevents. Hidden Pines Fire 2015 event data updated by TDEM.

Future Risks

Results of the hazard impact forecast for wildfire are presented. Following this is a discussion and summary of risk statewide.

County Dollar Loss Forecast

This map shows the results of the forecast model for 2019-2023 for wildfire dollar losses at the county level. These are based on the locations of impacts in the base period and the likely locations of future losses.



DPS Region	Wildfire Forecast Costs
Region 1	$36,241,298
Region 2	$7,398,488
Region 3	$7,587,824
Region 4	$5,317,313
Region 5	$208,762,680
Region 6	$154,373,737
Total:	$419,681,342

Bowie County Wildfire Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Bowie Unincorporated	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< Week PRI=3	High 3.9
DeKalb	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< Week PRI=3	High 3.9
Hooks	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< Week PRI=3	High 3.9
Leary	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< Week PRI=3	High 3.9
Maud	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< Week PRI=3	High 3.9
Nash	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< Week PRI=3	High 3.9
New Boston	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< Week PRI=3	High 3.9
Red Lick	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< Week PRI=3	High 3.9
Redwater	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< Week PRI=3	High 3.9
Wake Village	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< Week PRI=3	High 3.9
TexAmericas Center	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< Week PRI=3	High 3.9

BOWIE COUNTY CRITICAL FACILITIES

Facility	Bowie Co	DeKalb	Hooks	Leary	Maud	Nash	New Boston	Red Lick	Redwater	Wake Village	Tex Americas Center
City Hall		1	1	1	1	1	1	1	1	1	
Fire Station	1	1	1			1	1	1	1	1	
Civic Center											
Govt. Facility							4				
Wastewater plant											1
Corrections Facility							1				
Hospital											
Maintenance Barn											
Post Office	1	1	1		1	1	1		1		
Water Tower	1	1									
Police Station		1	1		1	1	1			1	
Sheriff Office							1				
EMS											
Public School	3	3	3	1	2	1	3	2	1	1	
Water Treatment Plant											1
County Seat							1				

Probability: According to FEMA National Risk Index Bowie Counties risk for Wildfire is relatively low. The threat of fires cannot be eliminated but public education and the use of prescribed burns can be used to better manage this hazard in Bowie County and participating jurisdictions. According to the current State Hazard Mitigation Plan, nearly 18 million people (70 percent of the state population) live within the wildland urban interface, the largest at-risk population of any state. By 2050, Texas's average number of days with high wildfire potential is projected to double from 40 to nearly 80 days a year. (reportcard.statesatrisk.org)

Vulnerability: The most vulnerable month for wildfires is July. Bowie County consists of heavily wooded pine, hard wood, bottom land and pasture. Crops, timber, pasture and dwellings are in danger of being destroyed by wildfires. Wildfires are contained by volunteer fire units working in coordination with each other. The fires that have occurred in the county have been contained by the dedicated fighters. Historically, the danger lies in the rural areas of Bowie County. Should a fire occur, framed homes and mobile homes would be very susceptible.

BOWIE COUNTY WILDFIRE BY ACREAGE 2013-2022

Source: Texas A & M Forest Service

YEAR	ACREAGE
2013	276
2014	230
2015	826
2016	442
2017	368.5
2018	171.5
2019	255
2020	294.5
2021	171
2022	576.5
TOTAL	3611

Impact: The impacts of wildfire for the participating communities is **Substantial** and could result in complete shutdown of facilities for 30 days or more, with more than 50 percent of property destroyed or with major damage. Air quality could be impacted and interruption of essential facilities and services could occur such as downed electrical lines.

Estimated Structure loss at 25%	
Bowie County Unincorporated	$307,819,825
DeKalb	$15,000,137
Hooks	$19,167,335
Leary	$4,049,414
Maud	$7,200,967
Nash	$39,758,857
New Boston	$47,191,148
Red Lick	$17,310,674
Redwater	$5,709,165
Wake Village	$76,003,057
TexAmericas Center	$5,834,142

Location: Due to heavy vegetation and dry conditions wildfire events in Bowie County are possible any time during the year. All of Bowie County and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center could possibly be affected, depending on where the wildfire started.

Summary: There are no Bowie County cities listed in the "Communities at Risk" Federal Register. Fires can destroy property and homes causing injury and death. Fortunately, no lives were lost in any of the fires listed. It is important that communities have up to date emergency warning, reporting, and response systems in place. Well trained cohesive VFD's play a critical role in protecting people and property. The rural areas of Bowie County are particularly at risk.

SECTION IV

MITIGATION GOALS AND LONG-TERM STRATEGY

Mitigation Plan Goals

The Bowie County Mitigation Action Plan goals describe the direction that Bowie County agencies, organizations, and citizenry can take to minimize the impacts of natural hazards. Specific recommendations are outlined in the action items. These goals help guide direction of future activities aimed at reducing risk and preventing loss from natural hazards.

Goal #1: Protect Life and Property

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to natural hazards.
- Improve hazard assessment information to make recommendations for discouraging new development in areas vulnerable to natural hazards.

Goal #2: Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.
- Provide information on tools, and funding resources to assist in implementing mitigation activities.

Goal #3: Natural Systems

- Preserve, rehabilitate, and enhance natural systems to serve natural hazard mitigation functions.

Goal #4: Partnerships and Implementation

- Encourage leadership within public and private sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.

Goal #5: Emergency Services

- Establish policy to ensure mitigation projects for critical facilities, services and infrastructure.
- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations and business.
- Integrate natural hazard mitigation activities with emergency operation plans and procedures.

Plan Update Mitigation Strategy:
The previous goals and actions were reviewed and some were complete, some on-going, or some are no longer needed. This updated plan represents the most current data available regarding actions needed to reduce loss of life and property through mitigation. The five-year update is seen as an opportunity to set actions in place that are current, valid and obtainable.

- added language reflects a desire to see that the Plan is acted upon in a measured fashion with at least annual meetings being held to monitor overall action priorities and progress.
- No natural event has occurred since the original plan that would alter the current plan's prioritization.
- There have been no new developments in the county or jurisdiction that would alter vulnerability. Bowie County has experienced less than 1% variation in population since 2010.
- There have been no changes politically or financially that would impact the plan's development.

Bowie County recognizes the importance of dedicated involvement regarding the integration of the plan into existing county and participating jurisdiction plans and budgets and codes. Bowie County has initiated a proactive course of action that includes annual reviews and reports to the Bowie County Commissioners Court and the city councils of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and representative of TexAmericas Center.

The presiding Bowie County Judge or his/her appointed representative will maintain a schedule to ensure that the plan is addressed and updated in a timely manner.

The annual meetings will involve the gathering of hazard related data from the previous year and discussion of progress made toward action item implementation.

The HMAP Steering Committee will evaluate the plan to assess if significant changes have occurred in the premises upon which the plan was developed such as the following:

- Changes in data sources and/or methodology used to determine vulnerabilities and loss estimates, in terms of quality and availability
- changes in federal or state plans that could affect the continued implementation of any of the mitigation actions
- the identification of new hazards requiring new mitigation actions
- changes in community perception relative to specific hazards

In addition to these functions, the HMAP Steering Committee will work to educate and involve the public in hazard mitigation activities and to oversee the incorporation of this plan into future planning and public policy documents as these are updated or developed. The incorporation of this plan into other planning instruments will serve as an additional metric for success. This plan will ultimately be evaluated based on implementation of action items, the incorporation of mitigation principles into future public policy, improved public safety, and the

overall reduction of losses for Bowie County and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center.

Method of Prioritization: Actions were prioritized using the **STAPLE+E** criteria. The actions do not adversely affect a particular segment of the population or cause relocation of lower income people. They provide long-term reduction of losses and have minimal secondary adverse impacts. They do not have adverse effects on the environment, and are consistent with the community's environmental goals, and have mitigation benefits while they are environmentally sound.

S – Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community's social and cultural values.
T – Technical	Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, and that are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

I think one's feelings waste themselves in words; they ought all to be distilled into actions which bring results.

Florence Nightingale

Unincorporated Bowie County Mitigation Actions 2017			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Develop and implement the Turn Around, Don't Drown Program.	On-going	Continue in plan update
FLOOD	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	75% complete	Continue in plan update
TORNADO	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and mitigation methods to protect themselves, family and property.	On-going	Continue in plan update
TORNADO	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	75% complete	Continue in plan update
THUNDERSTORM WIND	Provide a community awareness campaign concerning the risks and consequences of windstorms. By educating the public n High winds, loss of life and property may be mitigated as they take steps to secure their property and respond to warning.	On-going	Continue in plan update
THUNDERSTORM WIND	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	75% complete	Continue in plan update
WINTER STORM	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	75% complete	Continue in plan update
WINTER STORM	Mitigate protecting power lines from the impacts of winter storms by establishing standards for all utilities regarding tree pruning around lines.	No longer a concern	
HAIL	Install hail resistant film on the windows of critical facilities.	No longer a concern	
HAIL	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property from hail damage.	On-going	Continue in plan update
DROUGHT	Conduct Xeriscaping and water conservation workshops for the county.	No longer a concern	
DROUGHT	Replace county appliances or equipment with water saving parts as old ones wear out.	Complete	
EXTREME HEAT	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.	On-going	Continue in plan update
EXTREME HEAT	Develop and implement new cooling centers and advertise their locations for extreme heat events in existing, air-conditioned structures such as churches and county facilities.	On-going	Continue in plan update
WILDFIRE	Conduct a wildfire education program stressing the dangers of trash burning.	On-going	Continue in plan update
WILDFIRE	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	75% complete	Continue in plan update

Comprehensive Range of Specific Mitigation Actions Tables

The comprehensive range of specific mitigation actions and projects are listed below. A cost benefit review was performed to help decide which action items are feasible. The cost estimate and funding source are listed below. A cost benefit analysis will be performed prior to submission of any application to FEMA. Priorities listed below are defined as:

- High 1-3 Years
- Medium 4-7 Years
- Low 8+ Years

Estimated Cost of Actions	
Low	0-$10,000
Medium	$10,000-$25,000
High	$25,000 +

Unincorporated Bowie County

NOTE: *All of Unincorporated Bowie County projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.*

Bowie County Flood Action #1	Develop and implement the Turn Around, Don't Drown Program.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	State of Texas
Estimated Cost	Low (0-10k)
Responsible Agency	Bowie County Emergency Manager
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This program is known to save lives.

Bowie County Flood Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	County EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Bowie County Tornado Action #1	Develop/implement an education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods to protect themselves, family and property.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal 2: Public Awareness
Priority	High
Funding Source(s)	City
Estimated Cost	Low (0k-10k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	2 years
Effect on New Buildings	This could help reduce damage by implementing ideas about home/business protection from tornadic winds.
Effect on Existing Buildings	This could help reduce damage by implementing ideas about home and business protection from tornadic winds
Comments:	Educating the public is an integral part of mitigation.

