

# **BOWIE COUNTY TEXAS**

## **Hazard Mitigation Plan Five Year Update**

**INCORPORATED AND UNINCORPORATED AREAS**



**2016**





# **BOWIE COUNTY TEXAS**

## **FORWARD**

Development of a comprehensive all-hazard Mitigation Plan was approved by the Division of Emergency Management, Texas Department of Public Safety, in a letter dated February 21, 2003. The Planning Project Number is DR-1379-3.145. This Hazard Mitigation Plan identifies the potential impact of natural and man-made hazards that threaten the nine (9) county region of the Ark-Tex Council of Governments (ATCOG). The specific counties are as follows: Bowie; Cass; Delta, Franklin, Hopkins, Lamar, Morris, Red River, and Titus. This section is for **BOWIE COUNTY**, excluding the Cities of New Boston and Texarkana, Texas. These two cities obtained their own grants and are preparing their own separate Mitigation Action Plans. The Cities that are included in this Plan include Wake Village, Redwater, Nash, Maud, Leary, Hooks, DeKalb, and Red Lick.

## **FEDERAL AUTHORITIES**

Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act)

Public Law (PL) 106-390 (Disaster Mitigation Act of 2000)

Code of Federal Regulations (CFR) 44

44 CFR Parts 78, 201, and 206

## **STATE AUTHORITIES**

Emergency Management Plan for Bowie County, Texas

Joint Resolution Between the County of Bowie, Texas, and the Cities of Redwater, Nash, Maud, Leary, Hooks, DeKalb, Red Lick, and Wake Village.

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Don Shipp, Ark-Tex Council of Governments, P. O. Box 5307, Texarkana, Texas 75505 reviewed this plan in June, 2007. Area Code 903 832-8636. Fax: 903 832-3441 or 903-792-3012.  
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## SECTION I

### BOWIE COUNTY TEXAS

#### PURPOSE

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

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

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

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

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

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

The following objectives will be addressed in the plan:

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

## **PLAN ORGANIZATIONAL STRUCTURE**

### **Organizational Structure**

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

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

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

- ❖ Submit a final plan, with adoption documentation and approval signatures, for all participating jurisdictions, to the State and FEMA and ensure plan is noted as complete and approved by both agencies.
- ❖ Prepare for and attend City Council/Commissioners Court/public meetings during plan consideration and plan adoption process.
- ❖ Complete and acquire approval of all necessary forms associated with the application for Bowie County's Multi-Jurisdictional Hazard Mitigation Grant.

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

- ❖ Ensure that the County HMPT includes representatives from the neighborhood stakeholders groups. Each participating city must provide at least one representative to the county team and provide active support and input. ATCOG will approve the final composition of the planning team.
- ❖ 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 Bowie County for Hazards. The Ark Tex Council of governments worked hand in hand with the jurisdictions within the planning area of Bowie County to develop the current plan. It is through this regional cooperation that ATCOG can serve its members by working to continually improve the economic, social, educational, and safety aspects of life for citizens

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

#### **Organize Resources:**

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

- ✓ A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. This was done by having a public meetings. Postings and Notices were placed at the Courthouse and in two newspapers. The plan was also posted on the County website.
- ✓ Each participant was given an explanation of the Hazard Mitigation Planning Process. These opportunities were also used to gather hazard information, develop mitigation strategies, and edit the plan during the writing process.
- ✓ The review and incorporation of appropriate existing plans, studies, reports, technical information, and other research was included into the plan during its drafting process
- ✓ Support and information was obtained from other government programs and agencies such as the National Flood Insurance Program (NFIP), Natural Resources Conservation Service (NRCS), US Geological Survey (USGS), NOAA Weather, etc.

**Risk and Vulnerability Assessment:**

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

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

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

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

**Develop Mitigation Strategies:**

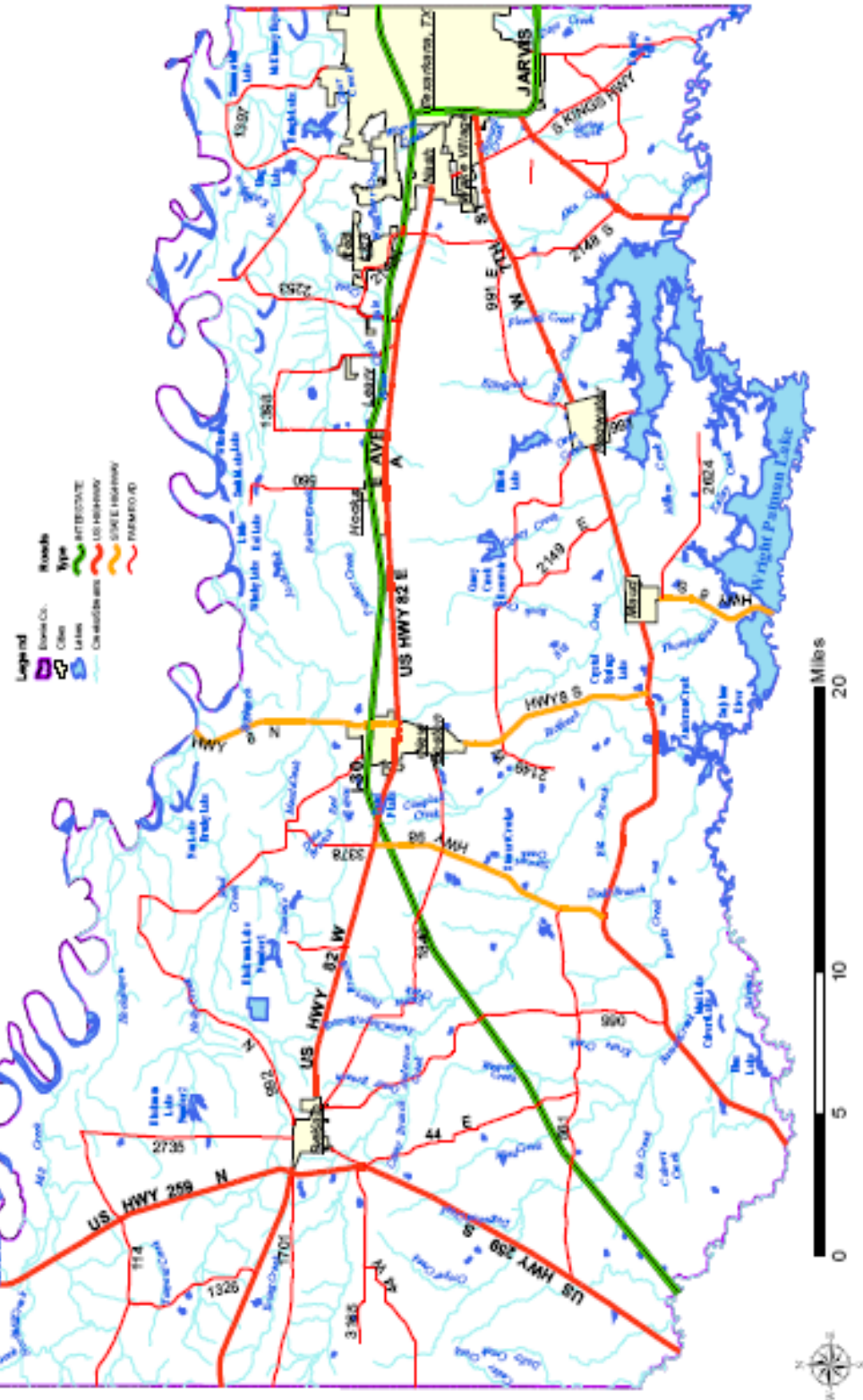
Written Strategies were developed to demonstrate how Bowie County, Texas intends to reduce losses identified in the Risk Assessment. It includes goals and objectives to guide the selection of mitigation activities and reduce potential losses. This is a blueprint for reducing the potential losses identified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

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



**Bowie County Texas**

# Bowie County



## Economy COUNTY GOVERNMENT

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

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

### Economic Considerations

**Unincorporated Bowie County and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater, and Wake Village have limited budgets.** Their tax base and annual budgets are low. They will have to rely on grants and volunteerism to accomplish the bulk of the projects. **Texas has 254 counties and Bowie County ranks 152 in median House Hold Income. It ranks 136 in growth with a 3.65% growth rate since 2000.**

<b>Bowie County Jurisdictions Ranked by The (2013) Census</b>		
Ranking	Jurisdiction	Population
1	Unincorporated Bowie County	34,910
2	Wake Village	5,488
3	Nash	3,081
4	Hooks	2,757
5	DeKalb	1,658
6	Maud	1,060
7	Redwater	1,057
8	Red Lick	1,010
9	Leary	478
Non-participating Jurisdictions		
	New Boston	4,546
	Texarkana	37,442



Bowie County and the

## **Resource Information**

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

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

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

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

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

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

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

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

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

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

The Bowie County Hazard Mitigation Plan 5-year update consists of Bowie County and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater and Wake Village.

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

Team meetings, telephone calls and e-mail communication played a role in team member contact and plan completion.

Meeting dates were scheduled as follows. Also see sign-in sheets pages 211-216.

<b>Scheduled Team Meeting Dates</b>		
<b>Date</b>	<b>Purpose</b>	<b>Location</b>

DRAFT

<b>BOWIE COUNTY TEAM MEMBERS</b>	
<b>Name</b>	<b>Title</b>
Doug Bowers	City Manager, Nash
Judge Carlow	Bowie County Judge
Mike Babb	Mayor, Hooks
Roy Beckett	Fire Chief, City of Maud
Buck Buchanan	Fire Chief, City of Hooks
Michael, Burke	City Administrator, Wake Village
James Carlow	County Judge, Bowie County
Mark Elrod	Texas Forestry Service
Clare Francavilla	Red Cross
James Guyton	Fire Chief, Wake Village
Jennifer Harland	External Affairs Manage, AEP
Mark Hawkins	V. P. Sales Hazmat Services
Shelia Kegley	Mayor, Red Lick
Robert Lorange	Mayor, Redwater
Randy Mansfield	City Administrator, Leary
John Nichols	Deputy Coordinator-West, Bowie County
Jim Roberts	Emergency Management Coordinator, Bowie County
Steve Rogers	Fire Chief, Nash
Scottie Taylor	Fire Fighter/Deputy Sheriff
David Wesselhoff	Deputy Coordinator-East, Bowie County
Dennis Wandrey	Mayor of DeKalb

### **Team Member Biographical Information and Contributions**

Doug Bowers  
 Judge Carlow

Stakeholders were selected to provide a wide variety of interested parties. Judges from neighboring counties, charity organizations, schools and city officials were invited to participate in the development of the plan.

<b>Bowie County Stakeholders</b>				
<b>Name</b>	<b>Title</b>	<b>Company</b>	<b>Location</b>	<b>Type of Contact</b>
L.D. Williamson	County Judge	Red River County	Clarkesville, TX	Phone and/or email
Mark Elrod		Texas Forest Service	New Boston, TX	Phone and/or email
Clare Francavilla	Director	American Red Cross	Texarkana, TX	Phone and /or email
Jennifer Harland	External Affairs Mgr.	AEP Electric Company	Bowie County, TX	Phone and/or email
Mark Hawkins	Vice President	Haz-Mat Services		Phone and/or email
Lynda Munkries	Judge	Morris County	Daingerfield, TX	Phone and/or email
Becky Wilbanks	Judge	Cass County	Linden, TX	Phone and/or email
James Prince	Sheriff	Bowie County	New Boston, TX	Phone and/or email
Brandon Peavey	Superintendent	Maud ISD	Maud, TX	Phone and/or email
Kathy Allen	Superintendent	Redwater ISD	Redwater, TX	Phone and/or email
John Booth	Superintendent	DeKalb ISD	DeKalb, TX	Phone and/or email
Ronnie Thompson	Superintendent	Hooks ISD	Hooks, TX	Phone and/or email.
Eric Schlotter	EMC	Texarkana, Texas	Texarkana, TX	Phone and/or email
Johnny Branson	Mayor	New Boston	New Boston, TX	Phone and/or email

### **Public Participation**

Public participation is a key component to strategic planning processes. Citizen participation offers citizens the chance to voice their ideas, interests, and opinions. Opportunities were given to the citizens of Bowie County to participate in planning and to review the plan. A Public meeting was held on ????????, and a plan draft was posted on the Bowie County Website. Notices were posted at the courthouse and in two local newspapers regarding the plan availability. There were no public comments or suggestions offered during the plan development process. **Documentation of the meetings and postings can be found on pages**

### **Adoption, Implementation and Maintenance:**

This describes the system that Bowie 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. Bowie County entered into a contract with The Ark-Tex Council of Governments in Texarkana, Texas, to develop the plan. The Mitigation Action Team assisted in developing plan goals and action items and shared their expertise to create a more comprehensive plan.

Newspaper postings helped publicize the meeting to neighboring counties and non-profits or other interested parties. These meetings are documented in the plan appendix (see pages 142-144). The Ark-Tex Council of Governments staff has also met numerous times, had numerous telephone conversations, and worked individually with officials and employees from the County and each of the cities in gathering the data necessary for the plan.

Upon approval by FEMA the plan will be submitted to the County by the Mitigation Planner for final signatures. The Plan will be available for public viewing at the county seat, on the Bowie County website and at the city halls of DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater, and Wake Village.

## SECTION II

### HAZARDS

All of Bowie County and the cities included in this plan are susceptible to several possible natural and technical hazards. The Hazard Mitigation Team with the assistance of the Ark-Tex Council of Governments Hazard Mitigation Planner conducted a comprehensive Hazard Analysis beginning in May, 2003. The hazard analysis will be reviewed annually, and up-dated 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 (Note: the hazards of dam failure and earthquake have been dropped in the 2015 update. Lightning and windstorm have been moved under thunderstorm. Hazmat Spills are not a natural hazard and have been removed from the update.

- Flood
- Tornado
- Winter Storm
- Thunderstorm Winds
- Hailstorm
- Drought
- Extreme Heat
- Wildfire

<u>Hazards with distinct area of risk</u>	<u>Hazards without distinct area of risk</u>
Flood	Tornado
Wildfire	Drought
	Extreme Heat
	Winter Storm
	Thunderstorm Winds
	Hailstorm

The process for identifying hazards included looking at historical data to determine which hazards seemed to occur in Cass County. Sources used were newspaper articles, minutes of Commissioner's Court meetings, 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.

## Natural Hazards Most Likely to Occur in Bowie County.

**Table 3.1**

Hazard	Type of Disaster	How Identified	Why Identified
Floods	Natural	<ul style="list-style-type: none"> <li>• Review Repetitive Flood Properties</li> <li>• NOAA</li> <li>• Newspaper accounts</li> <li>• Input from public</li> <li>• Review of FIRMS</li> </ul>	<ul style="list-style-type: none"> <li>• The County contains many creeks, streams and rivers</li> <li>• The County has experienced flooding in the past.</li> <li>• Flooding is a frequent issue</li> </ul>
Tornado	Natural	<ul style="list-style-type: none"> <li>• Public Input</li> <li>• National Weather Service</li> <li>• Past History</li> <li>• NCDC Data Base</li> </ul>	<ul style="list-style-type: none"> <li>• Public Concern</li> <li>• Past History</li> <li>• Frequency</li> </ul>
Winter Storms	Natural	<ul style="list-style-type: none"> <li>• Past Disasters (2000 ice storm) costliest in recent memory</li> <li>• Public input</li> <li>• NOAA</li> <li>• National Weather Center</li> </ul>	<ul style="list-style-type: none"> <li>• Little equipment to fight ice and snow</li> <li>• Heavy psychological toll on population</li> <li>• Population not educated about dealing with outages etc.</li> </ul>
Thunderstorms	Natural	<ul style="list-style-type: none"> <li>• NOAA reports</li> <li>• Public Input</li> <li>• Newspaper Accounts</li> </ul>	<ul style="list-style-type: none"> <li>• Wind shears an ongoing problem</li> <li>• Severe thunderstorms occur every year</li> </ul>
Droughts	Natural	<ul style="list-style-type: none"> <li>• History</li> <li>• Review of NCDC database</li> <li>• Public Input</li> </ul>	<ul style="list-style-type: none"> <li>• Costly to agri-business</li> <li>• Drought common to state and county</li> </ul>
Extreme Heat	Natural	<ul style="list-style-type: none"> <li>• History</li> <li>• Review of NCDC database</li> <li>• Public Input</li> </ul>	<ul style="list-style-type: none"> <li>• Costly to agri-business</li> <li>• Extreme heat common to state and county</li> </ul>
Wildfire	Natural	<ul style="list-style-type: none"> <li>• Fire databases</li> <li>• Public Input</li> <li>• Texas Forestry</li> <li>• Newspaper Articles</li> </ul>	<ul style="list-style-type: none"> <li>• More wildfire occurrences than any other natural disaster</li> <li>• Can be common to drought and storms</li> <li>• Rural areas most vulnerable</li> </ul>

## Risk Index Tables

Potential Severity of Impact: (45% of Priority Risk Index)	
<b>SUBSTANTIAL</b> Index Value = 4	<ul style="list-style-type: none"> <li>• Possible fatalities</li> <li>• Complete shutdown of facilities for 30 days or more</li> <li>• More than 50 percent of property destroyed or with major damage</li> </ul>
<b>MAJOR</b> Index Value - 3	<ul style="list-style-type: none"> <li>• Possible permanent disability from Injuries and/illnesses</li> <li>• Complete shutdown of critical facilities for at least 2 weeks</li> <li>• More than 25 percent of property destroyed or with major damage</li> </ul>
<b>MINOR</b> Index Value = 2	<ul style="list-style-type: none"> <li>• Injuries and/or illnesses do not result in permanent disability</li> <li>• Complete shutdown of critical facilities for more than 1 week</li> <li>• More than 10 percent of property destroyed or with major damage</li> </ul>
<b>LIMITED</b> Index Value = 1	<ul style="list-style-type: none"> <li>• Injuries and/or illnesses are treatable with first aid</li> <li>• Shutdown of critical facilities and services for 24 hours or less</li> <li>• Less than 10 percent of property destroyed or with major damage</li> </ul>

Probability of Future Events is categorized as Unlikely to “Highly Likely”. These terms are defined as follows:

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

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

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



<b>Duration:</b> (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

<b>Significant Weather Hazards in Bowie County</b>					
Hazard*	Impact (45%)	Probability (30%)	Warning Time (15%)	Duration (10%)	PRI Score
Floods	Major PRI=3	Highly Likely PRI=4	6 to 12 hrs. PRI=2.	< 24 hrs. PRI=2	High 3.2
Tornados	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< 6 hrs. PRI=1	High 3.7
Thunderstorms	Minor PRI=2	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.8
Hail	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Winter Storms	Minor PRI = 2	Highly likely PRI = 4	12 to 24 PRI = 2	< 1 Week PRI = 3	Medium 2.7
Drought	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Extreme Heat	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Wildfires	Substantial PRI 4	Highly Likely PRI 4	< 6 hrs. PRI 4	< Week PRI 3	high 3.9

\*Hazards considered significant enough for further evaluation.

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:

Table 2.1.1

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

## BOWIE COUNTY DAMAGE ASSESSMENT

INCLUDING THE JURISDICTIONS\* OF

DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater, and Wake Village

<b>BOWIE COUNTY</b>				
Structure Type	\$ Value	75%	50%	25%
Residential	2,514,101,705	1,885,576,279	1,257,050,853	628,525,426
Commercial	637,532,175	478,149,131	318,766,088	159,383,044
Industrial	55,681,300	41,745,975	27,840,650	13,920,325
Exempt Property	10,625,301	7,968,975	5,312,651	2,656,325
Totals	3,217,940,481	2,413,440,360	1,608,970,242	804,485,120

<b>DEKALB</b>				
Structure Type	\$ Value	75%	50%	25%
Residential	38,762,252	29,071,689	19,381,126	9,690,563
Commercial	14,181,829	10,636,372	7,090,915	3,545,457
Industrial	1,582,114	1,186,586	791,057	395,529
Exempt Property	23,183	17,387	11,592	5,796
Totals	54,549,378	40,912,034	27,274,690	13,637,345

<b>HOOKS</b>				
Structure Type	\$ Value	75%	50%	25%
Residential	54,625,230	40,968,923	27,312,615	13,656,308
Commercial	8,043,003	6,032,252	4,021,502	2,010,751
Industrial	0	0	0	0
Exempt Property	884,599	663,449	442,300	221,150
Totals	63,552,832	47,664,624	31,776,417	15,888,209

<b>LEARY</b>				
Structure Type	\$ Value	75%	50%	25%
Residential	7,316,495	5,487,371	3,658,248	1,829,124
Commercial	4,990,667	3,743,000	2,495,334	1,247,667
Industrial	0	0	0	0
Exempt Property	24,000	18,000	12,000	6,000
Totals	12,331,162	9248371	6165582	3,082,791

<b>MAUD</b>				
<b>Structure Type</b>	<b>\$ Value</b>	<b>75%</b>	<b>50%</b>	<b>25%</b>
Residential	21,968,354	16,476,266	10,984,177	5,492,089
Commercial	2,219,915	1,664,936	1,109,958	554,979
Industrial	0	0	0	0
Exempt Property	0	0	0	0
Totals	24,188,269	18,141,202	12,094,135	6,047,068

<b>NASH</b>				
<b>Structure Type</b>	<b>\$ Value</b>	<b>75%</b>	<b>50%</b>	<b>25%</b>
Residential	67,507,010	50,630,258	33,753,505	16,876,753
Commercial	27,322,558	2,0491,919	13,661,279	6,830,640
Industrial	9,109,278	6,830,640	4,554,639	2,277,320
Exempt Property	771,391	578,544	385,696	192,848
Totals	104,710,237	78531361	52,355,119	26,177,561

<b>RED LICK</b>				
<b>Structure Type</b>	<b>\$ Value</b>	<b>75%</b>	<b>50%</b>	<b>25%</b>
Residential	52,745,438	39,559,079	26,372,719	13,186,360
Commercial	5,766,489	4,324,867	2,883,245	1,441,622
Industrial	1,318,670	989,003	659,335	329,668
Exempt Property	0	0	0	0
Totals	59,830,597	44,872,949	29,915,299	14,957,650

<b>REDWATER</b>				
<b>Structure Type</b>	<b>\$ Value</b>	<b>75%</b>	<b>50%</b>	<b>25%</b>
Residential	15,241,688	11,431,266	7,620,844	3,810,422
Commercial	3,636,730	2,727,548	1,818,365	909,183
Industrial	1,502,242	1,126,682	751,121	375,561
Exempt Property	64,160	48,120	32,080	16,040
Totals	20,444,820	15,333,616	10,222,410	5,111,206

<b>WAKE VILLAGE</b>				
<b>Structure Type</b>	<b>\$ Value</b>	<b>75%</b>	<b>50%</b>	<b>25%</b>
Residential	229,967,237	172,475,428	114,983,619	57,491,809
Commercial	23,308,011	17,481,008	11,654,006	5,827,003
Industrial	958,325	718,744	479,163	239,581
Exempt Property	0	0	0	0
Totals	254,233,573	190,675,180	127,116,788	63,558,393

## HAZARD ANALYSIS

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

The following steps were taken:

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

### FLOOD

#### Flood Types

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

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

#### Floodplains

**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.

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

**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.

## **HISTORY OF FLOODING IN BOWIE COUNTY**

(Data from NOAA Satellite and Information Service, National Climatic Data Center)  
February 16 2001 to June 9, 2014. A total of 31 events.

