HAZARD MITIGATION ACTION PLAN

FOR

RED RIVER COUNTY TEXAS

AND THE JURISDICTIONS OF

AVERY, BOGATA, CLARKSVILLE, & DETROIT

Five Year Update

INCORPORATED AND UNINCORPORATED AREAS

DEVELOPED BY ARK-TEX COUNCIL OF GOVERNMENTS

2026

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SECTION I: Plan, Background and Purpose

PURPOSE

The goal of all mitigation efforts is long-term risk 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 following 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 Red River 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 Red River County Emergency Management Plan has been developed, and the assessment level of planning preparedness is Intermediate. **The 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 careful development, monitoring, and integration of emergency management and hazard mitigation planning is testament to its standing commitment to make the jurisdictions resistant to disaster 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 considered also. 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 were considered in the plan development.

- 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

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 Red River 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 summary of ATCOG 's responsibilities for the plan:

- Assign a lead planning staff member to provide technical assistance and necessary data to the Red River 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 Red River 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 Red River 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 Red River 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 Red River 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.

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 Red River County for Hazards. The Ark Tex Council of governments worked hand in hand with the jurisdictions within the planning area of Red River 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.

- ✓ The Hazard Mitigation Planning Process was explained to each participant. 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 Red River 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 jurisdiction's 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 use 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.

Developing Mitigation Strategies
Written Strategies were developed to demonstrate how Red River 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) 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.

Red River County Appraisal District provided information on property values.

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 State of Texas Hazard Mitigation Plan helped to develop the common language used in the Red River Mitigation Plans.

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

Texas A & M Forest Service provided information for the wildfire section of the plan.

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

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

FEMA National Risk Index provided information for the probability of an event occurring.

Team Members were informed of the progress, discussed issues, and were notified of any changes to FEMA guidelines for the creation of the plan. Existing plans were reviewed to determine how they might be incorporated into HMAP. The Emergency Management Coordinator of Red River County and the Mayors (or their appointees) of Avery, Bogata, Clarksville, and Detroit will oversee the Mitigation Plan.

Adoption, Implementation and Maintenance:
This describes the system that Red River County and the participating jurisdictions have established to monitor the plan; provides a description 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. Red River County entered into a contract with The Ark-Tex Council of Governments 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 have 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 at the County seat and at City Hall of Avery, Bogata, Clarksville, and Detroit.

RED RIVER COUNTY

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. Red River 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 the County Judge and attorneys, County and District Clerks, County Treasurer, Tax Assessor-Collector, Justices of the Peace, and Constables. The county judge and precinct commissioners conduct the general business of the county and oversee financial matters.

Red River County is separated from Oklahoma by the Red River and from Arkansas by Bowie County. Clarksville, the county seat and largest town, is sixty miles northwest of Texarkana. The county's center lies at 33°37' north latitude and 95°01' west longitude. Red River County occupies 1,054 square miles of the East Texas timberlands. The terrain is gently rolling with an elevation ranging from 300 to 500 feet above sea level. The county is drained by the Red River and the Sulphur River, which form its northern and southern boundaries. Most of the soils in the county are either loamy with a clayey subsoil or clayey. Mineral resources include oil, gas, clay, industrial sand, and chalk. Temperatures range from an average high of 94° F in July to an average low of 30° in January. Rainfall averages forty-six inches a year, and the growing season averages 234 days annually. (source: tshaonline.org)

Economic Considerations

Red River County and the jurisdictions of Avery, Bogata, Clarksville, and Detroit have very limited budgets. Red River County has a total population of 11,587. They mostly have Volunteer Fire Departments. Their tax base is low with limited annual budgets. They will have to rely on grants and volunteerism to accomplish the bulk of the projects. Building codes are nearly non-existent and they are limited to a few individuals that have multiple job responsibilities.

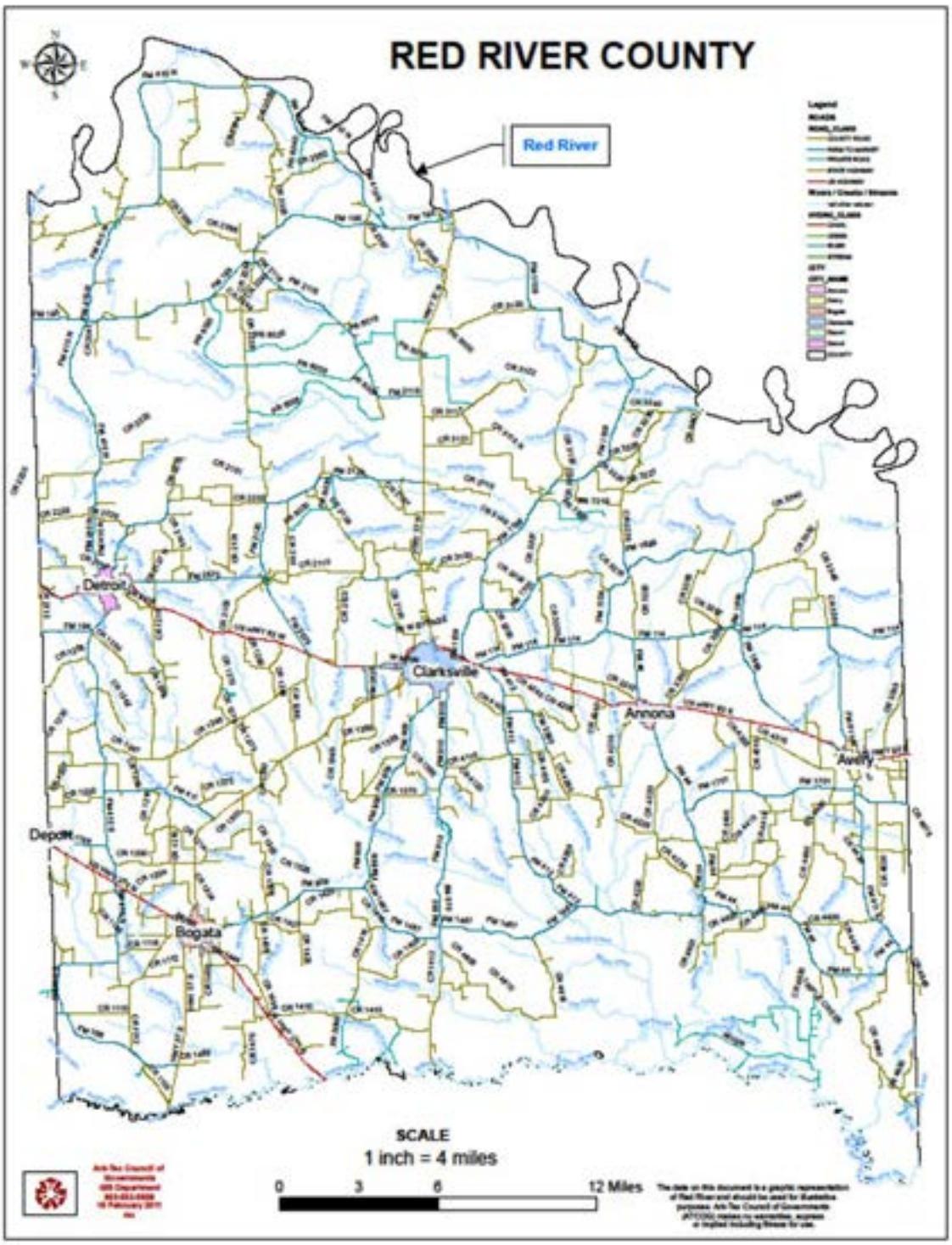
Red River County Jurisdictions Ranked by Population		
Ranking	Jurisdiction	Population
1	Red River County Unincorporated	6,145
2	Clarksville	3,285
3	Bogata	1,108
4	Detroit	628
5	Avery	421

Demographic Data

Estimates July 1, 2023	Red River County, Texas	State of Texas
Age and Sex		
Persons under 5 years (%)	5.4%	6.3%
Persons under 18 years (%)	20.7%	24.8%
Persons 65 years and over (%)	26.1%	13.4%
Female persons (%)	51.0%	50.0%
Race and Hispanic Origin		
White alone (%)	79.3%	77.4%
Black or African American alone (%)	15.7%	13.4%
American Indian and Alaska Native alone (%)	1.9%	1.1%
Asian alone (%)	0.5%	5.7%
Native Hawaiian and Other Pacific Islander alone (%)	0%	0.2%
Two or More Races (%)	2.5%	2.3%
Hispanic or Latina (%)	8.0%	40.2%
White alone, not Hispanic or Latino (%)	73.1%	39.8%
Health		
With a disability, under 65 (2018-2022) (%)	11.3%	8.2%
Persons without health insurance, under 65 (%)	19.1%	18.9%
Population Characteristics		
Foreign born persons, 2018-2022 (%)	3.5%	17.1%
Veterans, 2018-2022	822	1,416,973
Education		
High school graduate or higher, persons age 25 years+, 2018-2022 (%)	85.1%	85.2%
Bachelor's degree or higher, persons age 25 years+, 2018-2022 (%)	14.0%	32.3%
Economy		
In civilian labor force, total population age 16 years+, 2018-2022 (%)	47.2%	64.6%
In civilian labor force, female, population age 16 years+, 2018-2022 (%)	40.7%	58.5%
Income and Poverty		
Persons in poverty (%)	19.3%	14.0%
Median household income (in 2022 dollars), 2018-2022	$44,583	$73,035
Housing		
Owner-occupied housing unit rate, 2018-2022 (%)	75.0%	62.4%
Median value of owner-occupied housing units, (2018-2022)	$113,600	$238,000
Median Gross Rent, 2018-2022	$688	$1,251
Computer and Internet Use		
Households with a computer, 2018-2022 (%)	81.0%	94.8%
Households with a broadband Internet subscription 2018-2022 (%)	67.5%	88.4%
Transportation		
Mean travel time to work (minutes), worker age 16+, 2018-2022	28.4	26.6

Data Source: https://www.census.gov/quickfacts/fact/table/redrivercountytexas,US/PST045223

Red River County


RED RIVER COUNTY
Red River
Detroit
Clarksville
Annona
Avery
Bogata
SCALE
1 inch = 4 miles
0
3
6
12 Miles

PARTICIPATING JURISDICTIONS

The Red River County Hazard Mitigation Plan consists of Red River County and the jurisdictions of Avery, Bogata, Clarksville, and Detroit. The plan is a result of a joint effort and each of these entities participated in the formation of this plan and update. The Hazard Mitigation 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 experiences were evident in the team members, thus providing 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. A kick-off meeting was held at the Red River County Courthouse on September 10, 2025, at 10:30am. Representatives of Red River County, Clarksville, and Detroit were in attendance. A second kick-off meeting was held at Ark-Tex Council of Governments on October 1, 2025, at 1:30pm. Representative of Avery was in attendance. A third and final kick-off meeting was held and Bogata City Hall on October 2, 2025, at 2:30pm. Representative of Bogata was in attendance.

HAZARD MITIGATION TEAM MEMBERS

EMC	Red River County
Red River County Fire Fighters Association	Red River County
Mayor	City of Avery
Mayor	City of Bogata
Mayor	City of Clarksville
City Secretary	City of Detroit

Red River County Emergency Management Coordinator. He was the main contact person for the Red River County Hazard Mitigation Update. He participated in the Hazard Mitigation Kickoff Meeting and was available to provide information on Hazards and Mitigation Actions. He also provided information on the Fire Departments and Capability Assessment for the plan. He reviewed and provided input on past events. He was available for correspondence through phone and email.

Mayor of Avery. He participated in a Hazard Mitigation Kickoff Meeting and was available to provide information on Hazards and Mitigation Actions. He was available for correspondence through phone and email.

Mayor of Bogata. He participated in a Hazard Mitigation Kickoff Meeting and was available to provide information on Hazards and Mitigation Actions. He reviewed and provided input on past events and capability assessment. He was available for correspondence through phone and email.

Mayor of Clarksville. She participated in a Hazard Mitigation Kickoff Meeting and was available to provide information on Hazards and Mitigation Actions. She reviewed and provided input on past events and capability assessment. She was available for correspondence through phone and email.

City Secretary of Detroit. She participated in a Hazard Mitigation Kickoff Meeting and was available to provide information on Hazards and Mitigation Actions. She reviewed and provided input on past events and capability assessment. She was available for correspondence through phone or email.

Community Steakholders

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, members of the school system, the local hospital, and local non-profit agency. A draft of the plan was sent to stakeholders on insert date.

No identified stakeholders replied to the emails or the posting notice.

Area Stakeholder Contacts

Title	Company	Location	Type of Contact
County Judge	Lamar County	Paris, TX	email
County Judge	Bowie County	New Boston, TX	email
County Judge	Franklin County	Mt. Vernon, TX	email
County Judge	Titus County	Mt. Pleasant, TX	email
County Sheriff	Rd River County	Clarksville, TX	email
Chief of Police	Clarksville Police Department	Clarksville, TX	email
Superintendent	Avery ISD	Avery, TX	email
Superintendent	Clarksville ISD	Clarksville, TX	email
Superintendent	Detroit ISD	Detroit, TX	email
Superintendent	Rivercrest ISD	Bogata, TX	email
Director	HUB Community Center	Clarksville, TX	email
Director	Health Department	Clarksville, TX	email
Executive Director	Red Cross	Paris, TX	email
Director	Housing Authority	Clarksville, TX	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 Red River County to participate in planning and to review the plan.

In October of 2025 Red River County posted notice announcing that Red River County was in the process of updating their Hazard Mitigation Plan and requested public comments on natural hazards to be profiled and mitigation actions to be implemented. On DATE, a plan draft was posted on the Red River County website. Contact information was posted on the site. Notice was posted at the courthouse on DATE, and in the local newspaper running DATE, and DATE. There was one public comment submitted regarding Mitigation Actions to include, and these were reviewed and considered for inclusion in the plan.

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 scientists (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.

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.

Hazard Identification

All Red River County including the cities of Avery, Bogata, Clarksville, and Detroit are susceptible to several possible natural hazards. According to the FEMA National Risk Index Red River Counties risk for all hazards is relatively very low. Red River County ranks in the 26th percentile of U.S. Counties 24th percentile of Texas Counties. The Hazard Mitigation Team, with the assistance of the Ark-Tex Council of Governments Hazard Mitigation Planners, conducted a comprehensive Hazard Analysis beginning in October 2025. 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:

- Dam Failure
- Drought
- Extreme Heat
- Flood
- Hailstorm
- Lightning
- Severe Wind
- Severe Winter Weather
- Tornado
- Wildfire

AREAS OF RISK

Hazards with distinct area of risk	Hazards without distinct area of risk
Dam Failure	Drought
Flood	Extreme Heat
Wildfire	Hailstorm
	Lightning
	Severe Wind
	Severe Winter Weather
	Tornado

Hazards Listed in the Texas Hazard Mitigation Plan Not Included in the Red River County Plan

Hazard	Reason for Exclusion
Coastal erosion	Red River County is over 300 miles from the coast. Coastal erosion is not an issue for Red River County. The planning area has no history of Coastal erosion hazard: therefore, no impacts are expected in the future.
Earthquakes	There have been 0 earthquakes in Red River County since 1931. The probability of a 5.0 earthquake within the next 50 years is .61%.
Expansive soils	There is no evidence that expansive soil is an issue for Red River County. The planning area has no history of expansive soils hazard; therefore, no impacts are expected in the future.
Tropical storms	Red River County is over 300 miles from the Texas coast. Tropical storms are not an issue for Red River County. The planning area has no history of Tropical Storms hazards: therefore, no impacts are expected in the future.
Land subsidence	There is no evidence that land subsidence is an issue for Red River County. The planning area has no history of Land Subsidence hazard; therefore, no impacts are expected in the future.
Severe Coastal Flood	Red River County is over 300 miles from the Texas coast. Severe Coastal Flooding is not an issue for Red River County. The planning area has no history of Sever Coastal Flooding 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 Red River 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
Dam Failure	• Hazard Ratings	• Multiple dams in the county
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
Flood	• Review of 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
Hailstorm	• Public Input • National Weather Service • Past History • NCDC Data Base	• Public Concern • Past History • Frequency
Lightning	• Public Input • National Weather Service • Past History • NCDC Data Base	• Public Concern • Past History • Frequency
Severe Winds	• NOAA reports • Public Input • Newspaper Accounts	• Wind shares are an ongoing problem • Severe thunderstorms with accompanying high winds occur every year
Severe Winter Weather	• 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 • The population is not educated about dealing with outages etc.
Tornado	• Public Input • National Weather Service • Past History • NCDC Data Base	• Public Concern • Past History • Frequency
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

Determining Risk

The following tables represent the factors used to calculate overall risk in Red River 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 not 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 is probable in the next year 1/1 = 1.00 (Greater than .33)
Likely Index Value = 3	Event is 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 is 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 is probable in next 10 years 1/10 = 0.10 (0.10 or less)

Formula for probability: Number of events divided by the number 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 are 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 Red River County.

RED RIVER COUNTY				
Structure Type	$ Value	75%	50%	25%
Residential	$365,672,831	$274,254,623	$182,836,416	$91,418,208
Commercial	$37,997,484	$28,498,113	$18,998,742	$9,499,371
Industrial	$62,806,890	$47,105,168	$31,403,445	$15,701,723
Exempt Property	$7,324,646	$5,493,485	$3,662,323	$1,831,162
Totals	$473,801,851	$355,351,388	$236,900,926	$118,450,463

AVERY				
Structure Type	$ Value	75%	50%	25%
Residential	$19,464,186	$14,598,140	$9,732,093	$4,866,047
Commercial	$1,756,278	$1,317,209	$878,139	$439,070
Industrial	$0	$0	$0	$0
Exempt Property	$9,030	$6,773	$4,515	$2,258
Totals	$21,229,494	$15,922,121	$10,614,747	$5,307,374

BOGATA				
Structure Type	$ Value	75%	50%	25%
Residential	$45,650,267	$34,237,700	$22,825,134	$11,412,567
Commercial	$6,769,844	$5,077,383	$3,384,922	$1,692,461
Industrial	$623,924	$467,943	$311,962	$155,981
Exempt Property	$630,372	$472,779	$315,186	$157,593
Totals	$53,674,407	$40,255,805	$26,837,204	$13,418,602

CLARKSVILLE				
Structure Type	$ Value	75%	50%	25%
Residential	$110,788,610	$83,091,458	$55,394,305	$27,697,153
Commercial	$22,031,320	$16,523,490	$11,015,660	$5,507,830
Industrial	$8,516,633	$6,387,475	$4,258,317	$2,129,158
Exempt Property	$4,071,018	$3,053,264	$2,035,509	$1,017,755
Totals	$145,407,581	$109,055,686	$72,703,791	$36,351,895

DETROIT				
Structure Type	$ Value	75%	50%	25%
Residential	$27,669,401	$20,752,051	$13,834,701	$6,917,350
Commercial	$1,854,779	$1,391,084	$927,390	$463,695
Industrial	$564,156	$423,117	$282,078	$141,039
Exempt Property	$277,318	$207,989	$138,659	$69,330
Totals	$30,365,654	$22,774,241	$15,182,827	$7,591,414

Hazard Assessment Elements

The Hazard Profiles, found in the following sections, were prepared for each identified natural hazard, and assessed the hazard per the following 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. **Previous Occurrences:** Previous Occurrences describe the hazard in terms of what, when, where past events have occurred and the extent of damage.
3. **Location:** The location or geographic area affected by each natural hazard along with a map of the area affected.
4. **Probability:** Probability of Future Events described how likely a hazard is to occur within the county and jurisdictions.
5. **Impact:** Impact describes the hazard's potential severity that the hazard event is capable of inflicting upon 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.
7. **Extent:** Extent describes the expected range or intensity of each hazard.
8. **Summary:** 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, 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

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 more than 90,000 dams nationwide, according to 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.

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+

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 7,381 dams listed in the National Inventory of Dams, and 45 of those dams are located within Red River County.

DAMS IN RED RIVER COUNTY

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

Dam Name	NID ID
Langford Creek WS SCS Site 1 Dam	TX03084
Langford Creek WS SCS Site 12 Dam	TX03090
Langford Creek WS SCS Site 2 Dam	TX03085
Langford Creek WS SCS Site 3 Dam	TX03099
Langford Creek WS SCS Site 4 Dam	TX03100
Arrowhead Ranch Lake Dam	TX03097
Hall Lake Dam	TX03107
Langford Creek WS SCS Site 11 Dam	TX03089
Red River Country Club Dam	TX03093
Cowper Lake Dam	TX05193
Magic Valley Lake Dam	TX03079
Russell Lake 2 Dam	TX03105
Langford Creek WS SCS Site 8 Dam	TX03087
Line Branch 20 Dam	TX06063
Welch Gss	TX06052
Key Lake Dam	TX03080
Cowper Gss	TX06055
Langford Creek WS SCS Site 10 Dam	TX03088
City Lake Dam	TX05194
Russell Gss	TX06056
Ralph Elliot Dam	TX06039
Rivercrest Dam	TX03082
North Lake Dam	TX03098
Langford Creek WS SCS Site 13 Dam	TX03091
Line Branch 21 Dam	TX06065
Stroble Gss	TX06057
Rogers Lake Dam	TX03106
Hays Lake Dam	TX03078
Langford Creek WS SCS Site 7 Dam	TX03086
Langford Creek WS SCS Site 14 Dam	TX03092
Igo Lake Dam No 1	TX03110
Tallant Lake Dam	TX03109
Bill Jones Gss	TX06050
Issacs Ranch Dam	TX06061
Stiles Gss	TX06053
Brooks Lake Dam	TX03096
Jan Kay Lake Dam	TX03095
Edwards Dam	TX06782
Igo Dam No 2	TX03108
Harvey Lake Dam	TX03103
Bentsen Lake Dam	TX03102
Harvey Estate Dam	TX03081
Dalton Moore Pond Dam	TX05932
Joe Hart Gss	TX06059
Dearborn Lake Dam	TX03094
Bernard Lake Dam	TX03083
Crystal Lake Dam	TX03101

RED RIVER COUNTY DAM FAILURE RISK					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Red River Unincorporated	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
Avery	Limited PRI=3	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
Bogata	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
Clarksville	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45
Detroit	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI=1	< 6 hrs. PRI=1	Low 1.45

RED RIVER COUNTY CRITICAL FACILITIES

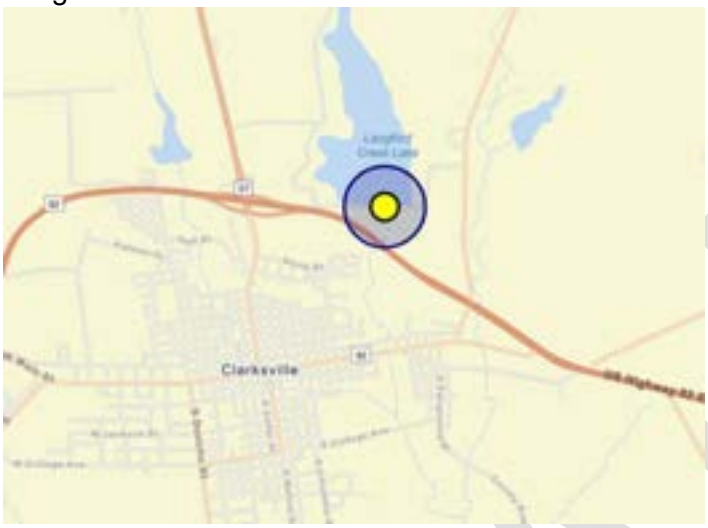
Facility	Red River Co	Avery	Bogata	Clarksville	Detroit
City Hall		1	1	1	1
Fire Department	6	1	1		
Civic Center					
Govt. Facility				4	
Wastewater plant		1	1	1	
Corrections Facility				1	
Hospital					
Maintenance Barn	4		1	1	1
Post Office		1	1	1	1
Water Tower	4	1	2	2	
Police Station			1	1	
Sheriff Office				1	
EMS				1	
Public School		1	1	1	1
Water Treatment Plant				1	
County Seat				1	

All critical facilities are vulnerable to the effects of dam failure.

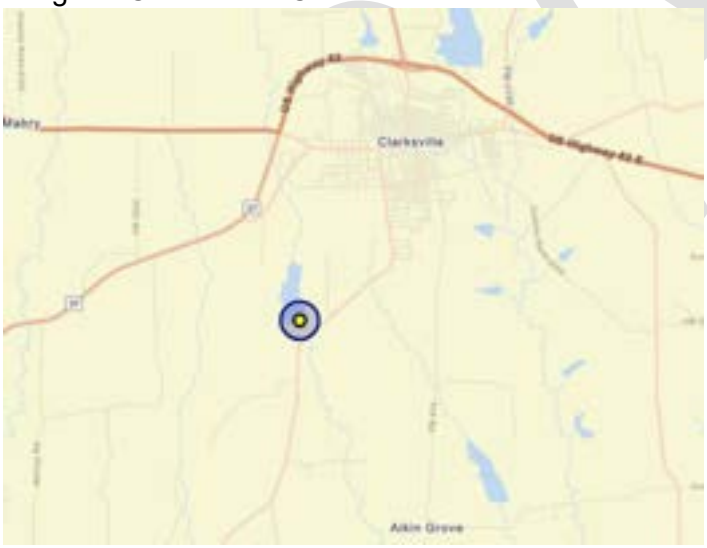
Location:

Langford Creek WS SCS Site 1, 2, 3, 4 and 12 Dam are high-hazard potential dams in Red River County listed in the National Inventory of Dams. Sites 3, 4 and 12 are in rural areas with no possibility of inundation impacts on critical infrastructure or populations. Sites 1 and 2 may pose risk, but data is still lacking as of this update.