Bowie County Tornado Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Bowie County Thunderstorm Winds Action #1	Provide a community awareness campaign concerning the risks and consequences of windstorms.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	Bowie County
Estimated Cost	Low (0-10k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Educating the Public will help protect life and property

Bowie County Thunderstorm Winds Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Bowie County Winter Storm Action #1	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Bowie County Winter Storm Action #2	Conduct workshops regarding how to mitigate your home from damages of winter storms.
Mitigation Goal/Objective	Goal #1: Protects Life and Property/Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Bowie County
Estimated Cost	Low (0-10K)
Responsible Agency	Bowie County EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Bowie County Winter Storm Action #3	Produce and distribute family and traveler emergency preparedness information about severe winter weather hazards.
Mitigation Goal/Objective	Goal #1: Protects Life and Property/Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Bowie County
Estimated Cost	Low (0-10K)
Responsible Agency	Bowie County EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Bowie County Hail Action #1	Encourage improving roof sheathing to prevent hail penetration.
Mitigation Goal/Objective	Goal #1: Protects Life and Property
Priority	Medium
Funding Source(s)	Bowie County
Estimated Cost	Low (0-10K)
Responsible Agency	Bowie County EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Bowie County Hail Action #2	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.
Mitigation Goal/Objective	Goal #1 Protect Life and Property/Goal #2 Public Awareness.
Priority	High
Funding Source(s)	Bowie County
Estimated Cost	Low (0-10k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Public awareness and education can minimize loss and protect lives by giving citizens the tools needed to take action.

Bowie County Drought Action #1	Develop an ordinance to restrict the use of public water resources for non-essential usage, such as landscaping, washing cars, filling swimming pools, etc.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	Bowie County
Estimated Cost	Low (0-10k)
Responsible Agency	Bowie County
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Bowie County Drought Action #2	Develop a drought communication plan and early warning system to facilitate timely communication of relevant information to officials, decision makers, emergency managers, and the public.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	Bowie County
Estimated Cost	Low (0-10k)
Responsible Agency	Bowie County
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Bowie County Extreme Heat Action #1	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Low
Funding Source(s)	Bowie County
Estimated Cost	Low (0-10k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	8 years
Effect on New Buildings	The workshop would contain information about insulation.
Effect on Existing Buildings	The workshop would contain information about insulation.
Comments:	

Bowie County Extreme Heat Action #2	Develop/implement new cooling centers and advertise their locations for extreme heat events in existing, air-conditioned structures such as churches and county facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	7 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This action will be more critical as the earth grows warmer.

Bowie County Dam Failure Action #1	Adopt ordinances that limit development in areas that could be affected by flooding caused by dam failure.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	Bowie County
Estimated Cost	Low (0-10k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Bowie County Dam Failure Action #2	Prepare updated high resolution, digitized maps of dam failure inundation areas.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Inplementation
Priority	Medium
Funding Source(s)	FEMA/Bowie County
Estimated Cost	Low (0-10k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This would provide more information regarding the need for further mitigation.

Bowie County Wildfire Action #1	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	Bowie County
Estimated Cost	Low (0-10k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	3 years
Effect on New Buildings	Out of control trash burning can destroy a new building
Effect on Existing Buildings	Out of control trash burning can destroy an existing building.
Comments:	Programs such as this can empower citizens to take precautionary action.

Bowie County Wildfire Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

DeKalb Mitigation Actions 2017			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Purchase emergency mobile generators for critical facility use during power outages.	Complete	
FLOOD	Widen ditches to increase volume capacity of flash flood waters.	Complete	
TORNADO	Develop and implement the Texas Individual Tornado Safe Room Program.	On-going	Continue in plan update
TORNADO	Purchase emergency mobile generators for critical facility use during power outages.	Complete	
TORNADO	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods to protect themselves, their family and their property.	On-going	Continue in plan update
THUNDERSTORM WIND	Provide public workshops and information regarding mitigating homes against windstorms.	On-going	Continue in plan update
THUNDERSTORM WIND	Purchase emergency mobile generators for critical facility use during power outages.	Complete	
WINTER STORM	Conduct workshops regarding how to mitigate your home from damages of winter storms.	On-going	Continue in plan update
WINTER STORM	Purchase emergency mobile generators for critical facility use during power outages.	Complete	
HAIL	Install hail resistant film on the windows of critical facilities.	On-going	Continue in plan update
HAIL	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.	No longer a priority	
DROUGHT	Conduct Xeriscaping and water conservation workshops for the city.	On-going	Continue in plan update
DROUGHT	Develop and implement a drought contingency plan to include water conservation, building code requirements, and mandatory water rationing.	On-going	Continue in plan update
EXTREME HEAT	Conduct fan drives for low-income and elderly who cannot afford air conditioning.	On-going	Continue in plan update
EXTREME HEAT	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.	No longer a priority	
WILDFIRE	Develop and implement a building vegetation clearance program.	On-going	Continue in plan update
WILDFIRE	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.	On-going	Continue in plan update

DeKalb

NOTE: All DeKalb projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.

DeKalb Flood Action #1	Participate in the NFIP.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City and grant money
Estimated Cost	High (25k +)
Responsible Agency	City of DeKalb
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

DeKalb Flood Action #2	Develop and Implement the Turn Around, Don't Drown Program.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	State of Texas
Estimated Cost	Low (0-10k)
Responsible Agency	City of DeKalb
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This program is known to save lives.

DeKalb Tornado Action #1	Develop and implement the Texas Individual Tornado Safe Room Program.
Mitigation Goal/Objective	Goal #1: Protect life and property
Priority	Medium
Funding Source(s)	FEMA Grant monies
Estimated Cost	High (25K)
Responsible Agency	DeKalb City Council
Estimated Completion Time	8 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Safe rooms in homes save lives by protecting individuals from high winds and flying debris.

DeKalb Tornado Action #2	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods to protect themselves, family and property.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	City
Estimated Cost	Low (0k-10k)
Responsible Agency	DeKalb Fire Chief/EMC
Estimated Completion Time	2 years
Effect on New Buildings	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
Effect on Existing Buildings	This could help reduce damage by implementing ideas about home and business protection from tornadic winds
Comments:	Educating the public is an integral part of mitigation.

DeKalb Thunderstorm Winds Action # 1	Provide public workshops and information regarding mitigating homes against windstorms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal # 2: Public Awareness
Priority	Medium
Funding Source(s)	DeKalb City Council
Estimated Cost	Low (0-10k)
Responsible Agency	City Fire Department/EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Public awareness and education can minimize loss and protect lives by giving citizens the tools needed to take action.

DeKalb Thunderstorm Winds Action #2	Create and enforce a city ordinance requiring approved mobile home tie-downs.
Mitigation Goal/Objective	Goal #1: Protecting Life and Property
Priority	Medium
Funding Source(s)	City of DeKalb
Estimated Cost	Low (0-10k)
Responsible Agency	City of DeKalb
Estimated Completion Time	6 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This relatively inexpensive action can reduce mobile home damage and resident injury.

Dekalb Winter Storm Action #1	Conduct workshops regarding how to mitigate your home from damages of winter storms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public awareness
Priority	High
Funding Source(s)	DeKalb City Council
Estimated Cost	Low (0-10k)
Responsible Agency	DeKalb Fire Dept./ EMC
Estimated Completion Time	3 years
Effect on New Buildings	Education empowers citizens and businesses to take action.
Effect on Existing Buildings	Education empowers citizens and businesses to take action.
Comments:	

DeKalb Winter Storm Action #2	Develop and implement a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4 Partnership and Implementation
Priority	Medium
Funding Source(s)	City of DeKalb
Estimated Cost	Medium (10-25k)
Responsible Agency	City of DeKalb
Estimated Completion Time	7 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This can protect both homes and businesses from power loss and damage from falling limbs.

DeKalb Hail Action #1	Install hail resistant film on the windows of critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	City of DeKalb
Estimated Cost	Low (0-10k)
Responsible Agency	DeKalb Public Works
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

DeKalb Hail Action #2	Purchase public alert/warning systems (NOAA "all hazard" radios) for locations throughout the city.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	Grant fund, local budget
Estimated Cost	Low (0-10k)
Responsible Agency	City of DeKalb
Estimated Completion Time	6 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	The use of NOZZ All-Hazards Weather Radios provides a cost-effective method for alerting the public to specific issues with multiple hazards.

DeKalb Drought Action #2	Develop and implement a drought contingency plan to include water conservation, building code requirements, and mandatory water rationing.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Natural Systems/Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of DeKalb, County
Estimated Cost	Low (0-10k)
Responsible Agency	DeKalb Mayor
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

DeKalb Extreme Heat Action #1	Conduct fan drives for low-income and elderly who cannot afford air conditioning.
Mitigation Goal/Objective	Goal#1: Protect Life and Property/Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of DeKalb, County
Estimated Cost	Low (0-10k)
Responsible Agency	DeKalb Mayor
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Much can be accomplished when the private and public sector joins hands.

DeKalb Extreme Heat Action #2	Develop and Implement new cooling centers and advertise their locations for extreme heat events in existing, air-conditioned structures such as churches and city facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25K)
Responsible Agency	City of DeKalb
Estimated Completion Time	7 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

DeKalb Wildfire Action #1	Develop and implement a building vegetation clearance program.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	City of DeKalb
Estimated Cost	Medium (10-25k)
Responsible Agency	DeKalb Public Works
Estimated Completion Time	7 years
Effect on New Buildings	This would protect new buildings from Wildfire/Urban Interface
Effect on Existing Buildings	This would protect existing buildings from Wildfire/Urban Interface
Comments:	Much can be accomplished when the private and public sector joins hands.

DeKalb Wildfire Action #2	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of DeKalb
Estimated Cost	Low (0-10k)
Responsible Agency	DeKalb Fire Chief
Estimated Completion Time	3 years
Effect on New Buildings	Out of control trash burning can destroy a new building
Effect on Existing Buildings	Out of control trash burning can destroy an existing building.
Comments:	Programs such as this can empower citizens to take precautionary action.

Hooks Mitigation Actions 2017			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Develop and implement the Turn Around, Don't Drown Program.	No longer needed	
FLOOD	Widen ditches to increase volume capacity of flash flood waters.	On-going	Continue in plan update
FLOOD	Purchase emergency mobile generators for critical facility use during power outages.	On-going	Continue in plan update
TORNADO	Develop and implement the Texas Individual Tornado Safe Room Program.	Defer to plan update	
TORNADO	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation method to protect themselves, their family, and their property.	Defer to plan update	
THUNDERSTORM WIND	Create and enforce a city ordinance requiring approved mobile home tie-downs.	Defer to plan update	
THUNDERSTORM WIND	Provide public workshops and information regarding mitigating homes against windstorms.	No longer needed	
WINTER STORM	Develop and implement a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms.	No longer needed	
WINTER STORM	Conduct workshops regarding how to mitigate your home from damages of winter storms.	Defer to plan update	
HAIL	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.	Defer to plan update	
HAIL	Purchase emergency mobile generators for critical facility use during power outages.	On-going	Continue in plan update
DROUGHT	Conduct Xeriscaping and water conservation workshops for the city.	No longer needed	
DROUGHT	Replace municipal appliances or equipment with water saving parts as old ones wear out.	On-going	Continue in plan update
EXTREME HEAT	Develop and implement new cooling centers and advertise their locations for extreme heat events in existing, air-conditioned structures such as churches and county facilities. This would constitute a small investment yet provide a valuable service to people during episodes of extreme heat.	Defer to plan update	
EXTREME HEAT	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.	Defer to plan update	
WILDFIRE	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.	On-going	Continue in plan update
WILDFIRE	Purchase emergency mobile generators for critical facility use during power outages.	On-going	Continue in plan update

Hooks

NOTE: All Hooks projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.