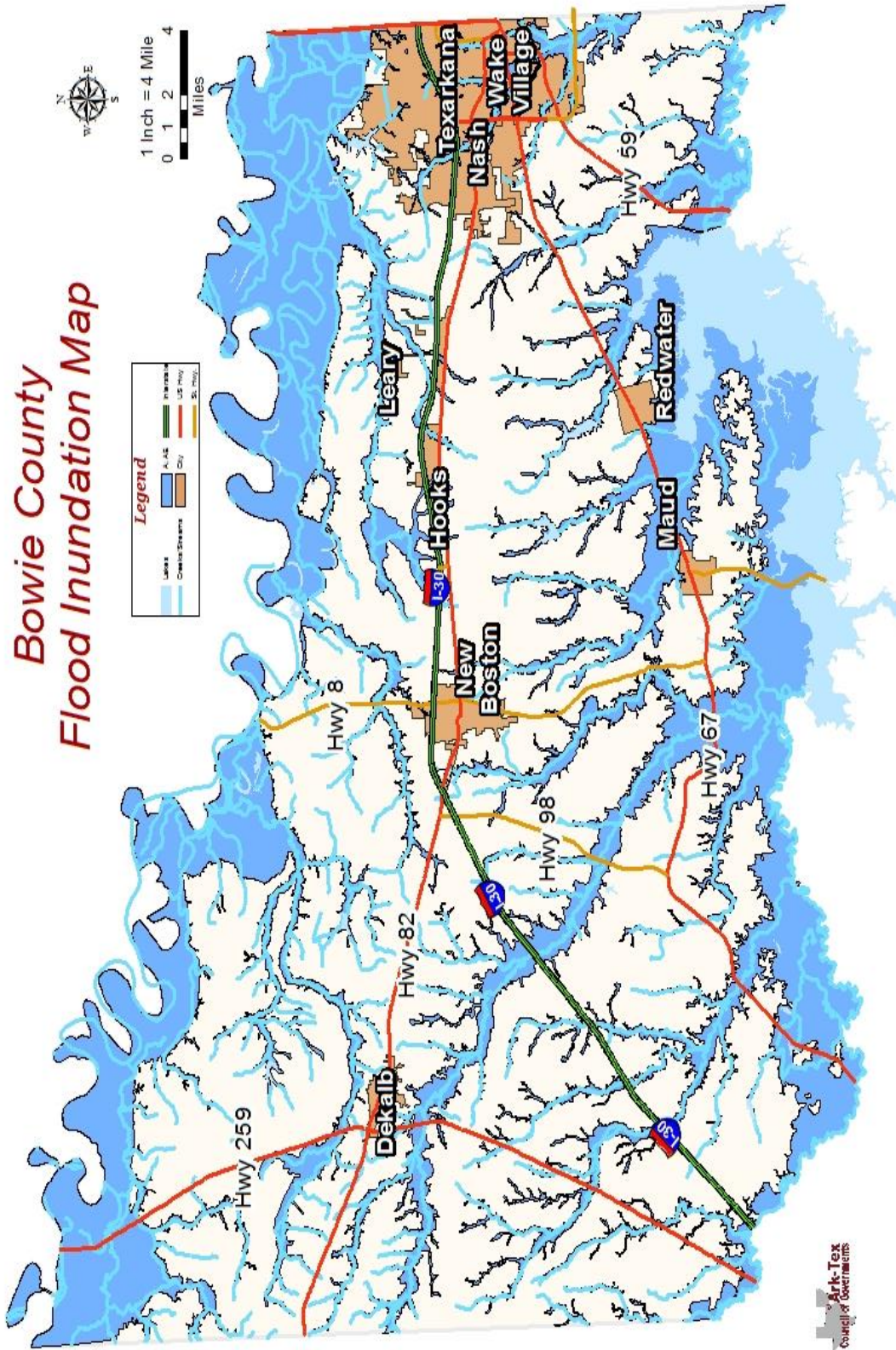
**Texarkana and New Boston data omitted because they prepare their own plans.**

<b>Date</b>	<b>Location</b>	<b>Description</b>	<b>\$ Property Damage</b>
02/16/01	Bowie County	High water over FM 989, Hwy 82 in Hooks & Hwy 82W @ Wagner Creek	0
02/27/01	Bowie	Evacuations required at Wake Village as flash flooding inundated homes and closed roads.	0
04/14/01	Bowe County	Flooding rains led to numerous road closures including Hwy 8 and 82. Five homes flooded	50K
06/06/04	Leary	High water across FM 1398 and 58.	0
06/06/04	1 Mile West, NW of Nash	High water across Highway 82 and FM 2148.	0
<b>Flood Events After Plan Adoption</b>			
01/15/07	2 Miles East of Maud	Localized heavy rainfall resulted in excessive flooding across mainly the eastern half of the county. Six county roads were closed due to flooding. A car was trapped by flood waters on CR 2789 and CR 3009 was washed out. Several CR were closed near Hwy 59 on the southwest side of Liberty Eyleau	0
04/09/08	1Mile NNW Of Pope	Highway 82 is flooded near the Bowie County/Red River County line. Truck was stalled out in high water. In all...17 roads were closed in Bowie county at one point in time from high water.	0
05/14/08	1 mile NNW of DeKalb	High water was reported across CR 933.	0
05/02/09	DeKalb	Excessive heavy rainfall resulted in several flooded roadways in Dekalb, Texas.	0
05/02/09	Wake Village	Excessive heavy rainfall resulted in several flooded intersections in the southwest side of town. Several underpasses were closed due to high water. A high water rescue was made when a car was found in a swollen creek. No injuries were reported.	15 k
05/03/09	1 Mile E Se of Whatley	High water was reported across 48th Street and FM 374.	0
05/09/09	4 miles West of Hooks	Stream flooding was reported east of New Boston that led to some road closures.	0
05/09/09	1 mile Southeast of Wake Village	Street flooding was reported in the west side of town.	0
05/09/09	1 Mile East NE of Redwater	High water was reported across Tri State Road.	0
05/09/09	1 Mile East South East of New Boston	Hwy. 82 east from New Boston to Texarkana, Texas had to be closed due to excessive heavy rainfall and flash flooding. Several other roads were closed throughout Bowie County as well.	0
05/09/09	Wake Village	Heavy rainfall resulted in the closure of Elm Street along the Swampoodle Creek.	0

<b>Date</b>	<b>Location</b>	<b>Description</b>	<b>\$ Property Damage</b>
05/10/09	2 miles North of DeKalb	CR 992 northeast of Dekalb was flooded and closed.	0
5/10/09	Hooks	Numerous county roads were flooded from excessive heavy rainfall. Two homes were flooded by three to four feet of water on Lacy Street in Hooks, Texas	0
5/10/09	Redwater	High water reported on Tristate Road in Redwater, Texas. The road had to be closed.	0
5/11/09	DeKalb, Simms, Moss Springs	Several roads remain underwater and closed in Dekalb, Simms and Moss Springs, Texas	0
5/11/09	Bowie County	Extensive flooding across the entire county. County roads underwater and closed include 4109, 4125, 4126, 4108, 1306, 4008, 1101 and 2253.	0
5/14/09	Redwater	Tri-State road was washed out in the community of Red Water, Texas.	0
10/09/09	Bowie County	High water was reported on Interstate 30	0
10/13/09	Liberty Eyleau	Water flooded several homes in the Liberty Eyleau community. In addition, nearly 14 city streets were flooded in the community.	100k
10/13/09	Wake Village	Two neighborhoods in the Wake Village community were isolated from incoming or outgoing traffic as water was 3 to 4 feet deep on roads around the area.	0
10/13/09	Bowie County	Widespread 2 to 4 inches were reported with isolated amounts in excess of 8 inches were reported. This rainfall led to widespread flash flooding across the region.	0
10/13/09	Bowie County	Water was running across Hwy. 82 near MLK.	0
10/13/09	Maud	The Arkadelphia Community was cut off due to flooding on CR 1102 and Rock Creek Road.	0
12/23/09	Bowie County	Flooding was reported on US 59 and Gun Club Road southwest of Texarkana, Texas.	0
4/25/11	Bowie County	Moderate street flooding was occurring along Hwy. 82...Hwy 8 and many smaller streets in the central portion of the county.	0
06/09/14	Nash, Texas	High water was reported on Hwy. 82 between Kings Highway and the Wal-Mart in Nash, Texas.	0
		<b>Total</b>	<b>167 k</b>