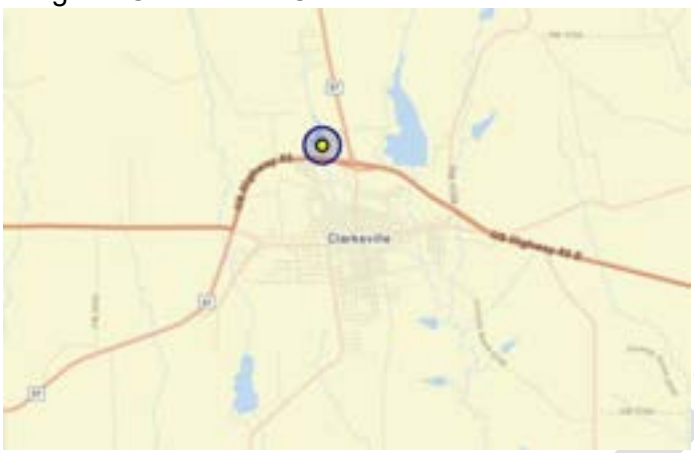
Langford Creek WS SCS Site 1 Dam



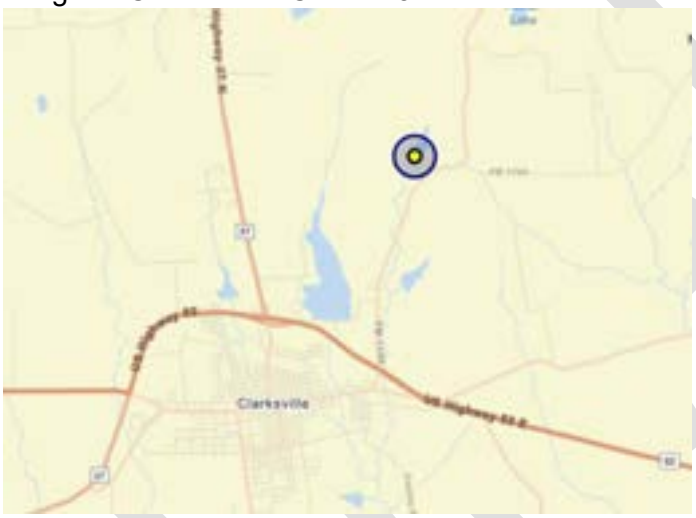
Langford Creek WS SCS Site 12 Dam



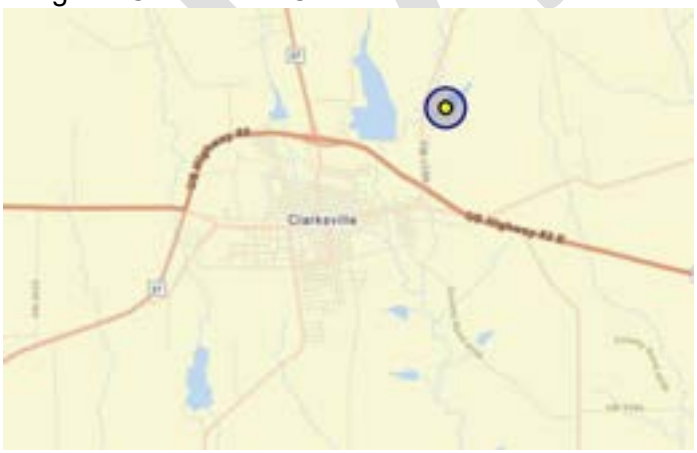
Langford Creek WS SCS Site 2 Dam



Langford Creek WS SCS Site 3 Dam



Langford Creek WS SCS Site 4 Dam



Source: National Inventory of Dams

Historical Occurrences: There is no local history of dam failure in Red River County.

Major Declarations for Planning Area: There were no major declarations for dam failure.

Probability: There is no documented dam failure in Red River County. Based on historical occurrences of dam failures, the probability of a dam failure somewhere in Red River County is considered unlikely.

Dam safety is increasingly subjected to the influence of climate change. Its impacts must be assessed through the integration of the various effects acting on each aspect, considering their interdependencies, rather than just a simple accumulation of separate impacts. (doaj.org)

Impact: 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). The 2023 State of Texas Hazard Mitigation Plan Update was also reviewed to determine the risk of dam failure. Review of the State Plan indicates that in Texas the most vulnerable jurisdictions are the cluster of densely populated metropolitan areas in the Texas Triangle (Austin, Dallas/Fort-Worth, Houston, and San Antonio). The effects of climate change, changes in population and changes in land development are not expected to affect the impact of a dam failure event.

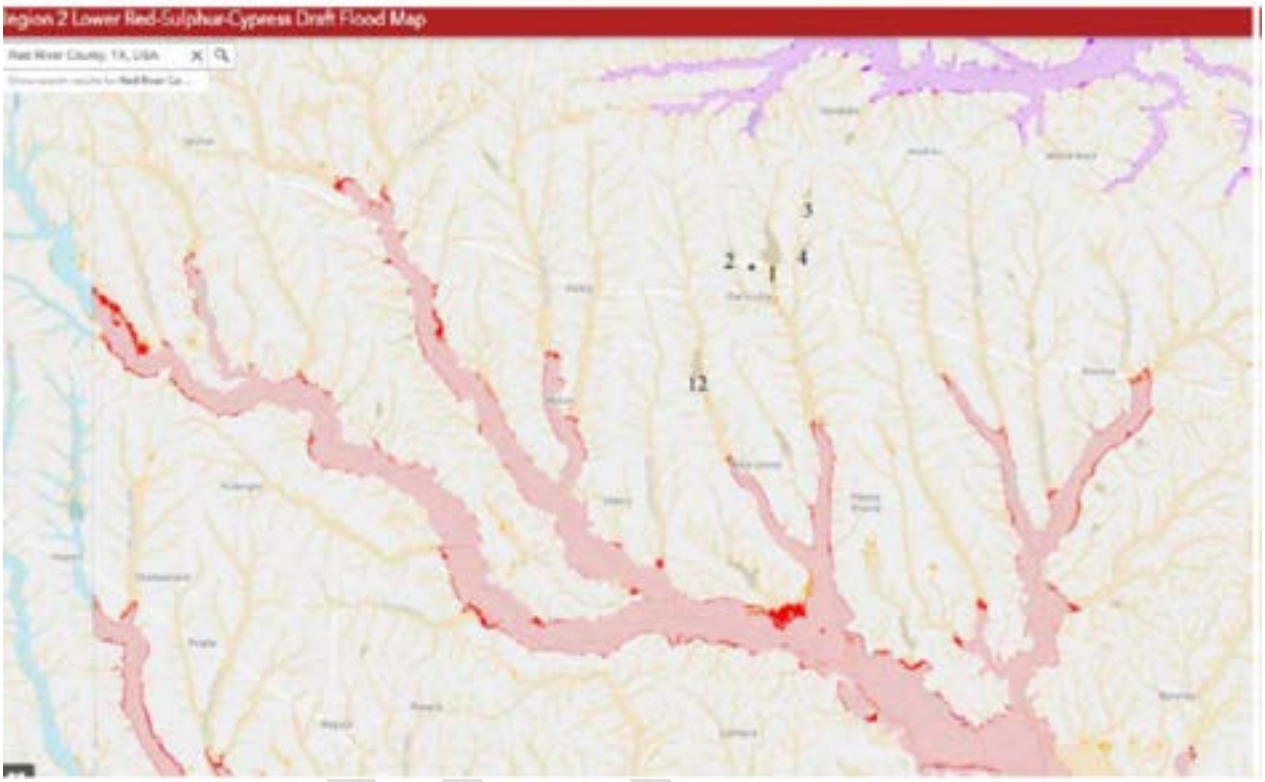
Estimated Property Loss at 25%		
Red River County	Residential	$91,418,208
Avery	Residential	$4,866,047
Bogata	Residential	$11,412,567
Clarksville	Residential	$27,697,153
Detroit	Residential	$6,917,350

Vulnerability: According to the Texas Dam Safety Program, heavy rains after a severe drought leave earthen dams vulnerable. If the dam failure is extensive, a large amount of water would enter the downstream waterway and out of bank. There may be extensive environmental effects, resulting in flooding that could disperse debris and hazardous materials downstream that could damage local ecosystems. If the event is severe, debris carried downstream can block traffic flow, cause power outages, disrupt local utilities, such as water and wastewater, which could result in school closures.

A dam breach could result in multiple deaths, with facilities being shut down for 30 days or more, and more than 50 percent of property destroyed or damaged (substantial severity). For these reasons, creating mitigation actions to remove or protect people and structures from the path of destruction is necessary to reduce the impact from dam failure.

Extent: 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 are no flood inundation maps currently for these dams.

The map below was obtained from the Region 2 Lower Red-Sulphur-Cypress Draft Flood Map website. In red, it shows Fathom fluvial data that indicates areas where the river flow exceeds the capacity of the river channel leading to the inundation of land around rivers and streams. While this information is regarding flooding, it does show the path of water flow in the event of a dam failure causing water to exceed the capacity of the channel.



Summary: It is unlikely that a dam failure will occur (i.e., an event may occur in the next 10 years), but a dam failure could have a substantial impact on most of the County. Red River County has 5 high-hazard potential dams listed in the National Inventory of Dams. As of this plan update, only two of those dams have a condition assessment of unsatisfactory or poor. This limits eligibility for High Hazard Potential Dam (HHPD) funding for the other three. The County will monitor updates to these ratings and revisit mitigation actions as more information becomes available.

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 led to water shortages, but they produce widespread crop failure and environmental stress. The extreme heat associated with some droughts has led to heat related deaths, job losses among agricultural workers, and significant acres 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 wildfire destroys timber stands.
- 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 of forest and range fires
- Reduced incomes
- Population migration (from rural to urban areas)
- Fewer recreational activities

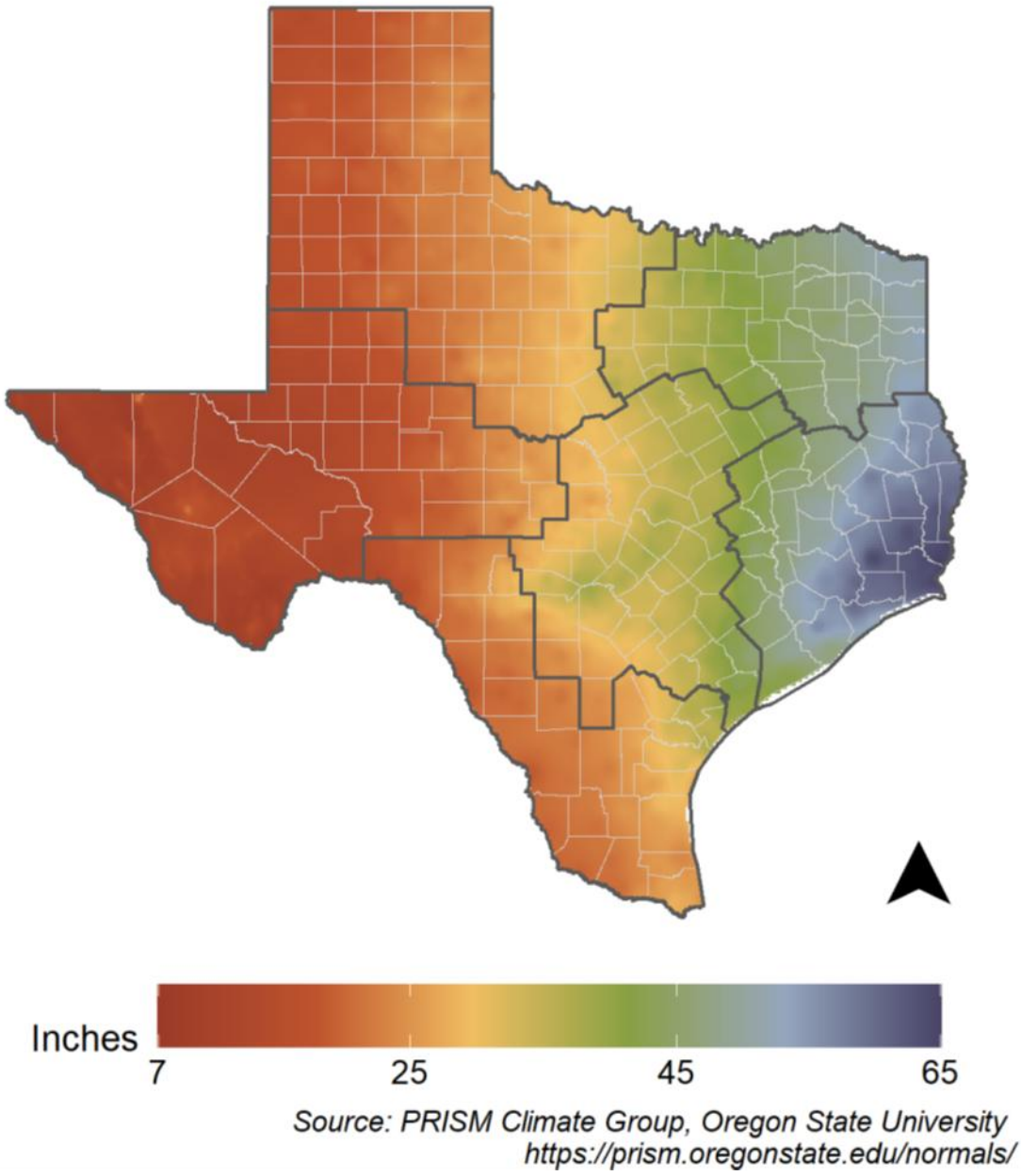
All these impacts were considered in planning for and responding to drought conditions.

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 application. Several indices developed by Wayne Palmer, as well as the Standardized Precipitation Index, are useful for describing the many scales of drought.

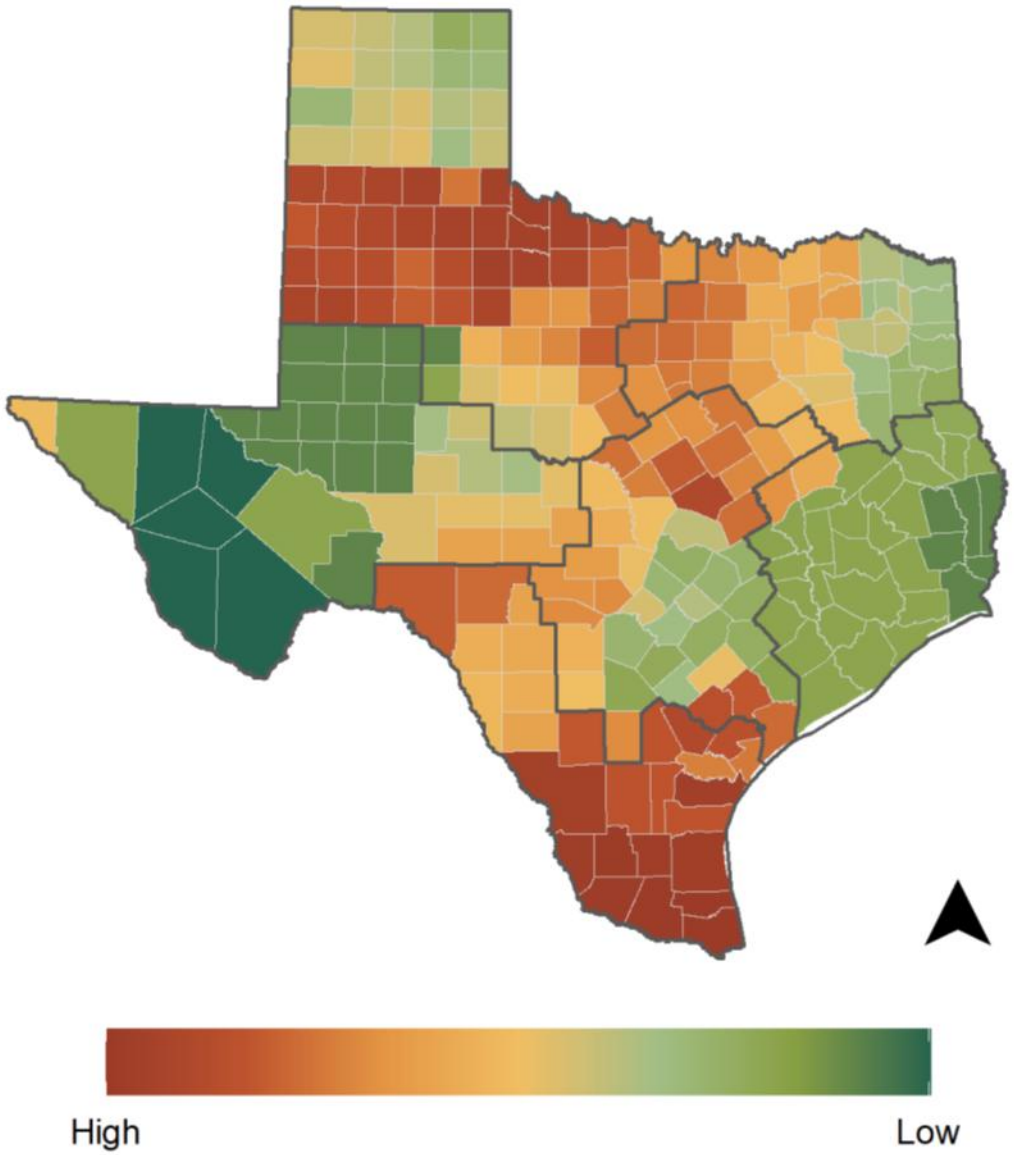
Common to all types of droughts is the fact that they originate from a deficiency of precipitation resulting from an unusual weather pattern. If the weather pattern lasts a short time (say, a few weeks or a couple of months), the drought is considered *short-term*. But if the weather or atmospheric circulation 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.

Drought: Average Annual Precipitation



Source: 2023 SHMP

Drought: Historic Events by County



Source: National Center for Environmental Information Storm Events Database
https://ncdc.noaa.gov/stormevents/

Source: 2023 SHMP

PREVIOUS OCCURANCES OF DROUGHT IN RED RIVER COUNTY

Data from National Oceanic and Atmospheric Administration (NOAA)

Date	Drought Events Narrative	Damage
08/18/2015	D2 drought conditions.	0.00K
09/01/2015	D2 drought conditions began to materialize portions of Red River County on September 1st. By September 8th, D3 drought conditions began to materialize across Red River County.	0.00K
10/01/2015	D3 drought conditions encompassed Red River County at the beginning of the month. By the end of October, drought conditions were downgraded below D2 drought status.	0.00K
08/02/2016	D2 drought conditions developed for Red River County during the first half of August. Conditions dissipated after August 16th due to some rainfall later in the month.	0.00K
10/25/2016	D2 drought conditions.	0.00K
11/01/2016	D2 drought conditions continued.	0.00K
12/01/2016	D2 drought conditions continued until much needed rainfall resulted in conditions improving to D1 by the second week of December.	0.00K
03/07/2017	D2 drought conditions in Red River County start the month before timely rainfall fell by the final week of the month resulting in a one category improvement to D1.	0.00K
11/22/2017	D2 drought conditions encompassed Red River County due to the significant deficits of rain observed since the final week of August.	0.00K
12/01/2017	D2 drought conditions encompassed Red River by the second week of the month until rainfall fell across the area resulting in the drought areas improving to D1.	0.00K
07/26/2018	D2 drought conditions developed, as much above normal temperatures of some 2-4+ degrees and below normal rainfall was observed.	0.00K
08/01/2018	D3 and D2 drought conditions continued through the first two weeks of August in Red River County, as very little rainfall fell through the first week of the month.	0.00K
12/23/2021	D2 drought conditions developed across Red River County through late December.	0.00K
01/01/2022	D2 drought conditions continued through the month of January.	0.00K
02/01/2022	D2 drought conditions persisted throughout February.	0.00K
03/01/2022	D2 drought conditions continued through late March.	0.00K
07/21/2022	D2 to D3 drought conditions developed in late July and continued through the end of the month.	0.00K
08/01/2022	D2 to D3 drought conditions continued through late August.	0.00K
10/06/2022	D2 to D3 drought conditions returned to Red River County in early October and lingered throughout the remainder of the month.	0.00K
09/21/2023	D2 drought conditions expanded during late September.	0.00K
10/01/2023	D2 to D4 drought conditions persisted through the first third of October.	0.00K
09/12/2024	D2 drought conditions developed during mid-September.	0.00K
10/01/2024	D2 drought conditions.	0.00K
11/01/2024	D2 drought conditions continued.	0.00K

Major Declarations for Planning Area: There were no major declarations for Drought.

Red River County Drought Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Red River Unincorporated	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Avery	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Bogata	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Clarksville	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Detroit	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55

RED RIVER COUNTY CRITICAL FACILITIES

Facility	Red River Co	Avery	Bogata	Clarksville	Detroit
City Hall		1	1	1	1
Fire Department	6	1	1		
Civic Center					
Govt. Facility				4	
Wastewater plant		1	1	1	
Corrections Facility				1	
Hospital					
Maintenance Barn	4		1	1	1
Post Office		1	1	1	1
Water Tower	4	1	2	2	
Police Station			1	1	
Sheriff Office				1	
EMS				1	
Public School		1	1	1	1
Water Treatment Plant				1	
County Seat				1	

All critical facilities are vulnerable to the effects of drought.

Location: Historically, drought has affected Red River County and the participating jurisdictions of Avery, Bogata, Clarksville, and Detroit. The agricultural areas, including the rural parts of the County, would be affected more than the urban areas.

Probability: Droughts will continue to occur in Red River County and participating jurisdictions when the conditions are right. It is a normal, recurrent feature of climate. A drought will affect Red River 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 of Drought in Red River County is relatively low.

Rising temperatures caused by climate change are making already dry regions drier and wet regions wetter. In dry regions, this means that when temperatures rise, water evaporates more quickly and thus increases the risk of drought or prolongs periods of drought. (World Health Organization)

Impact: Drought is determined by using the Palmer Drought Index. It is based on precipitation and temperature data for the area. The scale ranges from +4.0 and above, which is extremely wet to -4.00 or less, which is considered an extreme drought. The scale is most accurate when used to determine drought over a period of months. Droughts are regional and statewide. All of Red River County and the participating jurisdictions of Avery, Bogata, Clarksville, and Detroit would be affected.

The impact of a drought on the jurisdictions of Red River County includes 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. No changes in land use or development expected.

Vulnerability: The region is vulnerable when there is a deficiency of precipitation over an extended period of time. Crops may be damaged or destroyed, and wildlife (plant and animal) may be threatened. Low-income households could be more affected by drought impacts.

Extent: Drought conditions for Red River County have varied over the past 10 years ranging from Abnormally Dry (DO) to Extreme Drought (D3) according to drought.gov.

Summary: Drought is seen as an issue for Red River County, Avery, Bogata, Clarksville, and Detroit, however the county has never experienced shortages of potable water. Water rationing has never been necessary in any of the jurisdictions, but this remains a real possibility due to climate change. New precautions should be considered to mitigate changing weather patterns.

EXTREME HEAT

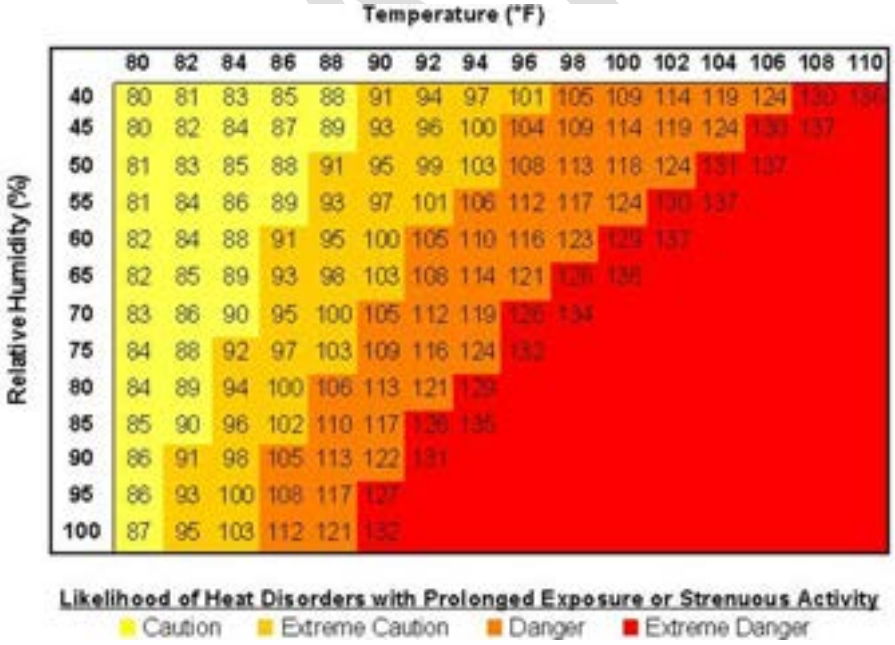
Description

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. Extreme heat is responsible for the highest number of annual deaths among all weather-related hazards. (ready.gov/heat)

Heat kills by taxing the human body beyond its abilities. More than 300 Texas died from heat in 2023. (texastribune.org) No one can know how many more deaths are caused by heat wave weather-how many diseased or aging hearts surrender that under better conditions would have continued functioning. 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.

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.

NOAA's National Weather Service Heat Index



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.