Hooks Flood Action #1	Widen ditches to increase volume capacity of flash flood waters.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City and grant money
Estimated Cost	Medium (10k-25k)
Responsible Agency	Hooks Public Works
Estimated Completion Time	3 years
Effect on New Buildings	This could protect new building from flash flooding
Effect on Existing Buildings	This could protect new building from flash flooding
Comments:	By widening ditches, especially in poor drainage areas the likelihood of flooding is decreased.

Hooks Flood Action #2	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grants
Estimated Cost	Medium (10k-25k)
Responsible Agency	Hooks City Council
Estimated Completion Time	5 years
Effect on New Buildings	Sewage flooding and water contamination.
Effect on Existing Buildings	Sewage flooding and water contamination
Comments:	It is important during times of stress and outages that critical facilities such as waste treatment plants and water supplies remain operational.

Hooks Tornado Action #1	Develop and implement the Texas Individual Tornado Safe Room Program.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	FEMA Grant
Estimated Cost	Low (0-10k)
Responsible Agency	Hooks EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	A safe room placed in a home or business will save lives.

Hooks Tornado Action #2	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation method to protect themselves, their family, and their property.
Mitigation Goal/Objective	Goal #1: Public Awareness
Priority	High
Funding Source(s)	City of Hooks
Estimated Cost	Low (0-10k)
Responsible Agency	Hooks Fire Dept./EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Public Education can create citizen action.

Hooks Thunderstorm Winds Action #1	Create and enforce a city ordinance requiring approved mobile home tie-downs.
Mitigation Goal/Objective	Goal #1: Protecting Life and Property
Priority	Medium
Funding Source(s)	City of Hooks
Estimated Cost	Low (0-10k)
Responsible Agency	Hooks Mayor
Estimated Completion Time	6 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This relatively inexpensive action can reduce mobile home damage and resident injury.

Hooks Thunderstorm Winds Action #2	Create an outdoor warning system within the city.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	Grant Fund, local budget
Estimated Cost	
Responsible Agency	City of Hooks
Estimated Completion Time	Within 5 years of securing funding
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Emergency warning systems would save lives/reduce injuries in a hazard event.

Hooks Winter Storms Action #1	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grants
Estimated Cost	Medium (10k-25k)
Responsible Agency	Hooks City Council/EMS
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	It is important during times of stress and outages that critical facilities such as waste treatment plants and water supplies remain operational.

Hooks Winter Storms Action #2	Conduct workshops regarding how to mitigate your home from damages of winter storms.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	City of Hooks
Estimated Cost	Low (0-10K)
Responsible Agency	Hooks Fire Dept./EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Public information plays a key role in mitigation by enabling the citizens.

Hooks Hail Action #1	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness.
Priority	High
Funding Source(s)	City of Hooks
Estimated Cost	Low (0-10k)
Responsible Agency	Hooks City Fire Dept./ EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Public awareness and education can minimize loss and protect lives by giving citizens the tools needed to take action.

Hooks Hail Action #2	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grants
Estimated Cost	Medium (10k-25k)
Responsible Agency	Hooks City Council/EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	It is important during times of stress and outages that critical facilities such as waste treatment plants and water supplies remain operational.

Hooks Drought Action #1	Implement a water conservation program and enforce it during drought periods enforcing restrictions on watering lawns.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems
Priority	Low
Funding Source(s)	City of Hooks
Estimated Cost	Medium (10k-25k)
Responsible Agency	City of Hooks
Estimated Completion Time	On-going
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Hooks Drought Action #2	Replace municipal appliances or equipment with water saving parts as old ones wear out.
Mitigation Goal/Objective	Goal #1: Protecting Life and Property
Priority	Low
Funding Source(s)	City of Hooks
Estimated Cost	Low (0-10k)
Responsible Agency	Hooks Public Works
Estimated Completion Time	8 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This will conserve water and set examples for the residents of Hooks.

Hooks Extreme Heat Action #1	Develop and implement new cooling centers and advertise their locations for extreme heat events in existing, air-conditioned structures such as churches and county facilities. This would constitute a small investment yet provide a valuable service to people during episodes of extreme heat.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Hooks EMC
Estimated Completion Time	7 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This action will be more critical as the earth grows warmer.

Hooks Extreme Heat Action #2	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	City Hooks
Estimated Cost	Low (0-10k)
Responsible Agency	Mayor of Hooks
Estimated Completion Time	6 years
Effect on New Buildings	This Business and home owners could learn ideas on protecting foundations.
Effect on Existing Buildings	This Business and home owners could learn ideas on protecting foundations.
Comments:	

Hooks Wildfire Action #1	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Hooks
Estimated Cost	Low (0-10k)
Responsible Agency	Hooks Fire Chief
Estimated Completion Time	3 years
Effect on New Buildings	Out of control trash burning can destroy a new building
Effect on Existing Buildings	Out of control trash burning can destroy an existing building.
Comments:	Programs such as this can empower citizens to take precautionary action.

Hooks Wildfire Action #2	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grants
Estimated Cost	Medium (10k-25k)
Responsible Agency	Hooks City Council/EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	It is important during times of stress and outages that critical facilities such as waste treatment plants and water supplies remain operational.

Leary Mitigation Actions 2017			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Purchase emergency mobile generators for critical facility use during power outages.	On-going	Continue in plan update
FLOOD	Install permanent "Caution Road may Flood warning signs on roadways that flood.	On-going	Continue in plan update
TORNADO	Develop and implement the Texas Individual Tornado Safe Room Program.	On-going	Continue in plan update
TORNADO	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods to protect themselves, their family and their property.	On-going	Continue in plan update
THUNDERSTORM WIND	Provide a community awareness campaign concerning the risks and consequences of windstorms. By educating the public n High winds, loss of life and property may be mitigated as they take steps to secure their property and respond to warning.	On-going	Continue in plan update
THUNDERSTORM WIND	Require structures on temporary foundations to be securely anchored to permanent foundations.	On-going	Continue in plan update
WINTER STORM	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
WINTER STORM	Develop and implement a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms.	On-going	Continue in plan update
HAIL	Install hail resistant film on the windows of critical facilities.	On-going	Continue in plan update
HAIL	Purchase emergency mobile generators for critical facility use during power outages.	On-going	Continue in plan update
DROUGHT	Conduct Xeriscaping and water conservation workshops for the city.	On-going	Continue in plan update
DROUGHT	Develop and implement a drought contingency plan to include water conservation, building code requirements, and mandatory water rationing.	On-going	Continue in plan update
EXTREME HEAT	Conduct fan drives for low-income and elderly who cannot afford air conditioning.	On-going	Continue in plan update
EXTREME HEAT	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.	On-going	Continue in plan update
WILDFIRE	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.	On-going	Continue in plan update
WILDFIRE	Purchase emergency mobile generators for critical facility use during power outages.	On-going	Continue in plan update

Leary

NOTE: All Leary projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.

Leary Flood Action #1	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grants
Estimated Cost	Medium (10k-25k)
Responsible Agency	Leary City Council/EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	It is important during times of stress and outages that critical facilities such as waste treatment plants and water supplies remain operational.

Leary Flood Action #2	Install permanent "Caution Road may Flood warning signs on roadways that flood.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	TX Dot
Estimated Cost	Low (0-10k)
Responsible Agency	Mayor of Leary
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Signs make people more aware of Flooding Danger.

Leary Tornado Action #1	Develop and implement the Texas Individual Tornado Safe Room Program
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	FEMA Grant
Estimated Cost	Low (0-10k)
Responsible Agency	Leary Mayor
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	A safe room placed in a home or business will save lives.

Leary Tornado Action #1	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods to protect themselves, their family and their property.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	City
Estimated Cost	Low (0k-10k)
Responsible Agency	Leary Mayor
Estimated Completion Time	2 years
Effect on New Buildings	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
Effect on Existing Buildings	This could help reduce damage by implementing ideas about home and business protection from tornadic winds
Comments:	Educating the public is an integral part of mitigation.

Leary Thunderstorm Winds Action #1	Provide a community awareness campaign concerning the risks and consequences of windstorms. By educating the public n High winds, loss of life and property may be mitigated as they take steps to secure their property and respond to warning.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Leary
Estimated Cost	Low (0-10k)
Responsible Agency	Mayor of Leary
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Educating the Public will help protect life and property.

Leary Thunderstorm Winds Action #2	Require structures on temporary foundations to be securely anchored to permanent foundations.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	Leary
Estimated Cost	Low (0-10k)
Responsible Agency	Mayor of Leary
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Leary Winter Storms Action #1	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Leary Mayor
Estimated Completion Time	7 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Leary Winter Storms Action #2	Develop and implement a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation
Priority	Medium
Funding Source(s)	City of Leary
Estimated Cost	Medium (10-25k)
Responsible Agency	Mayor of Leary
Estimated Completion Time	7 years
Effect on New Buildings	This can protect both homes and businesses from power loss and damage from falling limbs.
Effect on Existing Buildings	This can protect both homes and businesses from power loss and damage from falling limbs.
Comments:	

Leary Hail Storms Action #1	Install hail resistant film on the windows of critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	City of Leary
Estimated Cost	Low (0-10k)
Responsible Agency	Leary Mayor
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Leary Hail Storms Action #2	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grants
Estimated Cost	Medium (10k-25k)
Responsible Agency	Leary City Council
Estimated Completion Time	5 years
Effect on New Buildings	This could protect buildings from sewage flooding and water contamination.
Effect on Existing Buildings	This could protect buildings from sewage flooding and water contamination
Comments:	It is important during times of stress and outages that critical facilities such as waste treatment plants and water supplies remain operational.

Leary Drought Action #1	Conduct Xeriscaping and water conservation workshops for the city.
Mitigation Goal/Objective	Goal #2: Public Awareness/Goal #3: Natural Systems/Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	City of Leary
Estimated Cost	Low (0-10k)
Responsible Agency	Leary Mayor
Estimated Completion Time	6 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Using native and drought resistant plants can help curtail excessive water usage.

Leary Drought Action #2	Develop and implement a drought contingency plan to include water conservation, building code requirements, and mandatory water rationing.
Mitigation Goal/Objective	Goal#1: Protect Life and Property/Goal #2: Natural Systems/Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of Leary
Estimated Cost	Low (0-10k)
Responsible Agency	Leary Mayor
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Leary Extreme Heat Action #1	Conduct fan drives for low-income and elderly who cannot afford air conditioning.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of Leary, County
Estimated Cost	Low (0-10k)
Responsible Agency	Mayor of Leary
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Much can be accomplished when the private and public sector joins hands.

Leary Extreme Heat Action #2	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Low
Funding Source(s)	City of Leary
Estimated Cost	Low (0-10k)
Responsible Agency	Mayor of Leary
Estimated Completion Time	8 years
Effect on New Buildings	The workshop would contain information about insulation.
Effect on Existing Buildings	The workshop would contain information about insulation.
Comments:	

Leary Wild Fire Action #1	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Leary
Estimated Cost	Low (0-10k)
Responsible Agency	Leary Fire Chief
Estimated Completion Time	3 years
Effect on New Buildings	Out of control trash burning can destroy a new building
Effect on Existing Buildings	Out of control trash burning can destroy an existing building.
Comments:	Programs such as this can empower citizens to take precautionary action.