# Bowie County Flood Inundation Map



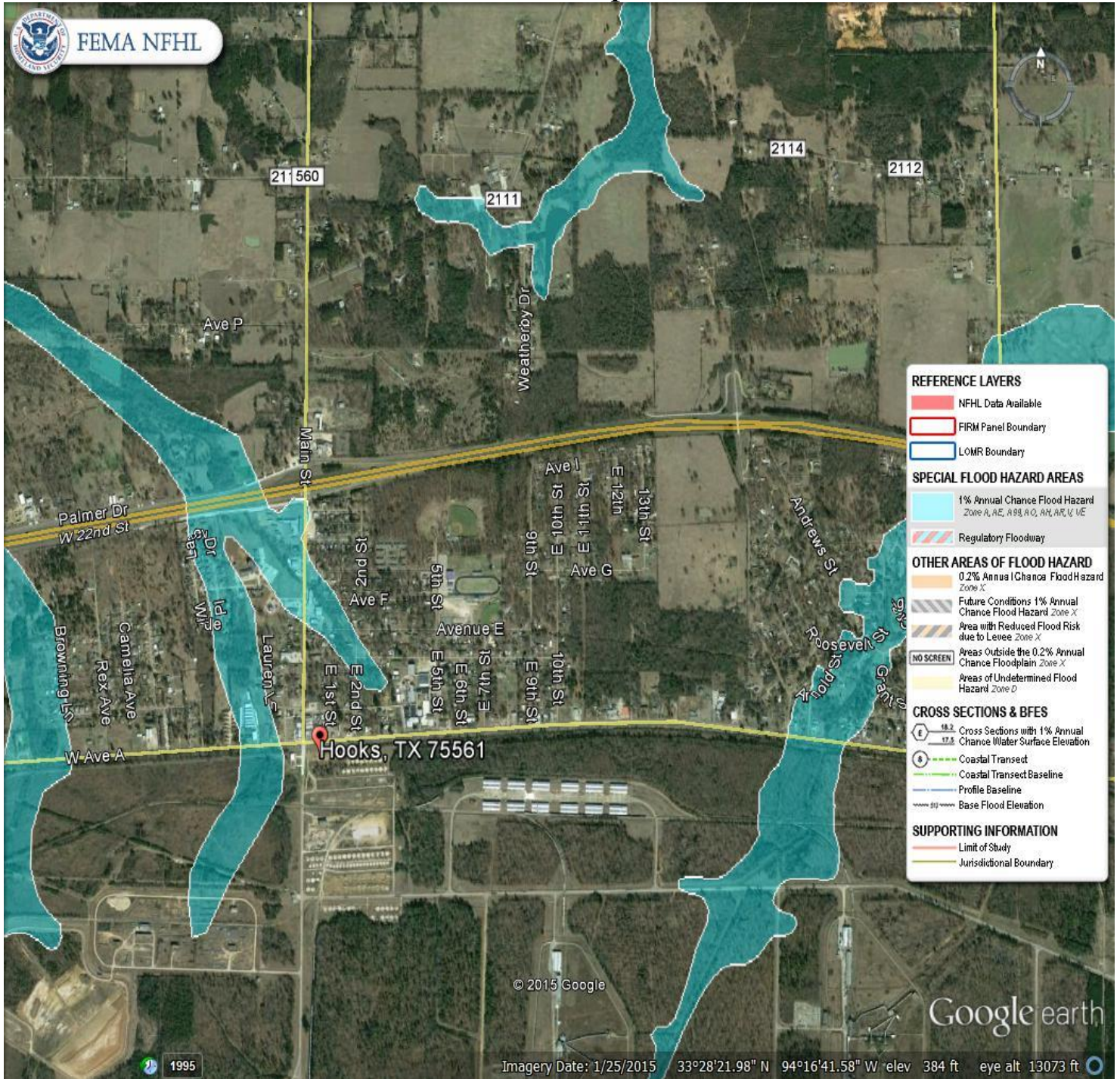


# DeKalb Floodplain





# Hooks Floodplain



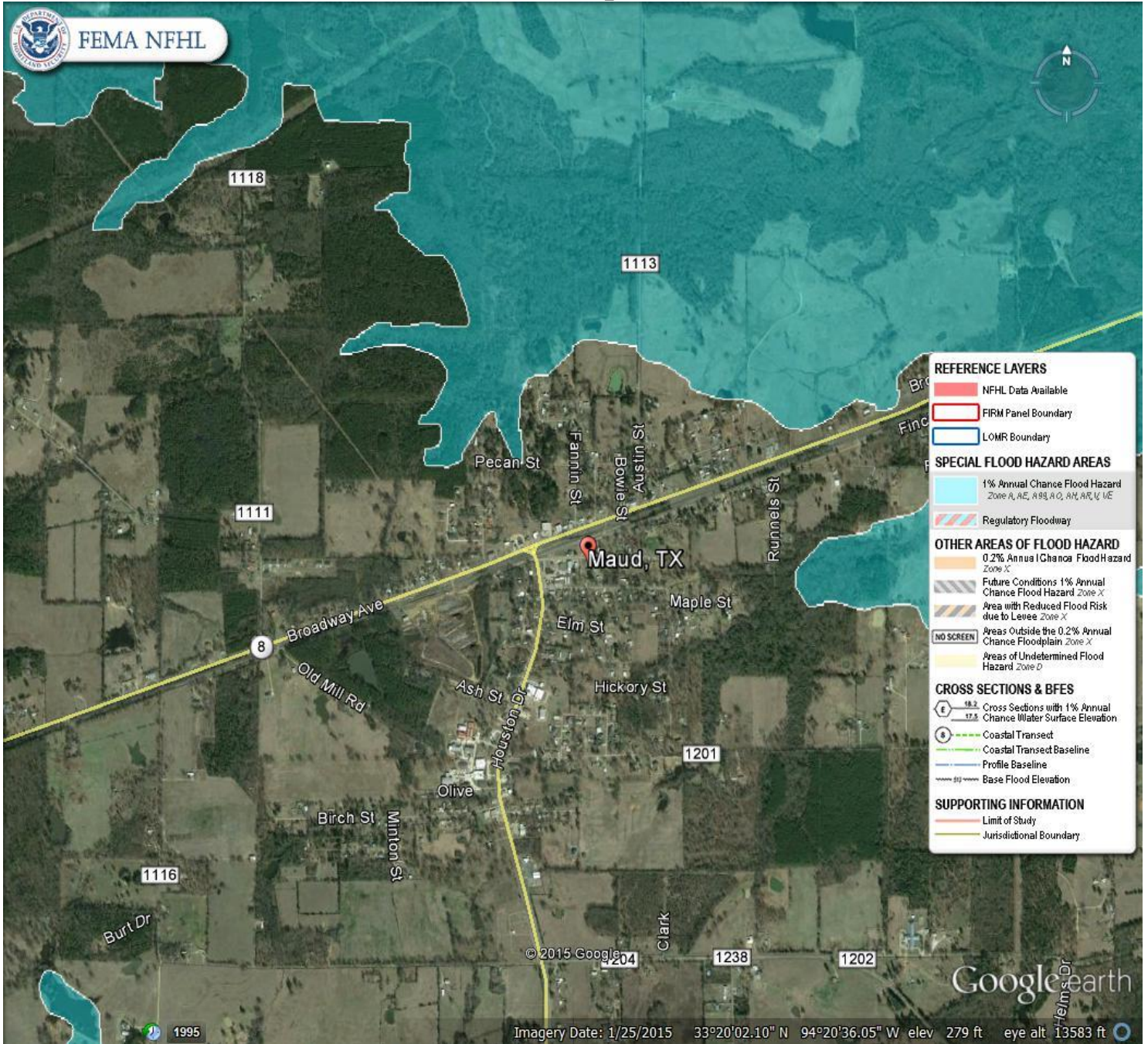


# Leary Floodplain



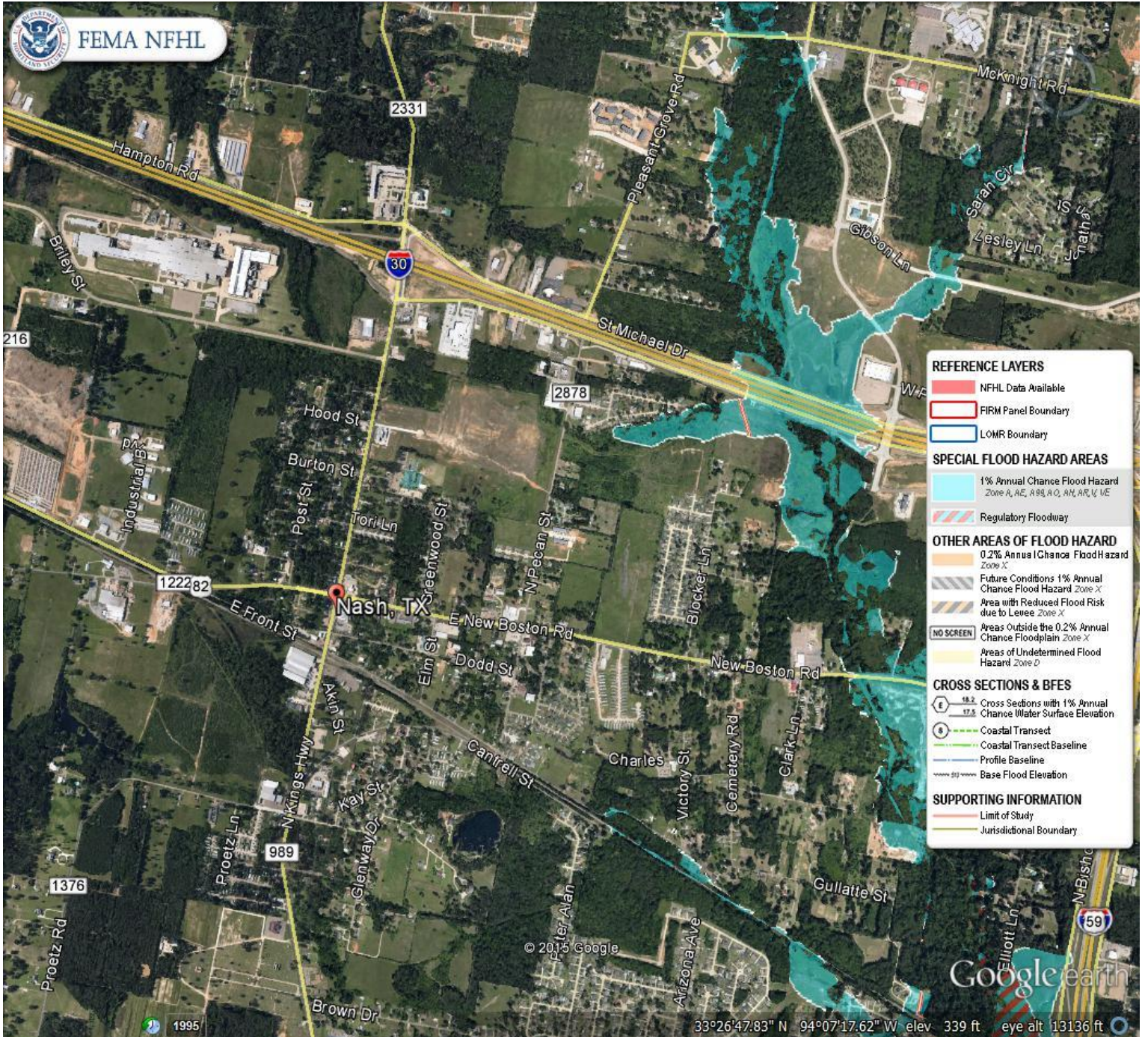


# Maud Floodplain



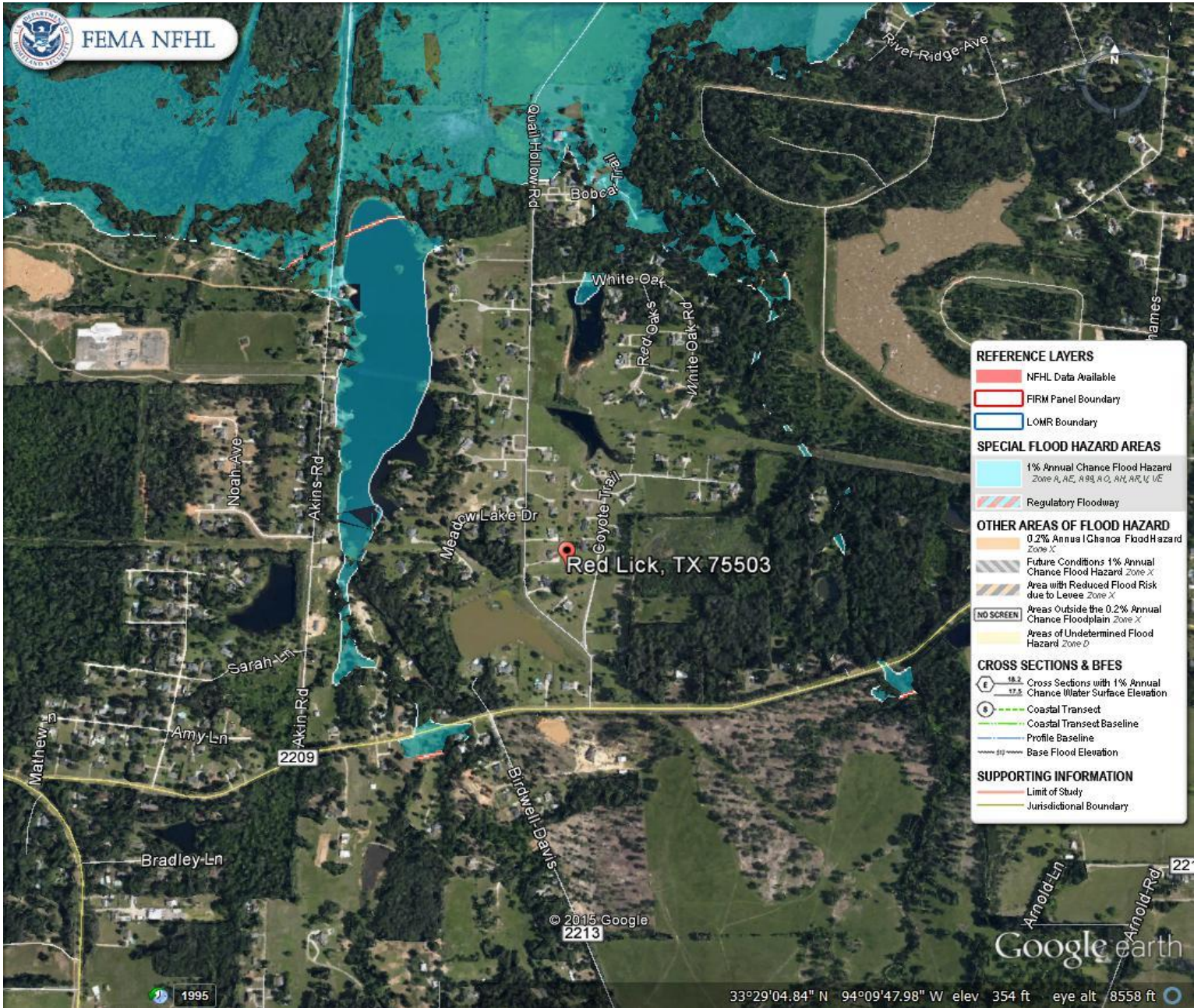


# Nash Floodplain



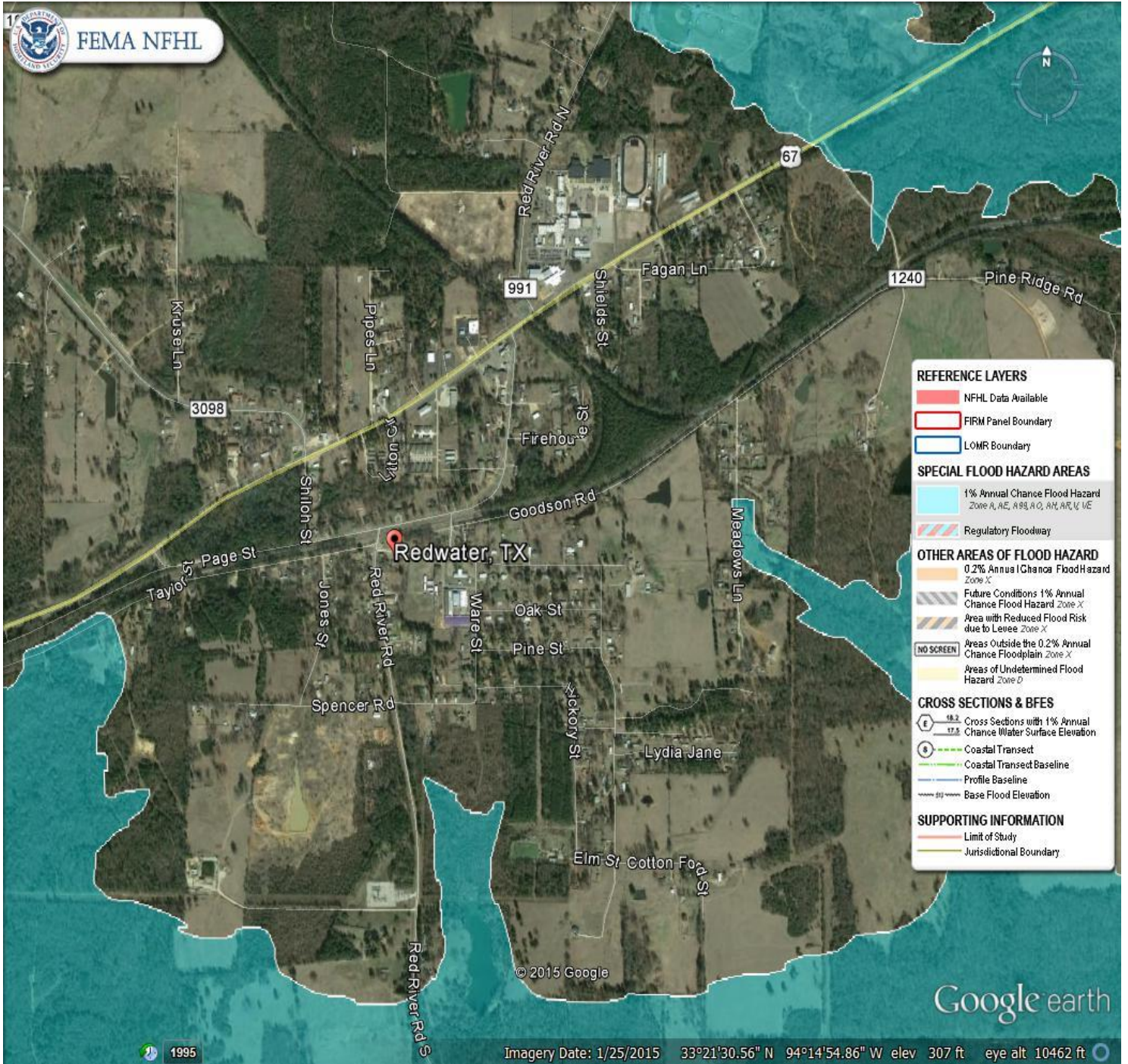


# Red Lick Floodplain



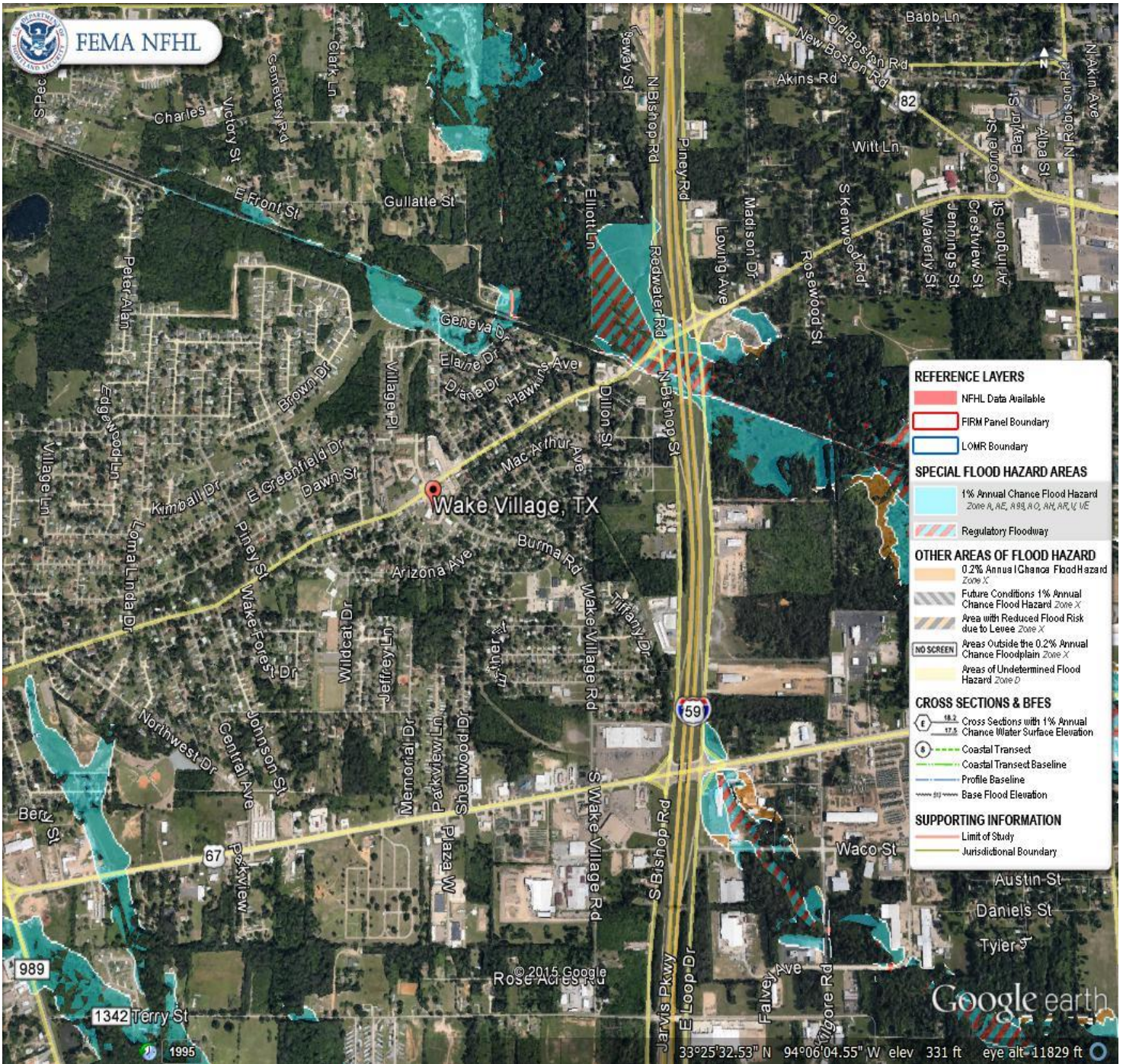


# Redwater Floodplain





# Redwater Floodplain





<b>Bowie County Flood Risk</b>					
<b>Jurisdiction</b>	<b>Impact</b>	<b>Probability</b>	<b>Warning Time</b>	<b>Duration</b>	<b>PRI Score</b>
Bowie County	Major PRI=3	Highly Likely PRI=4	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	High 3.35
DeKalb	Limited PRI=1	Unlikely PRI= 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Hooks	Limited PRI=1	Unlikely PRI= 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Leary	Limited PRI = 1	Unlikely PRI = 1	<6 hrs. PRI = 4	< 24 hrs. PRI = 2	Low 1.55
Maud	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Nash	Limited PRI=1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Red Lick	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Redwater	Limited PRI=1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55
Wake Village	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI= 4	< 24 hrs. PRI=2	Low 1.55

<b>EXTENT: Possible Amounts of Flooding Within Jurisdictions</b>		
<b>Jurisdiction</b>	<b>From</b>	<b>To</b>
Bowie County	¼ inch	3 feet
DeKalb	¼ inch	1 foot
Hooks	¼ inch	1 foot
Leary	¼ inch	1 foot
Maud	¼ inch	1 foot
Nash	¼ inch	1 foot
Red Lick	¼ inch	1 foot
Redwater	¼ inch	1 foot
Wake Village	No history of flash flooding	

**Bowie County and the jurisdiction of Hooks, Leary, Maud, Nash, Redwater and Wake Village participate in the NFIP program.** They have floodplain maps and a designated representative to monitor new construction to prevent anyone from developing in low areas. Priority was given to each action by the HMPT. Each NFIP action was weighted regarding ultimate impact on buildings and infrastructure. These participating jurisdictions are taking positive steps to remain in compliance such as widening ditches and revising building codes. **Unincorporated Bowie County has no repetitive flood properties on record but the jurisdictions of Wake Village and Nash have one each. Both are residential.**

**DeKalb and Red Lick are not participating in the national flood insurance program at this time. Each have chosen an action of participating in the NFIP Program.**



**Location:** Historically, the entire County has suffered from flooding. If future trends occur as they have in the past, the County area will continue to have floods. Countywide, the Highways and County roads will continue to flood.

**Probability:** Flash floods are possible at any time during the storm season. These types of floods occur often during that period. According the NOAA weather service in Shreveport, LA, a flash flood is defined as flooding that occurs within 6 hours after or during a rain. Bowie County could see heavier rainfall as climate change impacts the region.

**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. Over 2 to 3 inches of rain per hour is considered a heavy rain in Bowie County. Flooding is likely to occur in many areas should that amount fall for several hours. There is a moderate chance of flooding if rain falls at a rate of 1-2 inches per hour and slight for anything under.

**Impact:** the rural areas of Bowie County will continue to have issues with flooding. The flood severity categories include substantial, major, minor, and limited flooding. Bowie County,. There have been no injuries or deaths recorded. . The impact of flash floods varies locally. Roads may flood in Atlanta and Queen City and in rural county areas after heavy rains. There are no repetitive loss properties, and no reported deaths or injuries due to flooding with minimal financial loss. In the participating jurisdictions improvements such as new culverts and the retrenching of ditches could help to minimize the problem, however, should it rain hard enough in a short period of time, streets will flood. All the jurisdictions are responsive to the dangers of high water and know to place warning signs out for motorists when needed. The [Assessment Damage Tables on page 28-29](#) address the amount of loss that can occur with flooding.

**Summary:** Historically, Bowie County has suffered from flooding. If future trends continue, Bowie and rural county roads will continue to flood during periods of heavy rains. Countywide, the FM roads have seen flooding in the past and will continue to do so. Farm to Market roads and state highways are depicted on the Bowie County [map on page 17](#)

*We must build dykes to hold back the flood of fear.* **Martin Luther King**

## TORNADOES

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm (or sometimes as a result of a hurricane) 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. Tornado season is generally March through August, although tornadoes can occur at any time of the year. They tend to occur in the afternoons and evenings: over 80 percent of all tornadoes strike between noon and midnight.

Tornadoes in Bowie County 1950-2003  
Probability Severity

Fujita Scale	Tornados	Percent
F0	11	27
F1	15	36
F2	10	24
F3	4	10
F4	1	3
F5	0	0
Total	42	100

*There is a safe spot within every tornado. My job is to find it.* David Copperfield

Figure 2.2  
Wind Zones in U. S.

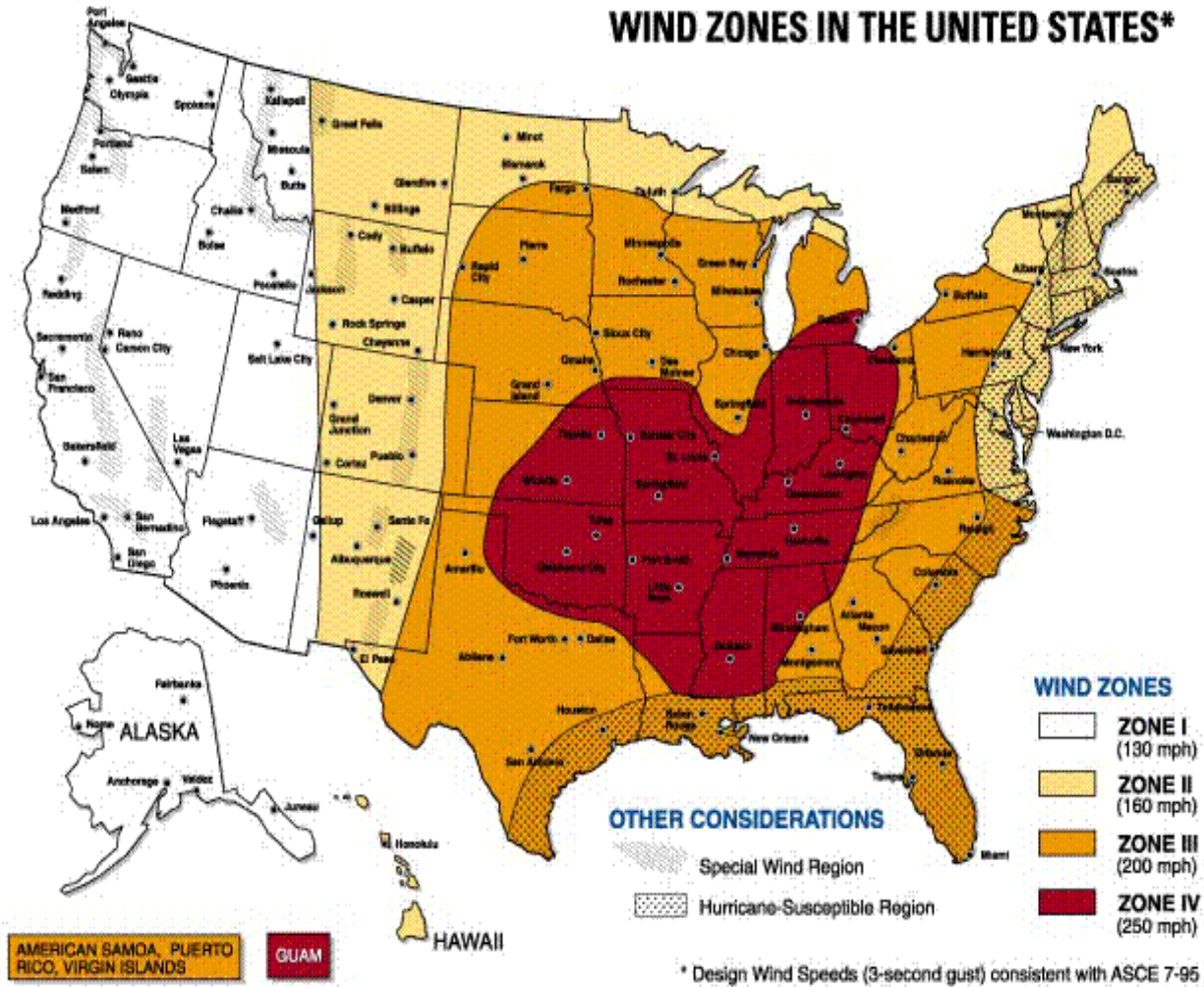


Figure I.2 Wind zones in the United States

The **Enhanced Fujita Scale**, or **EF Scale** 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 takes into account 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.

Source: [http://en.wikipedia.org/wiki/Enhanced\\_Fujita\\_Scale](http://en.wikipedia.org/wiki/Enhanced_Fujita_Scale)

Enhanced Fujita (EF) Scale		
Enhanced Fujita Category	Wind Speed (mph)	Potential Damage
EF0	65-85	<b>Light damage.</b> Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	<b>Moderate damage.</b> Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	<b>Considerable damage.</b> 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	<b>Severe damage.</b> 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	<b>Devastating damage.</b> Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200	<b>Incredible damage.</b> 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](http://en.wikipedia.org/wiki/Enhanced_Fujita_Scale)

**A HISTORY OF TORNADOES IN BOWIE COUNTY**  
(National Climatic Data Center)

42 Tornadoes reported in Bowie County between 01/01/50 and 04/03/12

<b>Begin Date</b>	<b>Location</b>	<b>F Scale</b>	<b>Description</b>	<b>\$PD</b>
02/12/50	Due to flaws in early record keeping the location is not known.	F2	8 Miles long, 833 Yards wide. 1 Fatality, 8 injuries	25K
04/30/54	Due to flaws in early record keeping the location is not known.	F3	19 Miles long, 440 Yards wide.	25K
03/08/62	Due to flaws in early record keeping the location is not known.	F1	1 Mile long, 100 Yards wide.	25K
05/29/67	Due to flaws in early record keeping the location is not known.	F0	1 Miles long, 17 Yards wide.	0
04/25/70	Due to flaws in early record keeping the location is not known.	F1	Not Known	0
03/12/71	Due to flaws in early record keeping the location is not known.	F4	5 Miles long, 880 Yards wide, 1 Fatality, 5 injuries	0
03/12/71	Due to flaws in early record keeping the location is not known.	F1	1 Mile long, 440 Yards wide.	25K
04/24/73	Due to flaws in early record keeping the location is not known.	F2	2 Miles long, 300 Yards wide, 8 injuries.	2.5M
01/10/75	Due to flaws in early record keeping the location is not known.	F2	4 Miles long, 107 Yards wide.	250K

<b>Begin Date</b>	<b>Location</b>	<b>F Scale</b>	<b>Description</b>	<b>\$PD</b>
04/29/75	Due to flaws in early record keeping the location is not known.	F2	None reported.	250K
11/01/77	Due to flaws in early record keeping the location is not known.	F3	6 Miles long, 50 Yards wide.	250K
04/01/79	Due to flaws in early record keeping the location is not known.	F1	None reported.	2.5K
05/03/79	Due to flaws in early record keeping the location is not known.	F1	Not Known	0
05/27/79	Due to flaws in early record keeping the location is not known.	F2	10 Miles long, 100 Yards wide.	2.5K
03/29/81	Due to flaws in early record keeping the location is not known.	F1	None reported.	250K
04/02/82	Due to flaws in early record keeping the location is not known.	F3	5 Miles long, 233 Yards wide.	250K
04/25/82	Due to flaws in early record keeping the location is not known.	F1	3 Miles long, 50yards wide	0
04/25/82	Due to flaws in early record keeping the location is not known.	F1	2 Miles long, 50 Yards wide	0
03/04/83	Due to flaws in early record keeping the location is not known.	F2	5 Miles long, 50 Yards wide.	250K
05/02/84	Due to flaws in early record keeping the	F0	Not Known	0

<b>Begin Date</b>	<b>Location</b>	<b>F Scale</b>	<b>Description</b>	<b>\$PD</b>
05/02/84	Due to flaws in early record keeping the location is not known.	F0	Not Known	0
10/18/84	Due to flaws in early record keeping the location is not known.	F0	1 Mile long, 30 yards wide	0
02/05/86	Due to flaws in early record keeping the location is not known.	F0	1 Mile long, 30 yards wide	0
04/04/86	Due to flaws in early record keeping the location is not known.	F1	10 Yards wide.	2.5K
11/15/87	Due to flaws in early record keeping the location is not known.	F0	10 Yards wide.	0
05/16/90	Due to flaws in early record keeping the location is not known.	F2	10 Yards wide.	0
10/07/92	Due to flaws in early record keeping the location is not known.	F1	10 Yards wide.	2.5K
05/09/93	DeKalb	F1	3 Miles long, 100 Yards wide. One home destroyed, minor damage to 60 homes and some business damage.	50K
01/22/99	New Boston	F1	25 Yards wide. Minor damage to several buildings.	40K
05/04/99	9 Miles SW of DeKalb	F3	Storm went directly through downtown. High school damaged as well as numerous homes and businesses. Presidential disaster declaration.	125M
12/04/99	SW of Bassett	F0	2 Miles long, 25 Yards wide. Occurred in rural wooded area. Damage consists of leaf stripped trees and broken branches.	0
03/26/00	3 Miles S, SW of DeKalb	F1	1 Mile long, 25 yards wide. Developed along squall line supercell as it moved southeast across the county. Few trees and limbs broken. One tree laid across edge of a house and carport, but no apparent physical damage was done.	0
03/26/00	10 Miles NW of DeKalb	F1	E Miles long, 25 yards wide. Developed on the comma head at northern end of a bow echo. Few trees were blown	0