PREVIOUS OCCURANCES OF EXTREME HEAT IN RED RIVER COUNTY

Data from National Oceanic and Atmospheric Administration (NOAA)

Date	Extreme Heat Events Narrative	Damage
08/29/2020	Afternoon temperatures climbing into the upper 90s to near 100 degrees. Light winds and very little mixing of the air mass contributed to heat indices between 110 and 115 degrees.	0.00K
07/09/2022 – 07/19/2022	Daytime temperatures climbing into the upper 90s to lower and middle 100s. Oppressively hot conditions were observed as heat indices averaged between 110-115 degrees.	0.00K
06/24/2023	Afternoon temperatures climbed into the mid and upper 90s to near 100 degrees. When combined with the high humidity, heat indices ranged from 110-119 degrees.	0.00K
07/13/2023	Temperatures climbed into the mid-90s to near 100 degrees. This resulted in heat indices ranging from 110-115 degrees.	0.00K
07/18/2023	Afternoon temperatures climbing into the upper 90s to in excess of 100 degrees. Heat indices ranging from 110-113 degrees.	0.00K
07/31/2023	Oppressive heat was observed with heat indices ranging near and in excess of 110 degrees.	0.00K
08/01/2023	Temperatures climbing well into the upper 90s to lower 100s and limited mixing of dewpoints observed. Heat indices ranged from 110 to 115 degrees in the first week of August.	0.00K
08/09/2023	Heat indices reaching or exceeding 110 degrees throughout much of mid-August.	0.00K
08/18/2023	Heat indices reaching or exceeding 110 degrees throughout much of mid to late August.	0.00K
09/06/2023	Temperatures climbed into the upper 90s to well into the triple digits. Heat indices reached or exceeded 110 degrees on September 6th and 7th.	0.00K
06/28/2024	Temperatures climbed into the middle and upper 90s through the last weekend in June. Heat indices ranged from 110-115 degrees each afternoon from June 28th through June 30th.	0.00K
07/01/2024	Temperatures climbed into the upper 90s to near 100 degrees through July 4th. Heat indices ranging from 110-115 degrees each afternoon from July 1st through the 4th.	0.00K
08/02/2024	Heat indices exceeded 110 degrees on August 2nd.	0.00K
08/13/2024	Afternoon temperatures rose into the upper 90s to lower 100s for several consecutive days totaling a full week from the 13th through the 19th. Heat indices exceeding 110 degrees.	0.00K

Major Declarations for Planning Area: There were no major declarations for Extreme Heat.

Red River County Extreme Heat Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Red River Unincorporated	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Avery	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Bogata	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Clarksville	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55
Detroit	Substantial PRI=4	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	High 3.55

RED RIVER COUNTY CRITICAL FACILITIES

Facility	Red River Co	Avery	Bogata	Clarksville	Detroit
City Hall		1	1	1	1
Fire Department	6	1	1		
Civic Center					
Govt. Facility				4	
Wastewater plant		1	1	1	
Corrections Facility				1	
Hospital					
Maintenance Barn	4		1	1	1
Post Office		1	1	1	1
Water Tower	4	1	2	2	
Police Station			1	1	
Sheriff Office				1	
EMS				1	
Public School		1	1	1	1
Water Treatment Plant				1	
County Seat				1	

All critical Facilities are vulnerable to the effects of extreme heat.

Location: Red River County would be affected by extreme heat. Citizens of Avery, Bogata, Clarksville, and Detroit will suffer from the impact of extreme heat.

Probability: It is highly likely that extreme heat waves will continue to occur in the region when the conditions are right. It is a normal, recurrent feature of climate. Red River County typically has heat occurrences every summer. It is highly likely that Red River County and participating jurisdictions will experience extreme heat.

Climate change effects on extreme heat include an increase in the average number of extremely hot days and could cause the heat wave season to be longer. More extreme heat will likely lead to more heat-related illnesses. (epa.gov)

Impact: The full range of the heat index on the preceding page is applicable for Red River County and participating 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 page 22 for examples of loss in dollars. Extreme heat causes heat stroke: time lost on the job and psychological stress. 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 significantly greater rate of spoilage due to extreme heat. Additional impact will be felt as food prices rise due to crop loss. No changes in land use or development expected.

Vulnerability: The region is vulnerable when there is a deficiency of precipitation over an extended period with high temperatures. The extent of damage or injury increases with the temperature and relative humidity levels. All of Red River County and the participating jurisdictions are vulnerable. Elderly persons, small children, chronic invalids, those on certain medications or drugs, 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. Crops and livestock are stressed during extended periods of extreme heat.

Extent: The Heat Index will be mitigated to any combination of temperature and humidity that ranges from 100 - 114 degrees Fahrenheit. Red River County has experienced heat indexes ranging from 110-119 over the last ten years.

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 Red River County and the participating jurisdictions of Avery, Bogata, Clarksville, and Detroit are aware of extreme heat's lethal potential and take precautions to prevent overheating and heat related strokes. Mitigation actions should take place to prepare for rising temperatures.

FLOOD

Description

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 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.

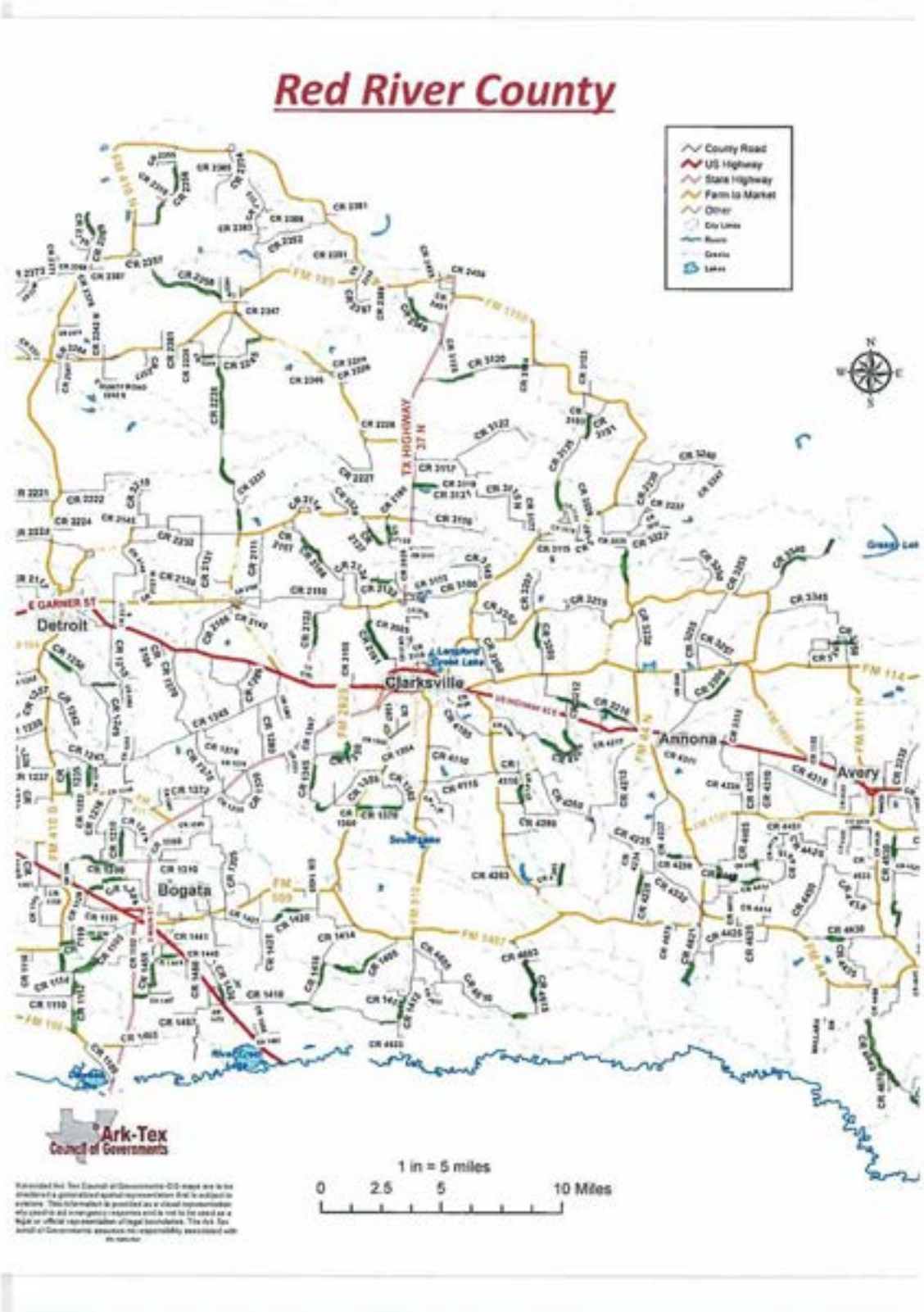
Riverine Floods: Riverine floods are caused by precipitation over large areas and differ from flash floods in their extent and duration. Floods in large river systems may continue for periods ranging from a few hours to many days.

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

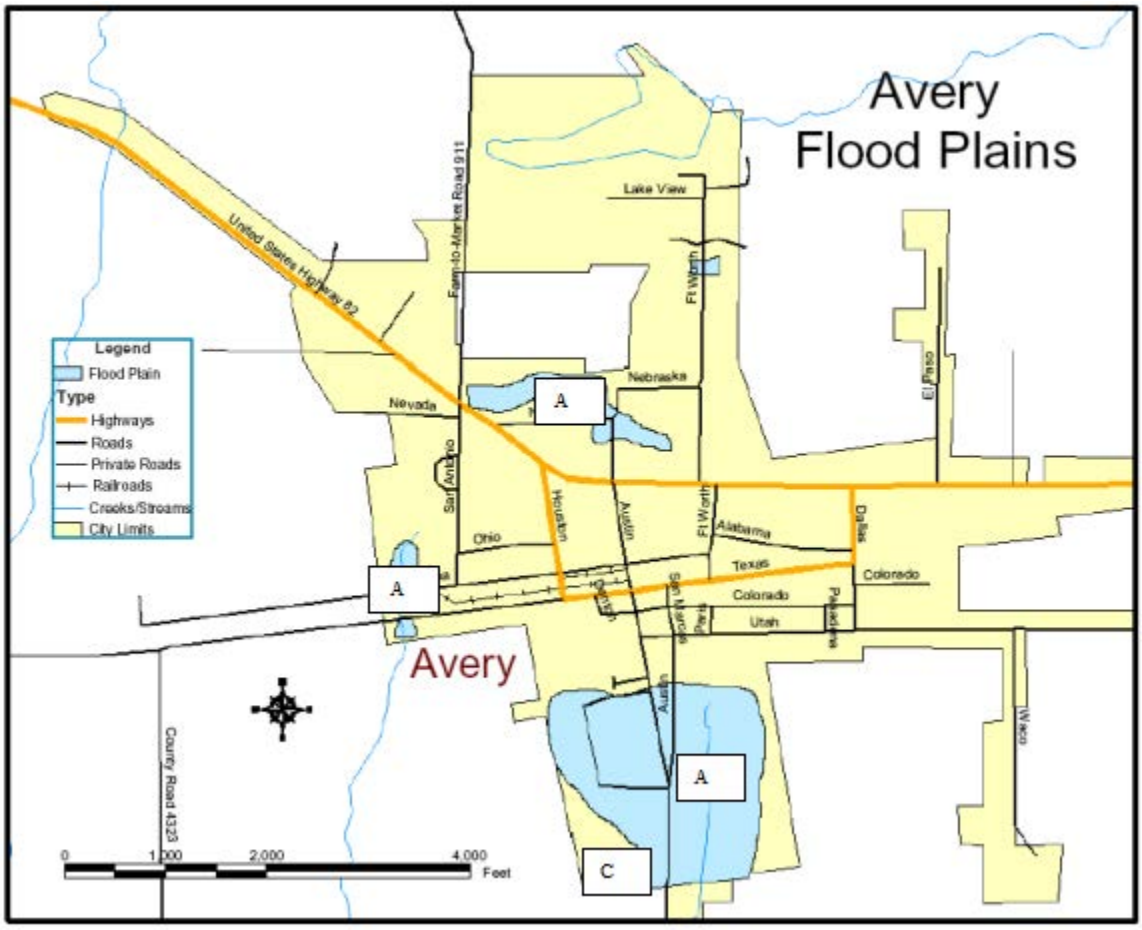
100-Year Flood: There is one chance in 100, or a 1% chance of a flood of such magnitude or greater occurring in any given year. There is no guarantee that a similar flood will not occur in the next year, or in the next month.

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.

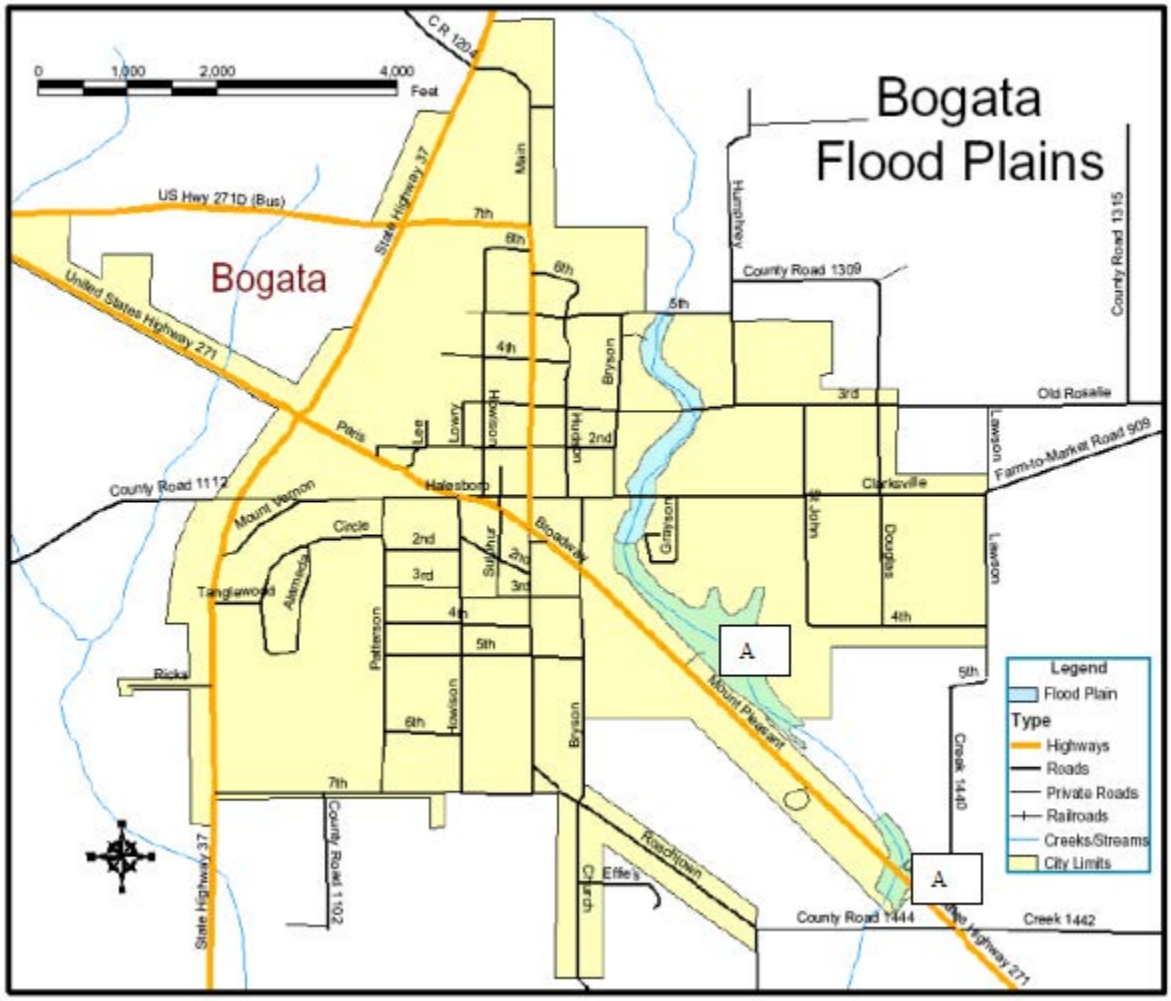
The following are floodplain maps for Red River County, Avery, Bogata, Clarksville, and Detroit.


Red River County
County Road
US Highway
State Highway
Farm to Market
Other
City Limits
Rivers
Creeks
Lakes
TX HIGHWAY 37 N
E GARNER ST
Detroit
Clarksville
Annona
Avery
Bogata
FM 909
Ark-Tex
Council of Governments
1 in = 5 miles
0 2.5 5 10 Miles

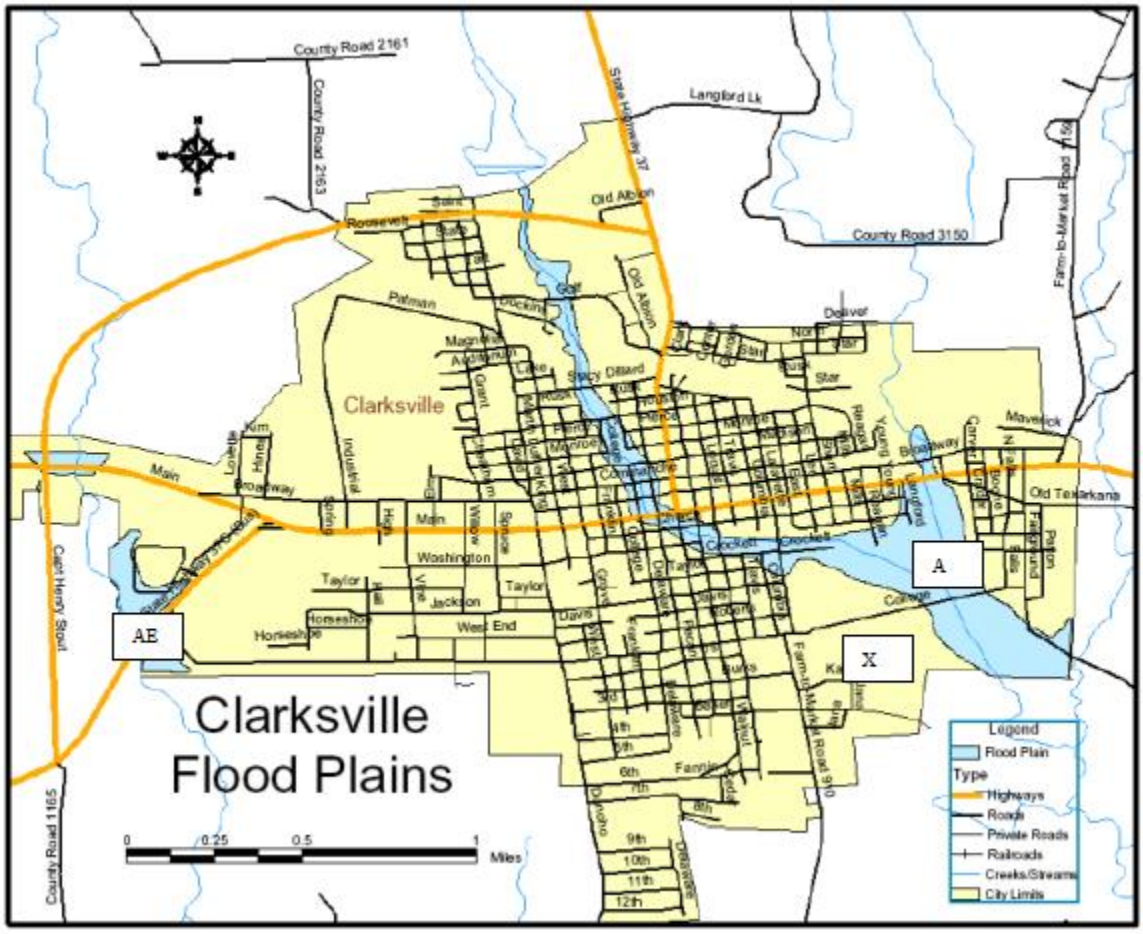
Avery Floodplain



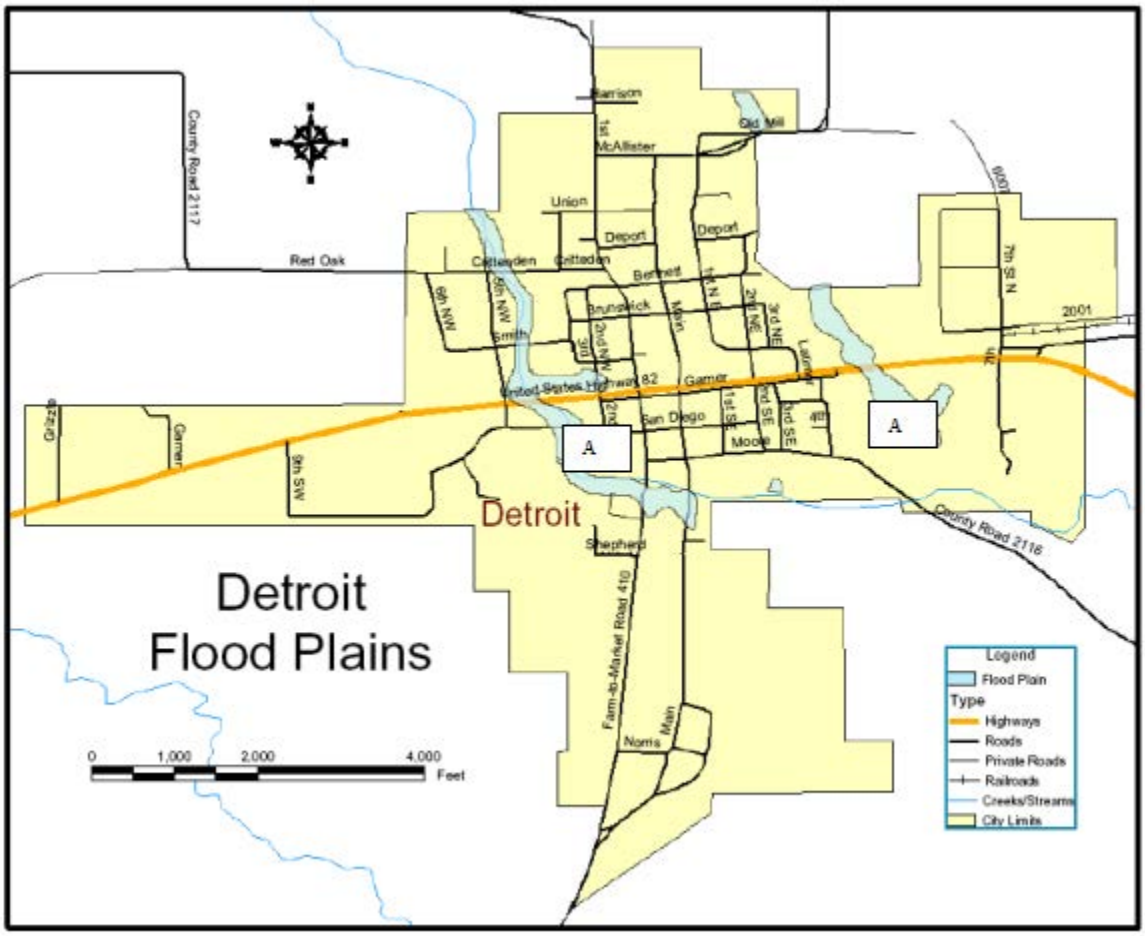
Bogata Floodplain



Clarksville Floodplain



Detroit Floodplain



Flood Plain Map Narrative

While Red River County is not a participant in the NFIP, the jurisdictions of Avery, Bogata, Clarksville and Detroit participate in 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 weighed regarding ultimate impact on buildings and infrastructure. These participating jurisdictions are taking positive steps to remain in compliance such as keeping drainage area clear of debris and providing generators to prevent wastewater overflow. 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, and also, through measures including flood warning, emergency response, and evacuation planning. Red River County will consider joining 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 Red River County, Avery, Bogata, Clarksville, and Detroit have no repetitive flood properties on record.

Repetitive Loss Structure

Source: Repetitive Loss Structures Texas Water Development Board

Red River County
Repetitive Loss Structures: 0
Structure Type: N/A
Total Losses: N/A
Total Paid: N/A

Red River County

Red River County is approximately 676,480 acres. The total taxable value of all property in the Red River County is approximately 466 million. There is no record of repetitive flood loss. Currently, Red River County does not have processes for making substantial improvement/substantial damage (SI/SD) determinations to bring buildings into compliance with the floodplain management requirements. A mitigation action has been added to this plan to develop a flood damage prevention ordinance.

Avery

The city of Avery has approximately 654 acres inside the city limits. It has a population of 421 people. The total taxable value of all property in the City of Avery is approximately 21 million dollars. There is no record of repetitive flood loss. Currently, the city of Avey does not have processes for making substantial improvement/substantial damage (SI/SD) determinations to bring buildings into compliance with the floodplain management requirements. A mitigation action has been added to this plan to develop a flood damage prevention ordinance.

Bogata

The city of Bogata is approximately 896 acres inside the city limits. It has a population of 1,108 people. The total taxable value of all property in the City of Bogata is approximately 53 million dollars. There is no record of repetitive flood loss. Currently, the city of Bogata does not have processes for making substantial improvement/substantial damage (SI/SD) determinations to bring buildings into compliance with the floodplain management requirements. A mitigation action has been added to this plan to develop a flood damage prevention ordinance.

Clarksville
The city of Clarksville is approximately 1,984 acres in the city limits. It has a population of 3,285 people. The total taxable value of all property in the City of Clarksville is approximately 141 million dollars. There is no record of repetitive flood loss. Currently, the city of Clarksville does not have processes for making substantial improvement/substantial damage (SI/SD) determinations to bring buildings into compliance with the floodplain management requirements. A mitigation action has been added to this plan to develop a flood damage prevention ordinance.

Detroit
The city of Detroit is approximately 1024 acres inside the city limits. It has a population of 628 people. The total taxable value of all property in the City of Detroit is approximately 30 million dollars. There is no record of repetitive flood loss. Currently, the city of Detroit does not have processes for making substantial improvement/substantial damage (SI/SD) determinations to bring buildings into compliance with the floodplain management requirements. A mitigation action has been added to this plan to develop a flood damage prevention ordinance.

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

Unincorporated Red River County does not participate in the Nation Flood Insurance Program, therefore is not eligible for the CRS program. Avery, Bogata, Clarksville and Detroit are eligible to participate in the CRS program but are not currently doing so but they will continue to analyze the benefits of joining.