Leary Wild Fire Action #2	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grants
Estimated Cost	Medium (10k-25k)
Responsible Agency	Leary City Council/EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	It is important during times of stress and outages that critical facilities such as waste treatment plants and water supplies remain operational.

Maud Mitigation Actions 2017			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Install permanent "Caution Road may Flood warning signs on roadways that flood.	On-going	Continue in plan update
FLOOD	Widen ditches to increase volume capacity of flash flood waters.	On-going	Continue in plan update
TORNADO	Develop and implement the Texas Individual Tornado Safe Room Program.	On-going	Continue in plan update
TORNADO	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods to protect themselves, their family and their property.	On-going	Continue in plan update
THUNDERSTORM WIND	Create and enforce a city ordinance requiring approved mobile home tie-downs.	On-going	Continue in plan update
THUNDERSTORM WIND	Provide public workshops and information regarding mitigating homes against windstorms.	On-going	Continue in plan update
WINTER STORM	Develop and implement a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms.	On-going	Continue in plan update
WINTER STORM	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
HAIL	Install hail resistant film on the windows of critical facilities.	On-going	Continue in plan update
HAIL	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.	On-going	Continue in plan update
DROUGHT	Conduct Xeriscaping and water conservation workshops for the city.	On-going	Continue in plan update
DROUGHT	Replace municipal appliances or equipment with water saving parts as old ones wear out.	On-going	Continue in plan update
EXTREME HEAT	Conduct fan drives for low-income and elderly who cannot afford air conditioning.	On-going	Continue in plan update
EXTREME HEAT	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.	On-going	Continue in plan update
WILDFIRE	Develop and implement a vegetation management program to reduce the danger of wildfire reaching dwellings.	On-going	Continue in plan update
WILDFIRE	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.	On-going	Continue in plan update

Maud

NOTE: *All Maud projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.*

Maud Flood Action #1	Install permanent "Caution Road may Flood warning signs on roadways that flood.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	TX Dot
Estimated Cost	Low (0-10k)
Responsible Agency	Maud Public Works
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Signs make people more aware of Flooding Danger

Maud Flood Action #2	Widen ditches to increase volume capacity of flash flood waters.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City of Maud and grant money
Estimated Cost	Medium (10k-25k)
Responsible Agency	Maud Public Works Department
Estimated Completion Time	3 years
Effect on New Buildings	This could protect new building from flash flooding
Effect on Existing Buildings	This could protect new building from flash flooding
Comments:	By widening ditches, especially in poor drainage areas the likelihood of flooding is decreased.

Maud Tornado Action #1	Develop and implement the Texas Individual Tornado Safe Room Program.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	FEMA Grant
Estimated Cost	Low (0-10k)
Responsible Agency	Maud EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	A safe room placed in a home or business will save lives.

Maud Tornado Action #2	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods to protect themselves, their family and their property.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Maud
Estimated Cost	Low (0k-10k)
Responsible Agency	Maud Fire Chief/EMC
Estimated Completion Time	2 years
Effect on New Buildings	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
Effect on Existing Buildings	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
Comments:	Educating the public is an integral part of mitigation.

Maud Thunderstorm Winds Action #1	Create and enforce a city ordinance requiring approved mobile home tie-downs.
Mitigation Goal/Objective	Goal #1: Protecting Life and Property
Priority	Medium
Funding Source(s)	City of Maud
Estimated Cost	Low (0-10k)
Responsible Agency	Maud Mayor
Estimated Completion Time	6 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This relatively inexpensive action can reduce mobile home damage and resident injury.

Maud Thunderstorm Winds Action #2	Provide public workshops and information regarding mitigating homes against windstorms.
Mitigation Goal/Objective	Goal #1: Protects Life and Property
Priority	Medium
Funding Source(s)	City of Maud
Estimated Cost	Low (0-10K)
Responsible Agency	Maud Fire Department/EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	The Storm Ready Program is about building community resilience in the face of increasing vulnerability to extreme weather and water events.

Maud Winter Storms Action #1	Develop and implement a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation
Priority	Medium
Funding Source(s)	City of Maud
Estimated Cost	Medium (10-25k)
Responsible Agency	Mayor of Maud
Estimated Completion Time	7 years
Effect on New Buildings	This can protect both homes and businesses from power loss and damage from falling limbs.
Effect on Existing Buildings	This can protect both homes and businesses from power loss and damage from falling limbs.
Comments:	Develop and implement a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms.

Maud Winter Storms Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Low
Funding Source(s)	City of Maud
Estimated Cost	Medium (10-25k)
Responsible Agency	Maud Mayor
Estimated Completion Time	8 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Maud Hail Action #1	Install hail resistant film on the windows of critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	City of Maud
Estimated Cost	Low (0-10k)
Responsible Agency	Maud Public Works
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Maud Hail Action #2	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness.
Priority	High
Funding Source(s)	City of Maud
Estimated Cost	Low (0-10k)
Responsible Agency	Maud City Fire Dept./ EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Public awareness and education can minimize loss and protect lives by giving citizens the tools needed to take action.

Maud Drought Action #1	Conduct Xeriscaping and water conservation workshops for the city.
Mitigation Goal/Objective	Goal #2 Public Awareness/Goal #3: Natural Systems/Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	City of Maud
Estimated Cost	Low (0-10k)
Responsible Agency	Maud Mayor
Estimated Completion Time	6 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Using native and drought resistant plants can help curtail excessive water usage.

Maud Drought Action #2	Replace municipal appliances or equipment with water saving parts as old ones wear out.
Mitigation Goal/Objective	Goal #1: Protecting Life and Property
Priority	Low
Funding Source(s)	City of Maud
Estimated Cost	Low (0-10k)
Responsible Agency	Maud Public Works Department
Estimated Completion Time	8 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This will conserve water and set examples for the residents of Maud.

Maud Extreme Heat Action #1	Conduct fan drives for low-income and elderly who cannot afford air conditioning.
Mitigation Goal/Objective	Goal#1: Protect Life and Property/Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of Maud, County
Estimated Cost	Low (0-10k)
Responsible Agency	Maud Mayor
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Much can be accomplished when the private and public sector joins hands.

Maud Extreme Heat Action #2	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Low
Funding Source(s)	City of Maud
Estimated Cost	Low (0-10k)
Responsible Agency	Maud Mayor
Estimated Completion Time	8 years
Effect on New Buildings	The workshop would contain information about insulation.
Effect on Existing Buildings	The workshop would contain information about insulation.
Comments:	

Maud Wildfire Action #1	Develop and implement a vegetation management program to reduce the danger of wildfire reaching dwellings.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems/Goal # 4: Partnerships and implementation
Priority	Medium
Funding Source(s)	City of Maud
Estimated Cost	Medium (10-25k)
Responsible Agency	Mayor of Maud
Estimated Completion Time	4 years
Effect on New Buildings	This would protect new buildings from encroaching wildfire.
Effect on Existing Buildings	This would protect new buildings from encroaching wildfire.
Comments:	

Maud Wildfire Action #2	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Maud
Estimated Cost	Low (0-10k)
Responsible Agency	Maud Fire Chief
Estimated Completion Time	3 years
Effect on New Buildings	Out of control trash burning can destroy a new building
Effect on Existing Buildings	Out of control trash burning can destroy an existing building.
Comments:	Programs such as this can empower citizens to take precautionary action.

Nash Mitigation Actions 2017			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Widen ditches to increase volume capacity of flash flood waters.	Complete, on-going	Continue in Plan Update
FLOOD	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	Complete	Now maintaining
TORNADO	Develop and implement the Texas Individual Tornado Safe Room Program.	On-going	Continue in Plan Update
TORNADO	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods.	On-going	Continue in Plan Update
THUNDERSTORM WIND	Require structures on temporary foundations to be securely anchored to permanent foundations.	On-going	Continue in Plan Update
THUNDERSTORM WIND	Provide public workshops and information regarding mitigating homes against windstorms.	On-going	Continue in Plan Update
WINTER STORM	Develop a preemptive strategy for removing dead limbs and overhangs that might fall during winter storms.	On-going	Continue in Plan Update
WINTER STORM	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	Complete	Now maintaining
HAIL	Install hail resistant film on the windows of critical facilities.	Complete for City Hall, recommend for all commercial buildings	Continue in Plan Update
HAIL	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.	On-going	Continue in Plan Update
DROUGHT	Conduct Xeriscaping and water conservation workshops for the city.	No longer needed	Recent history shows no need
DROUGHT	Replace municipal appliances or equipment with water saving parts as old ones wear out.	No longer needed	Recent history shows no need
EXTREME HEAT	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.	On-going	Continue in Plan Update
EXTREME HEAT	Develop and implement new cooling centers and advertise their locations for extreme heat events in existing, air-conditioned structures such as churches and county facilities.	On-going	Continue in Plan Update
WILDFIRE	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.	On-going	Continue in Plan Update
WILDFIRE	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	Complete	Now maintaining

Nash

NOTE: *All Nash projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.*

Nash Flood Action #1	Widen ditches to increase volume capacity of flash flood waters.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City and grant money
Estimated Cost	Medium (10k-25k)
Responsible Agency	Nash Public Works Department
Estimated Completion Time	3 years
Effect on New Buildings	This could protect new building from flash flooding
Effect on Existing Buildings	This could protect new building from flash flooding
Comments:	On-going to address seasonal debris as it occurs.

Nash Flood Action #2	Maintain emergency mobile generators in condition of readiness to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City of Nash
Estimated Cost	Low (0k-10k)
Responsible Agency	Nash Fire Chief/EMC
Estimated Completion Time	On-going
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Nash Tornado Action #1	Develop and implement the Texas Individual Tornado Safe Room Program.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	FEMA Grant
Estimated Cost	Low (0-10k)
Responsible Agency	Nash EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	A safe room placed in a home or business will save lives.

Nash Tornado Action #2	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods to protect themselves, their family and their property. Provide warning through use of storm sirens.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Nash
Estimated Cost	Low (0k-10k)
Responsible Agency	Nash Fire Chief/EMC
Estimated Completion Time	2 years
Effect on New Buildings	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
Effect on Existing Buildings	This could help reduce damage by implementing ideas about home and business protection from tornadic winds
Comments:	Educating the public is an integral part of mitigation.

Nash Thunderstorm Winds Action #1	Create ordinance to require metal carports and storage buildings to be anchored.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	Nash
Estimated Cost	Low (0-10k)
Responsible Agency	Nash City Manager
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Nash Thunderstorm Winds Action #2	Provide public workshops and information regarding mitigating homes against windstorms.
Mitigation Goal/Objective	Goal #1: Protects Life and Property
Priority	Medium
Funding Source(s)	City of Nash
Estimated Cost	Low (0-10K)
Responsible Agency	Nash Fire Department/EMC
Estimated Completion Time	5 years
Effect on New Buildings	Learning to building new structures with wind resistant design can save life and property
Effect on Existing Buildings	Learning how to reinforcing existing structures to resist high winds can save life and property.
Comments:	

Nash Winter Storm Action #1	Develop a preemptive strategy for removing dead limbs and overhangs that might fall during winter storms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	Nash/County
Estimated Cost	Medium (10-25k)
Responsible Agency	Nash Public Works
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Keeping roads and ditches free of limbs and debris opens transportation, could reduce flash flooding and prevents injury.