Begin Date	Location	F Scale	Description	\$PD
			over or broken. Tornado was continuation of the Red River County tornado.	
05/14/03	14 Miles N, NW of DeKalb	F2	40 Miles long, 100 Yards wide. Violent thunderstorm moved rapidly SE across McCurtain County, OK into Bowie Co. and Cass Co. Also produced strong microburst in McCurtain Co, OK and again SE of Maud. Numerous trees and limbs were snapped or pushed over along entire track. Several homes, mobile homes, barns, garages, and outbuildings were damaged or destroyed. Primary damage occurred SE of Maud, and was also associated with microburst with wind speeds approaching 100 mph. Microburst occurred along east side of tornado track.	200K
09/05/07	2 miles east of Simms Texas	F2	The tornado touched down in the small community of Old Union east of Simms, Texas. A small portion of a roof to a home was removed along with two metal garage doors that were pushed inward. A few trees were either uprooted or snapped. The tornado was rated an EF1 on the Enhanced Fujita Scale with a path length of 3 miles and a path width of 50 yards.	10K
03/03/08	1 Mile East of New Boston	F2	An EF1 tornado touched down 4 miles southwest of Hooks, Texas at the Red River Army Depot. Trees were downed and snapped. An outbuilding was destroyed, and a security guard shelter was pushed over. The intermittent tornado then moved northeast and crossed Interstate 30 where it knocked trees down on a house and damaged and destroyed several campers at a camper sale store on the interstate. Some of the main building was also damaged.	750K
04/10/08	3 Miles North West of Red Springs Texas	F2	Most of the tornado damage was north of interstate 30 with some structures showing EF2 damage. In particular, the cinderblock and brick lawnmower business just north of Hwy 82 was completely destroyed with roofing debris and lawnmower parts thrown to the west and north of the building location. A brick home several hundred yards from the lawnmower business sustained significant damage to its roof and exterior walls. A metal shop building built with large metal I-beams was completely destroyed. I-beams were twisted and thrown in a northerly and westerly direction up to 200 yards from the building location with concrete still attached. The trees between the large metal building and the interstate were uprooted or snapped in a convergent pattern...indicative of tornadic winds. In total...12 structures were damaged or destroyed between Hwy 82 and the interstate and numerous trees were downed. Three tractor trailers were flipped on interstate 30 which resulted in the interstate being shut down and there was one injury. Further south of Hwy 82 on the Lone Star Army Ammunition Depot, numerous trees were snapped or uprooted and damage to parts of the Depot were reported...although it was not surveyed. North of interstate 30 along the service road...an outbuilding sales business lost several buildings and had many others damaged. Along Farm to Market 2253, numerous trees were snapped and uprooted on either side of the road and several sheds and barns were damaged or destroyed. A greenhouse was	1M



Begin Date	Location	F Scale	Description	\$PD
			severely damaged near the end of the track. Some homes were also damaged from fallen trees.	
05/02/09	2 miles W NW of College Hill	F0	Several trees were uprooted and snapped along County Road 4250 and near County Road 4245 next to a house. No structural damage was noted.	0
05/14/209	2 Miles W NW of Liberty Hills	F0	Several trees snapped or uprooted in a line north and south of FM 992 and CR 3211 in Bowie County. Small limbs are also broken off in a swath approximately 75 yards wide in a 0.75 mile stretch where the trees were downed. Maximum winds are estimated at 60-65 mph.	0
10/29/09	1 mile South of Red Springs	F0	An EF0 tornado touched down on Hwy. 67 about a half mile west of Clear Springs Road. Several trees were uprooted and snapped approximately 10 miles southwest of Texarkana, Texas. After the initial touchdown, the tornado moved northeast, producing sporadic tree damage. The tornado dissipated on Tri State Road just south of Hwy. 82. Winds were estimated at 75-85 mph range.	0
11/29/09	2 Miles North of New Boston	F1	A mobile home was destroyed and 4 other homes sustained moderate to major damage. Several trees were uprooted. The tornado crossed Interstate 30 and quickly dissipated.	75K
<b>Bowie County Tornadoes After Original Plan Adoption</b>				
04/03/12	3 miles N NE of Dalby Springs	F0	The National Weather Service conducted a storm survey in Bowie County and found damage from an EF0 tornado. The tornado touched down 8 miles southwest of De Kalb, TX, just west of CR 4306 where a few trees were snapped and uprooted. The tornado crossed CR 4306 and traveled east northeast, remaining over open country where more trees were snapped and uprooted. The tornado lifted just west of the intersection of CR 4305 and U.S. Hwy. 259. The maximum winds are estimated at 65-75 mph.	0
<b>Total</b>				

**One tornado has occurred in unincorporated Bowie County since the original plan adoption in May of 2010.**

A tornado can cause major problems with infrastructure. Toppled power lines cause outages and the pose the threat of electrocution. Communication in the area may be disabled with both land lines and cell service blackouts. Fallen trees can block roads and cause major structural damage to houses and businesses. Flying debris is a major cause of injury and death from tornado winds.

Efficient coordination of emergency services including police, fire departments and utility companies play a vital role lessening the impact and reducing injury. The jurisdictions of **DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater and Wake Village** have similar needs that are reflected in the actions chosen by the mitigation actions chosen.

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

**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 62 years, there is a 68% chance that Bowie County will experience a tornado touchdowns in a given year. The expected tornado size would range between 25 to 1000 yards wide, with a path from one to several miles long. Most tornadoes are expected to touchdown for relatively short periods of time in a bounce type pattern. The occurrence of a tornado touchdown on an annual basis is considered highly likely in the county but unlikely for the participating jurisdictions because they represent only 1.5% of the total county area.

**Vulnerability:** All of Bowie County is vulnerable to tornado damages. The jurisdictions of **DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater and Wake Village** are made up primarily of older business districts that were not built to any code, making them particularly vulnerable to tornadic activity. Winds in the lowest F0 range could destroy these structures. The damage potential is high due to the number of mobile homes, manufactured housing and older wood framed homes found in the participating jurisdictions.

**Extent:** Based on a historical trend over the past 62 years, Bowie County can experience one or more tornadoes annually. The expected tornado size would range between 25 to 1000 yards wide, with a path from one to 10 miles long. Most tornadoes are expected to touchdown for relatively short periods of time in a bounce type pattern. A F1 tornado could destroy the small participating jurisdictions. Small towns can experience a complete loss of communications. Roads could be blocked by downed trees and building debris. This would contribute to the possibility of injury and death. **The Damage Assessment Tables on 18-19** demonstrate the amount of loss that can occur from a tornado. The extent of damage can be substantial.

Historically the severity has ranged from F0 to F2 on the Enhanced Fujita (EF) Scale. The entire scale presented is used to determine ranges and severity. The full range of 65 (F0) to 200 mph (F5 +) are possible in Bowie County and its jurisdictions.

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

**Summary:** Bowie County is located east of what is known as tornado alley. There have been 42 tornado events in Bowie County with no deaths and 2 injuries recorded over the 62 year history. Warning sirens, safe rooms, enforced modern building codes and generators for emergency power are needed safeguards for the small communities of **DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater and Wake Village** to help protect its citizens from tornadoes.

<b>Estimated Property Loss at 50%</b>	
Bowie County	\$1,608,970,242
DeKalb	\$27,274,490
Hooks	\$31,776,417
Leary	\$6,165,582
Maud	\$12,094,135
Nash	\$52,355,119
Red Lick	\$29,915,299
Redwater	\$10,222,410
Wake Village	\$127,116,788





**DeKalb Business District 1999**



**DeKalb Elementary School 1999**



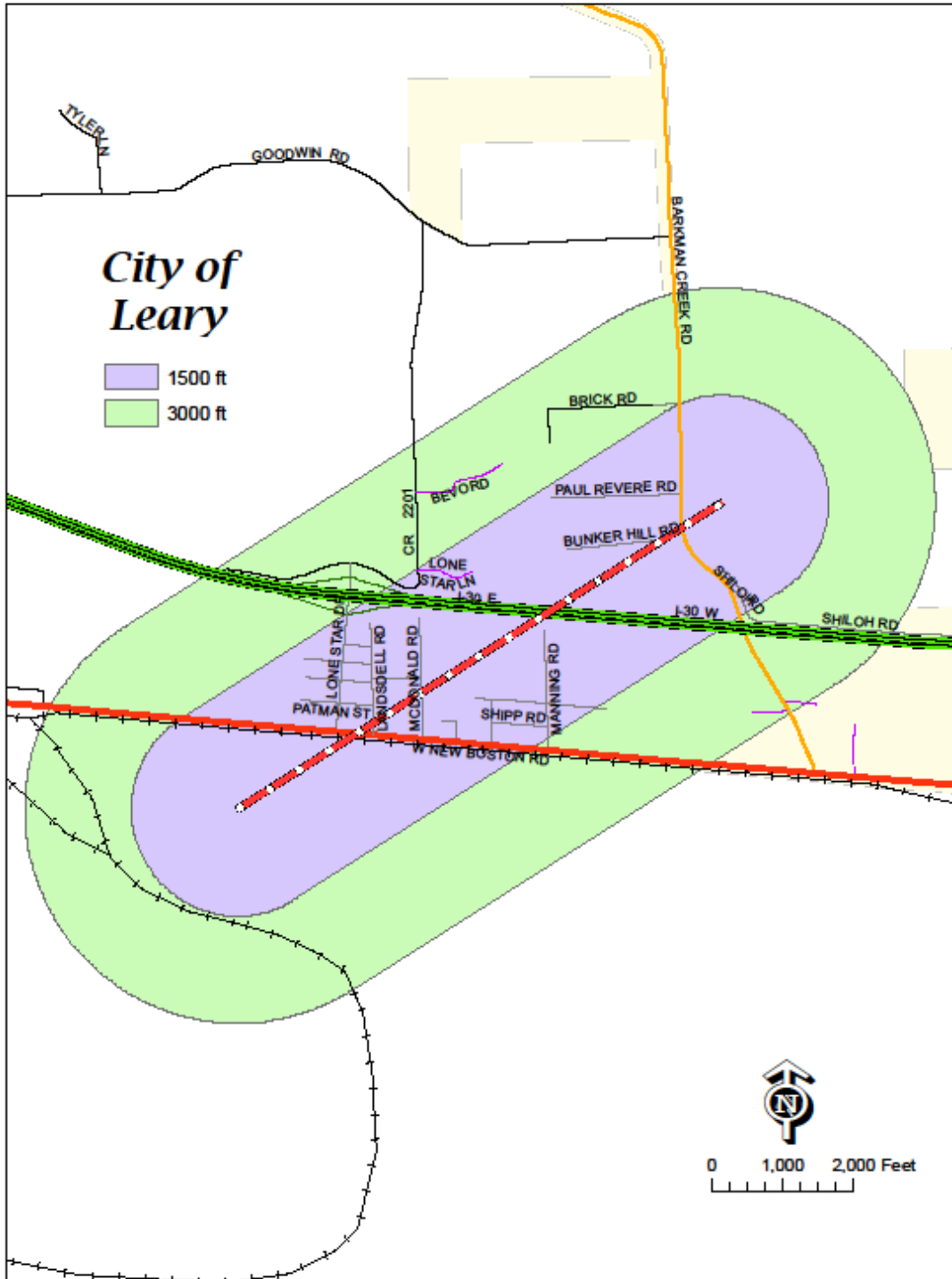


FRIDAY, MAY 6, 1999  
**PICKING UP THE PIECES**

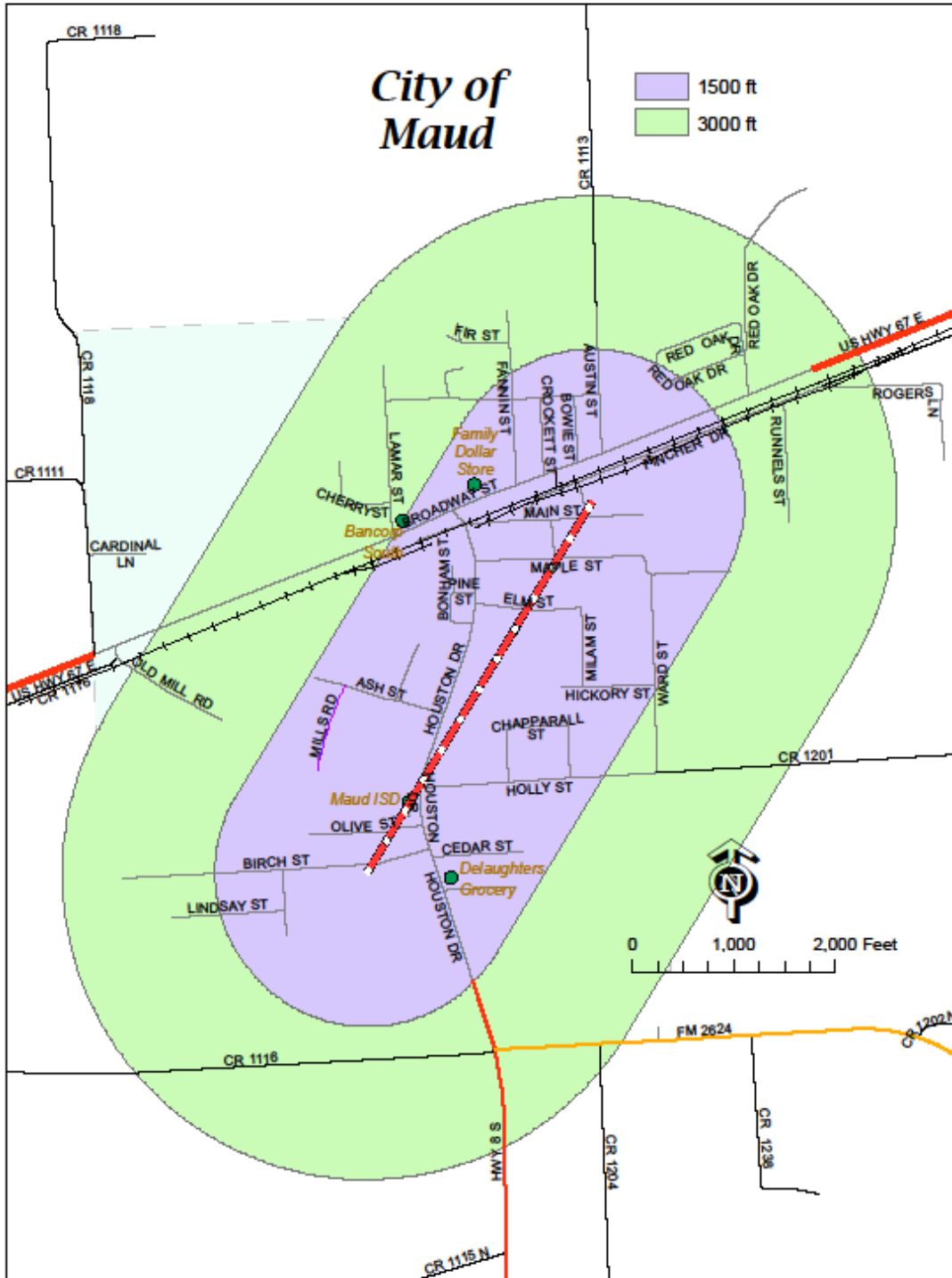
On Tuesday afternoon, folks in DeKalb beat their heads in their radios and televisions to hear the latest on the weather. Warned all day that a storm with a nasty disposition would be heading their way, they readied houses as best they could. When it was finally upon them, they sought refuge in churches and in hallways and in their homes, hoping to wait out the power of the storm that was at times as loud as a freight train and at others as silent as a barely audible whisper. They hunkered over their children and hoped. In a matter of minutes, the tornado wrecked the town to its core, shattering glass and hurling bricks, utterly destroying everything in its path. Nothing was stronger than the tornado that day. No one material. When it has passed as quickly as it had it struck the town, school children, a day care workers, business owners and townspeople craved outside to observe a carnage scene so much of the old town gone. On Wednesday, DeKalb started over.





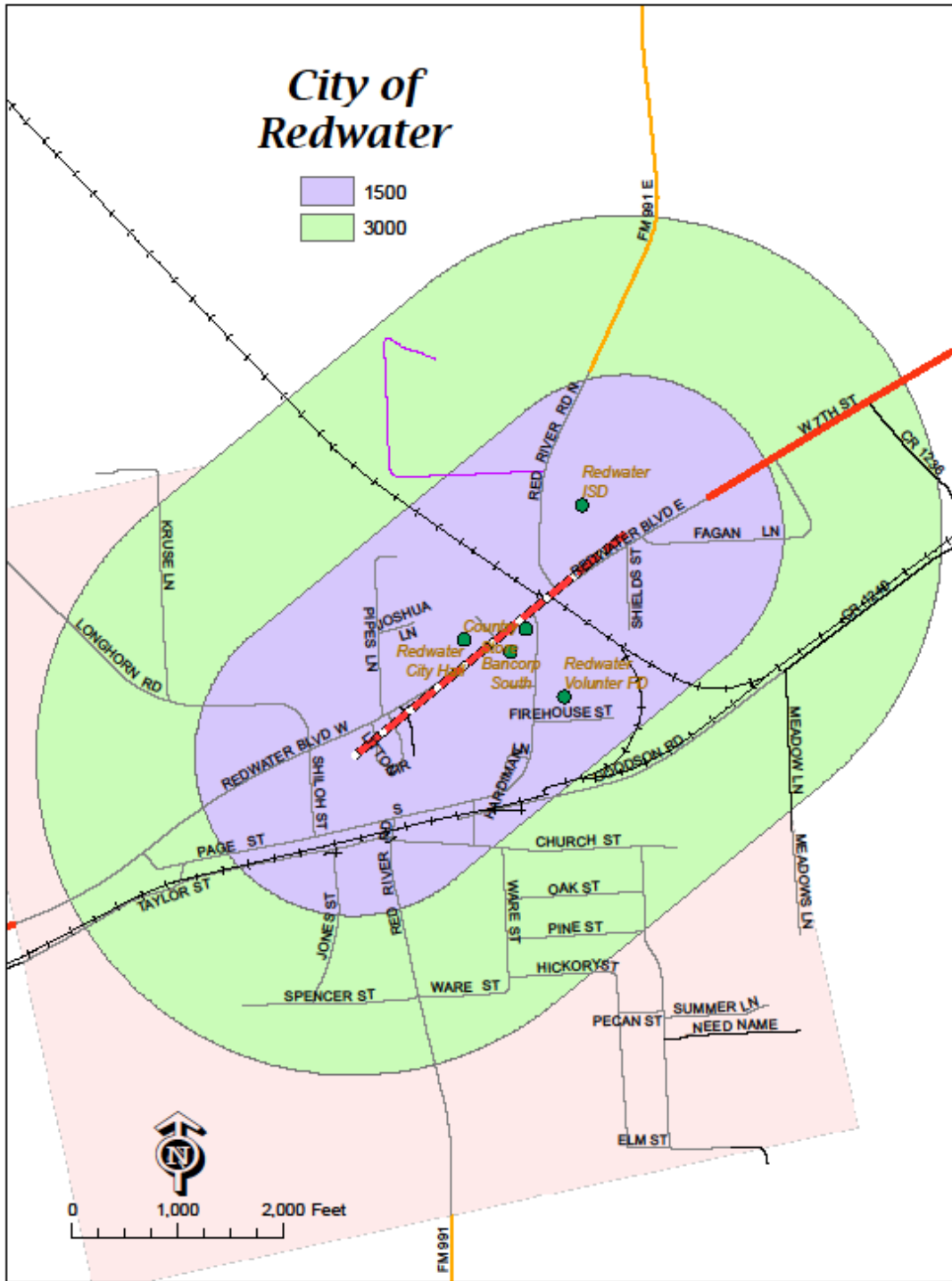


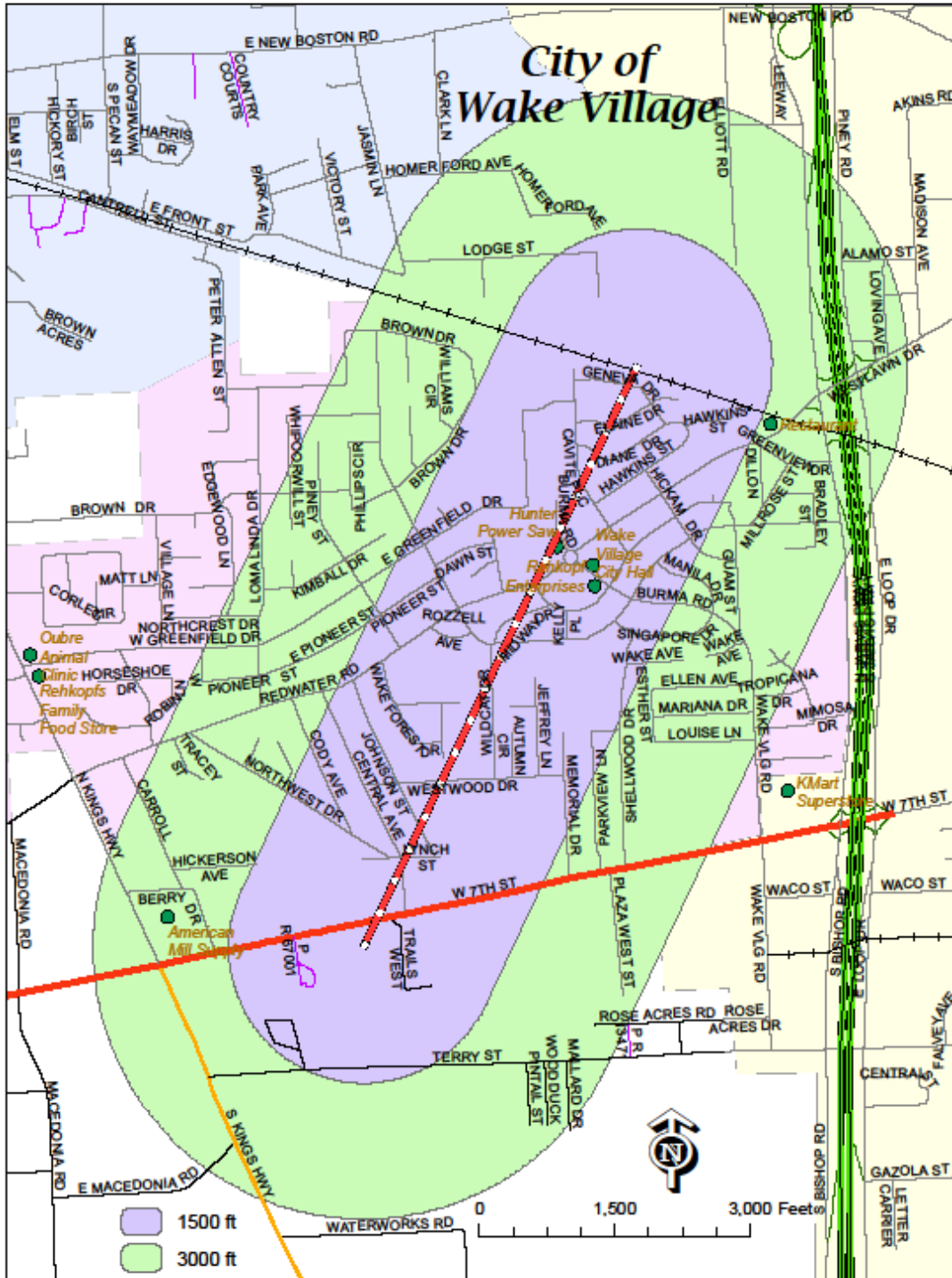












## SEVERE WINTER STORMS

Winter Storms are a hazard that poses a threat to the entirety of the Bowie County 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. 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.