PREVIOUS OCCURANCES OF EXTREME HEAT IN RED RIVER COUNTY

Data from National Oceanic and Atmospheric Administration (NOAA)

Date	Flood Events Narrative	Damage
01/02/2015	Bridges were flooded east of Clarksville, Texas including 114 near English and 1158 near Whiterock.	0.00K
05/08/2015	Farm to Market Road 195 closed 3 miles west of the town of Manchester due to flooding.	0.00K
11/27/2015	A truck was stranded in high water on CR. 2149 near the Bagwell, Texas community.	10.00K
11/28/2015	Intersection of FM 909 and FM1487 south of Clarksville was flooded and closed. FM 3390 southeast of Clarksville was flooded and closed.	0.00K
12/12/2015	County Roads were covered in high water and closed in Bagwell community and near Clarksville. A high-water car rescue was reported near the Rugby community.	5.00K
12/27/2015	Widespread flooding was reported in and around the Clarksville area.	0.00K
04/29/2016	Farm To Market Road 410 was closed near the intersection of County Road 1255 due to flooding.	0.00K
05/09/2016	Two feet of water was reported over roads in Detroit. Flooding over sidewalks on Main Street in Downtown Clarksville. Farm to Market Road 3281 was flooded and closed northeast of Detroit.	0.00K
06/04/2017	Main Street in the city of Annona was flooded.	0.00K
07/05/2017	High water covered Cedar Street in Clarksville.	0.00K
02/21/2018	Water covered numerous roadways across much of Red River County.	0.00K
02/22/2018	Highway 37 closed between Bogota and Hagansport due to flooding. FM 1487 closed from the Maple community to County Road 412 due to flooding.	0.00K
03/01/2018	Farm to Market Road 410 near and south of County Road 1119 was closed due to flooding. Farm to Market Road 909 north of County Road 1487 was closed due to flooding.	0.00K
06/07/2018	A vehicle was flooded and stranded at the intersection of FM 910 and College Ave. in Clarksville.	0.00K
08/26/2020	High water covered FM 114.	0.00K
10/04/2023	West College Avenue and South Donahoe Street were flooded in Clarksville.	0.00K
01/30/2025	FM 2118 was closed due to flooding.	0.00K
04/04/2025	High water covered Highway 37 just south of Bogata.	0.00K

Major Declarations for Planning Area: Red River County was a designated area for Public Assistance in the FEMA 4781-DR, Texas Disaster Declaration, May 2024, Texas Severe Winter Storms, Tornadoes, Straight line Winds, and Flooding.

Red River County Flood Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Red River Unincorporated	Limited PRI=1	Highly Likely PRI=4	6-12 hours PRI=3	< 24 hours PRI=2	Medium 2.40
Avery	Limited PRI=1	Highly Likely PRI=4	6-12 hours PRI=3	< 24 hours PRI=2	Medium 2.40
Bogata	Limited PRI=1	Highly Likely PRI=4	6-12 hours PRI=3	< 24 hours PRI=2	Medium 2.40
Clarksville	Limited PRI=1	Highly Likely PRI=4	6-12 hours PRI=3	< 24 hours PRI=2	Medium 2.40
Detroit	Limited PRI=1	Highly Likely PRI=4	6-12 hours PRI=3	< 24 hours PRI=2	Medium 2.40

RED RIVER COUNTY CRITICAL FACILITIES

Facility	Red River Co	Avery	Bogata	Clarksville	Detroit
City Hall		1	1	1	1
Fire Department	6	1	1		
Civic Center					
Govt. Facility				4	
Wastewater plant		1	1	1	
Corrections Facility				1	
Hospital					
Maintenance Barn	4		1	1	1
Post Office		1	1	1	1
Water Tower	4	1	2	2	
Police Station			1	1	
Sheriff Office				1	
EMS				1	
Public School		1	1	1	1
Water Treatment Plant				1	
County Seat				1	

All critical Facilities are vulnerable to the effects of flooding.

Location: Historically, the rural areas of the county have experienced the most damage from flooding. If future trends occur as they have in the past, the County will continue to have floods. Countywide, the Highways and County roads will continue to flood. Red River County and all the participating jurisdictions may have flooding during heavy and prolonged rains.

Probability: Flash floods are possible at any time during the storm season. These types of floods occur often during that period. According to the NOAA weather service in Shreveport, LA, a flash flood is defined as flooding that occurs within 6 hours after or during rain. The FEMA National Risk Index gives Red River County a very low risk for Riverine Flooding.

Climate change is affecting our water cycle, which refers to the way water moves about the planet. The rain is more in the form of intense downpours, leading to greater risk for floods. (climatecouncil.org)

Estimated Property Damage from Flood at 75%

Red River County	$355,351,388
Avery	$15,922,121
Bogata	$40,255,805
Clarksville	$109,055,686
Detroit	$22,774,241

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 with significant evacuations of people and/or transfer of property to higher elevations. The possible damage to the cities of Avery, Bogata, Clarksville, and Detroit are addressed in the tables found on page 22. Rising flood waters can destroy structures and endanger lives. Many rural roads in Red River County are subject to flooding in heavy rain. Rainfall from 2 to 4 inches in a given hour can cause flash flooding. Flash flooding can be magnified when the ground is already saturated with moisture. Based on historical evidence it is possible for limited flooding to take place within the city limits of all Red River County jurisdictions. No changes in land use or development expected.

Vulnerability: The probability of a flash flood and the inability to accommodate the existing drainage on some of the FM roads is a constant problem. There is no record of repetitive flood properties in the county, but Red River County and participating jurisdictions are susceptible to the effects of flooding.

Extent: Over 2 to 3 inches of rain per hour is considered heavy rain in Red River County. Some seepage into homes or other structures could occur during a heavy downpour.

EXTENT: Possible Amounts of Flooding Within Jurisdictions		
Jurisdiction	**From**	**To**
Red River County Unincorporated	¼ inch	3 feet
Avery	¼ inch	1 foot
Bogata	¼ inch	1 foot
Clarksville	¼ inch	1 foot
Detroit	¼ inch	1 foot

Summary: All jurisdictions may experience flooded streets due to flash flooding. Emergency procedures are in place to warn citizens about flooded streets. Barricades and cones are on hand to warn drivers of flooded areas. There are no repetitive flood properties in the jurisdictions. In Red River County, identified sections of rural roads and highways frequently flood after heavy rain. In these areas roads are well marked to warn drivers of impending danger. Educational programs like “Turn Around, Don’t Drown” will help citizens become more informed about the dangers of flooded roadways.

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. 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 by 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 it 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 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 common in middle latitudes, and a heavy shower lasts around 15 minutes. Hailstorms 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 dollars 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

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

PREVIOUS OCCURANCES OF HAIL IN RED RIVER COUNTY

Data from National Oceanic and Atmospheric Administration (NOAA)

Date	Hailstorm Events Narrative	Damage
03/28/2014	1.00-inch (quarter size) hail fell in Bogata.	0.00K
05/09/2015	1.75-inch (golf ball size) hail fell in Annona.	0.00K
03/17/2016	0.75-inch (dime size) hail fell northwest of Bogota.	0.00K
03/18/2016	1.50-inch (ping pong ball sized) hail fell just east of Negley. 1.75-inch (golf ball size) hail fell in Clarksville.	0.00K
05/09/2016	1.00-inch (quarter size) hail fell in Clarksville. 2.00-inch (half dollar size) hail fell in Annona. 1.75-inch (golf ball size) hail fell in Clarksville. 1.25-inch (half dollar size) hail fell in Annona.	0.00K
04/04/2017	1.75-inch (golf ball size) hail fell in Clarksville.	0.00K
05/11/2017	0.88-inch (nickel size) hail fell in Detroit.	0.00K
12/01/2018	0.75-inch (dime size) hail was reported about 7 miles south of Avery on FM 911.	0.00K
01/19/2019	0.75-inch (dime size) hail fell in Avery.	0.00K
05/01/2019	1.75-inch (golf ball size) hail fell in Detroit. 1.00-inch (quarter size) hail fell in Clarksville. 1.00-inch (quarter size) hail fell in Bogota.	0.00K
04/12/2020	1.25-inch (half dollar size) hail fell north of Clarksville. 0.75-inch (dime size) hail fell in Avery.	0.00K
04/19/2020	1.00-inch (quarter size) hail fell in Clarksville.	0.00K
04/24/2020	1.00-inch (quarter size) hail fell in Bogota.	0.00K
04/28/2020	1.75-inch (golf ball size) hail fell in the Dimple community.	0.00K
09/27/2020	1.00-inch (quarter size) hail fell on Highway 37 between Bogota and Clarksville.	0.00K
02/25/2021	2.00-inch (larger than golf ball size) hail fell in Bogota.	0.00K
12/10/2021	2.00-inch (larger than golf ball size) hail fell in Bogota.	0.00K
03/30/2022	1.25-inch (half dollar size) hail fell in the Bagwell community.	0.00K
06/11/2023	1.75-inch (golf ball size) hail was reported along Highway 195 just west of Highway 37 in the Albion community.	0.00K
06/13/2023	1.25-inch (half dollar size) hail reported near the Fulbright community. 2.50-inch (tennis ball size) hail reported in Clarksville. 1.75-inch (golf ball size) hail reported in Clarksville.	0.00K
09/08/2023	1.50-inch (ping pong ball size) hail reported in Clarksville.	0.00K
09/22/2023	1.00-inch (quarter size) hail reported in Annona.	0.00K
03/14/2024	1.75-inch (golf ball size) hail reported near the Albion community.	0.00K
05/09/2024	1.00-inch (quarter size) hail reported in Bogata. 1.75-inch (golf ball size) hail reported near Bogata. 0.88-inch (nickel size hail) reported in Lydia.	0.00K

Major Declarations for Planning Area: There were no major declarations for hailstorms.

Red River County Hailstorm Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Red River Unincorporated	Limited PRI=1	Highly Likely PRI=4	< than 6 hours PRI=4	< than 6 hours PRI=1	Medium 2.35
Avery	Limited PRI=1	Highly Likely PRI=4	< than 6 hours PRI=4	< than 6 hours PRI=1	Medium 2.35
Bogata	Limited PRI=1	Highly Likely PRI=4	< than 6 hours PRI=4	< than 6 hours PRI=1	Medium 2.35
Clarksville	Limited PRI=1	Highly Likely PRI=4	< than 6 hours PRI=4	< than 6 hours PRI=1	Medium 2.35
Detroit	Limited PRI=1	Highly Likely PRI=4	< than 6 hours PRI=4	< than 6 hours PRI=1	Medium 2.35

RED RIVER COUNTY CRITICAL FACILITIES

Facility	Red River Co	Avery	Bogata	Clarksville	Detroit
City Hall		1	1	1	1
Fire Department	6	1	1		
Civic Center					
Govt. Facility				4	
Wastewater plant		1	1	1	
Corrections Facility				1	
Hospital					
Maintenance Barn	4		1	1	1
Post Office		1	1	1	1
Water Tower	4	1	2	2	
Police Station			1	1	
Sheriff Office				1	
EMS				1	
Public School		1	1	1	1
Water Treatment Plant				1	
County Seat				1	

All critical Facilities are vulnerable to the effects of hailstorm.

Location: Hailstorms can strike anywhere in Red River County including the jurisdictions of Avery, Bogata, Clarksville, and Detroit.

Probability: The probability of a hailstorm strike in Red River County is highly likely. According to the FEMA National Risk Index the risk for hail in Red River County is very low.

Hailstorms are dangerous and costly phenomena that are expected to change in response to a warming climate. As a result of anthropogenic warming, it is generally anticipated that low-level moisture and convective instability will increase, raising hailstorm likelihood and enabling the formation of larger hailstones; the melting height will rise, enhancing hail melt and increasing the

average size of surviving hailstones; and vertical wind shear will decrease overall, with limited influence on the overall hailstorm activity, owing to a predominance of other factors. (researchgate.net)

Impact: The impact of a hailstorm has historically been limited. Hail damage autos, roofs, siding and crops. See tables on page 22 for a more comprehensive look at possible damage values. The effects of climate change, changes in population and changes in land development are not expected to affect the impact of a hailstorm event.

Estimated Property Loss at 25%	
Red River County	$118,450,463
Avery	$5,307,374
Bogata	$13,418,602
Clarksville	$36,351,895
Detroit	$7,591,414

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

Extent: Based on historical data it can be expected that Red River County will experience a H5 Destructive Hailstorm (NOAA/TORRO Hailstorm Intensity Scale).

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

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 severe damage to buildings, critical facilities, and infrastructure, 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 creates 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 the 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.

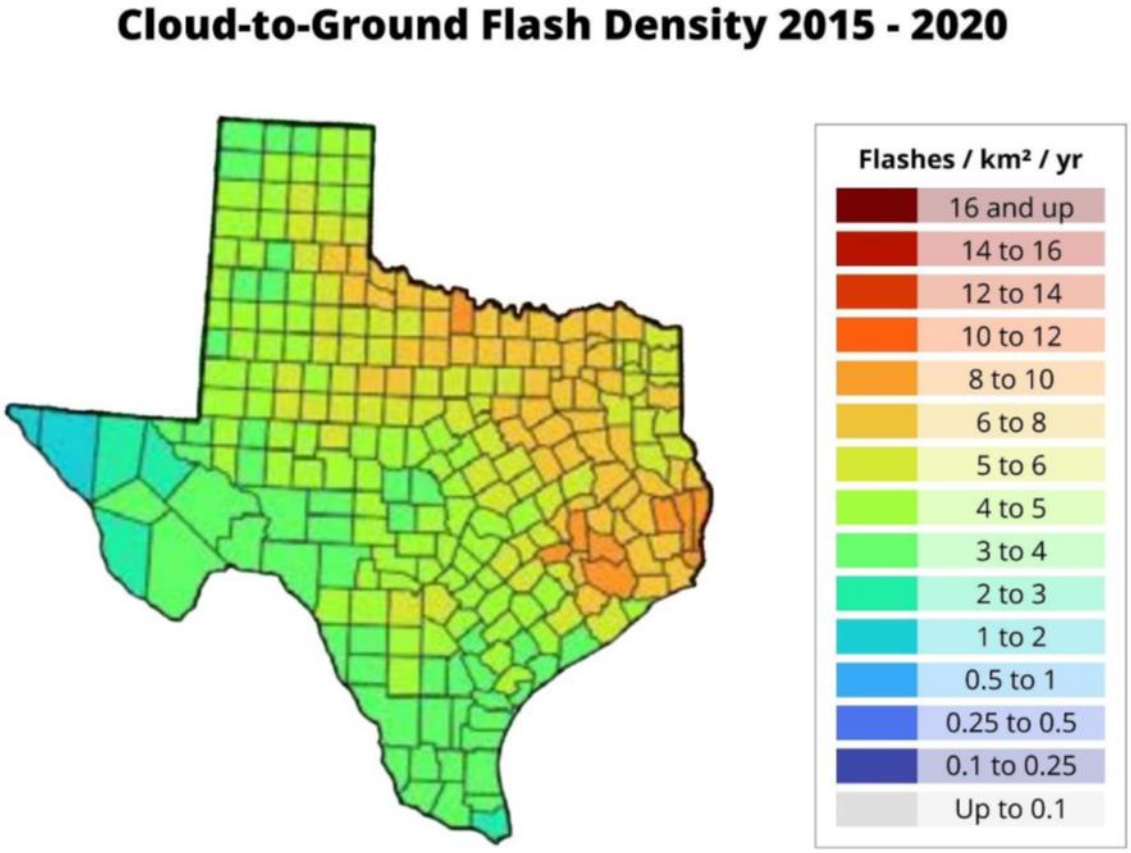
Sequelae: These secondary effects are many. Forest and grass fires, explosive steam conditions in masonry, trees and other water-bearing objects, and consequences of the thunderclap startling a person into inadvertently throwing a switch are examples.

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 Flag Warning.

Lightning can happen anywhere in the state of Texas. According to the map below Red River County can expect a flash density of 6-8 cloud to ground strikes per kilometer squared per year.



Lightning: Historic Events by County
(source: 2023 Texas Hazard Mitigation Plan)

Red River County Lightning Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Red River Unincorporated	Major PRI=3	Unlikely PRI=1	< 6 hours PRI=4	< 6 hours PRI=1	Medium 2.35
Avery	Major PRI=3	Unlikely PRI=1	< 6 hours PRI=4	< 6 hours PRI=1	Medium 2.35
Bogata	Major PRI=3	Unlikely PRI=1	< 6 hours PRI=4	< 6 hours PRI=1	Medium 2.35
Clarksville	Major PRI=3	Unlikely PRI=1	< 6 hours PRI=4	< 6 hours PRI=1	Medium 2.35
Detroit	Major PRI=3	Unlikely PRI=1	< 6 hours PRI=4	< 6 hours PRI=1	Medium 2.35

RED RIVER COUNTY CRITICAL FACILITIES

Facility	Red River Co	Avery	Bogata	Clarksville	Detroit
City Hall		1	1	1	1
Fire Department	6	1	1		
Civic Center					
Govt. Facility				4	
Wastewater plant		1	1	1	
Corrections Facility				1	
Hospital					
Maintenance Barn	4		1	1	1
Post Office		1	1	1	1
Water Tower	4	1	2	2	
Police Station			1	1	
Sheriff Office				1	
EMS				1	
Public School		1	1	1	1
Water Treatment Plant				1	
County Seat				1	

All critical Facilities are vulnerable to the effects of lightning.

Estimated Property Loss at 15%	
Red River County	$71,070,278
Avery	$3,184,424
Bogata	$8,051,161
Clarksville	$21,811,137
Detroit	$4,554,848

PREVIOUS OCCURANCES OF LIGHTNING IN RED RIVER COUNTY

Data from National Oceanic and Atmospheric Administration (NOAA)

In the past ten years there have been no lightning events reported in Red River County according to the NOAA storm events database. 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.

Major Declarations for Planning Area: There were no major declarations for Lightning.

Location: Lightning can strike in any geographic location and is considered a common occurrence in Texas. The Red River County planning area, and the jurisdictions of Avery, Bogata, Clarksville, and Detroit are susceptible to lightning strikes. Therefore, lightning could occur at any location within the entire planning area. It is assumed that the Red River County planning area is uniformly exposed to the threat of lightning.

Probability: According to FEMA National Risk Index Red River County risk for lightning is relatively low. Based on historical records and input from the planning team the probability of occurrence for future lightning events in Red River County, including the jurisdictions of Avery, Bogata, Clarksville, and Detroit are considered unlikely, including damage to a building or a critical facility.

Lightning will strike far more frequently in a world under climate change – but researchers can still not predict exactly where or when those strikes will occur. New research from the University of California, Berkeley, found warming conditions would result in 50% more lightning strikes by the end of the century. (theguardian.com)

Impact: Although there are no recorded deaths or monetary losses due to lightning in Red River County the probability and potential of death and property loss remain palpable. The effects of climate change, changes in population and changes in land development are not expected to affect the impact of a lightning event.

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

Extent: According to the NOAA, the average number of cloud-to-ground flashes for the State of Texas between 2006 and 2015 was 11.3 flashes per square mile. The National Lightning Detection Network lightning flash density map (shows a range of twelve to eighteen cloud-to-ground lightning flashes per square mile per year for the entire Red River County planning area. The power of lightning can run to the full extent of the Lightning Activity Level (LAL 1-LAL 6). See page 47 for review of the Lightning Activity Level (LAL) table.

Summary: Lightning can strike anywhere in Red River 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 Red River County.

SEVERE WIND

Severe 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.

Thunderstorms are most likely in the spring and summer but can occur anytime. Windstorms could last as little as a few minutes to last a few days. The greatest severe weather threat in the U.S. extends from Texas to southern Minnesota.

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 walking against the wind.
8	39-46	Fresh Gale	Twigs and small branches broke 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

PREVIOUS OCCURANCES OF SEVERE WIND IN RED RIVER COUNTY

Data from National Oceanic and Atmospheric Administration (NOAA)

Date	Severe Wind Events Narrative	Damage
07/14/2014	Tree down northwest of Clarksville. Large limbs were downed in Bagwell.	0.00K
07/23/2014	Powerlines were down in Clarksville.	0.00K
08/16/2014	Trees and powerlines were down in the Rosalee area and in Bogata.	0.00K
10/02/2014	Numerous trees were down across the entire county.	0.00K
05/25/2015	Damage to roofs in Bogata. Trees and powerlines were down throughout the county.	100.00K
12/12/2015	Trees were uprooted and down north of Clarksville.	0.00K
03/17/2016	Wind damage occurred in Bagwell, Clarksville and Annona.	260.00K
05/09/2016	Trees and power lines down near Clarksville. Power out in Detroit.	10.00K
03/26/2017	A power line was down at County Road 1370 and FM 910.	0.00K
04/29/2017	Trees were blown down along FM 195 near Manchester.	0.00K
06/23/2017	Trees were down on Columbia Street near Clarksville.	0.00K
04/06/2018	Trees were blown down along CR 1100 southwest of Bogota.	0.00K
04/13/2018	Trees and power lines were downed in and south of Avery. A tree fell on a home.	0.00K
06/07/2018	Large tree limbs were blown down on FM 909 near Scatter Creek.	0.00K
11/07/2018	A tree was blown across Highway 37 near the Dimple Quick Stop.	0.00K
05/18/2019	Tree blown down on the corner of W. Broadway and Lovette St.	0.00K
05/29/2019	Trees were down, shed was blown over and a tree hit a home in Boxelder.	0.00K
10/20/2019	A 60-mph wind gust was estimated to be south of Detroit.	0.00K
10/21/2019	Trees were down near Clarksville.	0.00K
05/08/2020	Trees were uprooted, power lines were downed, and barn roofs were damaged.	0.00K
05/24/2020	Trees and power lines were down across Red River County.	0.00K
11/24/2020	A tree was blown over Highway 37 and FM 2120 north of Clarksville.	0.00K
04/09/2021	A tree was down on Jackson and Delaware Street in Clarksville.	0.00K
05/03/2021	Multiple trees and power lines were down on FM 412 and CR 4222.	0.00K
03/30/2022	Trees were down on County Road 2132.	0.00K
04/13/2022	Several trees were down in Avery.	0.00K
03/02/2023	Damage in of Clarksville due to straight-line winds of 70 to 90 mph.	0.00K
06/10/2023	Trees were downed in the Albion community.	0.00K
06/11/2023	Trees and power lines were down across Bogata.	0.00K
06/14/2023	Trees and power lines were down across Bogata.	0.00K
06/18/2023	Trees down onto a power line on South Cedar Street in Clarksville.	0.00K
03/14/2024	Tree down with estimated 60 mph winds near Detroit.	0.00K
05/08/2024	Trees down on County Road 2235 near Bagwell.	0.00K
06/02/2024	Multiple trees and power lines down in Clarksville.	0.00K
05/17/2025	Trees were downed across FM 195 in Manchester and on Hwy 37.	0.00K

Major Declarations for Planning Area: Red River County was a designated area for Public Assistances in the FEMA 4223, 4255 and 4781, Texas Disaster Declarations.

Red River County Severe Wind Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Red River Unincorporated	Minor PRI=2	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	Medium 2.55
Avery	Minor PRI=2	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	Medium 2.55
Bogata	Minor PRI=2	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	Medium 2.55
Clarksville	Minor PRI=2	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	Medium 2.55
Detroit	Minor PRI=2	Highly Likely PRI=4	> than 24 hours PRI=1	>Week PRI=4	Medium 2.55

RED RIVER COUNTY CRITICAL FACILITIES

Facility	Red River Co	Avery	Bogata	Clarksville	Detroit
City Hall		1	1	1	1
Fire Department	6	1	1		
Civic Center					
Govt. Facility				4	
Wastewater plant		1	1	1	
Corrections Facility				1	
Hospital					
Maintenance Barn	4		1	1	1
Post Office		1	1	1	1
Water Tower	4	1	2	2	
Police Station			1	1	
Sheriff Office				1	
EMS				1	
Public School		1	1	1	1
Water Treatment Plant				1	
County Seat				1	

All critical Facilities are vulnerable to the effects of severe wind.

Location: Historically, all of Red River County has been affected by severe wind. If this trend continues, the entire County will be subject to their damage. This would include the jurisdictions of Avery, Bogata, Clarksville, and Detroit

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 Red River County given the right conditions. Red River County and its' jurisdictions are susceptible to damage from thunderstorm

winds. Microbursts and downbursts produce winds severe enough to be mistaken for tornadoes. The entire county is vulnerable to high winds associated with thunderstorms. FEMA National Risk Index for Strong Winds in Red River County is relatively low.

Rising global temperatures due to climate change means warmer air, which allows it to hold more moisture which boosts the chance of thunderstorms. (rmets.org)

Impact: According to NOAA Satellite and Information Service of the National Climatic Data Center, there were 35 thunderstorm wind events reported in Red River County between 2014 and 2025. Damage of $370,000 was reported for 5 of the 35 days. The magnitude ranged from 52 kts. to 78 kts. No changes in land use or development expected.

Vulnerability: The County is susceptible to flash flooding and wind damage from severe thunderstorms. Most of the flooding occurs in the rural areas where crops and property can be severely damaged.

Extent: There were no reported injuries or deaths from severe wind in Red River County. Historical data indicates the entire county is susceptible to windstorms with a Beaufort Scale rating of 10.

Estimated Property Loss at 15%	
Red River County	$71,070,278
Avery	$3,184,424
Bogata	$8,051,161
Clarksville	$21,811,137
Detroit	$4,554,848

Summary: High winds in Red River 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. Avery, Bogata, Clarksville, Detroit, and Red River County residents share susceptibility to severe wind damage.

SEVERE WINTER WEATHER

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 Red River 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 events. 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 over 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 scientific 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 hit hardest 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.

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 millions of dollars, depending on the severity of the storm.