Nash Winter Storm Action #2	Maintain emergency mobile generators in condition of readiness to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City of Nash
Estimated Cost	Low (0k-10k)
Responsible Agency	Nash Fire Chief/EMC
Estimated Completion Time	On-going
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Nash Hail Action #1	Encourage all commercial buildings to install hail resistant film on the windows.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	City of Nash
Estimated Cost	Low (0-10k)
Responsible Agency	Nash Public Works
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Nash Hail Action #2	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness.
Priority	High
Funding Source(s)	City of Nash
Estimated Cost	Low (0-10k)
Responsible Agency	Nash Fire Dept./ EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Public awareness and education can minimize loss and protect lives by giving citizens the tools needed to take action.

Nash Extreme Heat Action #1	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Low
Funding Source(s)	City of Nash
Estimated Cost	Low (0-10k)
Responsible Agency	Nash City Manager
Estimated Completion Time	8 years
Effect on New Buildings	The workshop would contain information about insulation.
Effect on Existing Buildings	The workshop would contain information about insulation.
Comments:	

Nash Extreme Heat Action #2	Develop and implement new cooling centers and advertise their locations for extreme heat events in existing, air-conditioned structures such as churches and county facilities and advertise as needed.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Nash EMC
Estimated Completion Time	7 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This action will be more critical as the earth grows warmer.

Nash Wildfire Action #1	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.
Mitigation Goal/Objective	Goal #2 Public Awareness
Priority	High
Funding Source(s)	City of Nash
Estimated Cost	Low (0-10k)
Responsible Agency	Nash Fire Chief
Estimated Completion Time	3 years
Effect on New Buildings	Out of control trash burning can destroy a new building
Effect on Existing Buildings	Out of control trash burning can destroy an existing building.
Comments:	City ordinance now prohibits burning household trash and requires light vegetation to be burned in approved container.

Nash Wildfire Action #2	Maintain emergency mobile generators in condition of readiness to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City of Nash
Estimated Cost	Low (0k-10k)
Responsible Agency	Nash Fire Chief/EMC
Estimated Completion Time	On-going
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

New Boston was not a part of the 2017 Hazard Mitigation Plan, therefore, have no actions to review for update.

New Boston

NOTE: *All New Boston projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.*

New Boston Flood Action #1	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grants
Estimated Cost	Medium (10k-25k)
Responsible Agency	City of New Boston
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	It is important during times of outages that critical facilities such as waste treatment plants and water supplies remain operational.

New Boston Flood Action #2	Widen ditches to increase volume capacity of flash flood waters.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City and Grant Money
Estimated Cost	Medium (10k-25k)
Responsible Agency	New Boston Public Works Department
Estimated Completion Time	3 years
Effect on New Buildings	Could protect from flash flooding.
Effect on Existing Buildings	Could protect from flash flooding.
Comments:	Widening ditches decreases

New Boston Tornado Action #1	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grants
Estimated Cost	Medium (10k-25k)
Responsible Agency	City of New Boston
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

New Boston Tornado Action #2	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods to protect themselves, family and property.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal 2: Public Awareness
Priority	High
Funding Source(s)	City of New Boston
Estimated Cost	Low (0k-10k)
Responsible Agency	New Boston Fire Chief/EMC
Estimated Completion Time	2 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Educating the public is an integral part of mitigation.

New Boston Thunderstorm Winds Action #1	Provide a community awareness campaign concerning the risks and consequences of windstorms.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of New Boston
Estimated Cost	Low (--10k)
Responsible Agency	Bowie County EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Educating the public will help protect life and property.

New Boston Thunderstorm Winds Action #2	Create and enforce a city ordinance requiring approved mobile home tie-downs.
Mitigation Goal/Objective	Goal #1: Protecting Life and Property
Priority	Medium
Funding Source(s)	City of New Boston
Estimated Cost	Low (0-10k)
Responsible Agency	New Boston Mayor
Estimated Completion Time	6 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This relatively inexpensive action can reduce mobile home damage and resident injury.

New Boston Winter Storm Action #1	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and property
Priority	Low
Funding Source(s)	City of New Boston
Estimated Cost	Medium (10-25k)
Responsible Agency	Mayor of New Boston
Estimated Completion Time	8 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

New Boston Winter Storm Action #2	Develop and implement a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation
Priority	Medium
Funding Source(s)	City of New Boston
Estimated Cost	Medium (10-25k)
Responsible Agency	Mayor of New Boston
Estimated Completion Time	7 years
Effect on New Buildings	Protects from power loss and damage.
Effect on Existing Buildings	Protects from power loss and damage.
Comments:	

New Boston Hail Action #1	Install hail resistant film on the windows of critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	City of New Boston
Estimated Cost	Low (0-10k)
Responsible Agency	New Boston Public Works
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

New Boston Hail Action #2	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property from hail damage.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	City of New Boston
Estimated Cost	Low (0-10k)
Responsible Agency	City Fire Dept./EMC
Estimated Completion Time	2 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Public awareness and education can minimize loss and protect lives by giving citizens the tools needed to take action.

New Boston Drought Action #1	Develop and implement a drought contingency plan to include water conservation, building code requirements, and mandatory water rationing.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Natural Systems/Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of New Boston, County
Estimated Cost	Low (0-10k)
Responsible Agency	Mayor of New Boston
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

New Boston Drought Action #2	Replace municipal appliances or equipment with water saving parts as the old ones wear out.
Mitigation Goal/Objective	Goal #1: Protecting Life and Property
Priority	Low
Funding Source(s)	City of New Boston
Estimated Cost	Low (0-10k)
Responsible Agency	New Boston Public Works
Estimated Completion Time	8 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This will conserve water and set examples for the residents of New Boston.

New Boston Extreme Heat Action #1	Conduct fan drives for low-income and elderly who cannot afford air conditioning.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation
Priority	High
Funding Source(s)	City of New Boston, County
Estimated Cost	Low (0-10k)
Responsible Agency	Mayo of New Boston
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Much can be accomplished when the private and public sector joins hands.

New Boston Extreme Heat Action #2	Provide Workshops on how to mitigate infrastructure from the effects of extreme heat.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Low
Funding Source(s)	City of New Boston
Estimated Cost	Low (0-10k)
Responsible Agency	Mayor of New Boston
Estimated Completion Time	8 years
Effect on New Buildings	This workshop would contain information about insulation.
Effect on Existing Buildings	This workshop would contain information about insulation.
Comments:	

New Boston Wildfire Action #1	Develop and implement a vegetation management program to reduce the danger of wildfire reaching dwellings.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems/Goal #4: Partnership and implementation
Priority	Medium
Funding Source(s)	City of New Boston
Estimated Cost	Medium (10-25k)
Responsible Agency	May of New Boston
Estimated Completion Time	4 years
Effect on New Buildings	This would protect new buildings from encroaching wildfire.
Effect on Existing Buildings	This would protect existing buildings from encroaching wildfire.
Comments:	

New Boston Wildfire Action #2	Conduct a wildfire education program stressing the dangers of trash burning in Bowie County.
Mitigation Goal/Objective	Goal #1: Protects Life and Property
Priority	Medium
Funding Source(s)	City of New Boston
Estimated Cost	Low (0-10k)
Responsible Agency	New Boston Fire Dept/EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Red Lick Mitigation Actions 2017			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
FLOOD	Install permanent "Caution Road may Flood warning signs on roadways that flood.	Complete	
TORNADO	Develop and implement the Texas Individual Tornado Safe Room Program.	On-going	Continue in plan update
TORNADO	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
THUNDERSTORM WIND	Provide public workshops and information regarding mitigating homes against windstorms.	On-going	Continue in plan update
THUNDERSTORM WIND	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
WINTER STORM	Develop a preemptive strategy for removing dead limbs and overhangs that might fall during winter storms.	On-going	Continue in plan update
WINTER STORM	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
HAIL	Install hail resistant film on the windows of critical facilities.	No longer needed	
HAIL	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.	On-going	Continue in plan update
DROUGHT	Conduct Xeriscaping and water conservation workshops for the city.	On-going	Continue in plan update
DROUGHT	Replace municipal appliances or equipment with water saving parts as old ones wear out.	Complete	
EXTREME HEAT	Develop and implement new cooling centers and advertise their locations for extreme heat events in existing, air- conditioned structures such as churches and county facilities. This would constitute a small investment yet provide a valuable service to people during episodes of extreme heat.	On-going	Continue in plan update
EXTREME HEAT	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.	On-going	Continue in plan update
WILDFIRE	Develop and implement a vegetation management program to reduce the danger of wildfire reaching dwellings.	On-going	Continue in plan update
WILDFIRE	Conduct a wildfire education program stressing the dangers of trash burning in Bowie County.	On-going	Continue in plan update

Red Lick

NOTE: *All Red Lick projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.*

Red Lick Flood Action #1	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Red Lick Mayor
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Red Lick Flood Action #2	Educate the public on mitigation strategies for flooding.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	Local budget, Grant funds, Volunteer Hours. Business Donations
Estimated Cost	$1,000
Responsible Agency	City of Red Lick
Estimated Completion Time	Throughout 5-year update
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Safety brochures, warning signs at parks, and educating school children can all help increase public awareness of flood dangers.

Red Lick Flood Action #3	Participate in the NFIP.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City and grant money
Estimated Cost	High (25k +)
Responsible Agency	City of Red Lick
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Red Lick Tornado Action #1	Develop and implement the Texas Individual Tornado Safe Room Program.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Low (0-10k)
Responsible Agency	Red Lick Fire Dept.
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	A safe room placed in a home or business will save lives.

Red Lick Tornado Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Red Lick Mayor
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Red Lick Thunderstorm Winds Action #1	Provide public workshops and information regarding mitigating homes against windstorms.
Mitigation Goal/Objective	Goal #1: Protects Life and Property
Priority	Medium
Funding Source(s)	City of Red Lick
Estimated Cost	Low (0-10K)
Responsible Agency	Red Lick RFD/EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	The Storm Ready Program is about building community resilience in the face of increasing vulnerability to extreme weather and water events.

Red Lick Thunderstorm Winds Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Red Lick Mayor
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Red Lick Winter Storm Action #1	Develop a preemptive strategy for removing dead limbs and overhangs that might fall during winter storms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	Red Lick/County
Estimated Cost	Medium (10-25k)
Responsible Agency	Red Lick Public Works
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Keeping roads and ditches free of limbs and debris opens transportation, could reduce flash flooding and prevents injury.

Red Lick Winter Storm Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Red Lick Mayor
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Red Lick Hail Action #1	Purchase public alert/warning systems (NOAA "All Hazard" radios) for locations throughout the city.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	Grant fund, local budget
Estimated Cost	$10,000
Responsible Agency	City of Red Lick
Estimated Completion Time	Within 12 months of securing funding
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	The use of NOAA All-Hazards Weather Radios provides a cost-effective method for alerting the public to specific issues with multiple hazards.

Red Lick Hail Action #2	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness.
Priority	High
Funding Source(s)	City of Red Lick
Estimated Cost	Low (0-10k)
Responsible Agency	Red Lick City Fire Dept./ EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Public awareness and education can minimize loss and protect lives by giving citizens the tools needed to take action.

Red Lick Drought Action #1	Conduct Xeriscaping and water conservation workshops for the city.
Mitigation Goal/Objective	Goal #2: Public Awareness/Goal #3: Natural Systems/Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	City of Red Lick
Estimated Cost	Low (0-10k)
Responsible Agency	Red Lick City Manager
Estimated Completion Time	6 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Using native and drought resistant plants can help curtail excessive water usage.