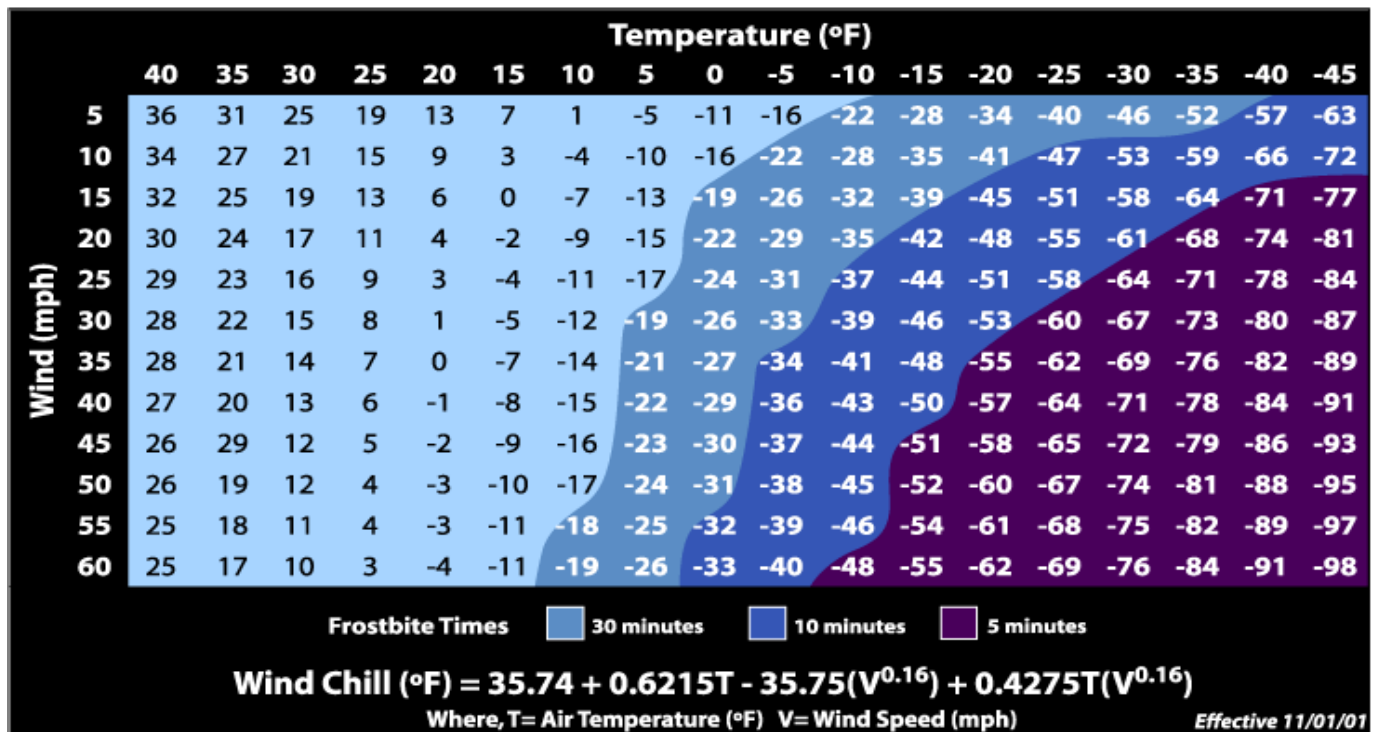
**WATCH:** A message indicating that conditions favor the occurrence of a certain type of hazardous weather. For example, a severe winter weather watch means that a severe winter weather event is expected in the next six hours or so within an area approximately 120 to 150 miles wide and 300 to 400 miles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

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

The *Wind Chill* temperature is simply a measure of how cold the wind makes real air temperature feel to the human body. Since wind can dramatically accelerate heat loss from the body, a blustery 30° day would feel just as cold as a calm day with 0° temperatures. The index was created in 1870, and on November 1, 2001, the National Weather Service released a more accurate chart.



## Wind Chill Chart



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. Stopping distances on ice are ten times greater than on dry pavement, and double that on packed snow.

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

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

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

### Potential Damage/Loss Due To Ice Storms

#### Life and Property

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

#### Roads and Bridges

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

#### Power Lines

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

#### Water Lines

Cast iron mainlines frequently break during severe freezes. Also, residential water lines often fail.

The potential for severe winter storms is high and records indicate that the cost can be in the millions of dollars, depending on the severity of the storm.



## **Winter Storms in Bowie County**

In the event of a major winter storm, Bowie County and the jurisdictions of **DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater, and Wake Village** could be affected physically, economically and socially. Those who travel face serious consequences from a winter ice storms. Stopping distances on glazed ice are ten times greater than on dry pavement, and double that on packed snow. Emergency vehicles from the police and fire departments are brought to a crawl when responding to emergency situations. Ambulance service must take extra time and care responding to accidents and emergency medical situations because of the hazard of ice on the streets and highways. It is possible that emergency vehicles would have to find alternate ways into neighborhoods because of downed trees and power lines. Many yards and streets are lined with tall trees that are subject to damage. Also communications with emergency teams can be compromised because of downed phone lines.

Public schools typically close when hazardous driving conditions exist. The cities of DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater and Wake Village are not equipped to clear roads and de-ice thoroughfares efficiently. In many instances the ice partially melts during the daylight hours only to re-freeze the following night causing patches of “black ice;” i.e., ice that is difficult to detect from a moving vehicle.

When Bowie County and it’s jurisdictions are faced with a winter storm that causes a power failure families and individuals may be forced to vacate their homes and seek alternate housing in hotels or emergency shelters because so many homes are heated by electricity. The elderly and the young are particularly susceptible to cold temperatures and both populations must take additional precautions to stay warm.

In past winter storms, residences that were heated with gas or propane or had gas cooking appliances in the kitchen, or gas log inserts in the fireplace fared much better than homes that were all electric. Homes with central gas heating were still left in the cold because the systems are run electrically.

Businesses would suffer due to a winter storm. In the storm of 2000 the pharmacies, gas stations and convenience stores closed due to power outages. Fuel became scarce creating hardships for both employees and employers. This in turn, causes lost wages and income, plus profit loss due to damaged merchandise and perishables. The local veterinary clinic might find its’ practice compromised because of power loss making it impossible to keep ill animals warm or to perform necessary procedures. Clients would hesitate to navigate dangerous roads in order to come to the clinic with ill or injured pets.

## HISTORY OF ICE STORMS IN BOWIE COUNTY

There were 24 snow and ice events reported in Bowie County from 02/01/94 to 01/11/15

Date	Type	Description	\$ PD
02/09/94	Ice Storm	An arctic cold front moved into Northern Texas during the afternoon of the 8 <sup>th</sup> , causing temperatures to fall 60 degrees within 48 hours in many locations. Up to four inches of ice and sleet accumulated, making this the most significant ice storm across East Texas in two years. Numerous highways, businesses, and schools were closed. Over 30K homes suffered power outages, and damage from falling trees was widespread to homes and businesses. Two indirect fatalities occurred as icy roads caused traffic accidents.	\$50M
01/06/97	Ice Storm	Abundant low level moisture was pumped northward across the region from low pressure over the northwest Gulf of Mexico. The moisture overran a freezing air mass across northeast Texas. The result was 2 to 4 inches of freezing rain and sleet across the area. Numerous accidents were reported along with power outages. Several highways were closed.	0
01/14/97	Ice Storm	Ice accumulations of ¼ to ½ inch occurred across portions of northeast Texas. Several traffic accidents resulted.	0
12/22/98	Ice Storm	A shallow arctic air mass spread across northeast and east Texas while low pressure formed in the Gulf of Mexico. This allowed overrunning of warm moist air over the cold dome producing widespread freezing rain and sleet. Overall ice accumulations were less than one inch. The ice accumulated mainly across exposed surfaces such as trees and power lines as well as bridges and overpasses. A few automobile accidents and downed trees and power lines were the worst result of the storm.	0
01/26/00	Ice Storm	A strong upper level trough moved out of the southern Great Basin and into the lower Mississippi Valley sweeping Arctic Air southward to the Gulf Coast. Moisture laden air from the Gulf overran the freezing surface temperatures producing ice across the northern half of northeast Texas. Ice accumulations of 1 to 4 inches fell across most of the area with the ice and snow accumulations near 8 inches. Thousands of homes were left without power due to ice covered tree limbs falling and snapping power lines. Also, hundreds of chicken houses were destroyed, and several 7 million chicks were killed. Barns, carports, and weak structure homes suffered collapse from the weight of the ice and snow. Traffic accidents were numerous and I-30 west of Texarkana had to be shut down when the freeway became impassable.	0.

Date	Type	Description	\$ PD
12/12/00	Ice Storm	A mixture of freezing rain, sleet and snow north of a Quitman to Linden Texas line, while further south, precipitation was in the form of freezing rain. Ice accumulations of 2 to 6 inches were common across the northern third of northeast Texas. Over 235,000 people were without power from several hours to several weeks from snapped power lines. Upwards of 29 transmission lines atop "H" shaped steel towers were snapped due to the weight of the ice. Northeast Texas was declared a disaster area.	\$123 M
12/24/00	Ice Storm	Ice storm struck the northern third of northeast Texas. Freezing rain resulted in ice accumulations from ¼ to 3 inches. Bowie and Cass Counties declared disaster area.	\$31.5 M
02/19/06	Winter Weather/mix	Light freezing rain and freezing drizzle falling across much of the region. Ice accumulations were very light...mainly less than ¼ of an inch across most places. While road surfaces remained wet from ground warmth, most elevated bridges and overpasses saw some ice accumulation which resulted in numerous traffic accidents. Many elevated bridges and overpasses had to be closed due to the ice accumulation.	0
03/07/08	Winter Weather	Three inches of snow was measured in parts of Bowie County	0
12/23/08	Winter Weather	Drizzle and light rain became freezing drizzle and light freezing rain across portions of northeast Texas during the predawn hours of December 23rd. The ice froze to elevated bridges and overpasses which in turn, resulted in several vehicle accidents.	0
1/28/09	Winter Weather	Freezing rain accumulation near one tenth of an inch resulted in most bridges and overpasses across the county becoming iced up. There were a few vehicular accidents reported across the county.	0
3/21/10	Winter Weather	An early spring winter storm affected portions of the region over the first official weekend of spring. Light to moderate snow fell across portions of the area.	0
<b>Winter Weather After Original Plan Submission</b>			
01/09/11	Winter Storm	Generally, one quarter to one half inch of freezing rain and sleet was reported initially across the northern half of Northeast Texas with the snow being the predominant precipitation type during the afternoon and evening of January 9 <sup>th</sup> with up to 7 inches of snow recorded in Bowie County. There were numerous reports of traffic accidents across the northern half of Northeast Texas with isolated power outages as well.	0
02/03/11	Winter Storm	A large area of precipitation, mostly in the form of snow, developed across Central Texas during the late night hours of February 3rd and moved quickly northeast into Northeast Texas, Accumulating snow was the result across much of the area with a mixture of sleet and freezing rain across portions of East Central Texas and Central Louisiana with Bowie County Reporting up to 5 inches of snow.	0

Date	Type	Description	\$ PD
02/09/11	Winter Weather	Snow totals across Northeast Texas are as follows: Red River County: 4 inches, Bowie County: 1 inch, Franklin County: 1 inch, Titus County: 1 inch. Both Smith and Gregg Counties in Northeast Texas experienced 0.10 of an inch of freezing rain during the event	0
12/25/12	Winter Storm	Accumulating snow was common across several counties in Northeast Texas. This heavy wet snow resulted in several trees downed along with powerlines which cut power to many locations across Northeast Texas. There were also several accidents reported from the accumulating snow on area roadways and bridges. Up to 8.5 inches of snow was recorded in Bowie County	0
1/15/13	Winter Weather	Only light ice accumulations from the freezing rain and sleet were noted across Northeast Texas but some minor snow accumulations were also reported. Some bridges and overpasses quickly became slick resulting in a few automobile accidents across Northeast Texas. In addition, there were some minor power outages from falling limbs due to the weight of the ice.	0
01/24/13	Winter Weather	There was a period of freezing rain and sleet across portions of Northeast Texas. Ice accumulation was mostly less than one quarter of an inch and mainly just north of the Interstate 20 corridor of Northeast Texas. Temperatures were well above normal before this air mass settled into the region so the ice accumulation was mainly on elevated objects such as bridges, overpasses, trees, powerlines and car tops.	0
12/06/13	Winter Weather	Freezing rain and sleet fell across the region. Ice accumulation was mainly less than one quarter of an inch but resulted in accumulation on bridges and overpasses, trees and powerlines. Some traffic accidents were noted across Northeast Texas during the height of the winter weather along with a few power outages.	0
02/04/14	Winter Weather	Temperatures quickly dropped below freezing during the late night hours of the 3rd into the predawn hours of the 4th and as a result, the light rain became mostly freezing rain with a mix of sleet and light snow. The temperatures did not climb above freezing until the mid-morning hours of February 4th. Freezing rain accumulations across portions of Bowie County were mostly near one tenth of an inch. This resulted in ice accumulation on elevated objects only, including bridges, overpasses and powerlines. There were a few automobile accidents along with a few power outages	0
02/07/14	Winter Weather	The snow across the northern half of Northeast Texas was mainly near one inch in accumulation. The snow caused some slick spots across some locations, mainly across elevated bridges and overpasses.	0



Date	Type	Description	\$ PD
03/02/14	Winter Storm	Temperatures cooled enough in the lower levels of the atmosphere such that freezing rain transitioned over to sleet across much of the area. Widespread sleet accumulations of one half to one inch were reported. There were some isolated areas with total sleet accumulations near 2 inches. Further east where temperatures were not cold enough aloft for sleet, freezing rain was the dominant precipitation type accumulations near one quarter to one half inch. The freezing rain and sleet accumulations resulted in numerous automobile accidents along with power outages from falling limbs and trees throughout the northern half of Northeast Texas	0
02/11/14	Winter Weather	A mixture of rain and sleet was the predominant precipitation type with some sleet accumulations near one quarter of an inch across portions of Northeast Texas. There was even a brief transition of moderate snow across portions of the region as well. During the evening and overnight hours of the event, the transition turned to predominantly freezing rain with ice accumulations mainly less than one quarter of an inch across Northeast Texas. Impacts included several automobile accidents that occurred from icing in elevated bridges and overpasses as well as isolated power outages from ice accumulating on limbs which fell across powerlines.	0
01/11/15	Winter Weather	After midnight on the 11th, this precipitation became light freezing rain but due to the temperature being at or just below freezing, ice accumulation was relegated to trees and elevated exposed objects including powerlines and some bridge surfaces. Ice accumulations were mostly near one tenth of an inch across the region	0

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

**Location:**

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

**Impact**

Although Northeast 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. As little as ¼ of an inch of ice can begin to cause power outages and damage to vegetation.

Heavy accumulations of ice can bring down trees and power lines, disabling electric power and communications for days. Heavy snow or ice can immobilize communities by shutting down transportation into, out of, and within the county. In rural areas and smaller communities homes and farms may be isolated for days. Livestock and other animals can die from exposure. When the event happens in the early spring, crops such as fruit can be destroyed. Bowie County and its jurisdictions can expect ice accumulations on streets, power lines and trees that will range from ¼ to ¾ of an inch. The Damage Assessment Tables found on page 19-20 demonstrate the amount of damage that can be possible. A temperature range between 32 degrees f. and 10 degrees f. is the range of temperature anticipated in the county that would create conditions for winter storms. (see the wind chill chart on page 66).

**Probability:** The probability of the occurrence of a freeze is high, given historical weather patterns. Nineteen winter weather events have occurred between 1994 and 2010. It is highly likely that a winter storm will occur in any given year. Bowie County and the participating jurisdictions share the same likelihood of experiencing a winter storm.

**Vulnerability/Impact:** Bowie County has a significant amount of acreage designated as conservation, public lands and agricultural land uses. The small towns and communities are always vulnerable. All jurisdictions could lose power to its sewage and water plant, power to homes and damage to city infrastructure. The elderly could suffer from lack of heat and lights during a winter storm. Small businesses could experience lost revenue due to reduced traffic during winter storm events. Falling trees and tree limbs could damage property and block roadways in all jurisdictions. Auto accidents related to travel on the icy roads increase.

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

<b>Estimated Property Loss at 15%</b>	
Bowie County	\$482,691,072
DeKalb	\$8,182,407
Hooks	\$9,532,925
Leary	\$1,849,674
Maud	\$3,628,240
Nash	\$15,706,536
Red Lick	\$8,974,589
Redwater	\$3,066,723
Wake Village	\$38,135,036

**Ice storms Devastated Bowie County in 2000**





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

## Nearly 30,000 without power after arctic blast

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

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

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

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

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



Staff photo by GREG FELKINS

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

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

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

seven days," McCloud said.

As of 11 a.m., AEP-SWEPCO reported 235,000 customers were without power. As of 4 p.m., 222,000 were still without power.

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

Please see **POWER** on Page 9A

## THUNDERSTORM WINDS

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

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

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

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

Source: [www.mountwashington.org](http://www.mountwashington.org)

## HISTORY OF SEVERE THUNDERSTORM WINDS IN BOWIE COUNTY

A total of 152 Wind Storm events were reported to National Climatic Storm Center from 1970 to June 2015. Only those storms listing property damage are shown in the following table. All of the events are recorded as “Thunderstorm Winds”.

Begin Date	Location	Description	\$Pr. Dm.	Magnitude
04/14/93	3 Miles West of Concord	Four mobile homes were rolled over and damaged and trees blown down by high winds.	5K	Not Available
04/14/93	4 Miles SE of New Boston	Same as above. Same storm.	50K	Not Available
04/14/93	5 Miles SW of Texarkana	Thunderstorm winds rolled a mobile home and blew down some trees.	50K	Not Available
05/09/93	3 Miles South of New Boston	Thunderstorm winds destroyed a barn.	50K	Not Available
10/18/93	2 Miles West NW of Maud	Several trees were blown down near the intersection of Hwy 8 and US 67.	5K	Not Available
10/18/93	Spring Hill	Trees blown down on Hwy 259	5K	Not Available
11/14/93	De Kalb	High winds damaged roofs, broke windows, downed trees.	50K	Not Available
11/18/93	2 Miles West NW of Maud	Several trees were blown down near the intersection of Texas Highway 8 and United States Highway 67.	5K	Not Available
04/11/94	5 Miles West SW of Texarkana	High winds damaged a mobile home office.	5K	Not Available
04/11/94	5 Miles South of Texarkana	Thunderstorm winds damaged a barn.	5K	Not Available
05/14/94	10 Miles SW of Texarkana	Trees blown down by high winds.	5K	Not Available
05/16/94	Not Known	Numerous trees blown down near Hwy 8 near the Bowie Bridge	50K	Not Available
05/29/94	5 Miles NW of Simms	Trees blown down by high winds.	5K	Not Available
06/30/94	Day	Trees were damaged by thunderstorm winds.	1K	Not Available
06/30/94	5 Miles SE of New Boston	Trees blown down by high winds.	5K	Not Available
10/21/94	4 Miles North of Maud	Trees blown down.	5K	Not Available
11/05/94	De Kalb	Trees blown down between DeKalb and Beaver Dam	5K	Not Available

Begin Date	Location	Description	\$PD	Magnitude
06/17/97	Hooks	Strong straight-line winds downed numerous trees and power lines with widespread outages. Gas company shed destroyed.	60K	70 knots
08/03/98	2 Miles North New Boston	Outbuilding destroyed by high wind.	4k	70 knots
08/12/98	DeKalb	Trees and power lines down with one tree across a house.	35K	52 knots
02/06/99	5 Miles South of DeKalb	Barn roof blown in middle of Hwy 44.	25K	57 knots
02/06/99	5 Miles South of Texarkana	Carport blown away.	12K	61 knots
04/26/99	7 Miles North of Texarkana	Several trees down including a tree across a home. Several mobile homes damaged.	60K	70 knots
05/06/01	9 Miles North of DeKalb	Trees blown down and small building destroyed.	12K	57 knots
06/14/01	DeKalb	Roof completely removed from a carport.	15K	62 knots
09/09/01	2 Miles West of Texarkana	Structural damage to a commercial storage facility on FM 989 between US-59 and US-67.	20K	65 knots
08/25/02	DeKalb	Tree fell across garage doing major damage.	22K	55 knots
06/02/04	5 Miles West of Texarkana	Trailer homes damaged by high winds along Hwy. 67 in Liberty Eylau area.	50K	57 knots
06/16/05	DeKalb	Large barn was blown over and destroyed by high winds.	30K	57 knots
03/03/08	Old Boston	Straight line winds over a 6 mile stretch and up to 2 miles wide caused major damage in and around the Old Boston, Texas community 5 miles south of New Boston, Texas. Several hundred large trees were snapped or uprooted and some of these fell on homes and businesses. Numerous powerlines were downed as a result and roof damage was common throughout the community. Damage was also reported at the Red River Army Depot just east of Old Boston, Texas.	2 mil	70 knots
04/08/08	Eylau	Large tree was downed on a mobile home on George Thomas Road in the Liberty Elyau community. Woman and child were rescued from the mobile home with no injuries reported. Trees were also downed across South State Line Road.	50k	54 knots
05/22/05	Red Springs	Thunderstorm winds blew a tree down on a car near the intersection of Tri-State Road and U.S. 67. Children were trapped in the car. The children were rescued with no injuries reported.	10k	55 knots
05/02/09	Redwater	The roof was removed from a mobile home in the community of Red Water, Texas.	10k	55 knots



10/09/09	Red Water	Trees reported downed throughout the county. There was one indirect injury south of New Boston, Texas when the driver of an 18-wheeler had to be taken to the hospital after his rig struck a downed tree on Texas highway 8.	50k	54 knots
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**New Boston and Texarkana are not a part of this MAP. They have their own MAPs.**

**Since the original plan was submitted an additional 46 thunderstorm wind events were recorded by the National Weather Service. Thunderstorms and their related high winds are Bowie County’s most frequent natural hazard. Historically, because of their frequency, they are the most costly.**

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

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

**Probability:** Given the climate and history, thunderstorms are highly likely during the storm season. Thunderstorms are most prolific in the spring and summer months, however, thunder storm winds may occur at any time in Bowie County given the right conditions. **Dekalb, Hooks, Maud, Nash, Redwater, and Wake Village** have recorded wind damage in the last five years. Climate change could change the likelihood and severity of the storms. The remaining jurisdictions of **Leary and Red Lick** are not immune from wind damage.