PREVIOUS OCCURANCES OF SEVERE WINTER WEATHER IN RED RIVER COUNTY

Data from National Oceanic and Atmospheric Administration (NOAA)

Date	Severe Winter Weather Events Narrative	Damage
02/07/2014	The snow across the northern half of Northeast Texas was mainly one inch in accumulation. The snow caused some slick spots across some locations, mainly across elevated bridges and overpasses.	0.00K
03/02/2014	Freezing rain and sleet accumulation resulted in numerous automobile accidents along with power outages from falling limbs and trees throughout the northern half of Northeast Texas.	0.00K
02/23/2015	Freezing rain accumulations across Northeast Texas were near one tenth of an inch or less.	0.00K
01/11/2015	A cold arctic airmass filtered into the region in the preceding days of January 11th with temperatures mostly in the lower 30s. Ice accumulations were near one tenth of an inch across the region.	0.00K
03/04/2015	Freezing rain amounts were nearly one tenth of an inch with sleet accumulations mainly less than one half inch.	0.00K
01/06/2017	Temperatures remained in the upper 20s and lower 30s during the daytime hours which resulted in light accumulating snows of around 0.5 inches or less across Red River County.	0.00K
02/11/2018	Temperatures remained at or below freezing across much of Northeast Texas during daytime hours. Scattered areas of light freezing rain mixed with sleet fell across portions of Northeast Texas, with light accumulations of sleet on grassy and road surfaces.	0.00K
01/22/2020	In Avery (Eastern Red River County), 0.30 inches of snow was recorded.	0.00K
02/11/2021	Patchy ice was reported on various bridges throughout Red River County.	0.00K
02/14/2021	7 inches of snow reported in Red River County.	0.00K
02/16/2021	An arctic air mass resulted in three inches of snowfall in Red River County. When combined with the previous winter, widespread snowfall totals ten inches making driving nearly impossible, with rolling blackouts further aggravated by the additional power outages the snow was responsible for.	4.800M
01/15/2022	Areas of snow developed and resulted in accumulations on bridges and overpasses. Avery recorded 1.5 inches of snow.	0.00K
02/23/2022	In Red River County, 0.20 inches of ice was estimated to be icing bridges, and some roadways.	0.00K
01/30/2023	Freezing rain reports in Red River County: Detroit: 0.40 inches, Bogota: 0.10 inches.	0.00K
02/01/2023	Freezing rain reports in Red River County: Detroit: 0.40 inches, Bogota: 0.25 inches.	0.00K
01/14/2024	Bitterly cold temperatures and some light snow.	0.00K
01/09/2025	Overall, total snowfall amounts averaged around 3 inches across Red River County.	0.00K

Major Declarations for Planning Area: Red River County was a designated area for Public Assistance in the FEMA 4705, 4586, and 4255, Texas Disaster Declarations for Severe Winter Storms.

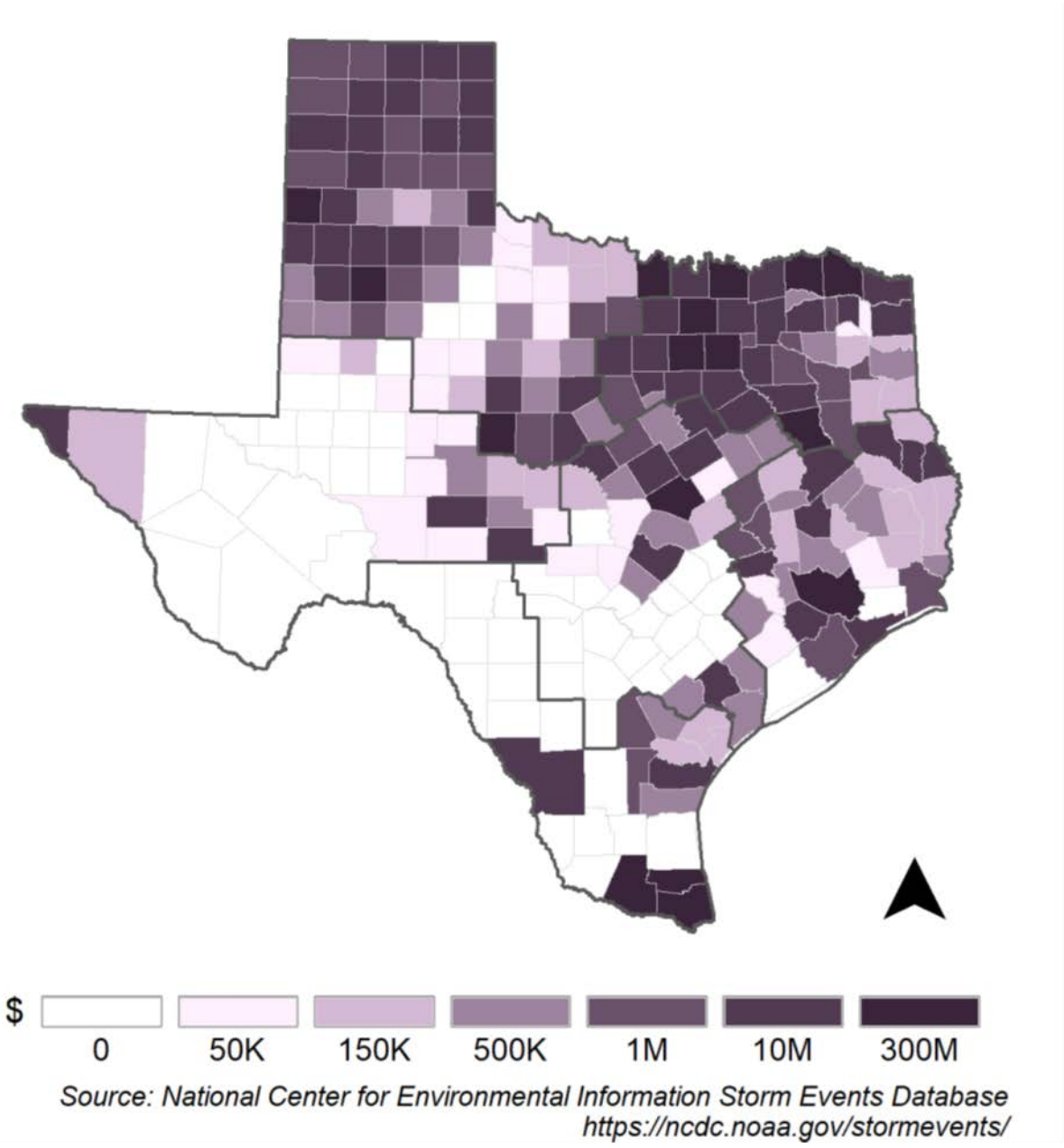
Red River County Severe Winter Storm Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Red River Unincorporated	Minor PRI=2	Highly Likely PRI=4	> than 24 hours PRI=1	<Week PRI=3	Medium 2.55
Avery	Minor PRI=2	Highly Likely PRI=4	> than 24 hours PRI=1	<Week PRI=3	Medium 2.55
Bogata	Minor PRI=2	Highly Likely PRI=4	> than 24 hours PRI=1	<Week PRI=3	Medium 2.55
Clarksville	Minor PRI=2	Highly Likely PRI=4	> than 24 hours PRI=1	<Week PRI=3	Medium 2.55
Detroit	Minor PRI=2	Highly Likely PRI=4	> than 24 hours PRI=1	<Week PRI=3	Medium 2.55

RED RIVER COUNTY CRITICAL FACILITIES

Facility	Red River Co	Avery	Bogata	Clarksville	Detroit
City Hall		1	1	1	1
Fire Department	6	1	1		
Civic Center					
Govt. Facility				4	
Wastewater plant		1	1	1	
Corrections Facility				1	
Hospital					
Maintenance Barn	4		1	1	1
Post Office		1	1	1	1
Water Tower	4	1	2	2	
Police Station			1	1	
Sheriff Office				1	
EMS				1	
Public School		1	1	1	1
Water Treatment Plant				1	
County Seat				1	

All critical Facilities are vulnerable to the effects of winter storm.

Severe Winter Weather: Historical Losses, 2000-2021



Source: 2023 SHMP

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

Probability: According to FEMA National Risk Index the risk for winter weather in Red River County is relatively low and the risk for ice storms is relatively high. The probability of the occurrence of a freeze is high, given historical weather patterns. Seventeen winter storms occurred between 2014 and 2025. It is highly likely that a winter storm will occur in any given year. Red River County and the participating jurisdictions share the same likelihood of experiencing a winter storm.

The Arctic is warming twice as fast as the rest of the world. As it warms, climate scientists are increasingly concerned that this can have significant implications for the jet stream, and cold arctic air is being pushed into areas that are not prepared for these conditions. (hsph.harvard.edu)

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. Red River County and its jurisdictions can expect ice accumulations on streets, power lines and trees that will range from one tenth to one half of an inch.

Residents of Avery, Bogata, Clarksville, and Detroit 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 businesses in the jurisdiction 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 icy roads increase.

Estimated Property Loss at 15%	
Red River County	$71,070,278
Avery	$3,184,424
Bogata	$8,051,161
Clarksville	$21,811,137
Detroit	$4,554,848

The Damage Assessment tables found on Page 22 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. No changes in land use or development expected.

Vulnerability: Red River County has a significant amount of acreage designated for conservation, public lands, and agricultural land uses. The small towns of Avery, Bogata, Clarksville, and Detroit are vulnerable to power outages, icy roads, and delayed emergency services.

Extent: During severe winter weather, Red River County and participating jurisdictions could experience structural damage due to limbs falling on homes, buildings, or utility lines. Traffic accidents could occur due to icy roads. Winter storm events could affect both rural Red River County and the jurisdictions of Avery, Bogata, Clarksville, and Detroit. Red River County can expect winter snowfall accumulations up to 3 inches.

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 more urban areas are operating within a few days. Avery, Bogata, Clarksville, Detroit, and rural Red River County may have power outages lasting one to two weeks.

TORNADO

Description

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 late Spring to early Summer, 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.

Texas is the state with the most tornadoes, experiencing on average 120 tornadoes annually, provoking about 11 deaths per year. With its vast size and diverse geography, Texas is prone to tornado activity throughout the year, resulting in a significant number of tornado-related incidents and fatalities. (wisevoter.com)

According to homefacts.com, Red River County, Texas is listed as moderate risk for Tornadoes. The largest tornado in the Red River County area was an F4 in 1982 that caused 170 injuries and 10 deaths. There have been 114 tornadoes 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 +

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		

PREVIOUS OCCURANCES OF TORNADO IN RED RIVER COUNTY

Data from National Oceanic and Atmospheric Administration (NOAA)

Date	Tornado Events Narrative	Damage
06/09/2014	Avery had damage consistent with that of a weak tornado. An EF0 tornado began along CR. 3326 where it snapped numerous trees, damaged the roof of the school gym and a dugout at the baseball field before lifting on the east side of town. Winds were near 85 mph.	10.00K
12/12/2015	There was damage southwest of Bogata consistent with that of tornado damage. The EF1 tornado first touched down just west of CR 1100. The storm moved into a north-northwest trajectory lifting near FM 196 and CR 1112. Damage consisted of snapped and/or uprooted trees. Structural damage included the removal of a roof from a two-story home. A brief tornado touchdown occurred northwest of Bogata. This tornado briefly developed near the intersection of FM 411 and CR 1245. Trees were snapped, and an outbuilding was destroyed before the tornado lifted.	45.00K
04/22/2020	As a tornado crossed over into Red River County, it had weakened to EF-0 strength, with estimated maximum winds near 80 mph. Several trees/tree limbs were snapped and uprooted as it entered Red River County, before lifting about one-quarter mile into the county.	0.00K
03/30/2022	An EF1 tornado, with winds near 95 mph, touched down just southeast of Bagwell. It ripped metal panels off of a barn and topped a soft wood tree. Metal pieces of the barn and tree branches were thrown as far as 300 yards. The tornado continued to down trees along two properties just off of CR 2110. Another barn's roof was damaged, and shingle damage was observed to a single-family home before it crossed CR 2110. The tornado downed a few more trees north of CR 2110 before lifting north of the roadway.	25.00K
05/24/2022	An EF1 tornado with estimated maximum winds of 95 mph touched down northeast of Detroit along CR 2127 North, where it twisted small and large limbs on a couple of trees. The tornado crossed CR 2140 and 2133, where it snapped and uprooted hardwood trees. The tornado continued to mostly twist and down large branches as it crossed CR 2234 and CR 2235, with a few trees snapped as it crossed CR 2235 before lifting.	5.000M
11/04/2022	An EF4 tornado touched down near the Fulbright community. As the tornado continued northeast, a single-family home had all of its walls removed with only the interior room left standing. It was determined the damage at this location was EF-4 with maximum winds of 170 mph. The damage swath widened and collapsed all the walls on a single-family home and completely destroyed Mount Olive Church.	2.000M
03/04/2025	An EF1 tornado with winds near 100 mph touched down on FM 44 approximately one mile southwest of Lydia, lifting a roof off of a shed adjacent to a residential home. There was tree damage across CR 4645.	10.00K
04/04/2025	A strong EF2 tornado with winds near 130 mph touched down northeast of Bogota. A home suffered major damage. A consistent path of very large, snapped trees was found along CR 1340. Outbuildings were destroyed.	850.00K

Major Declarations for Planning Area: Red River County was a designated area for Public Assistance in the FEMA 4781, Texas Disaster Declarations for Severe Storms, Tornadoes, Straight Line Winds, and Flooding.

Tornadoes in Red River County 2014-2025
Probability Severity

Fujita Scale	Tornados	Estimated Damage
EF0	2	$10,000
EF1	3	$5,080,000
EF2	1	$850,000
EF3	0	$0
EF4	1	$2,000,000
EF5	0	$0
Total	8	$7,940,000

Red River County Tornado Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Red River County Unincorporated	Substantial PRI=4	Likely PRI=3	< than 6 hours PRI=4	< than 6 hours PRI=1	High 3.40
Avery	Substantial PRI=4	Likely PRI=3	< than 6 hours PRI=4	< than 6 hours PRI=1	High 3.40
Bogata	Substantial PRI=4	Likely PRI=3	< than 6 hours PRI=4	< than 6 hours PRI=1	High 3.40
Clarksville	Substantial PRI=4	Likely PRI=3	< than 6 hours PRI=4	< than 6 hours PRI=1	High 3.40
Detroit	Substantial PRI=4	Likely PRI=3	< than 6 hours PRI=4	< than 6 hours PRI=1	High 3.40

RED RIVER COUNTY CRITICAL FACILITIES

Facility	Red River Co	Avery	Bogata	Clarksville	Detroit
City Hall		1	1	1	1
Fire Department	6	1	1		
Civic Center					
Govt. Facility				4	
Wastewater plant		1	1	1	
Corrections Facility				1	
Hospital					
Maintenance Barn	4		1	1	1
Post Office		1	1	1	1
Water Tower	4	1	2	2	
Police Station			1	1	
Sheriff Office				1	
EMS				1	
Public School		1	1	1	1
Water Treatment Plant				1	
County Seat				1	

All critical Facilities are vulnerable to the effects of a tornado.

Location: Tornado Alley is a term often used by the media to denote a zone in the Great Plains region of the central United States, often a north-south oriented region centered on north Texas, Oklahoma, Kansas, and Nebraska, where tornadoes are most frequent. Red River County and the participating jurisdictions of Avery, Bogata, Clarksville, and Detroit can be struck by a tornado.

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 25 years, there is a 24% chance that a tornado will strike Red River County in any given year. Strong scientific evidence predicts an increase in violent weather in Red River County. Most tornadoes are expected to touch down for short periods of time in a bounce type pattern. The possibility of a tornado touchdown on an annual basis is considered likely for the County. According to the FEMA National Risk Index, Red River County risk for Tornado is relatively low.

According to noaa.gov there is a greater risk of more off-season tornadoes in a warmer future climate, meaning more tornadic activity when people least expect it.

Impact: A strategically placed F5 Tornado could destroy Avery, Bogata, Clarksville, and Detroit. Fortunately, a storm of that magnitude never occurred. Damage could be substantial. The full range of 65 (F0) to 200 mph (F4 +) is considered to determine the extent. Tornadoes can produce damage that ranges from minor wind damage to total destruction. No changes in land use or development expected.

Vulnerability: Due to the frequency and unpredictable pattern of tornadoes, all of Red River County is vulnerable to tornado-induced damage. The potential damage is high due to the concentrations of populated areas, number of mobile homes and manufactured housing units throughout the county.

Extent: Historically the severity of tornadoes in Red River County has ranged from EF0 to EF4 on the Enhanced Fujita (EF) Scale.

Estimated Property Loss at 50%	
Red River County	$236,900,926
Avery	$10,614,747
Bogata	$26,837,204
Clarksville	$72,703,791
Detroit	$15,182,827

Summary: The jurisdictions of Red River County, Avery, Bogata, Clarksville, and Detroit would experience substantial damage from tornadoes. Many of the businesses have prefabricated structures and most of the housing is older, wood frame dwellings. Even EF 2 winds would cause major damage. The school systems have emergency plans in place to protect the children. It is conceivable that a targeted tornado strike could result in a 50 to 75% property loss. Upgrades in building codes and safe room construction are life savers in these rural communities.

WILDFIRE

Description

A wildfire is an uncontrolled fire that burns in wildland vegetation, often in rural areas. Wildfires can burn in forests, grasslands, savannas, and other ecosystems, and have been doing so for hundreds of millions of years. They are not limited to a particular continent or environment. Wildfires can burn in vegetation located both in and above the soil. Ground fires typically ignite in soil thick with organic matter that can feed the flames, like plant roots. Ground fires can smolder for a long time—even the entire season—until conditions are right for them to grow to a surface or crown fire. Surface fires, on the other hand, burn in dead or dry vegetation that is lying or growing just above the ground. Parched grass or fallen leaves often fuel surface fires. Crown fires burn in the leaves and canopies of trees and shrubs. (National Geographic)

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 can protect homes and businesses, 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.

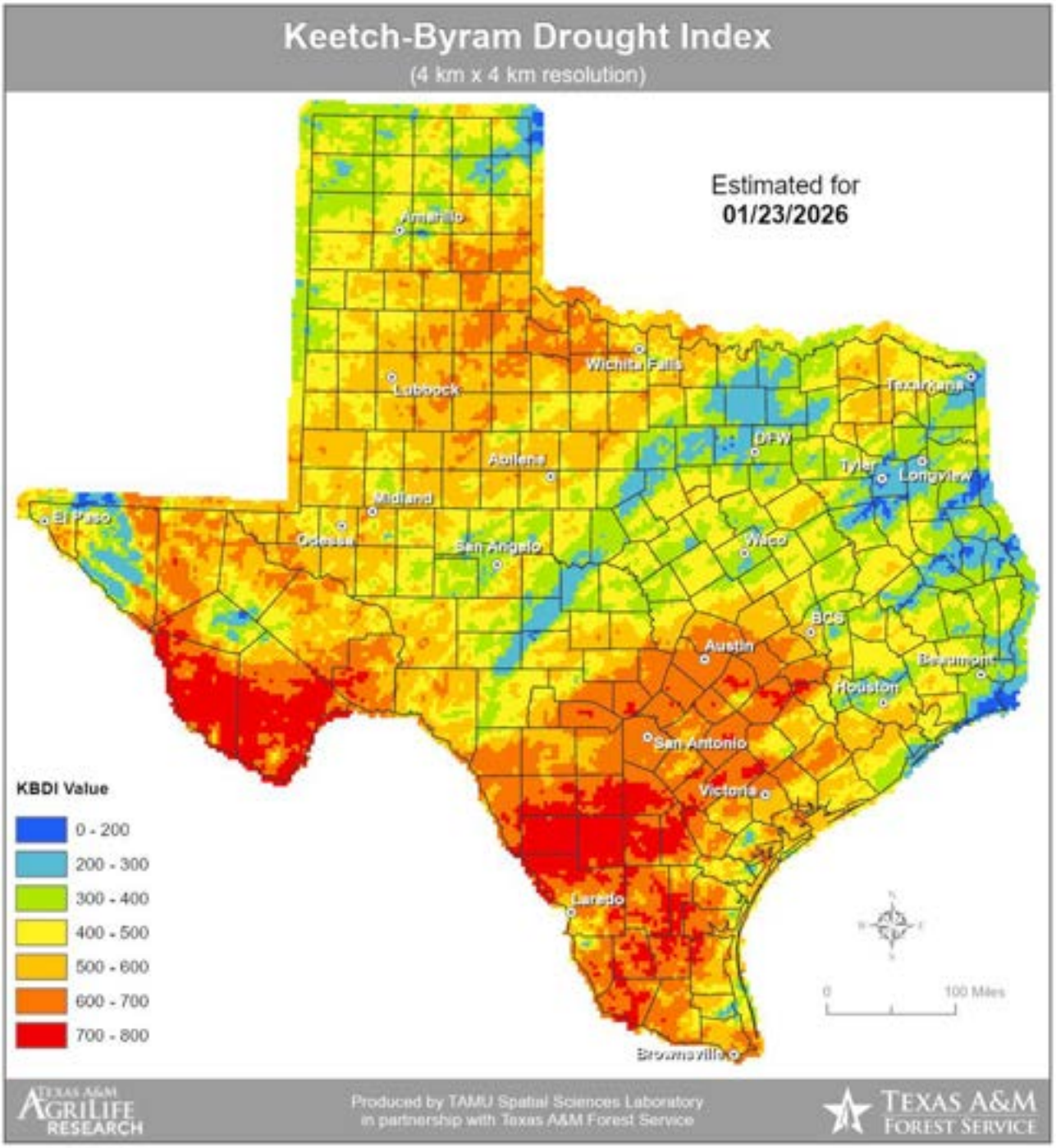
There is not a direct relationship between climate change and fire, but researchers have found strong correlations between warm summer temperatures and large fire years, so there is general consensus that fire occurrence will increase with climate change. (www.usgs.gov)

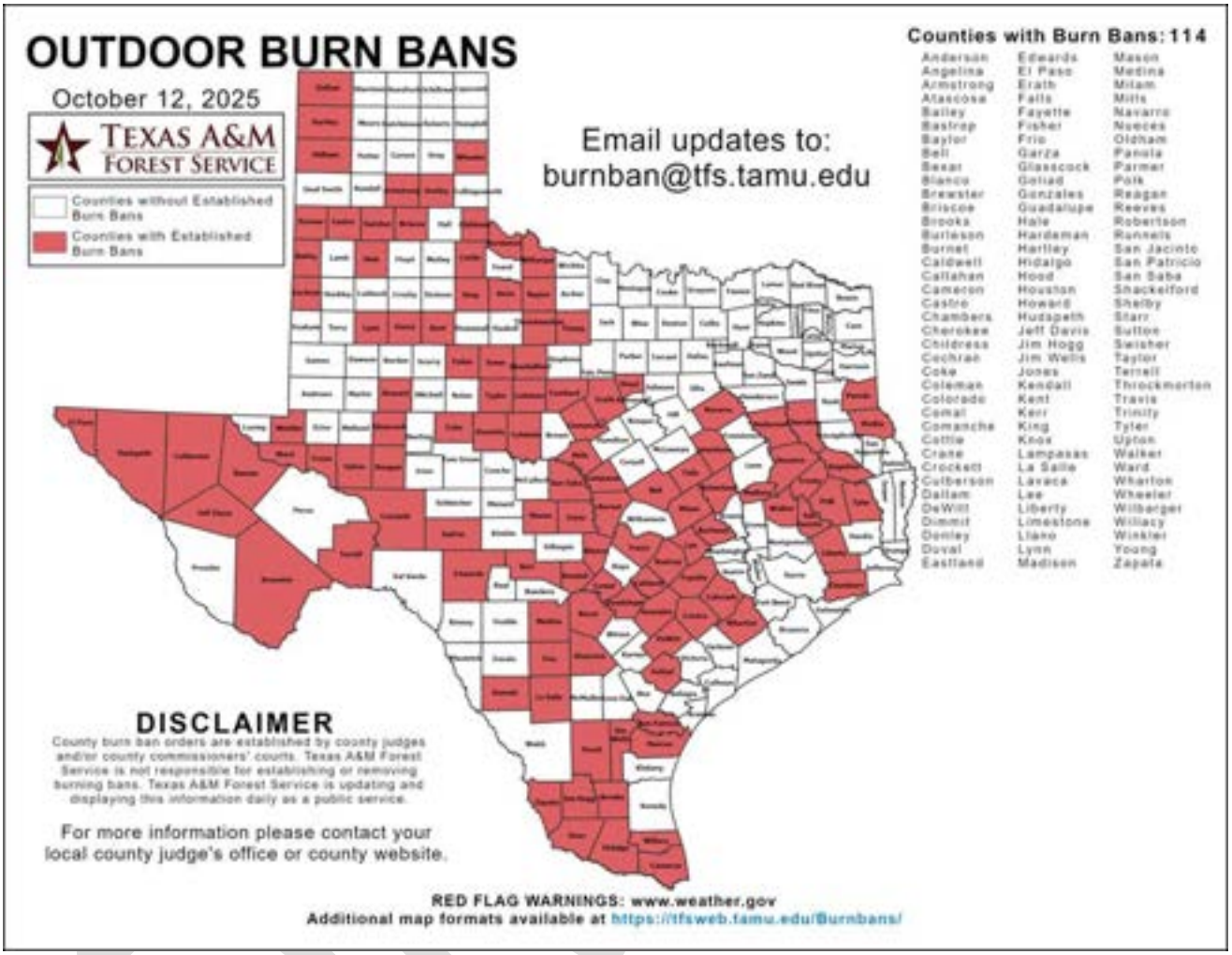
Should any part of the State of Texas experience extended periods of fair, windy weather, implementation of countywide bans on outdoor burning may be advised as a wildfire prevention tool in that area. Indicators that dictate the need for a burn ban could include: 1000 HR fuel moisture, Energy Release Component and run occurrence of local fire departments.

The Keetch-Byram Drought Index (KBDI) is 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.

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 smoke to carry into and 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 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. A 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.