Red Lick Drought Action #1	Implement a water conservation program and enforce it during drought periods enforcing restrictions on watering lawns.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/#3: Natural Systems
Priority	Low
Funding Source(s)	City of Red Lick
Estimated Cost	Medium (10-25k)
Responsible Agency	City of Red Lick
Estimated Completion Time	On-going
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A
Comments:	

Red Lick Extreme Heat Action #1	Develop and implement new cooling centers and advertise their locations for extreme heat events in existing, air-conditioned structures such as churches and county facilities. This would constitute a small investment yet provide a valuable service to people during episodes of extreme heat.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Red Lick Fire Dept.
Estimated Completion Time	7 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This action will be more critical as the earth grows warmer.

Red Lick Extreme Heat Action #2	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Low
Funding Source(s)	City of Red Lick
Estimated Cost	Low (0-10k)
Responsible Agency	Mayor of Red Lick
Estimated Completion Time	8 years
Effect on New Buildings	The workshop would contain information about insulation.
Effect on Existing Buildings	The workshop would contain information about insulation.
Comments:	

Red Lick Wildfire Action #1	Develop and implement a vegetation management program to reduce the danger of wildfire reaching dwellings.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems/Goal #4: Partnerships and implementation
Priority	Medium
Funding Source(s)	City of Red Lick
Estimated Cost	Medium (10-25k)
Responsible Agency	Mayor of Red Lick
Estimated Completion Time	4 years
Effect on New Buildings	This would protect new buildings from encroaching wildfire.
Effect on Existing Buildings	This would protect new buildings from encroaching wildfire.
Comments:	

Red Lick Wildfire Action #2	Conduct a wildfire education program stressing the dangers of trash burning in Bowie County.
Mitigation Goal/Objective	Goal #1: Protects Life and Property
Priority	Medium
Funding Source(s)	City of Red Lick
Estimated Cost	Low (0-10K)
Responsible Agency	Red Lick RFD/EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Redwater Mitigation Actions 2017			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Widen ditches to increase volume capacity of flash flood waters.	On-going	Continue in plan update
FLOOD	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
TORNADO	Develop and implement the Texas Individual Tornado Safe Room Program.	On-going	Continue in plan update
TORNADO	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
THUNDERSTORM WIND	Provide a community awareness campaign concerning the risks and consequences of windstorms. By educating the public n High winds, loss of life and property may be mitigated as they take steps to secure their property and respond to warning.	On-going	Continue in plan update
THUNDERSTORM WIND	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
WINTER STORM	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
WINTER STORM	Mitigate protecting power lines from the impacts of winter storms by establishing standards for all utilities regarding tree pruning around lines.	On-going	Continue in plan update
HAIL	Install hail resistant film on the windows of critical facilities.	On-going	Continue in plan update
HAIL	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
DROUGHT	Develop and implement a drought contingency plan to include water conservation, building code requirements, and mandatory water rationing.	On-going	Continue in plan update
DROUGHT	Replace municipal appliances or equipment with water saving parts as old ones wear out.	On-going	Continue in plan update
EXTREME HEAT	Conduct fan drives for low-income and elderly who cannot afford air conditioning.	On-going	Continue in plan update
EXTREME HEAT	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.	On-going	Continue in plan update
WILDFIRE	Develop and implement a vegetation management program to reduce the danger of wildfire reaching dwellings.	On-going	Continue in plan update
WILDFIRE	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.	On-going	Continue in plan update

Redwater

NOTE: *All Redwater projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.*

Redwater Flood Action #1	Widen ditches to increase volume capacity of flash flood waters.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City of Redwater and grant money
Estimated Cost	Medium (10k-25k)
Responsible Agency	Redwater public works
Estimated Completion Time	3 years
Effect on New Buildings	This could protect new building from flash flooding
Effect on Existing Buildings	This could protect new building from flash flooding
Comments:	By widening ditches, especially in poor drainage areas the likelihood of flooding is decreased.

Redwater Flood Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Redwater Mayor
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Redwater Tornado Action #1	Develop and implement the Texas Individual Tornado Safe Room Program.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Low (0-10k)
Responsible Agency	Redwater Fire Dept.
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	A safe room placed in a home or business will save lives.

Redwater Tornado Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Redwater Mayor
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Redwater Thunderstorm Winds Action #1	Provide a community awareness campaign concerning the risks and consequences of windstorms. By educating the public n High winds, loss of life and property may be mitigated as they take steps to secure their property and respond to warning.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Redwater
Estimated Cost	Low (0-10k)
Responsible Agency	Redwater Mayor
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Educating the Public will help protect life and property.

Redwater Thunderstorm Winds Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Redwater City Manager
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Redwater Winter Storm Action #1	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Redwater City Manager
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Redwater Winter Storm Action #2	Mitigate protecting power lines from the impacts of winter storms by establishing standards for all utilities regarding tree pruning around lines.
Mitigation Goal/Objective	Goal 1: Protect Life and Property/Goal 3: Natural Systems
Priority	Medium
Funding Source(s)	Redwater/County
Estimated Cost	Medium (10-25k)
Responsible Agency	Redwater Public Works
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Redwater Hail Action #1	Install hail resistant film on the windows of critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	City of Redwater
Estimated Cost	Low (0-10k)
Responsible Agency	Redwater Public Works
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Redwater Hail Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Redwater Mayor
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Redwater Drought Action #1	Develop and implement a drought contingency plan to include water conservation, building code requirements, and mandatory water rationing.
Mitigation Goal/Objective	Goal#1: Protect Life and Property/Goal #2: Natural Systems/Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of Redwater
Estimated Cost	Low (0-10k)
Responsible Agency	Redwater Mayor
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Redwater Drought Action #2	Replace municipal appliances or equipment with water saving parts as old ones wear out.
Mitigation Goal/Objective	Goal #1: Protecting Life and Property
Priority	Low
Funding Source(s)	City of Redwater
Estimated Cost	Low (0-10k)
Responsible Agency	Redwater Public Works
Estimated Completion Time	8 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This will conserve water and set examples for the residents of Redwater.

Redwater Extreme Heat Action #1	Conduct fan drives for low-income and elderly who cannot afford air conditioning.
Mitigation Goal/Objective	Goal#1: Protect Life and Property/Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of Redwater, County
Estimated Cost	Low (0-10k)
Responsible Agency	Redwater Mayor
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Much can be accomplished when the private and public sector joins hands.

Redwater Extreme Heat Action #2	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Low
Funding Source(s)	City of Redwater
Estimated Cost	Low (0-10k)
Responsible Agency	Mayor of Redwater
Estimated Completion Time	8 years
Effect on New Buildings	The workshop would contain information about insulation.
Effect on Existing Buildings	The workshop would contain information about insulation.
Comments:	

Redwater Wildfire Action #1	Develop and implement a vegetation management program to reduce the danger of wildfire reaching dwellings.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems/Goal #4: Partnerships and implementation
Priority	Medium
Funding Source(s)	City of Redwater
Estimated Cost	Medium (10-25k)
Responsible Agency	Mayor of Redwater
Estimated Completion Time	4 years
Effect on New Buildings	This would protect new buildings from encroaching wildfire.
Effect on Existing Buildings	This would protect new buildings from encroaching wildfire.
Comments:	

Redwater Wildfire Action #2	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Redwater
Estimated Cost	Low (0-10k)
Responsible Agency	Redwater Fire Chief
Estimated Completion Time	3 years
Effect on New Buildings	Out of control trash burning can destroy a new building
Effect on Existing Buildings	Out of control trash burning can destroy an existing building.
Comments:	Programs such as this can empower citizens to take precautionary action.

Wake Village Mitigation Actions 2017			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
FLOOD	Widen ditches to increase volume capacity of flash flood waters.	Re-worded	Continue in plan update
TORNADO	Develop and implement the Texas Individual Tornado Safe Room Program.	No Longer a concern	
TORNADO	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods to protect themselves, their family and their property.	On-going	Continue in plan update
THUNDERSTORM WIND	Create and enforce a city ordinance requiring approved mobile home tie-downs.	On-going	Continue in plan update
THUNDERSTORM WIND	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
WINTER STORM	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update
WINTER STORM	Mitigate protecting power lines from the impacts of winter storms by establishing standards for all utilities regarding tree pruning around lines.	On-going	Continue in plan update
HAIL	Install hail resistant film on the windows of critical facilities.	On-going	Continue in plan update
HAIL	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.	On-going	Continue in plan update
DROUGHT	Conduct Xeriscaping and water conservation workshops for the city.	On-going	Continue in plan update
DROUGHT	Develop and implement a drought contingency plan to include water conservation, building code requirements, and mandatory water rationing.	On-going	Continue in plan update
EXTREME HEAT	Develop and implement new cooling centers and advertise their locations for extreme heat events in existing, air-conditioned structures such as churches and county facilities.	Changed wording	Continue in plan update
EXTREME HEAT	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.	On-going	Continue in plan update
WILDFIRE	Develop and implement a vegetation management program to reduce the danger of wildfire reaching dwellings.	On-going	Continue in plan update
WILDFIRE	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.	On-going	Continue in plan update

Wake Village

NOTE: *All Wake Village projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.*

Wake Village Flood Action #1	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Wake Village City Manager
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Wake Village Flood Action #1	Widen and improve storm water basins and flumes to increase volume capacity of flash flood waters.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City of Wake Village and grant money
Estimated Cost	Medium (10k-25k)
Responsible Agency	Wake Village Public Works
Estimated Completion Time	3 years
Effect on New Buildings	This could protect new building from flash flooding
Effect on Existing Buildings	This could protect new building from flash flooding
Comments:	By widening ditches, especially in poor drainage areas the likelihood of flooding is decreased.

Wake Village Tornado Action #1	Conduct outreach activities to increase awareness of tornado risk including supporting severe weather awareness week.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Wake Village
Estimated Cost	Low (0k-10k)
Responsible Agency	Wake Village Fire Department/EMC
Estimated Completion Time	On-going
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Public knowledge of severe weather saves lives.

Wake Village Tornado Action #2	Develop and implement a public education program that will provide the public with understanding of their risk to Tornado events and the mitigation methods to protect themselves, their family and their property.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/ Goal #2: Public Awareness
Priority	High
Funding Source(s)	City
Estimated Cost	Low (0k-10k)
Responsible Agency	Wake Village Fire Chief/EMC
Estimated Completion Time	2 years
Effect on New Buildings	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
Effect on Existing Buildings	This could help reduce damage by implementing ideas about home and business protection from tornadic winds
Comments:	Educating the public is an integral part of mitigation.

Wake Village Thunderstorm Winds Action #1	Create and enforce a city ordinance requiring approved mobile home tie-downs.
Mitigation Goal/Objective	Goal #1: Protecting Life and Property
Priority	Medium
Funding Source(s)	City of Wake Village
Estimated Cost	Low (0-10k)
Responsible Agency	Wake Village City Manager
Estimated Completion Time	6 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This relatively inexpensive action can reduce mobile home damage and resident injury.