**Vulnerability:** The County is susceptible to damage from thunderstorm winds. Vulnerability depends on the magnitude of the storm. Damage potential is higher in populated areas. Deteriorating infrastructure, mobile homes business signage and crops are most susceptible to damage. **Bowie County** and the jurisdictions of **DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater and Wake Village** share susceptibility to thunderstorm damage.

**Impact:** According to NOAA Satellite and Information Service of the National Climatic Data Center, there were 205 thunderstorm wind events reported in Bowie County between 1970 and June of 2015. The magnitudes ranged from 50 knots to 70 knots. Trees, limbs, and awnings are particularly susceptible to wind damage from thunderstorm winds.

There have been 4 reported injuries and no deaths from thunderstorm wind events in Bowie County. Storms cause power outages, disruptions of transportation and property damage. Historical data indicate that the entire county is susceptible to windstorms during the thunderstorm season and, depending on the severity, costs will vary. See the Damage Assessment Tables on pages 25-26 demonstrating possible loss for the county and each participating jurisdiction.

<b>Estimated Property Loss at 25%</b>	
Bowie County	804,485,120
DeKalb	13,637,345
Hooks	15,888,209
Leary	3,082,791
Maud	6,047,068
Nash	26,177,561
Red Lick	14,957,650
Redwater	5,111,206
Wake Village	63,558,393

**Summary:** High winds, associated with thunderstorms can be destructive. Thunderstorms also spawn tornadoes. Deteriorating infrastructure, mobile homes business signage and crops are most susceptible to damage to Bowie County and its jurisdictions. Thunderstorm winds are the most common with an accumulated past occurrence cost exceeding any of the other Cass County hazards.. **Bowie County and the jurisdictions of DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater and Wake Village** are equally susceptible to thunderstorm damage.

## HAILSTORM

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

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

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

*“Gather out of star-dust,  
Earth-dust,  
Cloud-dust,  
Storm-dust,  
And splinters of hail,  
One handful of dream-dust,  
Not for sale.”*

**Langston Hughes**

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

Combined NOAA/TORRO Hailstorm Intensity Scales

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

Sources: [www.noaa.gov](http://www.noaa.gov) and [www.torro.org](http://www.torro.org)



## HISTORY OF HAILSTORMS IN BOWIE COUNTY

The NOAA Satellite and Information Service, National Climatic Data Center, reports that there have been 151 hail events reported between 6/12/71 and 06/08/14 in Bowie County. Six (6) of those events reported a magnitude of 2.75 inches. Three of these events' locations are listed as unknown, and the others occurred in the Day area, 6 miles South West of Texarkana, and 3 miles West of Texarkana. The largest magnitude occurred in the Maud area on May 14, 2003. The hail size was recorded up to or 4.50 inches, (H10) and with property damage of \$880,000. Numerous home and car windows were broken, and roofs were torn open. Vegetation was flattened and trees were stripped for a several mile area. Of the 205 hail events reported, this was the only event that reported any property damage. Several hail events reported the smallest magnitude of .75 inches.

Hail can damage roofs, siding, windows, cars, and satellite dishes. Each year hailstorms cause millions of dollars of damage to crops like corn and soy beans. It can rip the leaves off of trees and in extreme cases, kill small animals. Bowe County is an agricultural center and the economic impact of hail on crops is greater than in a more urban environments. Business signage can be destroyed by large hail. In Bowe County, Texas the probability of a hailstorm occurring is high (85%) due to the number of thunderstorms that visit our area each year.

**In DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater and Wake Village** there are many older, wood framed, houses that are more likely to experience structural damage from hailstorms. Roofs of homes and businesses are very susceptible to hail damage, resulting in repairs costing hundreds or even thousands of dollars to a single family dwelling. Many newer homes may have roof-top skylights that can break or crack during periods of large hail. Water damage as well as roof repair becomes a factor when skylights break. Also, cars that are open to the elements are susceptible to hail damage, including broken windshields and dented car bodies.

There were 133 days with hail events recorded by the National Weather Database between May 1971 and May of 2014. Since the plan was adopted an additional 21 days with hail events have been recorded. That's an average of 3.5 events per year. Hail events can occur anywhere in the county. It is difficult to determine from available data how much property or crop damage occurred due to hail storms.

*The largest hailstone ever reported was September 3, 1970, in Coffeyville, Kansas. It was approximately the size of a softball—758 grams, 45 centimeters in circumference, and 14.2 centimeters in diameter.*

<b>Bowie County Hail Storm Risk</b>					
<b>COMMUNITY</b>	<b>POTENTIAL IMPACT 45%</b>	<b>PROBABLITY 30%</b>	<b>Warning 15%</b>	<b>Duration 10%</b>	<b>RISK</b>
Bowie Unincorporated	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Dekalb	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Hooks	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Leary	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Maud	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35
Nash	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35
Red Lick	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35
Redwater	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35
Wake Village	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35

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

**Probability:** The probability of a hailstorm occurring in Bowie County is highly likely. The jurisdictions of **DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater, and Wake Village** share the same probability and risk.

**Impact:** The impact of a hailstorm has historically been limited however, large size hail can cause injuries. Hail can damage autos, roofs, siding and crops. A 2% loss to residential property in the county could result in a monetary value of \$9,850,601. See the tables on page 18-19 for a more comprehensive look at possible damage values.

**Extent:** The largest hail recorded in Bowie County was 4.5 inches but the pea size and smaller are the most common, causing no damage. All jurisdictions are affected equally. On March 21, 1982 hail stones were measured as large as 2.75 inches

. See the tables on page 18-19 for a more comprehensive look at possible damage values.

Estimated Property Loss at 2%		
Bowie County	Residential	\$502,820,341
DeKalb	Residential	775,245
Hooks	Residential	\$109,250
Leary	Residential	\$146,330
Maud	Residential	\$439,367
Nash	Residential	\$1,350,140
Red Lick	Residential	\$1054909
Redwater	Residential	\$304834
Wake Village	Residential	\$4,599,345

**Vulnerability:** Buildings, autos, and crops, can be damaged by hail. Hail is often part of thunderstorm activity. In rare cases hail can cause physical injury. The overall vulnerability level in Bowie County and its jurisdictions is high. Wooden Structures exist in all the jurisdictions in Bowie County. Repainting and even replacing lumber may be necessary if the storms are severe enough. Anyone who has an uncovered automobile could experience expensive repair costs. Also all the buildings in the jurisdictions have glass windows and many dwelling in all the jurisdictions have roofs that will be susceptible to hail damage

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

## WINDSTORMS

**Bowie County windstorm data can be found under Thunderstorms in this Five Year Update. There are no instances of windstorms, high winds or strong winds for Bowie County found in the NOAA Weather Data Base for Bowie County.**

## **DROUGHT**

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 of time when precipitation falls below normal levels. Drought is divided in three phases:

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

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

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.

### **The 1996, 1998 and 2000 Texas Droughts**

The statewide droughts of 1996 and 1998 produced widespread crop failure, significant environmental stress and required more than 300 cities and utilities to implement some form of water demand management. Most of these demand management measures were taken because the utility could not treat and distribute water as fast as it was being used.

The drought of 1996 began with below normal precipitation in November 1995. Precipitation (meteorological drought) did not return to “normal” until August 1996, and reservoir levels (hydrological drought) generally did not begin to recover until October of that year. This 10-month drought period saw significant drops in reservoir and aquifer levels over much of Texas. Agriculture impacts as a result of the drought were estimated to be in the range of \$5 billion.

Of the two droughts, the 1996 drought had more impact on water supplies. Statewide reservoir levels dropped to 68 percent of conservation storage capacity, similar to the drought of 1984 when storage capacity dropped to 66 percent.

The 1998 drought was shorter in duration. It began with an abrupt end to the much wetter conditions caused by El Nino and beginning of La Nina in March 1998. It did not end until five months later in the fall of 1998, with devastating floods in much of the state. By November 1998, crop moisture indices for the whole state had returned to adequate levels, and statewide reservoir levels had returned to 82 percent of capacity. Total losses were estimated to be more than \$6 billion. The extreme heat also led to 131 heat-related deaths, more than 14,000 farm workers out of jobs and almost a half a million acres burned by wildfires.

The 2000 drought caused about \$595 million in crop losses and 178 counties were declared federal agricultural disaster areas. As of September, North Texas had been rainless for 77 days, surpassing the no-rain record of 59 days set in 1934 and 1950. (See Figures 2.8, 2.9)

#### East Texas Drought Frequency 1892-1996

This table shows the number of years of drought and the number of separate droughts for East Texas.

Years	East Texas
1	6
2	2
3	0
Total Droughts	8
Drought Years	10

(Texas Almanac – 1998-1999 edition)


#### Potential Damage/ Loss Due To Crop Damage

Data is insufficient to project total losses on a severe drought. A severe drought like the 1996, 1998 and 2000 droughts would cause significant loss in basic agriculture items along with timber and livestock losses.



Table 2.10

Estimated Producer Drought Losses from Economic Potential – for years 1996, 1998, 1999, & 2000 in Texas				
Commodity	1996	1998	1999	2000
Cotton	\$359	\$659	..	\$485
Corn	177	255	..	34
Grain Sorghum	205	140	..	62
Wheat	202	0	..	153
Added Irrigation Costs	n/e	n/e	n/e	47
Wheat Grazing	39	25	59	30
Forage Crops	n/e	380	..	124
Other Crops	n/e	218	..	56
Livestock Value	522	101	n/e	n/e
Added Feed/Water Costs	589	325	154	105
Lost Shrimp Catch	n/e	n/e	10	n/e
<b>Total Producer Losses</b>	<b>\$2,093</b>	<b>\$2,103</b>	<b>\$223</b>	<b>\$1,096</b>



\* In millions of dollars n/e - Not estimated separately  
 \*\* Drought losses did occur in certain regions, but above average yields elsewhere offset losses for statewide total

Texas Agricultural Extension Service  
 10-18-00

Figure 2.5 provided by TexasWaterInfo.Net gives an Explanation of the Palmer Drought Severity Index by Texas Climatic Divisions. PDSI is primarily an index of meteorologic drought, but it also takes into account hydrologic factors such as precipitation, evaporation, and soil moisture. As of July 1, 2006, Texas Climatic Division, which includes Bowie County, was shown to be  $-3.82$ . The PDSI Legend shows that  $-4$  to  $-3$  is severe drought. Figure 2.6, provided by the NOAA Climate Prediction Center, which shows the Palmer Forecast for the United States by division, also shows that Bowie County, as of May, 2007, is near normal. Figure 2.7, the USDA Top Soil Moisture, Short-Very Short Percent of State Area for May 27, 2007, shows the state of Texas as not dry or very dry.

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

Common to all types of drought is the fact that they originate from a deficiency of precipitation resulting from an unusual weather pattern. If the weather pattern lasts a short time (say, a few

weeks or a couple months), the drought is considered *short-term*. But if the weather or atmospheric circulation pattern becomes entrenched and the precipitation deficits last for several months to several years, the drought is considered to be a *long-term* drought. It is possible for a region to experience a long-term circulation pattern that produces drought, and to have short-term changes in this long-term pattern that result in short-term wet spells. Likewise, it is possible for a long-term wet circulation pattern to be interrupted by short-term weather spells that result in short-term drought



***Violence is like a weed - it does not die even in the greatest drought.***

**Simon Wiesenthal**

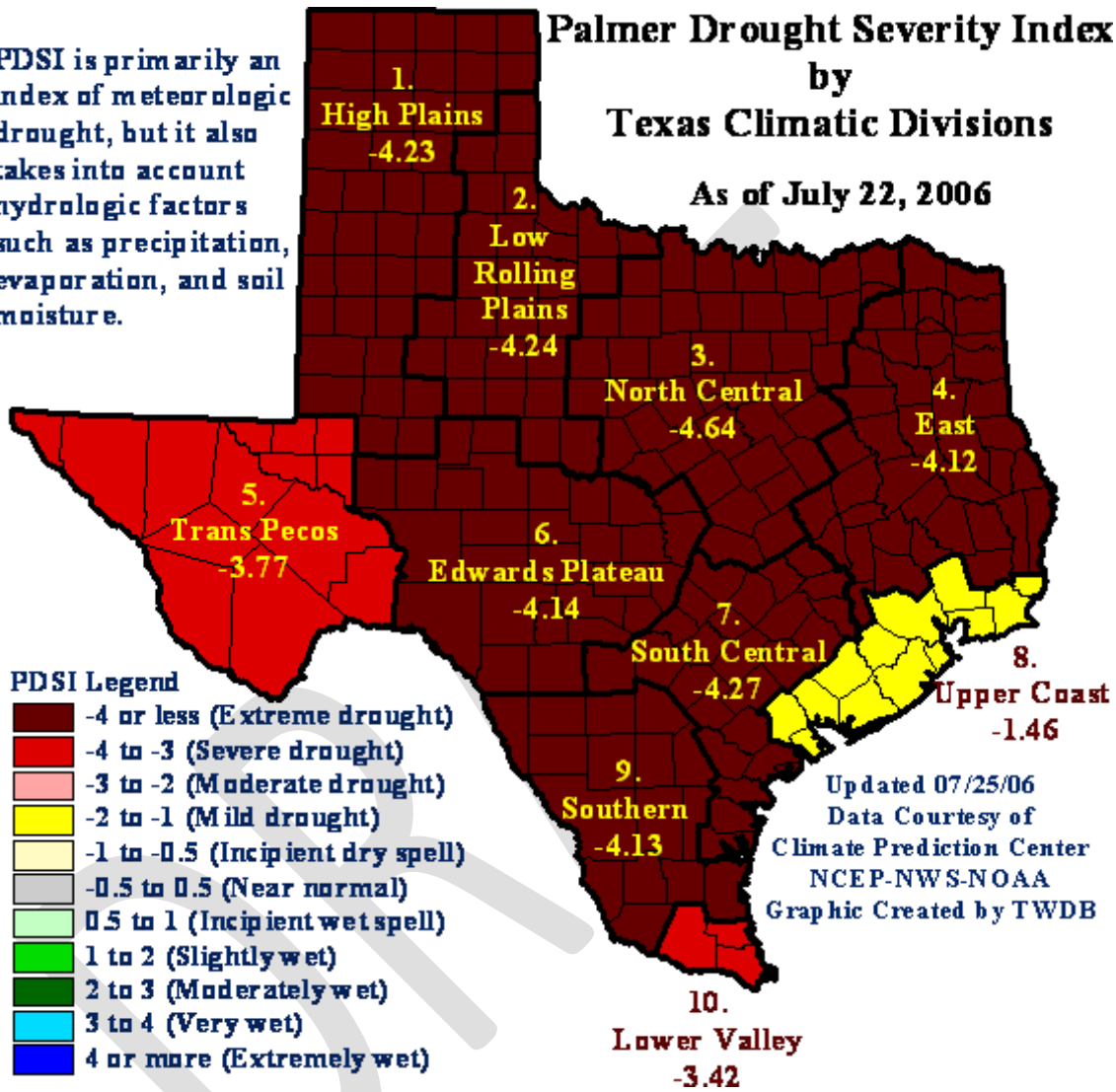


Explanation of PDSI

PDSI is primarily an index of meteorologic drought, but it also takes into account hydrologic factors such as precipitation, evaporation, and soil moisture.

**Palmer Drought Severity Index  
by  
Texas Climatic Divisions**

As of July 22, 2006



## HISTORY OF DROUGHT IN BOWIE COUNTY

The following Table shows that there have been 5 droughts in Bowie County between 01/01/1950 and 04/30/2006. This is in addition to the drought the region experienced the summer of 2006. Information supplied by NOAA Satellite and Information Service, National Climatic Data Center.

Begin Date	Location	Description	\$Crop Damage
05/01/96	18 Counties, Including Bowie	May was one of the hottest and driest on record. Over ninety percent of cooperative observers reported rainfall far below climatologic averages. Some reporting stations in northeast Texas including New Summerfield had no measurable rainfall the entire month. Numerous industries were hard hit including agricultural, timber, crop and livestock.	\$4M
06/01098-08/01/05	13 Counties, Including Bowie	The drought and extreme heat resulted in burn bans for much of the Middle Red River Valley country of Northeast Texas. The drought continued to take its toll on the agricultural and hydrological community of the region as well. The lack of rainfall through the period resulted in many crops being unusable which put a significant strain on the farming community. Water conservation measures were also in place in some areas as pool stages on various lakes were well below normal.	150M
12/01/05	21 Counties, Including Bowie	High fire danger continued across all of Northeast and East Central Texas throughout December. The month was a continuation to a devastating drought that impacted much of the eastern half of the state throughout 2005. Many lakes and reservoirs remained near or set all time record low levels and a series of dry cold fronts that blew through the region during the month did not help the already dry conditions. Several small fires broke out across the region during the month, but the resulting damage was minimal. Burn bans continued for many counties across Northeast Texas, as most of the region experienced rainfall deficits of 15 to 20 inches for the year.	Not Available
<b>Droughts After Submission of Original Plan</b>			
12/01/2010-03/01/2012	The entire state recorded drought conditions at one point	<b>This drought reached historical proportions creating severe drought conditions throughout the state of Texas. In September of 2011 Cass County experienced the greatest forest fire ever recorded in East Texas. 16 months of drought</b>	Not Available

Begin Date	Location	Description	\$Crop Damage
11/01/12-01/01/13	Bowie, Red River, Titus, Franklin	D2 Severe Drought conditions developed during the early part of the month along the Red River in extreme northern Red River and Bowie Counties in Northeast Texas Conditions improved during January 20113.	Not Available
08/09/13-09/01/13		Severe to extreme drought conditions expanded to encompass much of the northeast half of the state.	Not Available
		<b>total</b>	<b>\$154 M</b>

<b>Bowie County Drought Risk</b>					
<b>COMMUNITY</b>	<b>POTENTIAL IMPACT 45%</b>	<b>PROBABLITY 30%</b>	<b>Warning 15%</b>	<b>Duration 10%</b>	<b>RISK</b>
Bowie County	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
DeKalb	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Hooks	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Leary	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Maud	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Nash	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Red Lick	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Redwater	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Wake Village	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55

Pollutants are more concentrated when water supplies are low because pollutants and bacteria become more concentrated.



During a period of drought accompanied by a water shortage residents are often asked to ration their water. People may be asked to rotate the days of watering yards by address on odd and even sides of the street.

In areas where the soil is not stable foundation problems occur; especially with houses that are built on slab concrete.

Drought in Bowie County can have a large impact on local crops and local economies as well. Food prices increase because foods that are typically available locally have to be shipped in from areas not experiencing droughts.

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 that affect alignment. Refrigerated goods experience a significant greater rate of spoilage due to extreme heat. Additional impact will be felt as food prices rise due to crop loss.

Burn bans are often placed in effect because dry grass and shrubs can be susceptible to flash fires that will threaten neighborhoods

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

**Probability:** Droughts will continue to occur in the region when the conditions are right. It is a normal, recurrent feature of climate. A drought will affect Bowie County and its participating jurisdictions. According to the Texas Almanac, there were 15 recorded droughts between 1892 and 2011. Historically a drought can last from a few days to over a year.

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

**Impact:** Bowie County Drought Defined: Drought is determined by using the Palmer Drought Index. It is based on precipitation and temperature data for the area. The scale ranges from 3.99, which is very wet to -4.00 or less, which is considered extreme drought. The scale is most accurate when used to determine drought over a period of months. See the Damage Assessment Tables on page 24-25 The extent of drought experienced in Bowie County and its jurisdictions will range from *0 Abundantly Dry to 4 Exceptional Drought* (see drought monitor on page 83 for further detail).

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

**Location:** Historically, drought has affected the all of Bowie County including the jurisdictions. The agricultural areas, which include the rural parts of the County, would be affected more so than the urban areas.

**Summary:** Drought is seen as an issue for Bowie County, including **DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater and Wake Village**. The drought of 2011 actually covered 16 months and impacted the entire state. If the climatologists' predictions are correct, extreme weather may become the norm rather than the exception.

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

**Dwight Morrow**

## **EXTREME HEAT**

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

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

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

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

The Heat Index will be mitigated to any combination of temperature and humidity that ranges from 100 degrees F. to 114 degrees F. Temperatures of 90 degrees and higher will be considered extreme heat.