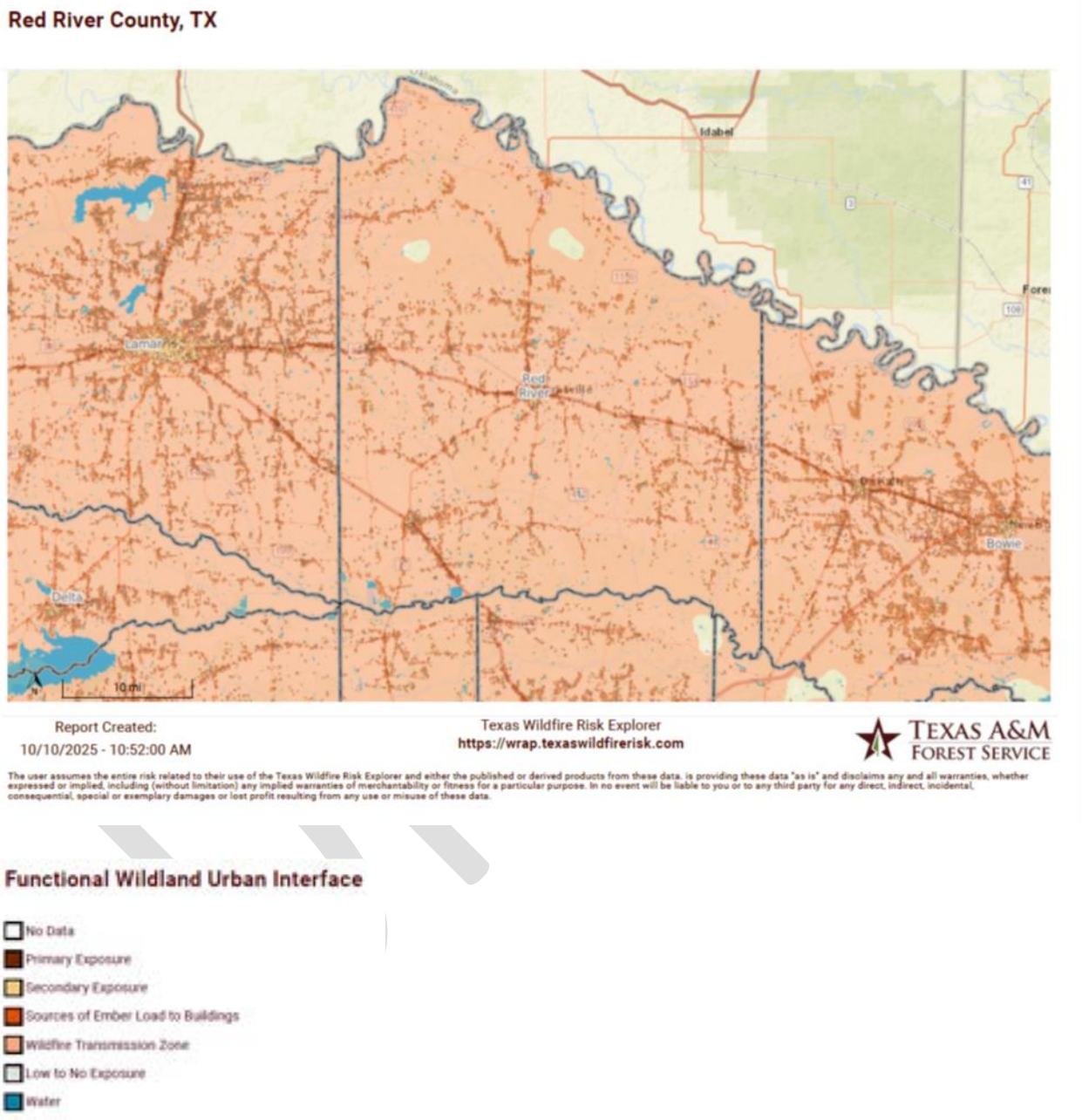
The map below shows the current (January 23, 2026) KBDI for Red River County at 400-600.




OUTDOOR BURN BANS
October 12, 2025
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: 114
Anderson
Angelina
Armstrong
Atascosa
Bailey
Bastrop
Baylor
Bell
Bexar
Blanco
Brewster
Briscoe
Brooks
Burleson
Burnet
Caldwell
Callahan
Cameron
Castro
Chambers
Cherokee
Childress
Cochran
Coke
Coleman
Colorado
Comal
Comanche
Cottle
Crane
Crockett
Culberson
Dallam
DeWitt
Dimmit
Donley
Duval
Eastland
Edwards
El Paso
Erath
Falls
Fayette
Fisher
Frio
Garza
Glasscock
Goliad
Gonzales
Guadalupe
Hale
Hardeman
Hartley
Hidalgo
Hood
Houston
Howard
Hudspeth
Jeff Davis
Jim Hogg
Jim Wells
Jones
Kendall
Kent
Kerr
King
Knox
Lampasas
La Salle
Lavaca
Lee
Liberty
Limestone
Llano
Lynn
Madison
Mason
Medina
Milam
Mills
Navarro
Nueces
Oldham
Parmer
Polk
Reagan
Reeves
Robertson
Runnels
San Jacinto
San Patricio
San Saba
Shackelford
Shelby
Starr
Sutton
Swisher
Taylor
Terrell
Throckmorton
Travis
Trinity
Tyler
Upton
Walker
Ward
Wharton
Wheeler
Wilbarger
Willacy
Winkler
Young
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/

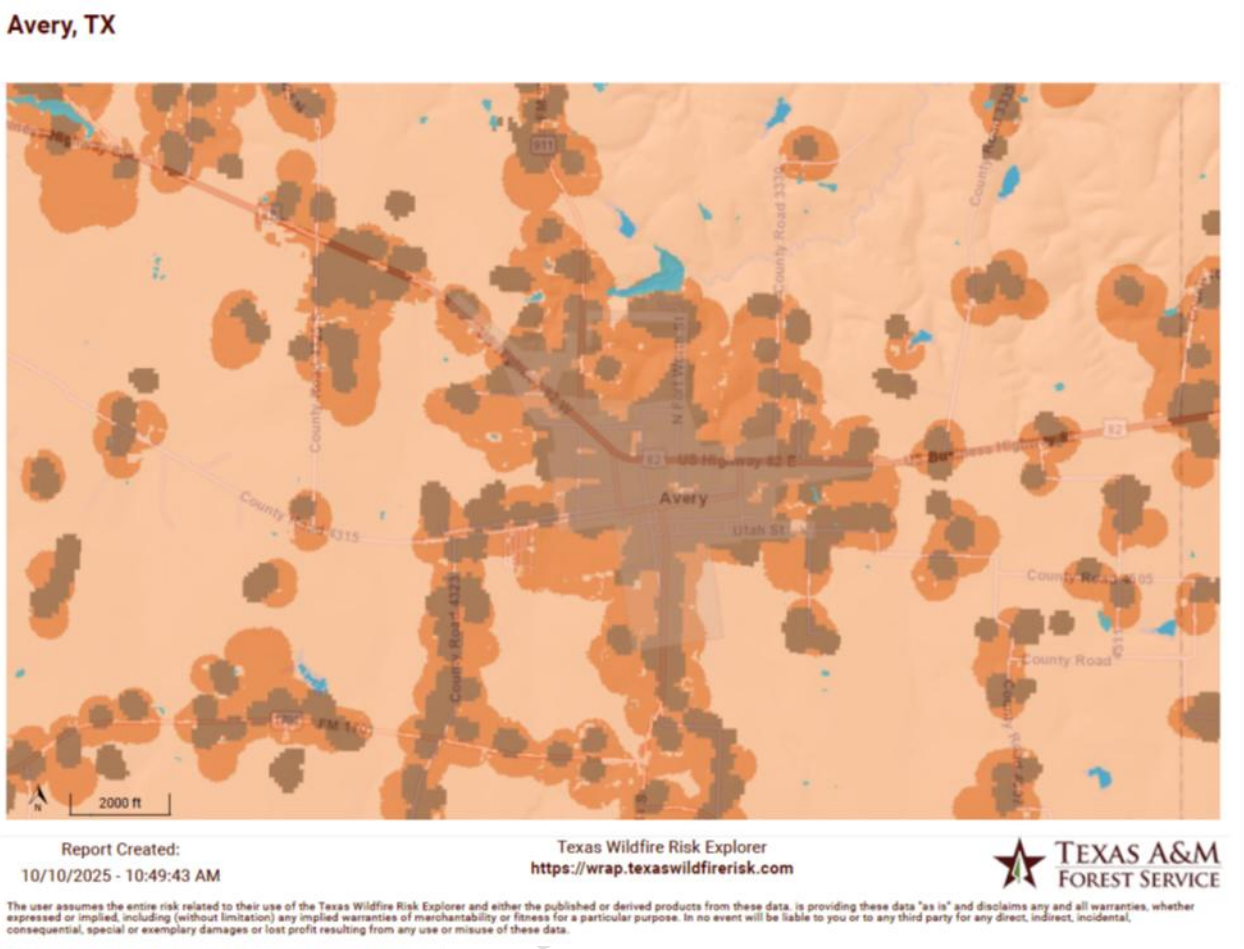
Potential Wildfire Damages and Losses in Red River County

The Wildland Urban Interface (WUI) is a geographical area where combustible homes are mixed with combustible vegetation.



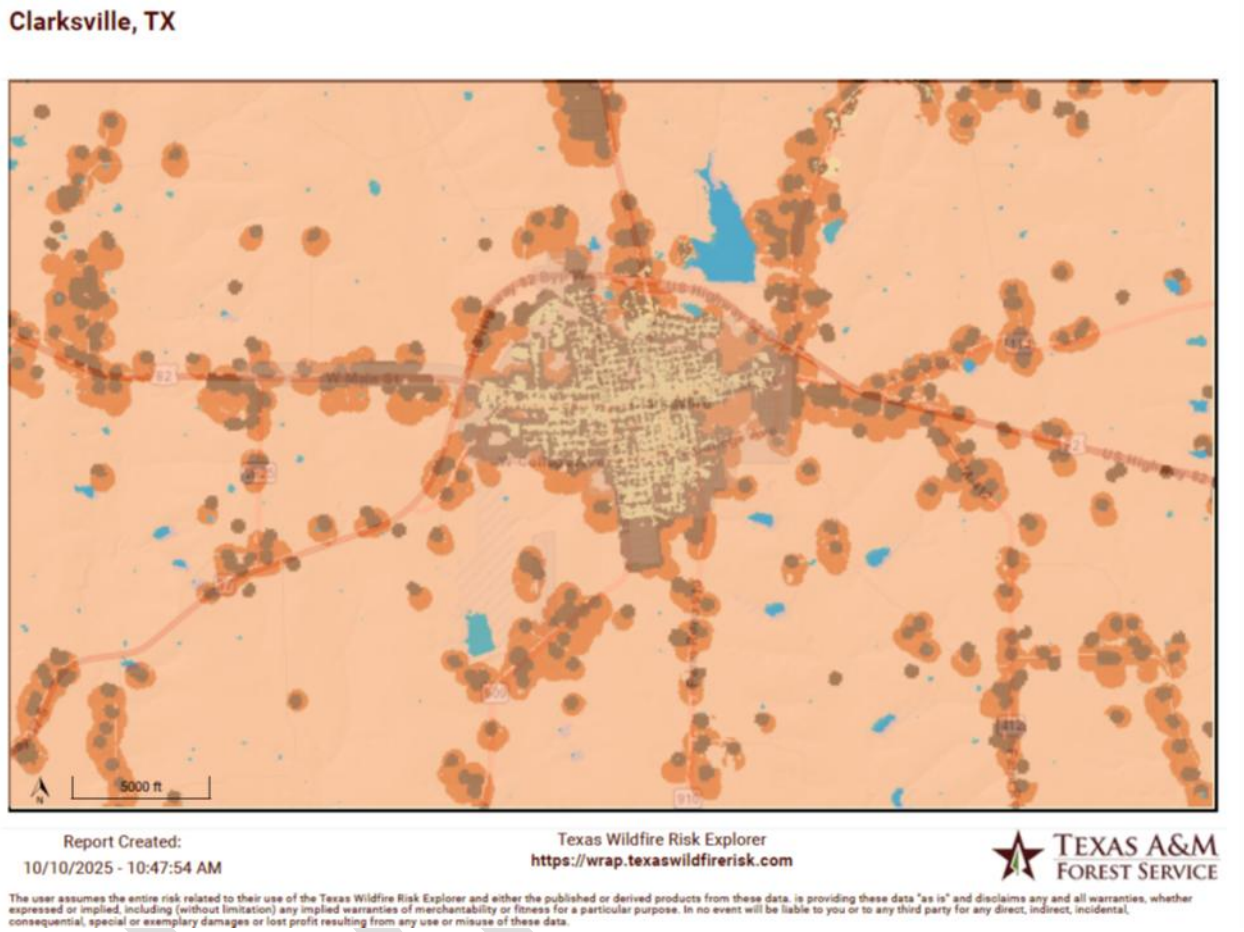
Potential Wildfire Damages and Losses in the City of Avery

The Wildland Urban Interface (WUI) is a geographical area where combustible homes are mixed with combustible vegetation.



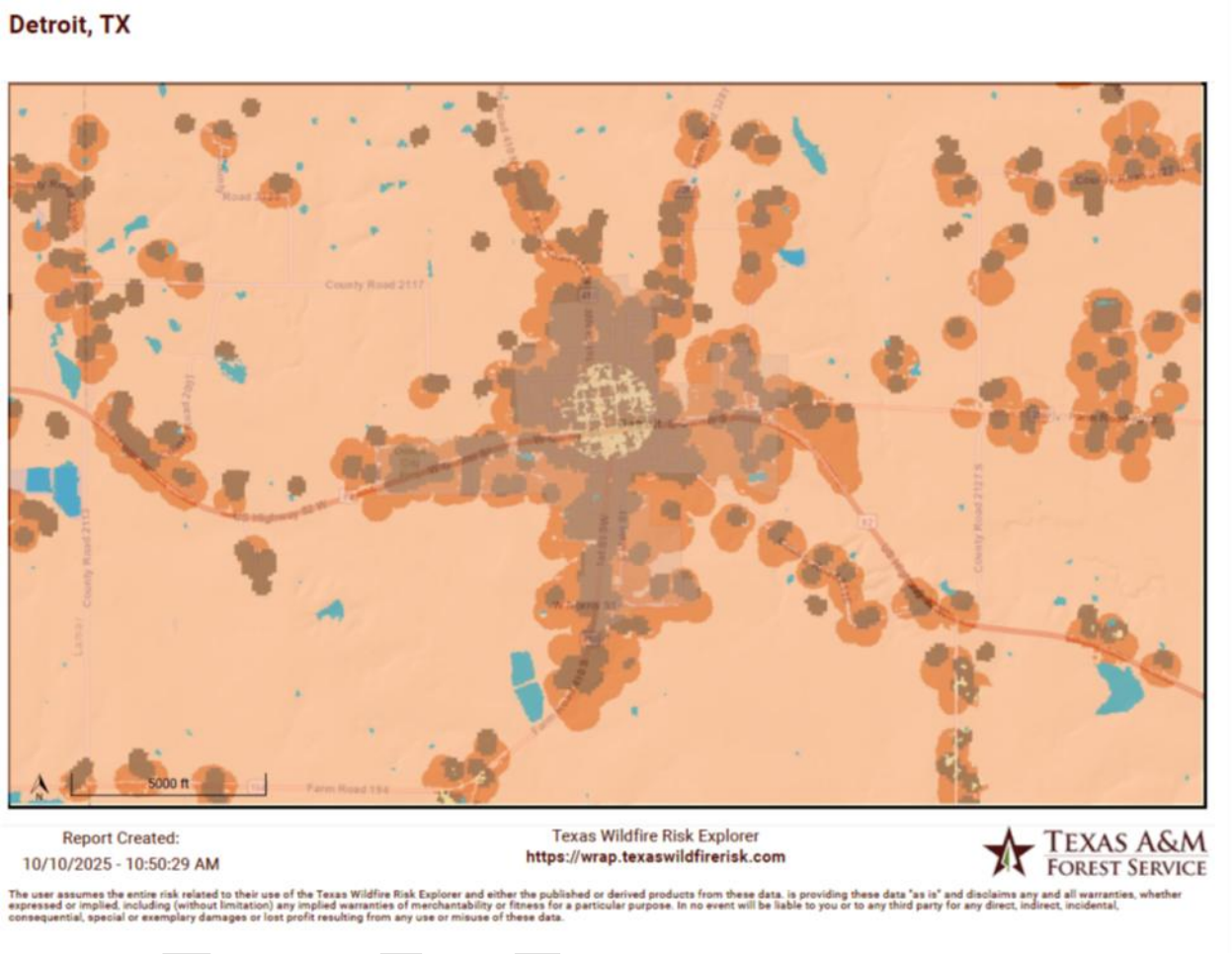
Potential Wildfire Damages and Losses in the City of Clarksville

The Wildland Urban Interface (WUI) is a geographical area where combustible homes are mixed with combustible vegetation.

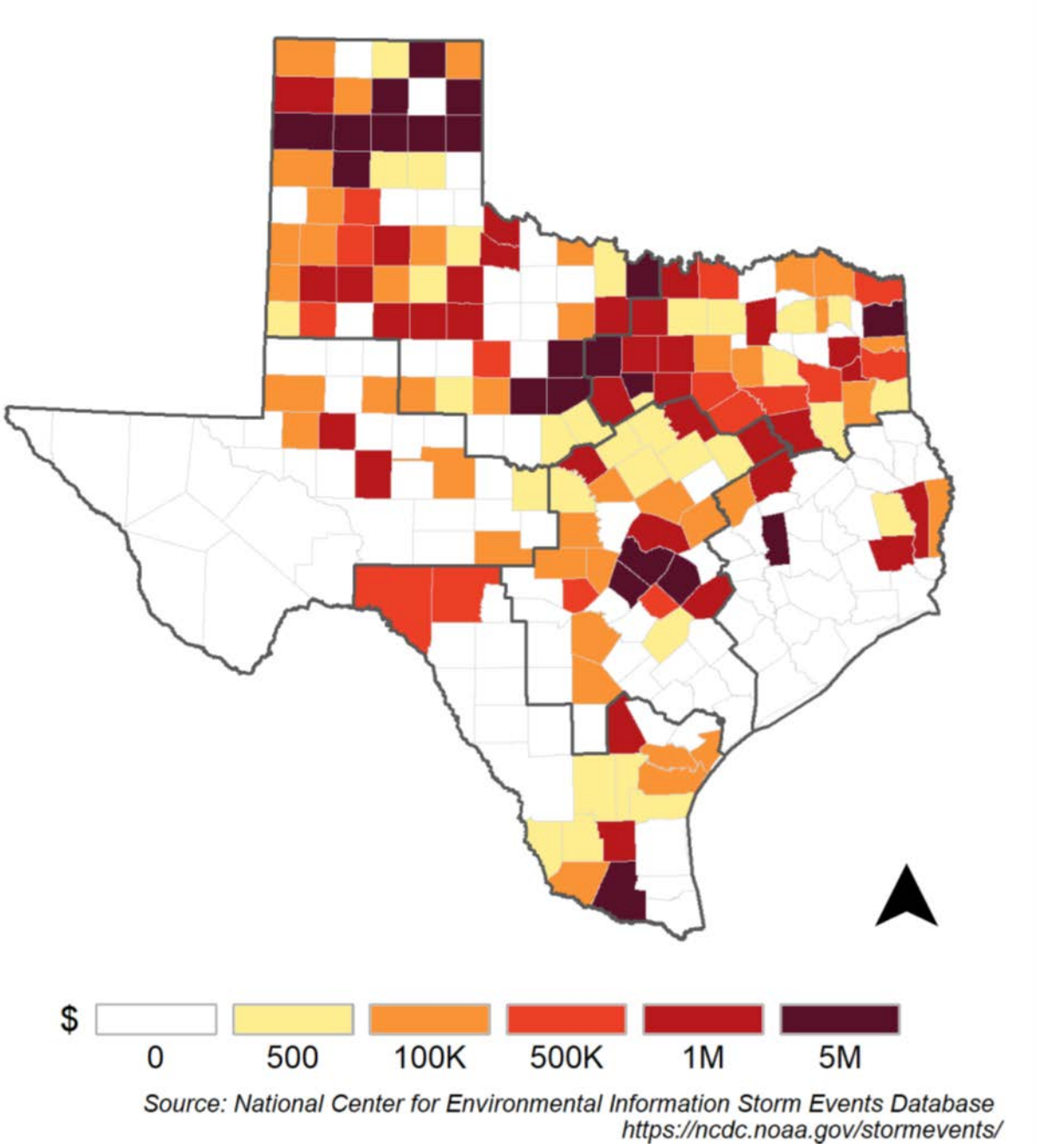


Potential Wildfire Damages and Losses in the City of Detroit

The Wildland Urban Interface (WUI) is a geographical area where combustible homes are mixed with combustible vegetation.

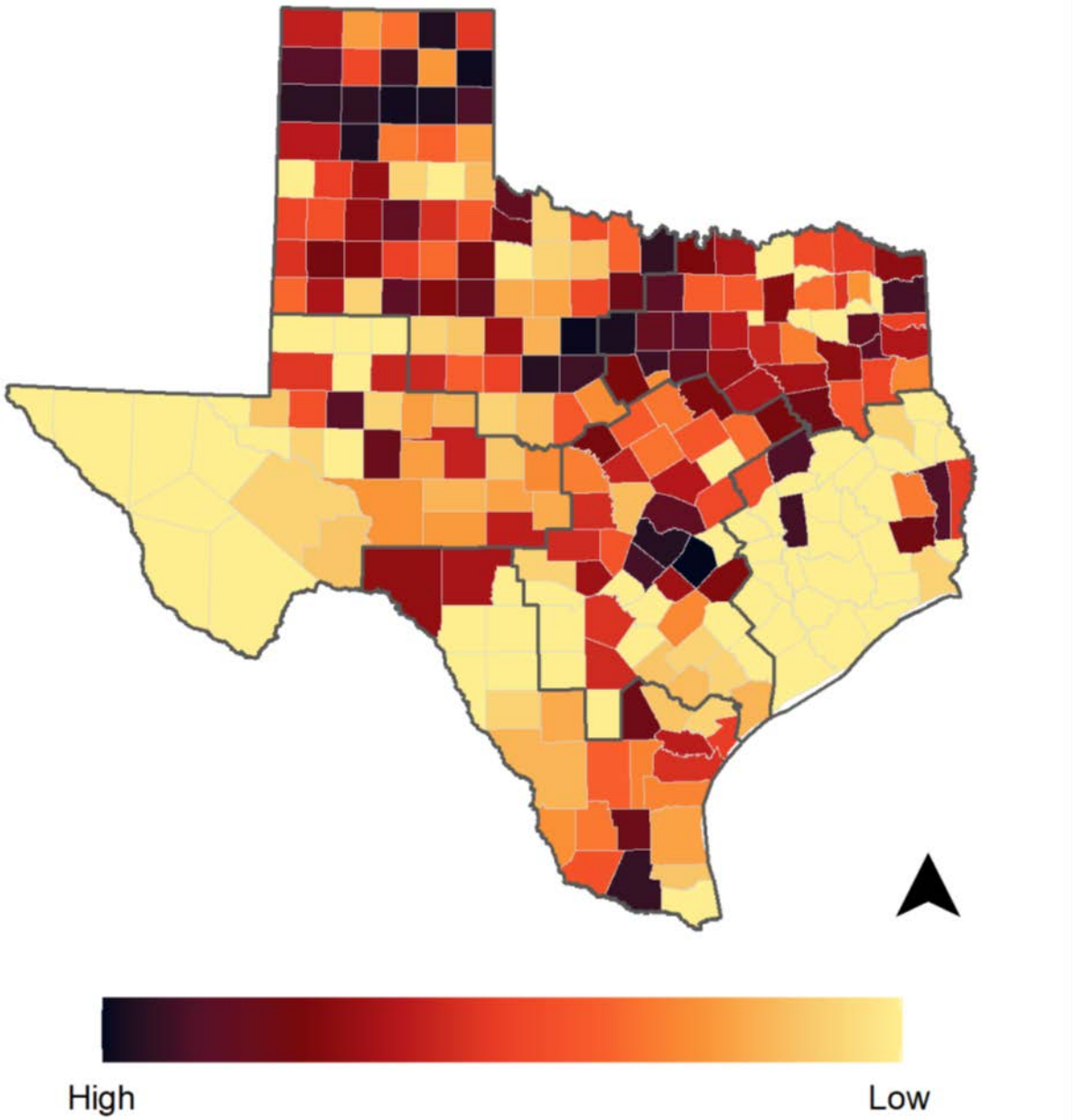


Wildfire: Historical Dollar Losses, 2000-2021



Source: 2023 SHMP

Wildfire: Counties at Greatest Risk



Source: National Center for Environmental Information Storm Events Database
https://ncdc.noaa.gov/stormevents/

Source: 2023 SHMP

Red River County Wildfire Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Red River Unincorporated	Substantial PRI=4	Highly Likely PRI=4	< than 6 hours PRI=4	< Week PRI=3	High 3.28
Avery	Substantial PRI=4	Highly Likely PRI=4	< than 6 hours PRI=4	< Week PRI=3	High 3.28
Bogata	Substantial PRI=4	Highly Likely PRI=4	< than 6 hours PRI=4	< Week PRI=3	High 3.28
Clarksville	Substantial PRI=4	Highly Likely PRI=4	< than 6 hours PRI=4	< Week PRI=3	High 3.28
Detroit	Substantial PRI=4	Highly Likely PRI=4	< than 6 hours PRI=4	< Week PRI=3	High 3.28

RED RIVER COUNTY CRITICAL FACILITIES

Facility	Red River Co	Avery	Bogata	Clarksville	Detroit
City Hall		1	1	1	1
Fire Department	6	1	1		
Civic Center					
Govt. Facility				4	
Wastewater plant		1	1	1	
Corrections Facility				1	
Hospital					
Maintenance Barn	4		1	1	1
Post Office		1	1	1	1
Water Tower	4	1	2	2	
Police Station			1	1	
Sheriff Office				1	
EMS				1	
Public School		1	1	1	1
Water Treatment Plant				1	
County Seat				1	

All critical Facilities are vulnerable to the effects of wildfire.