Wake Village Thunderstorm Winds Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Wake Village City Manager
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Wake Village Winter Storm Action #1	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Wake Village City Manager
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

Wake Village Winter Storm Action #2	Mitigate protecting power lines from the impacts of winter storms by establishing standards for all utilities regarding tree pruning around lines.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	Wake Village/County
Estimated Cost	Medium (10-25k)
Responsible Agency	Wake Village Public Works
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Wake Village Hail Action #1	Install hail resistant film on the windows of critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	City of Wake Village
Estimated Cost	Low (0-10k)
Responsible Agency	Wake Village Public Works
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Wake Village Hail Action #2	Conduct a workshop for residents about the prevalence of hailstorms and how to protect your home and property form hail damage.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness.
Priority	High
Funding Source(s)	City of Wake Village
Estimated Cost	Low (0-10k)
Responsible Agency	Wake Village Fire Dept./ EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Public awareness and education can minimize loss and protect lives by giving citizens the tools needed to take action.

Wake Village Drought Action #1	Conduct Xeriscaping and water conservation workshops for the city.
Mitigation Goal/Objective	Goal #2: Public Awareness/Goal #3: Natural Systems/Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	City of Wake Village
Estimated Cost	Low (0-10k)
Responsible Agency	Wake Village City Manager
Estimated Completion Time	6 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Using native and drought resistant plants can help curtail excessive water usage.

Wake Village Drought Action #2	Develop and implement a drought contingency plan to include water conservation, building code requirements, and mandatory water rationing.
Mitigation Goal/Objective	Goal#1: Protect Life and Property/Goal #2: Natural Systems/Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of Wake Village, County
Estimated Cost	Low (0-10k)
Responsible Agency	Wake Village City Manager
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Wake Village Extreme Heat Action #1	Develop and implement new cooling centers and advertise their locations for extreme heat events in existing, air-conditioned structures such as churches and city facilities. This would constitute a small investment yet provide a valuable service to people during episodes of extreme heat.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Wake Village Fire Dept.
Estimated Completion Time	7 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	This action will be more critical as the earth grows warmer.

Wake Village Extreme Heat Action #2	Provide workshops on how to mitigate infrastructure from the effects of extreme heat.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Low
Funding Source(s)	City of Wake Village
Estimated Cost	Low (0-10k)
Responsible Agency	Wake Village City Manager
Estimated Completion Time	8 years
Effect on New Buildings	The workshop would contain information about insulation.
Effect on Existing Buildings	The workshop would contain information about insulation.
Comments:	

Wake Village Wildfire Action #1	Develop and implement a vegetation management program to reduce the danger of wildfire reaching dwellings.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems/Goal #4: Partnerships and implementation
Priority	Medium
Funding Source(s)	City of Wake Village
Estimated Cost	Medium (10-25k)
Responsible Agency	Wake Village City Manager
Estimated Completion Time	4 years
Effect on New Buildings	This would protect new buildings from encroaching wildfire.
Effect on Existing Buildings	This would protect new buildings from encroaching wildfire.
Comments:	

Wake Village Wildfire Action #2	Purchase Emergency mobile generators to use with emergency equipment during power outages for critical facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium (10-25k)
Responsible Agency	Wake Village EMC
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Generators keep critical equipment operational during power outages.

TexAmericas Center was not a part of the 2017 Hazard Mitigation Plan, therefore, have no actions to review for update.

TexAmericas Center

NOTE: *All TexAmericas Center projects are subject to availability of federal and local funding as well as availability of local staff to administer the project.*

TexAmericas Center Flood Action #1	Establish a stormwater management plan for the TAC Campus.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	General Fund
Estimated Cost	Low (10-25k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	3-5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Reduce pollution and contamination during construction projects by controlling runoff of rainwater or melted snow into streets, lawns, rivers, and other sites.

TexAmericas Center Flood Action #2	Action: Establish a Floodplain Management Guidelines that will fulfill the requirements for NFIP.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	General Fund
Estimated Cost	Low (10-25k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	3-5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Flood Action #3	Action: Improve TAC's drainage, to include but not limited to, expanding and adding ditches, improving drainage structures, and maintaining existing drainageways.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	TexAmericas Center General Fund
Estimated Cost	High ($100k-$5 million)
Responsible Agency	TexAmericas Center
Estimated Completion Time	15-20 years (Ongoing)
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Tornado #1	Implement a warning siren system.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	High (150-750k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	7-10 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Sirens will warn citizens in real time of impending tornadic activity.

TexAmericas Center Tornado #2	Construct a community safe room/shelter.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium/High (100-750k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	7-15 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Will offer protection to individuals on the TAC Campus. May also be used as a heating/cooling facility.

TexAmericas Center Thunderstorm Winds #1	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant/General Operating Funds
Estimated Cost	Medium/High (100-250k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	5 -10 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Thunderstorm Winds #2	Implement a program to identify, inspect and manage hazardous trees.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant/General Operating Funds
Estimated Cost	Medium/High (75-250k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Winter Storms #1	Develop and implement a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	FEMA Grant/General Operating Funds
Estimated Cost	Medium (10-250k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	5-10 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Fires during winter storms also present a greater danger because water supplies may freeze and impede firefighting efforts.

TexAmericas Center Lightning Action #1	Install lightning arrestors on critical facilities and infrastructure.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant/General Operating Funds
Estimated Cost	Medium (10K-25k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	5-7 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Lightning Action #2	Implement a warning siren system.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant/General Operating Funds
Estimated Cost	High (150K-750k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	7-10 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Winter Storm Action #2	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant/General Operating Funds
Estimated Cost	Medium/High (100K-259k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	5-10 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Hailstorm #1	Install hail resistant roofing on existing TAC buildings as well as newly constructed buildings.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	General Operating Funds
Estimated Cost	High (100k-5 million)
Responsible Agency	TexAmericas Center
Estimated Completion Time	15 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Hailstorm #2	Install covered parking to protect TAC vehicles and equipment.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	General Operating Funds
Estimated Cost	Medium (75k-250k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	5 – 7 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Drought #1	Use Smartscape in existing and new developments landscapes; implement landscape techniques to stabilize soil; plant trees to create shaded areas for public
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	FEMA Grant/ General Operating Funds
Estimated Cost	Medium (100-250k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Utilize proposed infrastructure and water holding facilities for irrigation and dry hydrants.

TexAmericas Center Drought #2	Implement a drought emergency plan.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	General Operating Funds
Estimated Cost	Medium (10-25k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	2-5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Extreme Heat #1	Construct a community safe room/shelter.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	Medium/High (100-750k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	5 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Community Cooling Center

TexAmericas Center Extreme Heat #2	Provide shade structures in common public areas.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant/ General Operating Funds
Estimated Cost	Medium (10-25k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	7-15 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Earthquakes #1	Ensure new and existing utilities are strengthened and reinforced with insulation and flex piping to prevent disruption in services.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant/ General Operating Funds
Estimated Cost	Medium/High (100k-5 million)
Responsible Agency	TexAmericas Center
Estimated Completion Time	15 years & Ongoing
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	Engineering likely required.

TexAmericas Center Earthquakes #2	Use Geographic Information System to map potential hazard areas, at-risk structures, and associated hazards (e.g., liquefaction and landslides) to assess any high-risk areas.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant/ General Operating Funds
Estimated Cost	Medium/High (100-750k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	5-10 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

TexAmericas Center Wildfire #1	Develop and implement a Wildland-Urban Interface Code.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	General Operating Funds
Estimated Cost	Low/Medium (5-25k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	The Wildland Urban Interface (WUI) is an area of development that is susceptible to wildfires due to the number of structures located in an area with vegetation that can act as fuel for a wildfire. The WUI creates an environment in which fire can move readily between structural and vegetation fuels. The expansion of these areas has increased the likelihood that wildfires will threaten structures and people. This code can also assist with drought resistant vegetation, and tree/brush pruning for thunderstorms.

TexAmericas Center Wildfire #2	Establish a fuel break at the appropriate location(s).
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant/ General Operating Funds
Estimated Cost	Medium/High (100-750k)
Responsible Agency	TexAmericas Center
Estimated Completion Time	5-10 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	By decreasing the amount of vegetation that the fire must travel through, the risk of extreme fire behavior greatly depreciates.

SECTION V

Monitoring, Implementation, Evaluating, Updating and Integration

Bowie County and each participating jurisdiction will be responsible for implementing its own mitigation actions contained in Section IV. Each action has been assigned to a specific person or local government office that is responsible for implementing it. Bowie County and its jurisdictions have very lean budgets and staff. They rely on grants and federal funding for many of the improvements that are made within their borders. State law requires that the city council and the Commissioners' Court of Bowie County approve changes to budgets, improvement plans and mitigation plans. The governing bodies of each participating jurisdiction have adopted the mitigation action plan for their jurisdictions.

The Bowie County Commissioners will be responsible for adopting the Bowie County Mitigation Action Plan. (All jurisdictions must officially adopt and commit to implementation of the plan to be covered by the plan). This governing body has the authority to make public policy regarding natural hazards. The Bowie County Mitigation Plan will be submitted to the Texas Department of Emergency Management for review and upon their approval, TDEM will then submit the plan to the Federal Emergency Management Agency (FEMA) for review and final approval. The review will address the federal criteria outlined in FEMA Interim Final Rule 44 CFR Part 201. Once accepted by FEMA, Bowie County/City will formally adopt it and gain eligibility for Hazard Mitigation Grant Program funds.

Monitoring

To prevent issues regarding meeting the goals of The Bowie County Hazard Mitigation Action Plan it is agreed that the county and participating jurisdictions will evaluate the plan on an annual basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process will include a definite schedule and timeline and will identify the local agencies and organizations participating in plan evaluation.

Annually near the anniversary of the plan's approval, the Hazard Mitigation Committee Members will meet to monitor the progress of the mitigation actions for their respective communities. The County Judge or his/her designated appointee will organize the meeting. The public will be invited to attend and will be encouraged to provide feedback.

The meeting will review the progress of each action for each community to assess if the action is being completed in a timely fashion and if additional resources need to be directed to complete the actions. Monitoring the plan's actions is important to keep accountability for all team members.

They will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. This plan can and will pave the way for other plans, codes and programs. A written record of the annual meeting, along with any project reports, will be accomplished and kept on file in the county office. Every five years the updated plan will be submitted to the State Hazard Mitigation Officer.

The Status of the Hazard Mitigation Actions will be monitored by the designated emergency management coordinator for each jurisdiction on a quarterly basis. Preparation for the Five-Year Plan Update will begin no later than 1 year prior to the plan expirations date.

Implementation

The Bowie County Hazard Mitigation Committee will be responsible for coordinating implementation of the five-year plan action items and undertaking the formal review process. The county formed a Hazard Mitigation Committee that consists of members from local agencies, organizations, and citizens.

Upon formal adoption of the plan, hazard mitigation team members from each participating jurisdiction will review all comprehensive land use plans, capital improvement plans, Annual Budget Reviews, Emergency Operations or Management Plans, transportation plans, and any building codes to guide and control development. The hazard mitigation team members will work to integrate the hazard mitigation strategies into these other plans and codes. Each jurisdiction will conduct annual reviews of their comprehensive and land use plans and policies and analyze the need for any amendments in light of the approved hazard mitigation plan. Participating jurisdictions will ensure that capital improvement planning in the future will also contribute to the goals of this hazard mitigation plan to reduce the long-term risk to like and property from all hazards. Within one year of formal adoption of the hazard mitigation plan, existing planning mechanisms will be reviewed by each jurisdiction.