<b>Possible Health Outcomes from Extreme Heat</b>	
<b>Heat Index</b>	<b>Heat Disorder</b>
<b>130 degrees or higher</b>	<b>Heatstroke/Sunstroke, highly higher likely with continued exposure.</b>
<b>105 degrees – 130 degrees</b>	<b>Sunstroke, heat cramps or heat exhaustion likely and heatstroke possible with prolonged exposure and/or physical activity.</b>
<b>90 degrees – 105 degrees</b>	<b>Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity.</b>
<b>89 degrees – 90 degrees</b>	<b>Fatigue possible with prolonged exposure and/or physical activity.</b>

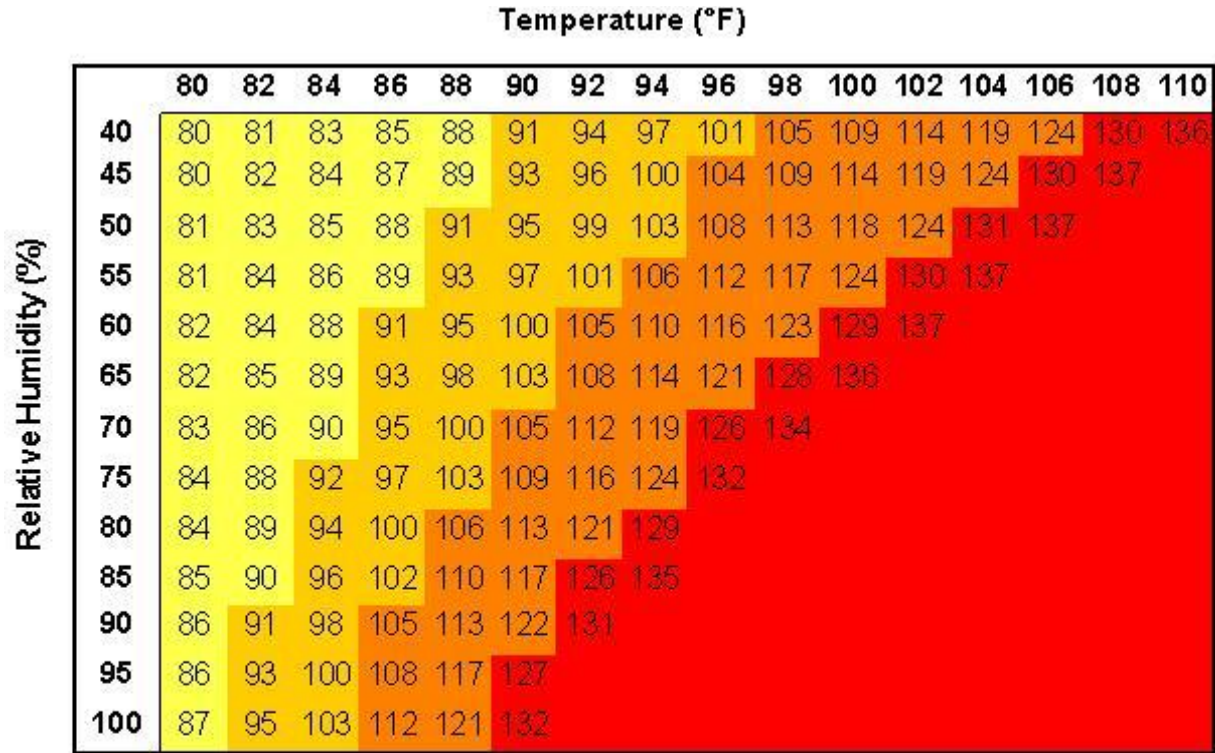
<b>Bowie County Summer Temperatures*</b>			
<b>Date</b>	<b>Days 90 &amp; Above</b>	<b>Days 100 &amp; Above</b>	<b>High Temperature</b>
June 2010	26	0	99 June 26
July 2010	27	2	100 July 25, 21
August 2010	30	13	105 August 22
June 2011	28	4	103, June 18,19
July 2011	31	20	106 July 24
August 2011	30	26	111 August 3
June 2012	25	7	107 June 25
July 2012	27	5	103 July 20, 29
August 2012	25	3	101 August 13
June 2013	16	1	100 June 28
July 2013	23	1	100 July 10
August 2013	25	6	101 August 30
June 2014	10	0	94 June 30
July 2014	16	1	100 July 14
August 2014	24	0	97 August 23, 24

\* NOAA Weather

**Extreme Heat Extent:**

According to the NOAA weather service in Shreveport, Louisiana, extreme heat by definition exists when over a two day period the heat index high reaches 105-109 with a minimum evening index temperature of 75 degrees or better. The heat index is calculated by combining air temperature and humidity levels. Bowie County typically has one to three extreme heat occurrences every summer. High temperatures and humidity are part of Bowie County summers.

NOAA's National Weather Service  
Heat Index



**Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity**

■ Caution   
 ■ Extreme Caution   
 ■ Danger   
 ■ Extreme Danger

Extreme heat is often categorized in terms of weather events with drought. As stated in this document earlier, many deaths each year are heat related.

In Bowie County, those at greatest risk of death in heat waves are the urban-dwelling elderly without access to an air-conditioned environment for at least part of the day. Thus the issues of prevention and mitigation combine issues of the aging and of public health. Nursing Homes, located in Bowie County, take special precautions to ensure that residents are kept at comfortable temperatures. Should the cooling system in such a facility fail, evacuation would have to occur in a matter of hours while the system was being repaired.

Extreme heat can have an impact on infrastructure which is often affected in urban areas. Asphalt roads soften and concrete roads have been known to "explode" lifting 3 - 4 foot pieces of concrete. During the 1980 heat wave hundreds of miles of highways buckled (NOAA, 1980)



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 that can lead to derailment. Refrigerated goods spoil more quickly. Additional impact will be felt as food prices rise due to crop damage and loss. Increased usage in power causes electric bills to increase.

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

We can expect heat waves to become more frequent and intense due to global warming.

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

**Probability:** Extreme heat waves will continue to occur in the region when the conditions are right. It is a normal, recurrent feature of climate. Bowie County typically has three or four extreme heat occurrences every summer. It is highly likely that Bowie County and its jurisdictions will experience extreme heat.

**Vulnerability:** The region is vulnerable when there is a deficiency of precipitation over an extended period of time and high temperatures. The extent of damage or injury increases with the temperature and relative humidity levels. All of **Bowie County** and the jurisdictions of

**DeKalb, Hooks, Leary, Maud, Nash, Red Lick, Redwater, and Wake Village** are vulnerable and share the same risk. The elderly, young and ill are most vulnerable to extreme heat. Crops and livestock are stressed during extended periods of extreme heat. Extreme heat causes heat stroke, time lost on the job and psychological stress

**Impact:**

According to the NOAA weather service in Shreveport, Louisiana, extreme, heat by definition, exists when over a two day period, the heat index high reaches 105-109 with a minimum evening index temperature of 75 degrees or better. The heat index is calculated by combining air temperature and humidity levels. The full range of the heat index on the preceding page is applicable for Bowie County and its jurisdictions. There is no specific history regarding property or crop damage due to excessive heat available for examples of loss in dollars. The financial loss could be extensive. Extreme heat in conjunction with drought can impact crop and livestock production. (see the Estimated loss potential on page (drought) for more detail.) Poultry in particular are sensitive to hot conditions. The Heat Index will be mitigated to any combination of temperature and humidity that ranges from 100 degrees F to 114 degrees F

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

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

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

## **WILDFIRE**

Wildfires are nothing new to the State of Texas. They are a part of our natural history and have shaped many of our native Texas ecosystems. What is new is the unprecedented growth and development that is occurring in locations across the state that were once rural. It is in this area where development meets native vegetation that the greatest risk to public safety and property from wildfire exists. Wildfires typically start in woodland or prairie areas. They can occur naturally though they are often exacerbated by human activities. Wildfires can be hard to control as they threaten homes and communities located nearby. Wildfires happen in every state, and they do not respect county or state lines. The impact of fire reaches well beyond the initial flames and smoke. Even if firefighters are able to protect homes and business, the aftermath of wildfire can be just as devastating as floods.

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

### **A HISTORY OF WILDFIRES IN TEXAS**

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

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

Over the five-year period of 1991 – 1995, an average of 1,178 fires a year burned an average of 17,022 acres with the average fire size being 14 acres. Compare this to 1996, when 2,622 fires burned 76,581 acres with an average fire size of 29 acres.

## Texas Wildfire Facts

- 1900 local Fire Departments
- Debris Burning is the number one cause of wildfire
- 96% of wildfires are caused by humans
- 3,500 homes lost 2005-2011
- 118,700 wildfires reported 2005-2011
- 80% of wildfires within 2 miles of a community
- 8.9 million acres burned 2005-2011
- 12% of wildfires are caused by arson
- 24 civilian fatalities 2005-2009

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 wild fire prevention tool in that area. The Texas Forest Service recommends that local governments consider a KBDI of 600 and above for imposition of burn bans. Other indicators that dictate the need for a burn ban include: 1000 HR fuel moisture, Energy Release Component and run occurrence of local fire departments.

The Keetch-Byram Drought Index (KBDI) is basically a mathematical system for relating current and recent weather conditions to potential or expected fire behavior. The KBDI is the most widely used drought index system by fire managers in the south. It is also one of the only drought index systems specifically developed to equate the effects of drought with potential fire activities. The result of this system is a drought index number ranging from 0 to 800 that accurately describes the amount of moisture that is missing. A rating of zero defines the point where there is no moisture deficiency and 800 is the maximum drought possible. These numbers correlate with potential fire **behavior as follows in Table 2.19:**

## Expected Fire Conditions With Varying KBDI Levels

<p>0 – 200 Low Fire Danger</p>	<p>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.</p>
<p>200 – 400 Moderate Fire Danger</p>	<p>Fires more readily burn and will carry across an area with no “gaps”. Heavier fuels will still not readily ignite and burn. Also, expect smoldering and the resulting smokes to carry into and possibly through the night.</p>
<p>400 – 600 High Fire Danger</p>	<p>Fire intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.</p>
<p>600 – 800 Extreme Fire Danger (600 – 800 continued)</p>	<p>Surface litter and most organic layers are consumed. 1000-hour fuels contribute to intensity. Stumps will burn to the end of roots underground. Any dead snag will ignite. Spotting from snags is a major problem if close to line. Expect dead limbs on trees to ignite from sparks. Expect extreme intensity on all fires that makes control efforts difficult. With winds above 10 miles per hour, spotting is the rule. Expect increased need for resources for fire suppression. Direct initial attack is almost impossible. Only rapid response time to wildfire with complete mop-up and patrol will prevent a major fire situation from developing.</p>



## Potential Wildfire Damages and Losses in Bowie County

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

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

Bowie County residents are served by 13 local fire departments as depicted below in Table 2.20 which shows the square miles that each fire department in Bowie County covers. Figure 2.17 shows that between December 1, 2005, and August 1, 2006, there have been 269 large fires in Texas, and 1,411,257 acres have been burned. There have been 2,351 wildland fires, and 1,444,688 acres have been burned. No estimate is available for potential dollar damages from Wildland fires. Bowie County is at risk of fires due to the frequency of drought situations that occur.

**AREA COVERED (SQUARE MILES)  
BY BOWIE COUNTY FIRE DEPARTMENTS**

FIRE DEPARTMENT	AREA (SQUARE MILES)
C5VFD	29
DeKalb VFD	252
Hooks VFD	43
Liberty Eylau VFD	56
Maud VFD	93
Nash VFD	8
New Boston VFD	120
Pleasant Grove VFD	52
Red River Army Depot FD	56
Redwater VFD	36
Simms VFD	152
Texarkana FD	24
Wake Village VFD	2

Source: Texas Forest Service

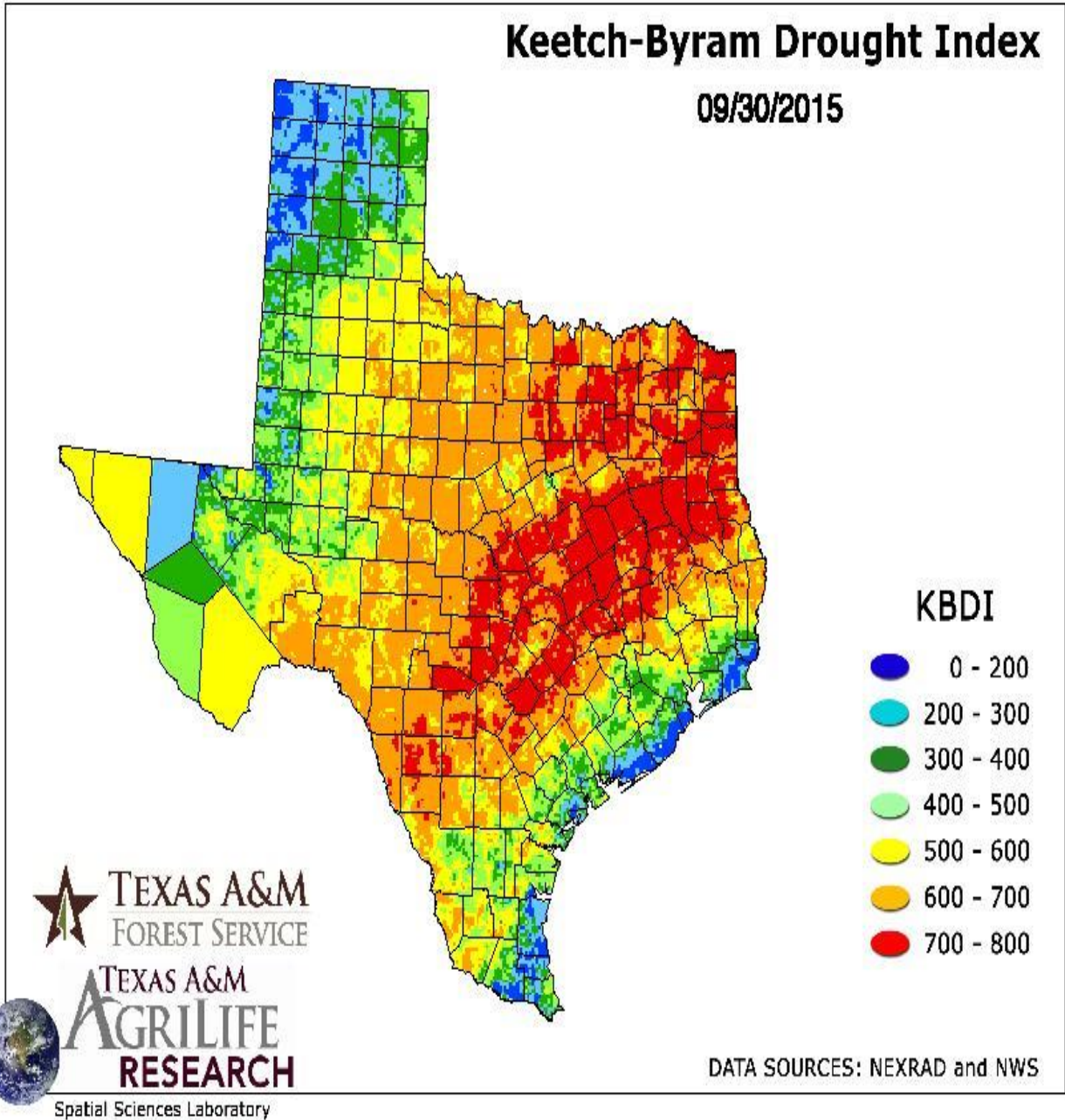
## ISO FIRE PROTECTION CLASSES FOR BOWIE COUNTY

Table 5.2

Fire Protection Area	Protection Class	Primary Fire Response
DeKalb	7	DeKalb FD
Hooks	6	Hooks FD
Leary		C-5 VFD
Maud	8/9*	Maud FD
Red Lick		C-5 VFD
Redwater	8/9	Redwater FD
Wake Village	6	Texarkana FD

\*Split class means that all properties within 1,000 feet of a water supply (fire hydrant) and within 5 road miles of a fire station are eligible for the first class (Class 1 through 8). Properties more than 1,000 feet from a water supply from a water supply but within 5 road miles of a fire station are eligible for Class 9. All properties more than 5 road miles from a fire station are Class 10.

The map below shows the KBDI for Bowie County at 700-800, is severe. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.

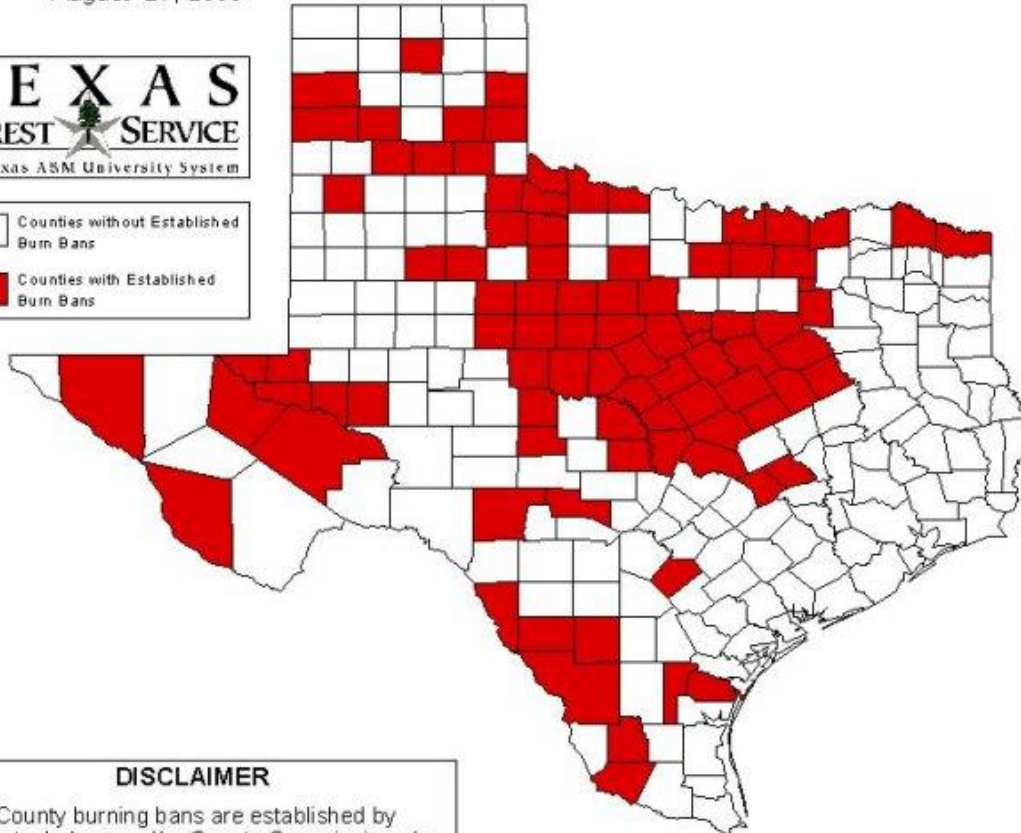


# Outdoor Burning Bans

August 27, 2003



Counties without Established Burn Bans  
 Counties with Established Burn Bans



**Total Counties: 90**

- |               |             |
|---------------|-------------|
| Bell          | Kent        |
| Bosque        | Kerr        |
| Bowie         | King        |
| Briscoe       | Knox        |
| Brown         | Lamb        |
| Burleson      | Lampasas    |
| Burnet        | La Salle    |
| Callahan      | Lee         |
| Coleman       | Limestone   |
| Collin        | Llano       |
| Collingsworth | Loving      |
| Comanche      | McLennan    |
| Concho        | Maverick    |
| Cooke         | Menard      |
| Coryell       | Mills       |
| Cottle        | Navarro     |
| Crane         | Nolan       |
| Deaf Smith    | Nueces      |
| Denton        | Oldham      |
| Dimmit        | Palo Pinto  |
| Donley        | Pecos       |
| Eastland      | Presidio    |
| Edwards       | Randall     |
| Ellis         | Red River   |
| Erath         | Reeves      |
| Falls         | Rockwall    |
| Fannin        | Runnels     |
| Fisher        | San Saba    |
| Foard         | Shackelford |
| Freestone     | Somervell   |
| Garza         | Starr       |
| Grayson       | Stephens    |
| Hall          | Swisher     |
| Hamilton      | Taylor      |
| Hardeman      | Upton       |
| Haskell       | Ward        |
| Hill          | Webb        |
| Hood          | Wheeler     |
| Hudspeth      | Wilbarger   |
| Hutchinson    | Williamson  |
| Jim Hogg      | Wilson      |
| Jim Wells     | Winkler     |
| Johnson       | Wise        |
| Jones         | Witchita    |
| Kaufman       | Young       |

**DISCLAIMER**

County burning bans are established by County Judges and/or County Commissioner's Courts. The Texas Forest Service is not responsible for establishing or removing burning bans. The Texas Forest Service is only displaying this information as a public service.