RED RIVER COUNTY FIRE DEPARTMENTS

Annona VFD
Avery VFD
Bagwell VFD
Bogata VFD
Boxelder VFD
Clarksville VFD
Cuthand VFD
Detroit VFD
North Woods VFD
Pine Creek VFD
Rosalie VFD

RED RIVER COUNTY WILDFIRE BY ACREAGE 2014-2024

Source: Texas A & M Forest Service

Type of Fire	**ACREAGE**
Arson	260
Campfire	0
Debris burning	2,519
Equipment use	817
Fireworks	1
Natural	40
Other	95
Power generation	58
Railroads	0
Recreation and ceremony	217
Smoking	6
Unable to Determine	1,246
Total	**5,259**

Major Declarations for Planning Area: Red River County was a designated area for Public Assistance in the FEMA 4029-DR, Texas Disaster Declaration, September 2011, Texas Wildfires.

Location: Due to heavy vegetation and dry conditions, wildfire events in Red River County are possible any time during the year. All of Red River County and the participating jurisdictions could be affected, depending on where the wildfire started.

Probability: The FEMA National Risk Index lists Red River Counties' risk for wildfire as 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 Red River County and participating jurisdictions. 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)

Climate change could affect the length, frequency and burned areas of wildfire season. (epa.gov)

Impact: High winds, high temperatures, dry conditions, and low humidity can increase the potential and severity of wildfire. Wildfire can spread quickly, affecting large areas and rural areas. This type of fire could burn for days destroying structures and lives. Rural areas in Red River County experience most Wildfires. The KDBI Levels of 200 (moderate) to 800 (extreme) are considered when mitigating wildfires. The maps located on pages 63-67 demonstrate the wildfire urban interface. If a wildfire breaks out in the jurisdictions of Red River County, many acres would be in danger. The table below demonstrates estimated structure loss. See the Loss Estimate Tables on page 22 for further inquiry regarding loss. No changes in land use or development expected.

Estimated Property Loss at 25%	
Red River County	$118,450,463
Avery	$5,307,374
Bogata	$13,418,602
Clarksville	$36,351,895
Detroit	$7,591,414

Vulnerability: The most vulnerable month for wildfires is January. The most significant danger lies in the rural areas of the county where forests and pastures meet. Farm equipment and structures including barns and homes may be destroyed.

Extent: In the last ten years over 5,259 acres of land have been affected by wildfires. A 25% loss could cost Red River County and participating jurisdictions over 180 million dollars.

Summary: Wildfires are more prevalent where counties have seasons of drought and extreme temperatures. Rural homes and structures have been threatened by the increased volume and magnitude of these occurrences. The entire planning area of Red River County and the participating jurisdictions are at risk from wildfire.

CAPABILITY ASSESSMENT

Administrative, Financial, Regulatory, Outreach, and Technical Capabilities

Capability Assessment describes the ability of the jurisdictions to implement strategies and incorporate mitigation principles into other planning initiatives. Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of natural hazards. Administrative and technical capabilities include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. Education and outreach programs and methods can be used to implement mitigation activities and communicate hazard-related information.

Local Land Use Planning, City Plans and Ordinances
Red River County has an On-Site Sewage Facility (OSSF) rule.
The City of Avery has a master plan and a local emergency operations plan.
The City of Bogata has a code of ordinances that includes building regulations.
The City of Clarksville has a code of ordinances that includes building regulations, a comprehensive plan that covers street, drainage, housing, land use, zoning and a Planning and Zoning Board and Board of Adjustment.
The City of Detroit has building codes, land development code, and a comprehensive plan.

Administrative Capabilities and Critical Mitigation Staffing Capabilities
Red River County Judge and Commissioners Court
Red River County Emergency Management Coordinator
Red River County Sheriff
Mitigation Planning Committee
City of Bogata Mayor and City Council
City of Clarksville Mayor and City Council
City of Detroit Mayor and City Council

Technical Capabilities
Residents of Detroit can subscribe to email or text alerts
The City of Clarksville has a Mass Notification System CivicReady
Red River County has the Regroup mass notification System and E-Dispatch automated mobile dispatching
Avery, Bogata, and Clarksville have emergency warning sirens
Active 911

Public Education and Outreach
Red River County Website
Red River County Emergency Management Facebook page
City of Avery Website
City of Bogata Website and Facebook page
City of Clarksville Website and Facebook page
Most of the Fire Departments in Red River County have Facebook pages
Radio and Newspaper

Financial Capabilities
General Budgeting
FEMA Mitigation Funding
Other State and Federal Funding

Red River County, the Cities of Avery, Bogata, Clarksville and Detroit are dedicated to expanding and improving these capabilities as new needs are recognized to reduce risks from natural hazards. Red River County and all jurisdictions in this plan have the ability to expand/improve their capabilities under the direction of the County Judge and City Mayors along with the City Councils and Commissioners Court, and all support staff. Red River County has an Emergency Management Coordinator that supports the unincorporated area of Red River County as well as the jurisdictions of Avery, Bogata, Clarksville and Detroit. The Emergency Management Coordinator is a great support for the County in identifying and mitigating the effects of natural hazards in Red River County. With the assistance of the Red River County Emergency Management Coordinator, the smaller jurisdictions of Avery, Bogata, Clarksville and Detroit will have the ability to expand and improve their capabilities to achieve mitigation.

Federal Government Mitigation Funding Sources

The FEMA Region 6 Texas Mitigation Assistance Resource Guide provides state, territory, and local officials with a wide array of potential mitigation funding resources. These resources include grants, loans, technical assistance, and in-kind services from federal, state, territory, and private sources. Each resource includes information about the program, eligibility requirements, cost sharing, and an example of program use, if available. The Guides also align the resource with the National Mitigation Framework core capability and the National Disaster Recovery Framework support function.

Federal Emergency Management Agency (FEMA) Programs

Program	Details
Flood Mitigation Assistance Program (FMA)	Provides funding to implement measures to reduce or eliminate the long-term risk of flood damage.
Hazard Mitigation Grant Program (HMGP)	Provides grants to implement long-term hazard mitigation measures after a major disaster declaration.
National Flood Insurance Program (NFIP)	Enables property owners to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages.
Fire Management Assistance Grants Program (FMAG)	Provides equipment and supplies purchases, overtime labor costs, temporary repairs of damage from firefighting activities, emergency work, evacuations and sheltering, search and rescue, mobilization, and demobilization.
Building Resilient Infrastructure and Communities (BRIC)	Building Resilient Infrastructure and Communities (BRIC) will support states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. BRIC is a new FEMA pre-disaster hazard mitigation program that replaces the existing Pre-Disaster Mitigation (PDM) program.
Emergency Management Performance Grant (EMPG)	Helps communities program implement the National Preparedness System by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness with an overall goal of securing and creating a resilient nation.

Environmental Protection Agency (EPA)

Program	Details
Clean Water Act Section 319 Grants	Grants for water source management programs including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and regulation. Funds are provided only to designated state and tribal agencies
Clean Water State Revolving Funds	State grants to capitalize loan funds. States make loans to communities, individuals, and others for high-priority water-quality activities.
Wetland Program Development Grants	Funds for projects that promote research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution.
Targeted Watersheds Grants Program	Established in 2003, the Targeted Watersheds Grant program is designed to encourage successful community-based approaches and management techniques to protect and restore the nation's watersheds. Managed by the Environmental Protection Agency.

Floodplain, Wetland and Watershed Protection Programs

Program	Details
USACE Planning Assistance to States (PAS)	Fund plans for the development and conservation of water resources, dam safety, flood damage reduction and floodplain management. 50% non-federal match.
USACE Flood Plain Management Services (FPMS)	Technical support for effective floodplain management.
Texas Silver Jackets	Under the National Flood Risk Management Program, it promotes agency collaboration and coordination with interagency, state-led flood risk and multiple hazard management teams. Provides resources/tools for supporting information sharing and networking, and to promote flood risk awareness efforts. actions to reduce risk.
USACE Environmental Laboratory	Guidance for implementing environmental programs such as ecosystem restoration and reuse of dredged materials.
U.S. Fish & Wildlife Service Coastal Wetlands Conservation Grant Program	Matching grants to states for acquisition, restoration, management, or enhancement of coastal wetlands.
U.S. Fish & Wildlife Service Partners for Fish and Wildlife Program	Program that provides financial and technical assistance to private landowners interested in restoring degraded wildlife habitat.

Office of Housing and Urban Development (HUD)

Program	Details
Community Development Block Grants (CDBG) - DR	Grants to develop viable communities, principally for low- and moderate-income people. CDBG funds are available through Disaster Recovery Initiative. Disaster funds are contingent upon Presidential disaster declaration.
Community Development Block Grants (CDBG) – Mitigation (MIT)	This unique program represents a significant opportunity for eligible grantees – those affected by recent disasters -- to carry out strategic and high-impact activities to mitigate disaster risks and reduce future losses by: increasing resilience to disasters, and reducing or eliminating the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship by lessening the impact of future disasters.
Disaster Recovery Assistance	Disaster relief and recovery assistance for individuals in the form of special mortgage financing for rehabilitation of impacted homes.
Neighborhood Stabilization Program	Funding to State and local governments and non-profits for the purchase and rehabilitation of foreclosed and vacant property in order to renew neighborhoods devastated by the economic crisis.

Bureau of Land Management (BLM)

Program	Details
Community Assistance and Protection Program	Focuses on mitigation/prevention, education, and outreach. National Fire Prevention and Education teams are sent to areas across the country at-risk for wildland fire to work with local residents.
Firewise Communities Program	Effort to involve homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire before a fire starts.

U.S. Department of Agriculture (USDA)

Program	Details
USDA Forest Service Economic Action Program	Funds for preparation of Fire Safe plans to reduce fire hazards and utilize byproducts of fuels management activities in a valued fashion. 80% of total cost of project may be covered.
USDA Natural Resources Conservation Service Emergency Watershed Protection Support	Funds for implementing emergency measures in watersheds in order to relieve imminent hazards to life and property created by a natural disaster.
USDA Natural Resources Conservation Service Watershed Protection and Flood Prevention	This program provides for cooperation between the Federal government and the states and their political subdivisions to work together to prevent erosion, floodwater and sediment damage, to further the conservation development, use and disposal of water, and to further the conservation and proper use of land in authorized watersheds.

Health and Economic Agencies

Program	Details
Department of Health & Human Services Disaster Assistance for State Units on Aging (SUAs)	Provide disaster relief funds to those SUAs and tribal organizations who are currently receiving a grant under Title VI of the Older Americans Act. For areas designated a Disaster Declaration issued by the President.
Economic Development Administration (EDA) Economic Development Administration	Grants that support public works, economic adjustment assistance, and planning. Certain funds allocated for locations recently hit by major disasters. The maximum investment rate shall not exceed 50% of the project cost.
U.S. Small Business Administration Small Business Administration Loan Program	Low-interest, fixed rate loans to small businesses for the purpose of implementing mitigation measures. Also available for disaster damaged property. Must meet SBA approved credit rating.

Corporation for National and Community Service (CNCS)

Program	Details
AmeriCorps Senior Corps Social Innovation Fund Volunteer Generation Fund	The nation's largest grant-maker for service and volunteering plays a critical role in strengthening America's nonprofit sector and addressing the nation’s challenges through service.

Research Grants

Program	Details
National Science Foundation (NSF) Decision, Risk, and Management Sciences Program (DRMS)	Grants for small-scale, exploratory, high-risk research having a severe urgency with regard to natural or anthropogenic disasters and similar unanticipated events.
U.S. Geological Survey (USGS) National Earthquake Hazards Reduction Program	The purpose of NEHRP is to provide products for earthquake loss reduction to the public and private sectors by carrying out research on earthquake occurrence and effects. Communities with population under 20,000.

Texas Water Development Board

Program	Details
FEMA Flood Mitigation Assistance Program (FMA)	As described under federal programs, the State manages grants to subgrantees for planning or project assistance to communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other insurable structures under the National Flood Insurance Program.
Flood Protection Planning Program	Planning assistance to communities in evaluation of structural and nonstructural solutions to flooding problems, including early flood warning systems and flood response plans.
Drinking Water State Revolving Fund	Below market, fixed interest rate loans. Principal forgiveness for qualifying disadvantaged, green, very small systems, and urgent need projects.
Rural Water Assistance Fund	Long-term, fixed interest rate loans that provide small, rural water utilities with low-cost, long-term financing for the planning, design acquisition, and construction of water and wastewater projects.
State Participation Program – Regional Water and Wastewater Facilities	Long-term, fixed interest rate financing through temporary TWDB ownership interest in a regional facility.
State Water Implementation Fund for Texas (SWIFT)	Flexible financing options: low-interest loans, deferred loans, or temporary TWDB ownership interest.
Economically Distressed Areas Program	Provides financial assistance for the planning, design, acquisition, and construction of water and wastewater projects in economically distressed areas where service is unavailable or is inadequate to meet state standards.
Agricultural Water Conservation Grants	Funding for conservation projects or programs.
Agricultural Water Conservation Loans	Funding for conservation projects or conservation programs as outlined in Agricultural Water Conservation Grants above.
Groundwater Conservation District Loan Program	Finance the startup costs (salaries and payroll taxes, utilities, travel, insurance, building and office leases, office supplies and furniture, telephone and computer equipment, and legal and professional fees) of groundwater conservation districts.
Regional Water Planning Group Grants Program	Planning activities for the long-term (50-year) water supply needs of Texas.
Regional Facility Planning Grant Program	Studies to evaluate and recommend the most feasible alternatives to meet regional (two or more participating entities or service areas) water supply and wastewater facility needs, estimate the costs associated with implementing the recommendations, and identify any institutional arrangements that may be necessary to provide regional water supply and wastewater services.
Water Research Grant Program	Water research that addresses one of the Texas Water Development Board's designated research topics published in its most recent request for proposals.

Texas General Land Office (GLO)

Program	Details
Natural Resources Damage Assessment (NRDA)	Natural resource trustees are the designated federal, state and tribal agencies who are responsible for the natural resources impacted by an oil spill or hazardous substance release. https://tpwd.texas.gov/landwater/water/environconcerns/damage_assessment

Texas Department of Agriculture

Program	Details
CDBG Program	TDA administers the Community Development Block Grant for Rural Texas. The primary objective of the CDBG is to develop viable communities by providing decent housing and suitable living environments and expanding economic opportunities principally for people with low- to moderate- income.
Agricultural Management Assistance (AMA)	Program provides financial and technical assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation methods into their farming operations.
Agricultural Water Enhancement Program (AWEP)	The Agricultural Water Enhancement Program is a voluntary conservation initiative that provides financial and technical assistance to agricultural producers to implement water enhancement activities on agricultural land to conserve surface and ground water and improve water quality.
Conservation Innovation Grants (CIG)	Voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging federal investment in environmental enhancement and protection, in conjunction with agricultural production.
Environmental Quality Incentives Program (EQIP)	Voluntary program that provides financial and technical assistance to agricultural producers through contracts up to a maximum term of ten years.
Wildlife Habitat Incentive Program (WHIP)	Voluntary program for conservation-minded landowners who want to develop and improve wildlife habitat on agricultural land, nonindustrial private forest land, and tribal land.

Texas Department of Housing and Community Affairs

Program	Details
HOME Program	The program goal is to expand in rural areas the supply of decent, safe, affordable housing and strengthen public-private housing partnerships between units of general local governments, public housing authorities, nonprofits, and for-profit entities. Funding has been set aside funding for Disaster Relief and Persons with Disabilities, among others.

Texas Commission on Environmental Quality (TCEQ)

Program	Details
Nonpoint Source Grant Program	The TCEQ and the Texas State Soil and Water Conservation Board (TSSWCB) administer federal grants for activities that prevent or reduce nonpoint source pollution. Grants are awarded annually and fund projects for up to three years. TCEQ usually solicits grants in the summer of each year. Opportunities and instructions for how to apply are published on the web site below. The grants are made available through a federal program authorized under §319 of the Clean Water Act (CWA).
American Recovery and Reinvestment Act (ARRA)	State-managed program utilizing federal funding, ARRA provided significant funding for states to finance high priority water infrastructure projects through a $2 billion appropriation to the DWSRF (see below) program and a $4 billion appropriation to the CWSRF (see below) program. EPA's CWSRF & DWSRF ARRA Implementation webpage provides information on the status of ARRA implementation as well as guidance and resources for states and other stakeholders.
Clean Water State Revolving Fund	Provides attractive, low-cost funding for projects that improve water quality, renew wastewater infrastructure, and support local economies. The independent, revolving loan funds all 50 states and Puerto Rico to administer the SRF program, providing financial assistance to local communities. https://www.epa.gov/cwsrf
Drinking Water State Revolving Fund (DWSRF)	The Safe Drinking Water Act, through the DWSRF, makes funds available to drinking water systems to finance infrastructure improvements. The program also emphasizes providing funds to small and disadvantaged communities and to programs that encourage pollution prevention as a tool for ensuring safe drinking water.

SECTION IV: Mitigation Goals and Strategy

Mitigation Plan Goals

The Red River County Mitigation Action Plan goals describe the direction that Red River 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 properties 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.
- Strengthening emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations and businesses.
- Integrate natural hazard mitigation activities with emergency operation plans and procedures.

Plan Update Mitigation Strategy:
Many of the previous goals and actions were never acted on and some of the old actions are no longer valid. 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 jurisdictions that would alter vulnerability. Red River County experienced a 9% decline in population between 2010 and 2020.
- There have been no changes politically or financially that would impact the plan's development.

Red River County recognizes the importance of dedicated involvement regarding the integration of the plan into existing county and participating jurisdictions plans and budgets and codes. Red River County has initiated a proactive course of action that includes annual reviews and reports to the Red River County Commissioners Court and the city councils of Avery, Bogata, Clarksville, and Detroit.

The presiding Red River 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 whether 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 Red River County and the jurisdictions of Avery, Bogata, Clarksville, and Detroit.

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, 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, which 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.

Unincorporated Red River County Mitigation Actions 2020			
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	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	No longer a concern	Delete 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.	No longer a concern	Delete 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
LIGHTNING	Install lightning protection systems in any critical facility whose function could be impacted by a lightning strike	No longer a concern	Delete in Plan Update
LIGHTNING	Provide public education regarding the dangers and protection from lightning strikes	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	Establish standards for all utilities regarding tree pruning around lines	No longer a concern	Delete in Plan Update
HAIL	Install hail resistant film on the windows of critical facilities	No longer a concern	Delete in Plan Update
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	Delete in Plan Update
DROUGHT	Replace county appliances or equipment with water saving parts as old ones wear out	No longer a concern	Delete 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	No longer a concern	Delete in Plan Update
DAM FAILURE	Deficiency will be remedied either with inundation information from TCEQ or by independent study to determine risk dams pose	On-going	Continue in Plan Update
DAM FAILURE	Provide public education regarding the dangers associated with dam failure and new mitigation strategies	On-going	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. Priority and Cost are defined as:

Priority	
Low	8+ years
Medium	4-7 years
High	1-3 years

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

Unincorporated Red River County

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

Red River County Dam Failure #1	Deficiency will be remedied either with inundation information from TCEQ or by independent study to determine the risk dams pose.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	FEMA Grant/Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County Dam Failure #2	Provide public education regarding the dangers associated with dam failure and new mitigation strategies.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County Hail Drought #1	Monitor drought conditions and water supply.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems
Priority	High
Funding Source(s)	Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	1 year
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County Hail Drought #2	Educate farmers on soil and water conservation practices.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	4 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County 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.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	4 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River 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, Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	3 Years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River 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/Goal #5: Emergency Services
Priority	High
Funding Source(s)	FEMA Grant/Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	2 years
Effect on New Buildings	This could protect new buildings from sewage flooding and water contamination.
Effect on Existing Buildings	This could protect existing buildings from sewage flooding and water contamination.

Red River County Flood Action #3	Develop Flood Prone Maps for Public Awareness in support of Turn Around, Don't Drown.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	FEMA Grant/Red River County Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	Red River County EMC
Estimated Completion Time	2 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County Flood Action #4	Participate in the National Flood Insurance Program
Mitigation Goal/Objective	Goal #2: Public Awareness/Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation
Priority	Medium
Funding Source(s)	FEMA Grant/Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	4 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County Flood Action #5	Create a process for making substantial improvement / substantial damage (SI/SD) determinations to bring buildings into compliance with the floodplain management requirements.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation
Priority	High
Funding Source(s)	FEMA Grant/Red River County Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	Red River County EMC
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County Hailstorm Action #1	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	High
Funding Source(s)	Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	3 years
Effect on New Buildings	Knowledge gained from workshops can translate into actions that improve structures and their design.
Effect on Existing Buildings	Knowledge gained from workshops can translate into actions that improve structures and their design.

Red River County Hailstorm Action #2	Apply for TDEM Safe Room Program
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	TDEM Safe Room Program/Red River County Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	Red River County EMC
Estimated Completion Time	2 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County Lightning Action #1	Provide public education regarding the dangers and protection from lightning strikes.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	4 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County Severe Wind 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/Goal #5: Emergency Services
Priority	High
Funding Source(s)	FEMA Grant/Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	2 years
Effect on New Buildings	This could protect new buildings from sewage flooding and water contamination.
Effect on Existing Buildings	This could protect new buildings from sewage flooding and water contamination.

Red River County Severe Wind Action #2	Apply for TDEM Safe Room Program
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	TDEM Safe Room Program/Red River County Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	Red River County EMC
Estimated Completion Time	2 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County Severe Winter Weather 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/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant/Red River County Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	Red River County EMC
Estimated Completion Time	5 years
Effect on New Buildings	This could protect new buildings from sewage flooding and water contamination.
Effect on Existing Buildings	This could protect existing buildings from sewage flooding and water contamination

Red River County Severe Winter Weather Action #2	Establish Warming Centers around the county for the affected population.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	FEMA Grant/Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	2 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County Tornado 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/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant/Red River County Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	Red River County EMC
Estimated Completion Time	5 years
Effect on New Buildings	This could protect new buildings from sewage flooding and water contamination.
Effect on Existing Buildings	This could protect existing buildings from sewage flooding and water contamination

Red River County Tornado Action #2	Apply for TDEM Safe Room Program for tornado shelters.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	TDEM Safe Room Program/Red River County Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	Red River County EMC
Estimated Completion Time	2 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Red River County Wildfire Action #1	Create and implement a Community Wildfire Protection Program.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness/Goal #4: Partnership and Implementation
Priority	High
Funding Source(s)	FEMA Grants/Red River County Annual Budget
Estimated Cost	High (25K+)
Responsible Agency	Red River County EMC
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	

Red River County Wildfire Mitigation 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)	Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	1 year
Effect on New Buildings	Awareness of trash burning safety could reduce the possibility of a wildfire which could reach a building.
Effect on Existing Buildings	Awareness of trash burning safety could reduce the possibility of a wildfire which could reach a building.

Red River County Wildfire Mitigation Action #3	Implement FIREWISE Program.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	FEMA Grant/Red River County Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	Red River County EMC
Estimated Completion Time	1 year
Effect on New Buildings	
Effect on Existing Buildings	

Avery Mitigation Actions 2020			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Purchase emergency mobile generators for critical facilities use during power outages	On-going	Continue in Plan Update
FLOOD	Develop and implement a program for cleaning debris from ditches and drains within Avery to protect existing and new buildings.	On-going	Continue in Plan Update
TORNADO	Develop and implement a public education program that will provide the public with understanding of their risk from Tornadoes and the mitigation methods to protect life and property.	On-going	Continue in Plan Update
TORNADO	Develop and implement the Texas Individual Tornado Safe Room Program	Complete	Delete in Plan Update
THUNDERSTORM WIND	Provide a community awareness campaign concerning the risks and consequences of windstorms. By educating the public about 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
LIGHTNING	Purchase portable generators that can provide electricity to a critical facility during lightning strike power outage.	On-going	Continue in Plan Update
LIGHTNING	Provide public education regarding the dangers and protection from lightning strikes.	On-going	Continue in Plan Update
HAIL	Install hail resistant film on the windows of critical facilities.	No longer a concern	Delete in Plan Update
HAIL	Purchase emergency mobile generators for critical facility use during power outages.	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
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, and mandatory water rationing.	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

Avery

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

Avery 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)	Avery Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	5 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Avery Drought Action #2	Develop and implement a drought contingency plan to include water conservation, 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)	Avery Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Avery Extreme Heat Action #1	Radio/TV/newspaper PSA's advising public of heat hazard and providing information about heat advisories.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	Avery Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Avery Flood Action #1	Purchase emergency mobile generators for critical facilities use during power outages
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grants, Avery Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Ensuring that wastewater facilities and pumps have power can help protect new buildings from flooding and water contamination.
Effect on Existing Buildings	Ensuring that wastewater facilities and pumps have power can help protect existing buildings from flooding and water contamination.

Avery Flood Action #2	Develop and implement program for cleaning debris from ditches and drains.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems
Priority	High
Funding Source(s)	FEMA Grant/Avery Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	3 years
Effect on New Buildings	By keeping ditches clear water will flow better, preventing flooding.
Effect on Existing Buildings	By keeping ditches clear water will flow better, preventing flooding.