The Bowie County HMAP will be incorporated into a variety of new and existing planning mechanisms for **DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, TexAmericas Center and Bowie County government** including: grant applications, human resource manuals, ordinances, building codes and budgets. Each team member will communicate new ideas and issues found within the plan to the city boards. The county and its participating jurisdictions will consider how to best incorporate the plans together. This includes incorporating the mitigation plan into county and local comprehensive or capital improvement plans as they are developed.

Updating

Preparation for the Five-Year Plan Update will begin no later than 1 year prior to the plan expirations date. The County Judge or his/her designated appointee will organize a meeting with the Hazard Mitigation Committee Members to begin the update process. The committee

member will organize all data gathered during the monitoring and evaluation meetings to assist will the plan update. The committee members will also assess the need for additional participating jurisdictions for the plans update. The public will be invited to attend and will be encouraged to provide feedback.

Copies of the Plan will be kept at the county courthouse and all city halls as well as in the Administration building of TexAmericas Center. The existence and location of these copies will be publicized in the appropriate local papers. The plan includes the address and the phone number of the county department responsible for keeping track of public comments on the Plan.

Bowie County is committed to supporting the cities, communities and other jurisdictions in the planning area as they implement their mitigation plans. Bowie County will review and revise as needed, the long-range goals and objectives in its strategic plan and budgets to ensure that they are consistent with this mitigation action plan. Bowie County will work with participating jurisdictions to advance the goals of the is hazard mitigation plan through its routine, ongoing, long-range planning, budgeting and work processes.

Integration

Unincorporated Bowie County population 35,075. The following are Bowie County's authorities, policies, programs and resources available to accomplish hazard mitigation action and strategies. Bowie County has a county judge and four commissioners. It has volunteer fire departments and a public works department. There is a county emergency management coordinator. Unincorporated Bowie County will integrate data and action recommendations into the existing maintenance program. The county judge or county commissioner will propose the integration to the County which will vote on it at the monthly city council meeting. The county judge will sign this into action after a majority vote. To improve and expand capabilities, Bowie County should establish a team to develop public-private initiatives addressing disaster related issues.

DeKalb, population 1,527, The following are the city of DeKalb's authorities, policies, programs and resources available to accomplish hazard mitigation actions and strategies. The city of DeKalb has a mayor, a fire chief, and a police department, and maintenance department. DeKalb has building codes, and zoning ordinances DeKalb will integrate data and action recommendations into the existing capital improvements plan so that hazard mitigation will always be a consideration for future growth. A city council member or the mayor will propose the plans integration into the city council who will vote on it at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the City of DeKalb should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan. They could benefit from additional training and staff to support mitigation plan activities.

Hooks, population 2,518. The following are the city of Hooks authorities, policies, programs and resources available to accomplish hazard mitigation actions and strategies. The city of Hooks has a mayor, a fire chief, who also serves as the emergency management coordinator, and a maintenance program and chief building official. The city of Hooks will integrate data and action recommendations from the mitigation plan into the existing capital implements plan into the local emergency operations plan. A city council member or the mayor will propose the plans integration to the city council who will vote on it at the monthly city council meeting. The mayor will sign thin into action after a majority vote. To improve and expand the City of Hooks should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations. They could also benefit from additional training and staff to support mitigation plan activities.

Leary, Population 433, The following are the city of Leary's authorities, policies, programs and resources available to accomplish hazard mitigation actions and strategies. The city of Leary has a mayor and a city council the jurisdiction of Leary will integrate data and action recommendations into the existing maintenance program. The city of Leary will integrate data and action recommendations from the mitigation plan into the existing capital implements plan and into the local emergency operations plan. A city council member or the mayor will propose it to the city council who will vote on it at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the City of Leary should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations.

Maud, population, 977. The following are the city of Maud's authorities, policies, programs and resources available to accomplish hazard mitigation actions and strategies. The city of Maud has a mayor, a fire chief, who also serves as the emergency management coordinator, and a public works department as well as a police officer. The city of Maud will integrate data and actions recommendations into elements of the local emergency management plan and the zoning ordinance. A city council member or the mayor will submit proposals to the city council who will vote on it at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the City of Maud should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations.

Nash, population 3,814. The following are the city of Nash's authorities, policies, programs and resources available to accomplish hazard mitigation action and strategies. The city of Nash has a mayor, city manager, fire department, police department, and public works department. It also has building codes and zoning ordinances. The city of Nash will integrate mitigation data and action recommendations into elements of the local master plan. The mayor will make this proposal at the quarterly city council meeting. The mayor will sign this update upon the city council's majority vote. To improve and expand capabilities the City of Nash should establish a

Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations. They could also benefit from additional training and staff to support mitigation plan activities.

New Boston, population 4,612. The following are the city of New Boston's authorities, policies, programs and resources available to accomplish hazard mitigation actions and strategies. New Boston has a mayor and a city manager. It also has a fire department, a police department and a public works department. International building codes are in place and enforced. New Boston will integrate actions and recommendations of the mitigation plan into the Capital improvements plan and the master plan the city manager will propose these actions at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the city of New Boston should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations. They could also benefit from additional training and staff to support mitigation plan activities.

Red Lick, population 946. The following are the city of Red Lick's authorities, policies, programs and resources available to accomplish hazard mitigation action and strategies. The city of Red Lick has a mayor, and a city council. The city of Red Lick will integrate data and action recommendations from the mitigation plan into the existing capital implements plan and into the local emergency operations plan. The Emergency Management Coordinator will propose this at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the City of Red Lick should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations.

Redwater, population 853. The following are the city of Redwater's authorities, policies, programs and resources available to accomplish hazard mitigation action and strategies. Redwater has a mayor, a city council and a fire chief. Redwater will integrate actions and recommendations of the mitigation plan into the Redwater Capital Improvement Plan. The mayor or city council member will propose this action at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the City of Redwater should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations. They could also benefit from additional training and staff to support mitigation plan activities

Wake Village, population 5,945: The following are the city of Wake Village's authorities, policies, programs and resources available to accomplish hazard mitigation action and strategies. Wake Village has a mayor and a city manager. It also has a fire department, a police department and a public works department. International building codes are in place and enforced. Wake Village will integrate actions and recommendations of the mitigation plan into the Capital improvements plan and the master plan the city manager will propose these actions at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the city of Wake Village should establish a Hazard

Mitigation Team to address their Hazard Mitigation Plan recommendations. They could also benefit from additional training and staff to support mitigation plan activities

TexAmericas Center, the following are TexAmericas Center's authorities, policies, programs and resources available to accomplish hazard mitigation action and strategies. TexAmericas has a Chief Executive Officer, Chief Operations Officer and Vice President of Finance. International building codes are in place and enforced. TexAmericas Center will integrate actions and recommendations of the mitigation plan into their Policy Documents and the Chief Executive Officer will propose these actions at the monthly Board of Directors Meeting. The Executive Director will sign this into action after a majority vote. To improve and expand capabilities, TexAmericas Center should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations. They could also benefit from additional training and staff to support mitigation plan activities.

"The bureaucracy is expanding to meet the needs of the expanding bureaucracy. "
Oscar Wilde

R E S O L U T I O N

Bowie County

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Updated and Revised Mitigation Action Plan including its review and maintenance, for the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center in accordance with this resolution.

RESOLVED THIS _____ DAY OF_____, 2022

_____
County Judge, Bowie County, Texas

ATTEST_____
County Clerk

R E S O L U T I O N

DeKalb

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Updated and Revised Mitigation Action Plan including its review and maintenance, for the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center in accordance with this resolution.

RESOLVED THIS _____ DAY OF_____, 2022

_____
Mayor, DeKalb, Texas

ATTEST_____
City Secretary

R E S O L U T I O N

Hooks

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Updated and Revised Mitigation Action Plan including its review and maintenance, for the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center in accordance with this resolution.

RESOLVED THIS _____ DAY OF_____, 2022

_____
Mayor, Hooks, Texas

ATTEST_____
City Secretary

R E S O L U T I O N

Leary

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Updated and Revised Mitigation Action Plan including its review and maintenance, for the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center in accordance with this resolution.

RESOLVED THIS _____ DAY OF_____, 2022

_____
Mayor, Leary, Texas

ATTEST_____
City Secretary

R E S O L U T I O N

Maud

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Updated and Revised Mitigation Action Plan including its review and maintenance, for the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center in accordance with this resolution.

RESOLVED THIS _____ DAY OF_____, 2022

_____
Mayor, Maud, Texas

ATTEST_____
City Secretary

R E S O L U T I O N

Nash

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Updated and Revised Mitigation Action Plan including its review and maintenance, for the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center in accordance with this resolution.

RESOLVED THIS _____ DAY OF_____, 2022

_____
Mayor, Nash, Texas

ATTEST_____
City Secretary

R E S O L U T I O N

New Boston

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Updated and Revised Mitigation Action Plan including its review and maintenance, for the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center in accordance with this resolution.

RESOLVED THIS _____ DAY OF_____, 2022

_____

Mayor, New Boston, Texas

ATTEST_____

City Secretary

R E S O L U T I O N

Red Lick

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Updated and Revised Mitigation Action Plan including its review and maintenance, for the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center in accordance with this resolution.

RESOLVED THIS _____ DAY OF_____, 2022

_____

Mayor, Red Lick, Texas

ATTEST_____

City Secretary

R E S O L U T I O N

Redwater

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Updated and Revised Mitigation Action Plan including its review and maintenance, for the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center in accordance with this resolution.

RESOLVED THIS _____ DAY OF_____, 2022

_____

Mayor, Redwater, Texas

ATTEST_____

City Secretary

R E S O L U T I O N

Wake Village

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Updated and Revised Mitigation Action Plan including its review and maintenance, for the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center in accordance with this resolution.

RESOLVED THIS _____ DAY OF_____, 2022

_____
Mayor, Wake Village, Texas

ATTEST_____
City Secretary

R E S O L U T I O N

TexAmericas Center

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Updated and Revised Mitigation Action Plan including its review and maintenance, for the County of Bowie, the Cities of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, and Wake Village and the special district TexAmericas Center in accordance with this resolution.

RESOLVED THIS _____ DAY OF_____, 2022

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President/CEO, TexAmericas Center

ATTEST_____

Public Notice Page

Sample Stakeholder email

Judge John Doe,

The Ark-Tex Council of Governments, Bowie County, and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, New Boston, Red Lick, Redwater, Wake Village, and TexAmericas Center are preparing a Hazard Mitigation Plan Five-Year Update. Your county or organization has been identified as a possible stakeholder in the plan and we invite you to participate in our plan development. Hazard Mitigation is defined as any sustained action taken to reduce or eliminate the long-term risk to life and property from hazard events.

Emergency management coordinators, county judges, non-profit organizations, law enforcement, local civil servants, nonprofit groups, and other interested parties are invited to participate. To review a *draft* of the plan, go to BOWIE COUNTY TEXAS. We will be happy to consider your interests, questions, concerns, suggestions, and participation in the development of this plan. You may contact me by phone or by e-mail at your convenience.

To find out more about hazard mitigation click on or paste the following link:
Hazard Mitigation Planning for Local Communities (fema.gov)

If you need additional information, feel free to contact my office.

Don Shipp
Hazard Mitigation Planner

Ark-Tex Council of Governments

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