Avery Flood Action #3	Create a process for making substantial improvement / substantial damage (SI/SD) determinations to bring buildings into compliance with the floodplain management requirements.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation
Priority	High
Funding Source(s)	FEMA Grant/Avery Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Avery Hailstorm Action #1	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grants, Avery Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	5 years
Effect on New Buildings	This could protect new buildings from sewage flooding and water contamination.
Effect on Existing Buildings	This could protect existing buildings from sewage flooding and water contamination

Avery Lightning Action #1	Purchase portable generators that can provide electricity to a critical facility during lightning strike power outage.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #5: Emergency Service
Priority	Medium
Funding Source(s)	FEMA Grant/Avery Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Could help protect new buildings from damage and loss due to fire or electrical surge.
Effect on Existing Buildings	Could help protect existing buildings from damage and loss due to fire or electrical surge.

Avery Lightning Action #2	Provide public education regarding the dangers and protection from lightning strikes.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	City of Avery Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	4 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Avery Severe Winds Action #1	Provide a community awareness campaign concerning the risks and consequences of windstorms. By educating the public about high winds, loss of life and property may be mitigated.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2 Public Awareness
Priority	High
Funding Source(s)	Avery Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	3 years
Effect on New Buildings	Knowledge gained from workshops can translate into actions that improve structures and their design.
Effect on Existing Buildings	Knowledge gained from workshops can translate into actions that improve structures and their design.

Avery Severe 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)	Avery Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Protect new mobile homes from damage during high winds.
Effect on Existing Buildings	Protect existing mobile homes from damage during high winds

Avery Severe Winter Weather 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/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant, Avery Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Protect new buildings from flooding and water contamination.
Effect on Existing Buildings	Protect existing buildings from flooding and water contamination.

Avery Severe Winter Weather 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)	Avery Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	5 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.

Avery Tornado Action #1	Develop and implement a public education program that will provide the public with understanding of their risk from Tornadoes and the mitigation methods to protect life and property.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	Avery Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Avery 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

Avery 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)	Avery Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Avery Mayor
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.

Avery Wildfire Action #2	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant/Avery Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Avery Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Generators can provide power to equipment utilized in fighting fires.
Effect on Existing Buildings	Generators can provide power to equipment utilized in fighting fires.

Bogata Mitigation Actions 2020			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Develop and implement the Turn Around, Don't Drown Program	On-going	Continue in Plan Update
FLOOD	Widen and deepen ditches to allow rainwater run-off to work more efficiently	Modify	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 method to protect themselves, their family, and their property	Modify	Continue in Plan Update
TORNADO	Install a reliable siren system to warn the citizens of Bogata when weather conditions regarding tornadoes require immediate action	Complete	Delete from Plan, add community public information
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	Delete in Plan Update
LIGHTNING	Install lightning protection systems in any critical facility whose function could be impacted by a lightning strike	Modify	Continue in Plan Update
LIGHTNING	Purchase portable generators that can provide electricity to a critical facility during lightning strike power outage	Complete	Delete 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	Conduct workshops regarding how to mitigate your home from damage of winter storms	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 from hail damage	On-going	Continue in Plan Update
HAIL	Purchase emergency mobile generators for critical facility use during power outages	Complete	Delete in Plan Update
DROUGHT	Conduct workshops on conserving water, xeriscaping and managing drought impacts	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
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.	Complete	Delete in Plan Update

Bogata

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

Bogata Drought Action #1	Conduct workshops on conserving water, xeriscaping and managing drought impacts.
Mitigation Goal/Objective	Goal #2: Public Awareness / Goal #3: Natural Systems / Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	5 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Bogata 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	Medium
Funding Source(s)	FEMA Grant/Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	5 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Bogata Extreme Heat Action #1	Do PSA's advising public of heat hazard, provide information on heat advisories and location of cooling center.
Mitigation Goal/Objective	Goal #1: Protecting Life and Property
Priority	High
Funding Source(s)	Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Bogata Flood Action #1	Increase the size of ditches to accommodate flash flood waters in flood prone areas.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant/Bogata Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Could keep water from reaching buildings.
Effect on Existing Buildings	Could keep water from reaching buildings.

Bogata Flood Action #2	Develop and implement the Turn Around, Don't Drown Program
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	State of Texas, Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Bogata Flood Action #3	Create a process for making substantial improvement / substantial damage (SI/SD) determinations to bring buildings into compliance with the floodplain management requirements.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation
Priority	High
Funding Source(s)	FEMA Grant/Bogata Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Bogata Hailstorm Action #1	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	High
Funding Source(s)	Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Bogata Lightning Action #1	Install lightning protection systems in any critical facility whose function could be impacted by a lightning strike
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	FEMA Grant/Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Could help protect new buildings from damage and loss due to fire or electrical surge.
Effect on Existing Buildings	Could help protect new buildings from damage and loss due to fire or electrical surge.

Bogata Severe Wind Action #1	Provide public workshops and information regarding mitigating homes against windstorms.
Mitigation Goal/Objective	Goal #1: Protects Life and Property/Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Learning how to install wind resistant design can save money and lives.
Effect on Existing Buildings	Protecting existing structures by modification can save money and lives.

Bogata 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/Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Bogata 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: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	3 years
Effect on New Buildings	Learning of new methods could change construction plans for new buildings.
Effect on Existing Buildings	Learning of new methods could create ideas on changes that could be made to re-enforce existing buildings.

Bogata Tornado Action #3	Provide community information regarding the siren system warning citizens when weather conditions require immediate action.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Bogata Severe Winter Weather 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/Goal #4: Natural Systems
Priority	Medium
Funding Source(s)	FEMA Grant/Bogata Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	5 years
Effect on New Buildings	This can protect new homes and businesses from power loss and damage from falling limbs.
Effect on Existing Buildings	This can protect existing homes and businesses from power loss and damage from falling limbs.

Bogata Severe Winter Weather Action #2	Conduct workshops regarding how to mitigate your home from damage of winter storms.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Knowledge gained from these workshops could help mitigate new homes from the damages of winter storms
Effect on Existing Buildings	Knowledge gained from these workshops could help mitigate new homes from the damages of winter storms

Bogata 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)	Bogata Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Bogata Mayor
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.

Clarksville Mitigation Actions 2020			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Bi-Annual storm drainage cleaning program to be implemented to keep debris from hampering drainage	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	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 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	On-going	Continue in Plan Update
LIGHTNING	Install lightning prediction systems in parks and playgrounds	On-going	Continue in Plan Update
LIGHTNING	Provide public education regarding the dangers and protection from lightning strikes	On-going	Continue in Plan Update
WINTER STORM	Conduct workshops regarding how to mitigate your home from damage of winter storms	On-going	Continue in Plan Update
WINTER STORM	Purchase emergency mobile generators for critical facility use during power outages	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 from 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, and mandatory water rationing	On-going	Continue in Plan Update
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

Clarksville

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

Clarksville 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)	Clarksville Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Clarksville Drought Action #2	Develop and implement a drought contingency plan to include water conservation, 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)	Clarksville Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Clarksville Extreme Heat Action #1	Radio/TV/newspaper PSA's advising public of heat hazard and providing information about heat advisories.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	Clarksville Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Clarksville Flood Action #1	Bi-Annual storm drainage cleaning program to be implemented to keep debris from hampering drainage
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	Clarksville Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	3 years
Effect on New Buildings	This could protect new buildings from flash flooding
Effect on Existing Buildings	This could protect existing buildings from flash flooding

Clarksville Flood Action #2	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grants/Clarksville Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	This could protect new buildings from sewage flooding and water contamination.
Effect on Existing Buildings	This could protect existing buildings from sewage flooding and water contamination

Clarksville Flood Action #3	Provide protection to the existing sewage lift stations by upgrading.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grant/Clarksville Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Clarksville Flood Action #4	Purchase more lighting and barriers for traffic control.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	FEMA Grant/Clarksville Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Clarksville Flood Action #5	Update City Comprehensive Plan that addresses infrastructure, drainage, annexing and permits.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA Grants/Clarksville Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Clarksville Flood Action #6	Create a process for making substantial improvement / substantial damage (SI/SD) determinations to bring buildings into compliance with the floodplain management requirements.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnership and Implementation
Priority	High
Funding Source(s)	FEMA Grant/Clarksville Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Clarksville Hailstorm 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)	Clarksville Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	This will strengthen new buildings' resiliency to this hazard.
Effect on Existing Buildings	This will strengthen existing buildings' resiliency to this hazard.

Clarksville Hailstorm 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	High
Funding Source(s)	Clarksville Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	3 years
Effect on New Buildings	Knowledge gained from workshops can translate into actions that improve structures and their design.
Effect on Existing Buildings	Knowledge gained from workshops can translate into actions that improve structures and their design.

Clarksville Lightning Action #1	Install lightning prediction systems in parks and playgrounds
Mitigation Goal/Objective	Goal #1: Protect life and property/Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	FEMA Grant/Clarksville Annual Budget
Estimated Cost	High (25K +)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Clarksville Lightning Action #2	Provide public education regarding the dangers and protection from lightning strikes.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Clarksville Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Owners of new businesses and homes could learn to protect life and property
Effect on Existing Buildings	Owners of existing businesses and homes could learn to protect life and property

Clarksville Severe Wind 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)	Clarksville Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Actions learned and implemented could help protect new buildings from high winds
Effect on Existing Buildings	Actions learned and implemented could help protect new buildings from high winds

Clarksville Severe Wind Action #2	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant/Clarksville Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	By supporting critical facility power new buildings could be protected from backed up wastewater, etc.
Effect on Existing Buildings	By supporting critical facility power existing buildings could be protected from backed up wastewater, etc.

Clarksville Severe Winter Weather Action #1	Conduct workshops regarding how to mitigate your home from damage of winter storms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public awareness
Priority	High
Funding Source(s)	Clarksville Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	3 years
Effect on New Buildings	Education empowers citizens and businesses to act.
Effect on Existing Buildings	Education empowers citizens and businesses to act.

Clarksville Severe Winter Weather Action #2	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant/Clarksville Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Clarksville Mayor
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

Clarksville Severe Winter Weather Action #3	Continue 5-year plan of tree trimming
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	FEMA Grant/Clarksville Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Clarksville 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/Clarksville Annual Budget
Estimated Cost	High (25K+)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Clarksville 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)	Clarksville Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	2 years
Effect on New Buildings	Help reduce damage by implementing ideas about new homes and business protection from tornadic winds.
Effect on Existing Buildings	Help reduce damage by implementing ideas about existing homes and business protection from tornadic winds.

Clarksville Tornado Action #3	Add additional warning sirens that can be heard throughout the city.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal # 2: Public Awareness
Priority	High
Funding Source(s)	FEMA Grant/Clarksville Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	2 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Clarksville 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/ Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	FEMA Grant/Clarksville Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Clarksville Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Protect new buildings from Wildfire/Urban Interface
Effect on Existing Buildings	Protect existing buildings from Wildfire/Urban Interface

Clarksville Wildfire Action #2	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	Clarksville Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Clarksville Mayor
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.

Detroit Mitigation Actions 2020			
HAZARD	**ACTION**	**DISPOSTION**	**EXPLANATION**
FLOOD	Purchase emergency mobile generators for critical facility use during power outages	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 Rebate Program for residential property owners	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	Purchase emergency mobile generators for critical facility use during power outages	On-going	Continue in Plan Update
THUNDERSTORM WIND	Provide public workshops and information regarding mitigating homes against thunderstorm winds	On-going	Continue in Plan Update
LIGHTNING	Install lightning protection systems in any critical facility whose function could be impacted by a lightning strike	On-going	Continue in Plan Update
LIGHTNING	Provide public education regarding the dangers and protection from lightning strikes	On-going	Continue in Plan Update
WINTER STORM	Purchase back-up generators for water and sewage facilities.	On-going	Continue in Plan Update
WINTER STORM	Conduct workshops regarding how to mitigate your home from damage of 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	Conduct a workshop for residents about the prevalence of hailstorms and how to protect their home and property from hail damage	On-going	Continue in Plan Update
DROUGHT	Conduct workshops on conserving water, xeriscaping and managing drought impacts	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
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

Detroit

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

Detroit Drought #1	Conduct public workshops on conserving water, xeriscaping and managing drought impacts.
Mitigation Goal/Objective	Goal #2: Public Awareness/Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	Detroit Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	5 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Detroit 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 #3: Natural Systems/Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	Detroit Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	4 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Detroit Extreme Heat Action #1	Conduct a local fan drive to help people with few resources.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	Detroit Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Detroit Extreme Heat Action #2	Radio/TV/newspaper PSA's advising public of heat hazard and providing information about heat advisories.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	Detroit Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Detroit Flood Action #1	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant/Detroit Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Detroit Mayor
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

Detroit 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)	FEMA Grant/Detroit Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	3 years
Effect on New Buildings	This could protect new buildings from flash flooding
Effect on Existing Buildings	This could protect existing buildings from flash flooding

Detroit Flood Action #3	Create a process for making substantial improvement / substantial damage (SI/SD) determinations to bring buildings into compliance with the floodplain management requirements.
Mitigation Goal/Objective	Goal # 1: Protect Life and Property/Goal #4: Partnership and Implementation
Priority	High
Funding Source(s)	FEMA Grant/Detroit Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	3 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Detroit Hailstorm 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)	Detroit Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	5 years
Effect on New Buildings	This action would help protect damage to sensitive equipment.
Effect on Existing Buildings	This action would help protect damage to sensitive equipment.

Detroit Hailstorm Action #2	Conduct a workshop for residents about the prevalence of hailstorms and how to protect their home and property from hail damage.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	Detroit Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	3 years
Effect on New Buildings	The implementation of hail resistant roofing, and reinforced windows can help protect valuables from damage.
Effect on Existing Buildings	The implementation of hail resistant roofing, and reinforced windows can help protect valuables from damage.

Detroit Lightning Action #1	Install lightning protection systems in any critical facility whose function could be impacted by a lightning strike
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	FEMA Grant/Detroit Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Could help protect new buildings from damage and loss due to fire or electrical surge.
Effect on Existing Buildings	Could help protect new buildings from damage and loss due to fire or electrical surge.

Detroit Lightning Action #2	Provide public education regarding the dangers and protection from lightning strikes.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	City budget
Estimated Cost	Low (0-10K)
Responsible Agency	Detroit Annual Budget
Estimated Completion Time	5 years
Effect on New Buildings	Owners of new businesses and homes could learn to protect life and property
Effect on Existing Buildings	Owners of existing businesses and homes could learn to protect life and property

Detroit Severe Wind Action #1	Purchase emergency mobile generators for critical facility use during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant/Detroit Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	5 years
Effect on New Buildings	This could protect new buildings from flooding and raw sewage contamination.
Effect on Existing Buildings	This could protect existing buildings from flooding and raw sewage contamination

Detroit Severe Wind Action #2	Provide public workshops and information regarding mitigating homes against thunderstorm winds.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Detroit Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	5 years
Effect on New Buildings	Making mitigation changes in new buildings, particularly while they are being constructed, can protect property from winter storms damage.
Effect on Existing Buildings	Reinforcing and amending existing building construction can protect property from winter storm damage.

Detroit Severe Winter Weather Action #1	Purchase back-up generators for water and sewage facilities.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant/ Detroit Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	4 years
Effect on New Buildings	Generator power in critical facilities can protect from issues like flooding and raw sewage contamination
Effect on Existing Buildings	Generator power in critical facilities can protect from issues like flooding and raw sewage contamination.

Detroit Severe Winter Weather Action #2	Conduct workshops regarding how to mitigate your home from damage of winter storms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public awareness
Priority	High
Funding Source(s)	Detroit Annual Budget
Estimated Cost	Low (0-10k)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	3 years
Effect on New Buildings	Making mitigation changes in new buildings can protect property from winter storm damage.
Effect on Existing Buildings	Reinforcing and amending existing building construction can protect property from winter storm damage.

Detroit Tornado Action #1	Develop and implement the Texas Individual Tornado Safe Room Rebate Program for residential property owners.
Mitigation Goal/Objective	Goal #1: Protect life and property
Priority	Medium
Funding Source(s)	FEMA Grant/Detroit Annual Budget
Estimated Cost	High (25K+)
Responsible Agency	City of Detroit Mayor
Estimated Completion Time	7 years
Effect on New Buildings	N/A
Effect on Existing Buildings	N/A

Detroit 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)	Detroit Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Detroit 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

Detroit 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/Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	Detroit Annual Budget
Estimated Cost	Medium (10-25K)
Responsible Agency	City of Detroit Mayor
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

Detroit Wildfire Mitigation Action #2	Conduct a wildfire education program stressing the dangers of trash burning in order to help prevent wildfires.
Mitigation Goal/Objective	Goal #1: Protect Life and Property/Goal #2: Public Awareness
Priority	High
Funding Source(s)	Detroit Annual Budget
Estimated Cost	Low (0-10K)
Responsible Agency	City of Detroit Mayor
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.

SECTION V: Plan Implementation and Maintenance

Monitoring, Implementation, Evaluating, Updating and Integration

Red River 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. Red River 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 Red River 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 Red River County Commissioners will be responsible for adopting the Red River County Mitigation Action Plan. (All jurisdictions must officially adopt and commit to implementation of the plan to be covered by the plan. This includes all participating cities/towns). This governing body has the authority to make public policy regarding natural hazards. The Red River 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, Red River 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 Red River County Hazard Mitigation 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 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.

Evaluation

During the annual meeting to review the Hazard Mitigation Action Plan, committee members 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. Worksheet 9: Action Monitoring Form, from the FEMA Local Mitigation Planning Handbook May 2023, will be completed to evaluate progress towards the completion of the Mitigation Actions. Evaluating the plan's actions is important to maintain 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.

Implementation

The Red River County Hazard Mitigation Committee will be responsible for coordinating implementation of the five-year plan action items and undertaking the formal review process. 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. While the hazard mitigation team members have not yet incorporated the hazard mitigation strategies into other plans and codes, they plan to do so during this next update period. 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. 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 Red River County HMAP will be incorporated into a variety of new and existing planning mechanisms for Avery, Bogata, Clarksville, and Detroit and the 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's expiration 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 members 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. 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.

Red River County is committed to supporting the cities, communities, and other jurisdictions in the planning area as they implement their mitigation plans. Red River 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. Red River 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 Red River County
Unincorporated Red River County has a population of 6,145. The following are Red River County's authorities, policies, programs, and resources available to accomplish hazard mitigation action and strategies. Red River County has a County Judge and four Commissioners. It has volunteer fire departments. There is a county Emergency Management Coordinator. Red River County will integrate data and action recommendations into the existing maintenance program. The Judge will propose these actions at the Commissioners Court meeting and will sign this into action after a majority vote. To improve and expand capabilities, Red River County should establish a team to develop public-private initiatives addressing disaster related issues.

Avery
The City of Avery has a population of 421. The following are the city of Avery authorities, policies, programs, and resources available to accomplish hazard mitigation actions and strategies. Avery has a Mayor, a City Secretary, and a Public Works Director. It also has a volunteer fire department. They have building codes and require permits. Avery will integrate actions and recommendations of the mitigation plan into the existing maintenance program, the existing master plan and into the local emergency operations plan. The mayor will propose these actions at the monthly City Council meeting and will sign this into action after a majority vote. To improve and expand capabilities, the city of Avery 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.

Bogata
The City of Bogata has a population of 1,108. The following are the city of Bogata authorities, policies, programs, and resources available to accomplish hazard mitigation actions and strategies. Bogata has a Mayor, a City Secretary, and a Public Works Department. It also has a volunteer fire department. They have building codes and require permits. Bogata will integrate actions and recommendations of the mitigation plan into elements of the local emergency management plan and zoning ordinance. The mayor will propose these actions at the monthly City Council meeting and will sign this into action after a majority vote. To improve and expand capabilities, the city of Bogata 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.

Clarksville
The City of Clarksville has a population of 3,285. The following are the City of Clarksville authorities, policies, programs, and resources available to accomplish hazard mitigation actions and strategies. Clarksville has a Mayor, a City Manager, a City Secretary and a Public Works Director. There is also a fire department that serves Clarksville. They have building codes and require permits. Clarksville will integrate actions and recommendations of the mitigation plan into the local emergency operations plan and will consider information in the Hazard Mitigation Plan for planning and zoning. The mayor will propose these actions at the monthly City Council meeting and sign this into action after a majority vote. To improve and expand capabilities, the city of Clarksville 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.

Detroit

The City of Detroit has a population of 628. The following are the City of Detroit authorities, policies, programs, and resources available to accomplish hazard mitigation actions and strategies. Detroit has a Mayor, a City Manager and a City Secretary. There is also a volunteer fire department that serves Detroit. They have building codes and require permits. Detroit will integrate actions and recommendations of the mitigation plan into the existing maintenance program, the existing master plan, and into the local emergency operation plan. The mayor will propose these actions at the monthly City Council meeting and sign this into action after a majority vote. To improve and expand capabilities, the city of Clarksville 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.

R E S O L U T I O N

Red River County

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit 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 Red River, the Cities of Avery, Bogata, Clarksville, and Detroit in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2026

_____

County Judge, Red River County, Texas

ATTEST _____

County Clerk

R E S O L U T I O N

Avery

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit 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 Red River, the Cities of Avery, Bogata, Clarksville, and Detroit in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2026

_____

Mayor, Avery, Texas

ATTEST _____

City Secretary

R E S O L U T I O N

Bogata

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit 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 Red River, the Cities of Avery, Bogata, Clarksville, and Detroit in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2026

_____
Mayor, Bogata, Texas

ATTEST _____
City Secretary

R E S O L U T I O N

Clarksville

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit 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 Red River, the Cities of Avery, Bogata, Clarksville, and Detroit in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2026

_____

Mayor, Clarksville, Texas

ATTEST _____

City Secretary

R E S O L U T I O N

Detroit

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit each have recognized the need to prepare a Five-year Updated Mitigation Action Plan; and

WHEREAS, the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit have decided to jointly prepare one Five-year Updated Mitigation Action Plan.

THEREFORE, BE IT RESOLVED that the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit hereby jointly adopt and approve said Five-year Updated Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the County of Red River, the Cities of Avery, Bogata, Clarksville, and Detroit 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 Red River, the Cities of Avery, Bogata, Clarksville, and Detroit in accordance with this resolution.

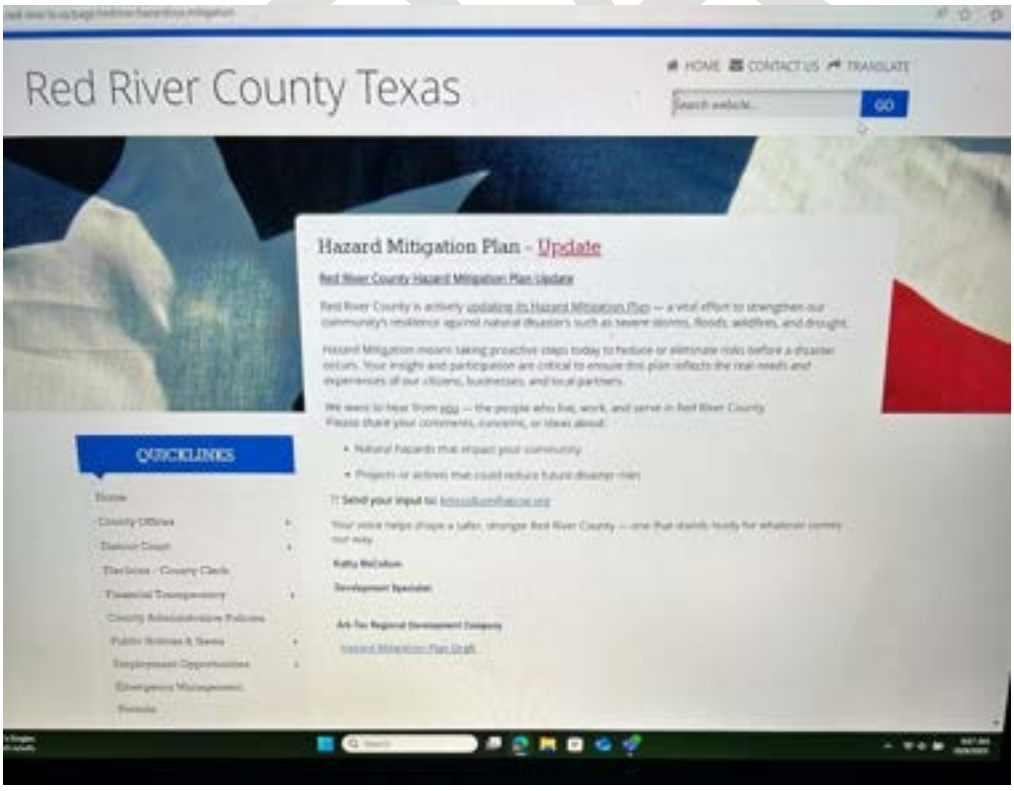
RESOLVED THIS DAY OF , 2026

_____
Mayor, Detroit, Texas

ATTEST_____
City Secretary

Facebook Public Input Notice October 9, 2025

County Website Public Input Notice October 9, 2025



Placeholder for public notice of draft plan

Dear Stakeholder,

The Ark-Tex Council of Governments, Red River County, and the jurisdictions of Avery, Bogata, Clarksville, and Detroit 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 (insert link). 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.

Kathy McCollum
Hazard Mitigation Specialist
Main: 903-832-8636 | Direct: 903-276-4256 | kmccollum@atcog.org
Main office: 4808 Elizabeth St, Texarkana, TX 75503
www.atcog.org | www.facebook.com/ATCOG

This Hazard Mitigation Plan (HMP) was developed by the Red River County, Texas Hazard Mitigation Planning Team (HMPT) under the direction and guidance of the Red River County Emergency Management Coordinator and Ark-Tex Council of Governments who worked with the Texas Division of Emergency Management (TDEM) to complete the HMP.

The primary contacts for the HMP update are:

Red River County
Jake Brockett
Emergency Management Coordinator
400 N Walnut St.
Clarksville, Texas 75426
rrcoem@co.red-river.tx.us
Phone: 903-427-2680

Ark-Tex Council of Governments
Kathy McCollum
Hazard Mitigation Specialist
4808 Elizabeth Street
Texarkana, Texas 75503
kmccollum@atcog.org
Phone: 903-276-4256

Copies of the adopted Plan are available for review:

- County website
- County Courthouse, 400 N Walnut St., Clarksville, Texas 75426