For Additional Information Contact:  
 Texas Interagency Coordination Center  
<http://www.tamu.edu/ticc>  
 (936)875-4786

Figure 2.14  
 Outdoor Burning Bans  
 State Map

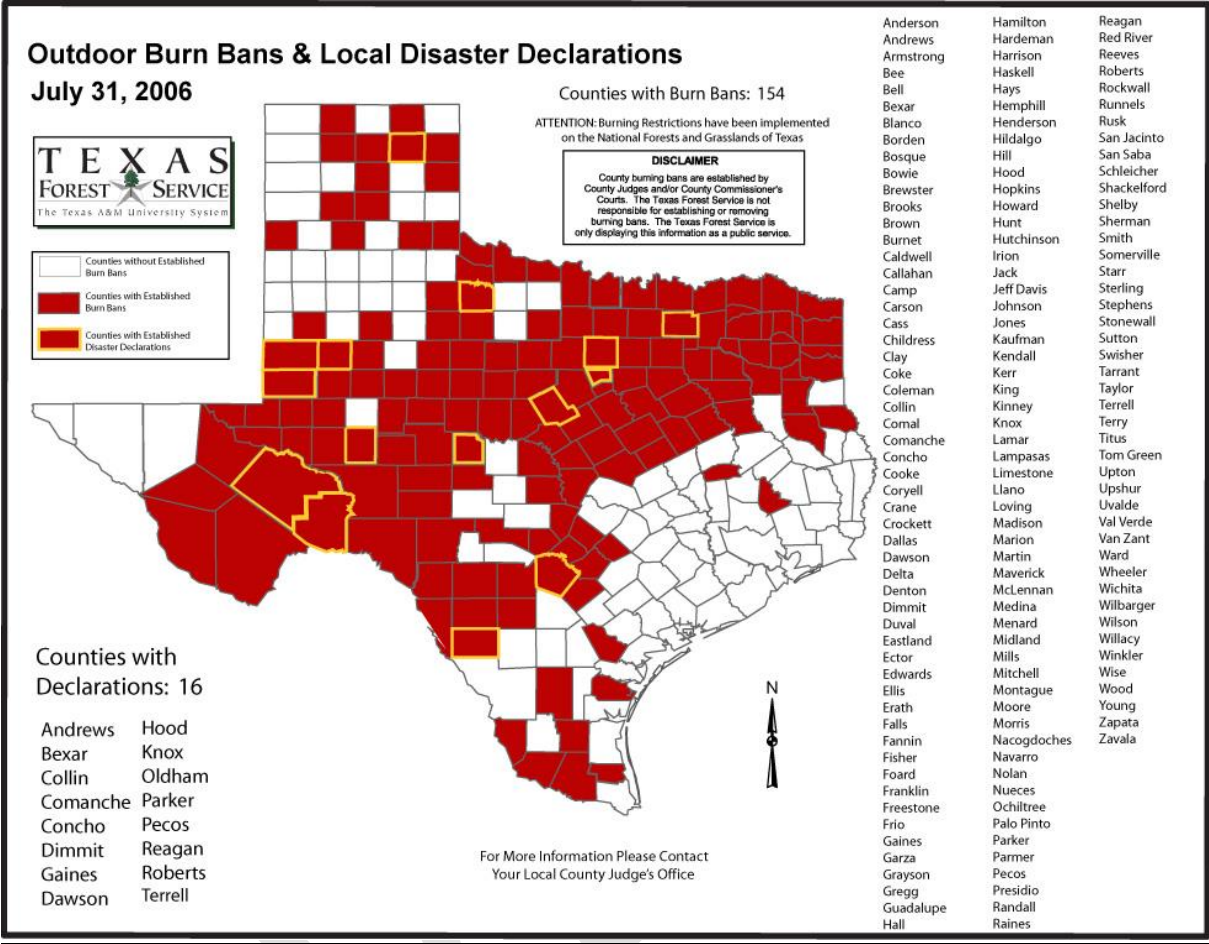



Figure 2.16  
Outdoor Burning Bans  
State Map



### **Wildland Urban Interface (WUI)**

-  1 - LT 1 hs/40 ac
-  2 - 1 hs/40 to 1 hs/20 ac
-  3 - 1 hs/20 to 1 hs/10 ac
-  4 - 1 hs/10 to 1 hs/5 ac
-  5 - 1 hs/5 to 1 hs/2 ac
-  6 - 1 hs/2 to 3 hs/ac
-  7 - GT 3 hs/ac

### **WUI Map Legend**

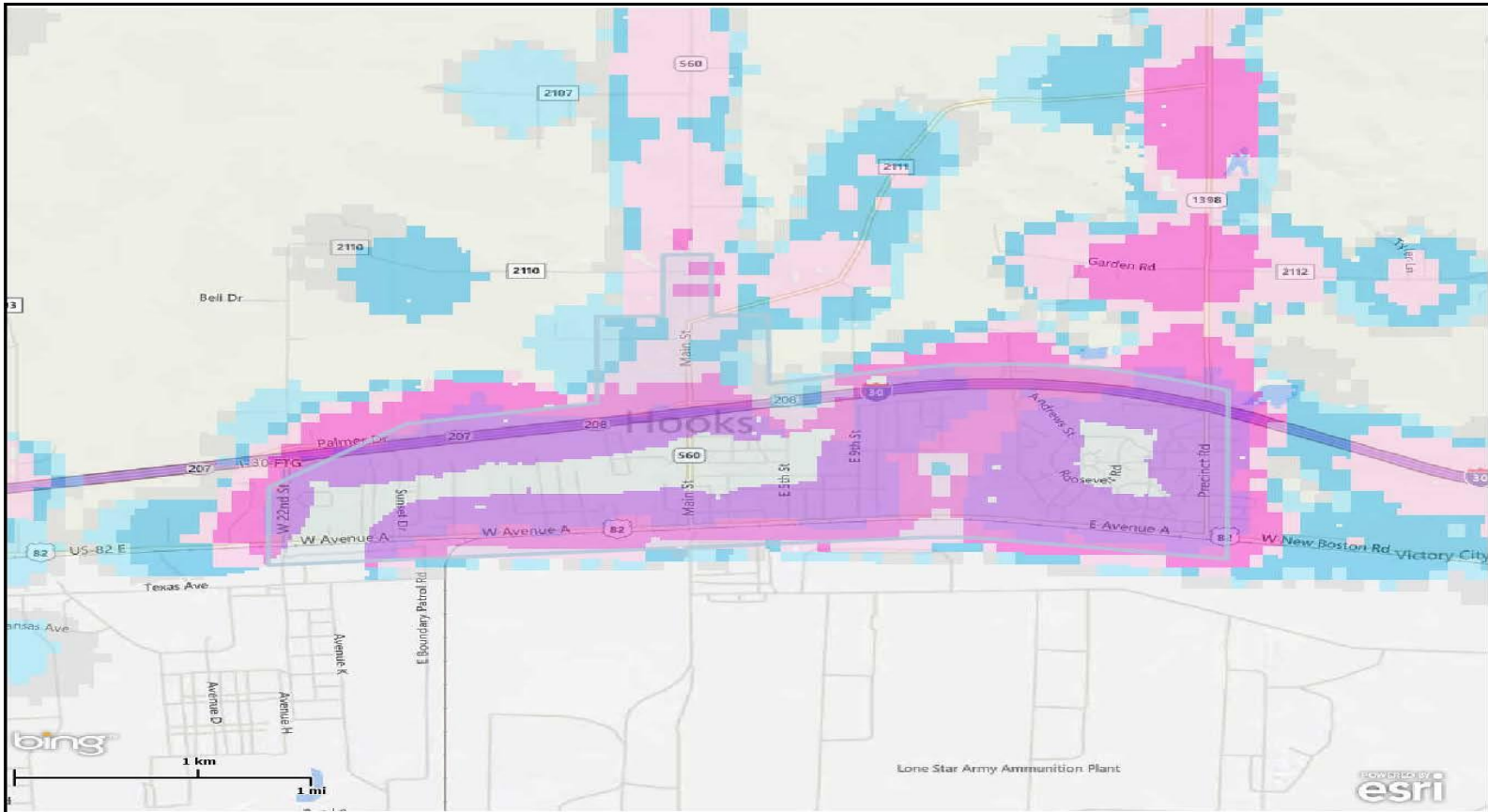






# Hooks WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:  
06/30/2015 3:10 PM

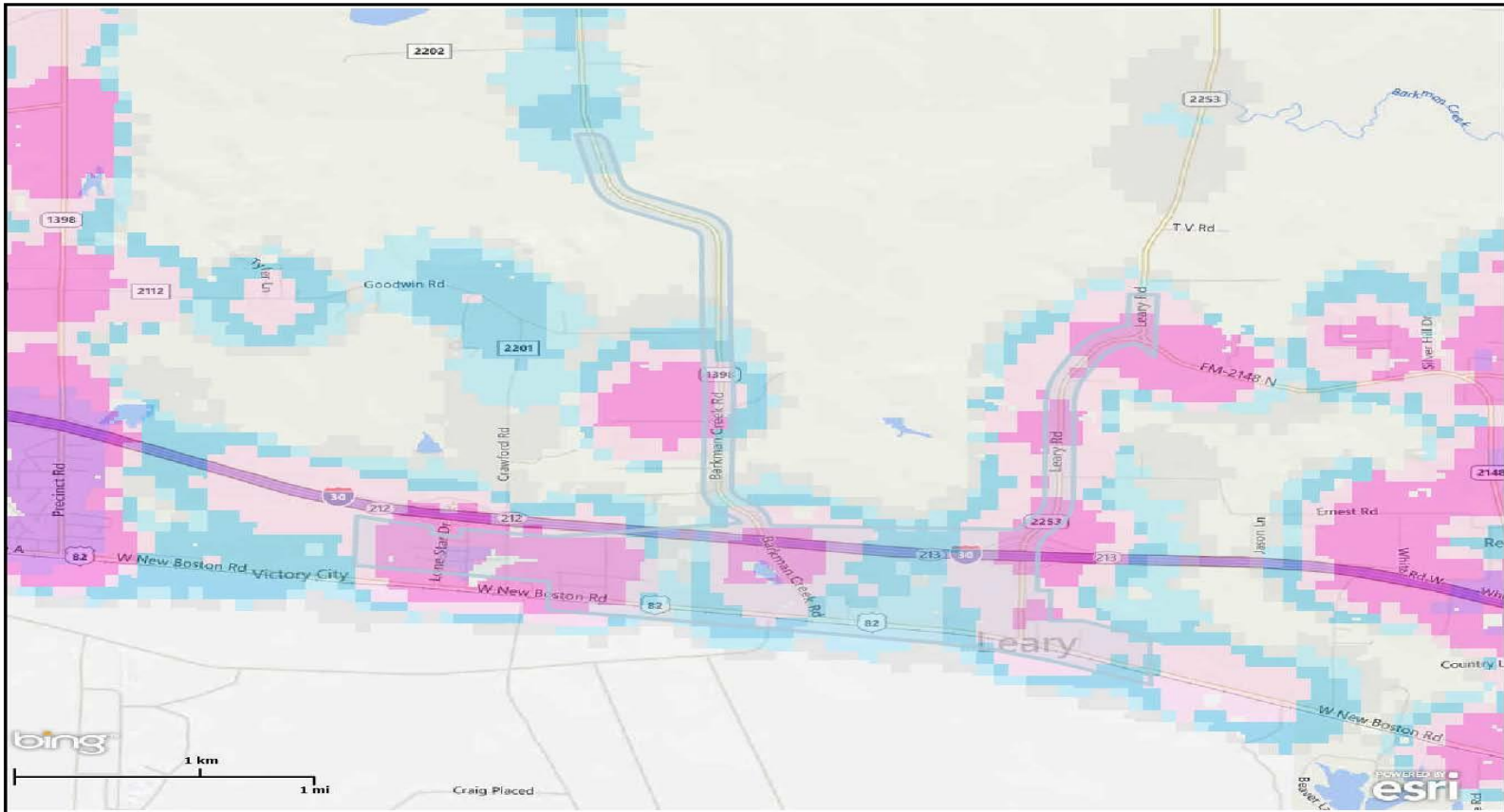
**Texas Wildfire Risk Assessment 2010**  
[www.texaswildfirerisk.com](http://www.texaswildfirerisk.com)



The user assumes the entire risk related to their use of the Texas Wildfire Risk Assessment and either the published or derived products from these data. Texas A&M Forest Service is providing these data "as is" and disclaims any and all warranties, whether expressed or implied, including (without limitation) any implied warranties of merchantability or fitness for a particular purpose. In no event will Texas A&M Forest Service be liable to you or to any third party for any direct, indirect, incidental, consequential, special or exemplary damages or lost profit resulting from any use or misuse of these data.

# Leary WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:  
07/01/2015 9:41 AM

**Texas Wildfire Risk Assessment 2010**  
[www.texaswildfirerisk.com](http://www.texaswildfirerisk.com)

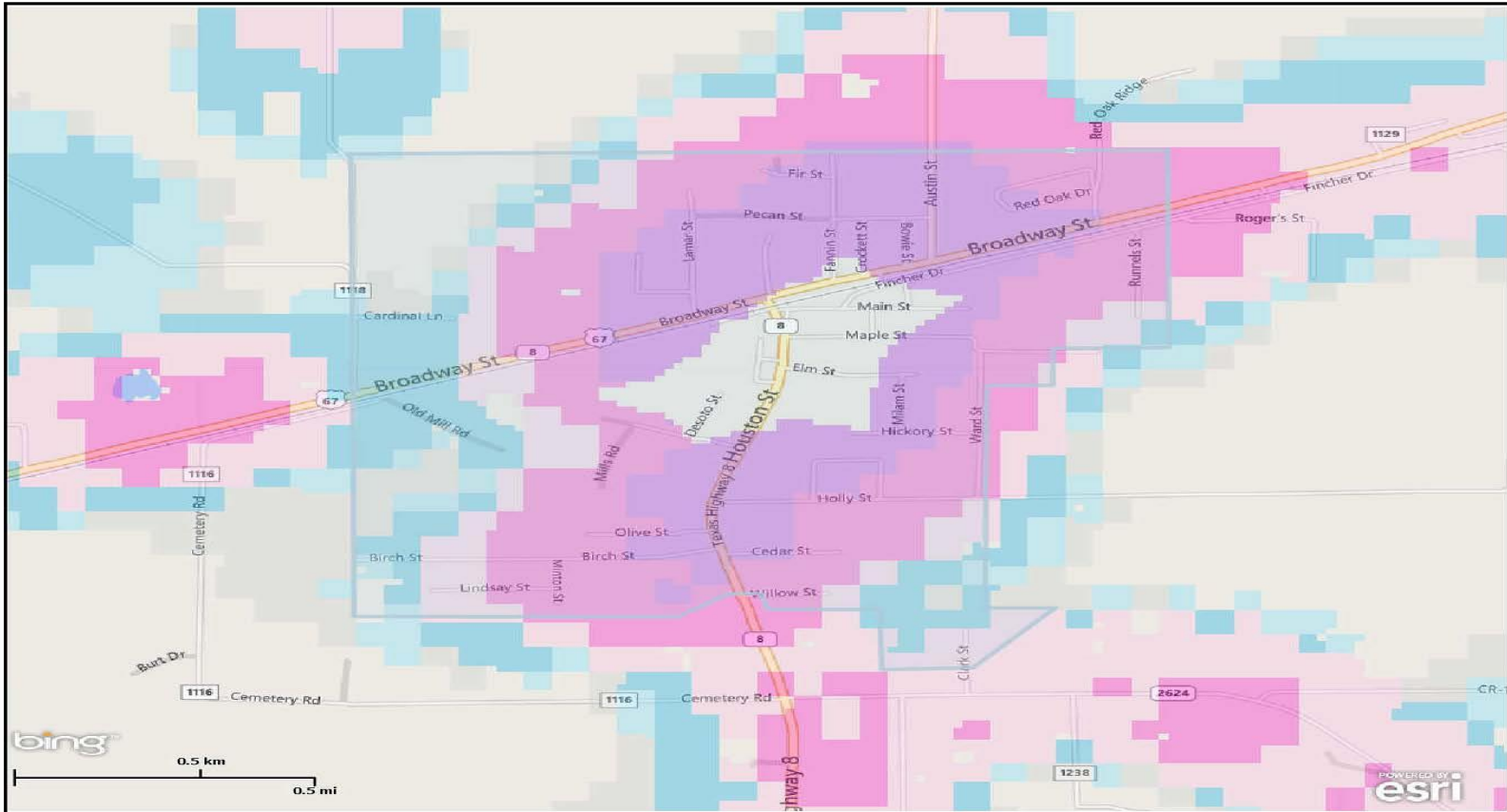


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# Maud WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:  
06/30/2015 3:23 PM

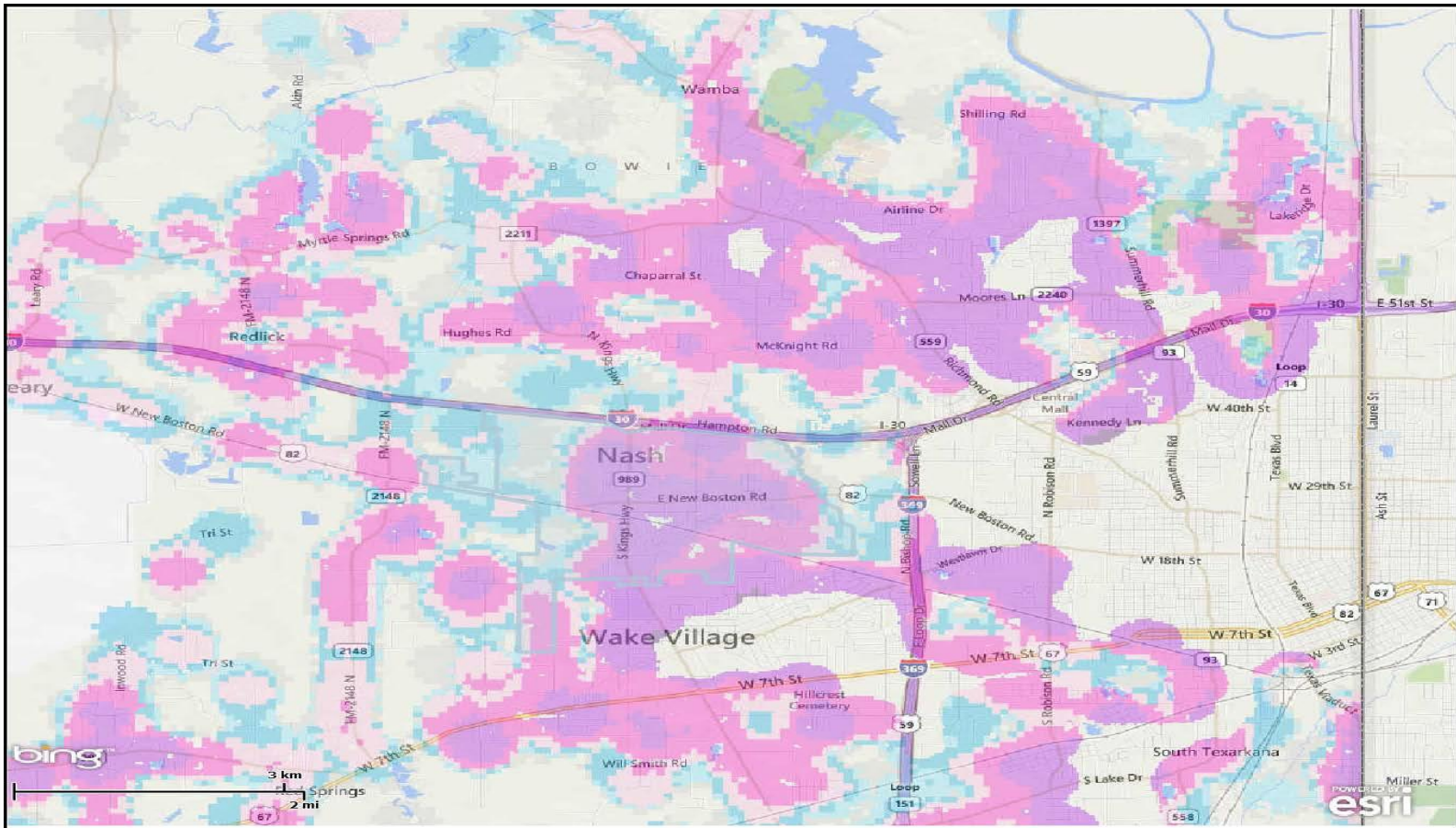
**Texas Wildfire Risk Assessment 2010**  
[www.texaswildfirerisk.com](http://www.texaswildfirerisk.com)



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# Nash WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:  
06/30/2015 3:25 PM

## Texas Wildfire Risk Assessment 2010

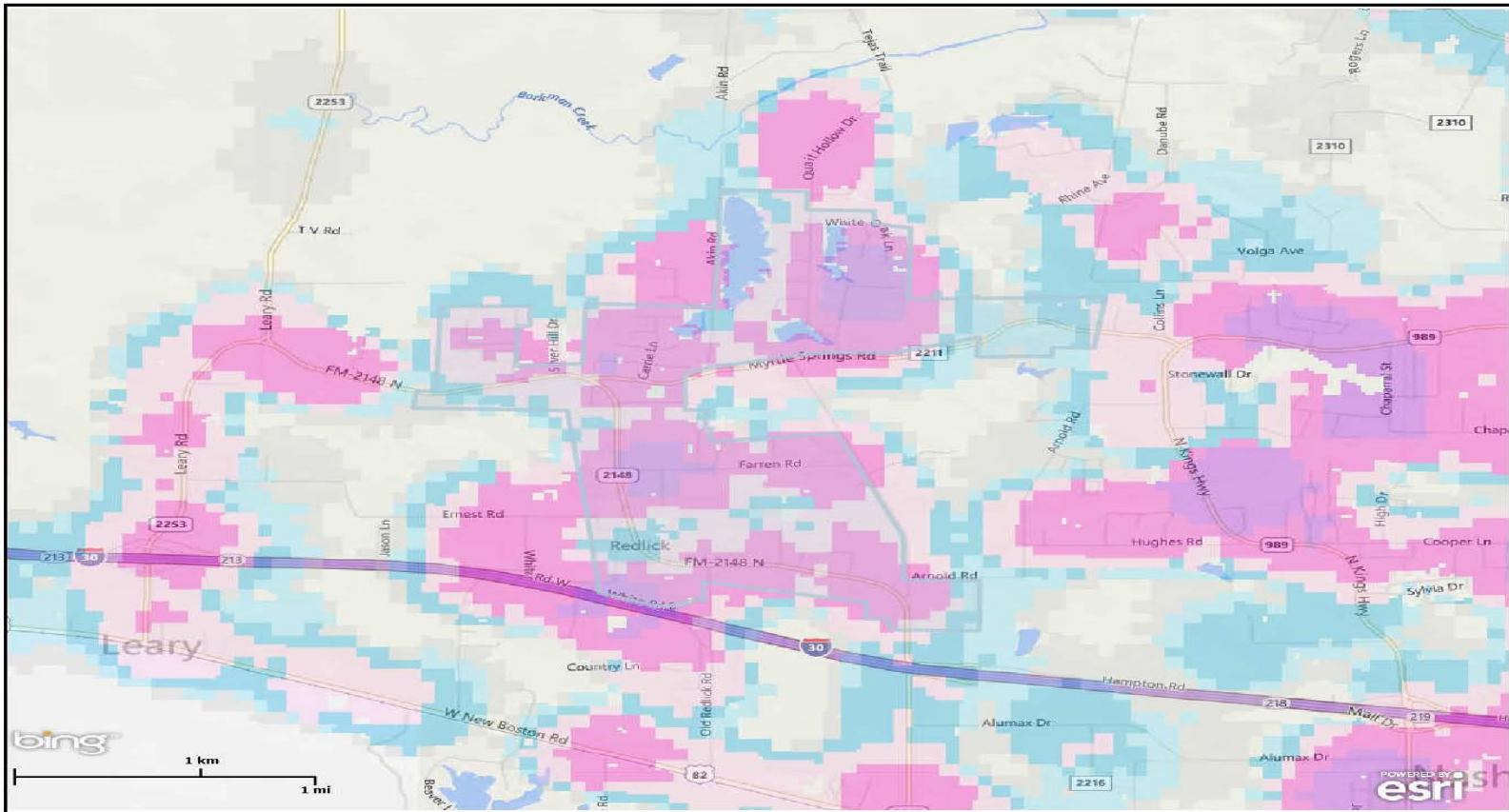
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# Red Lick WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:  
06/30/2015 3:27 PM

## Texas Wildfire Risk Assessment 2010

[www.texaswildfirerisk.com](http://www.texaswildfirerisk.com)

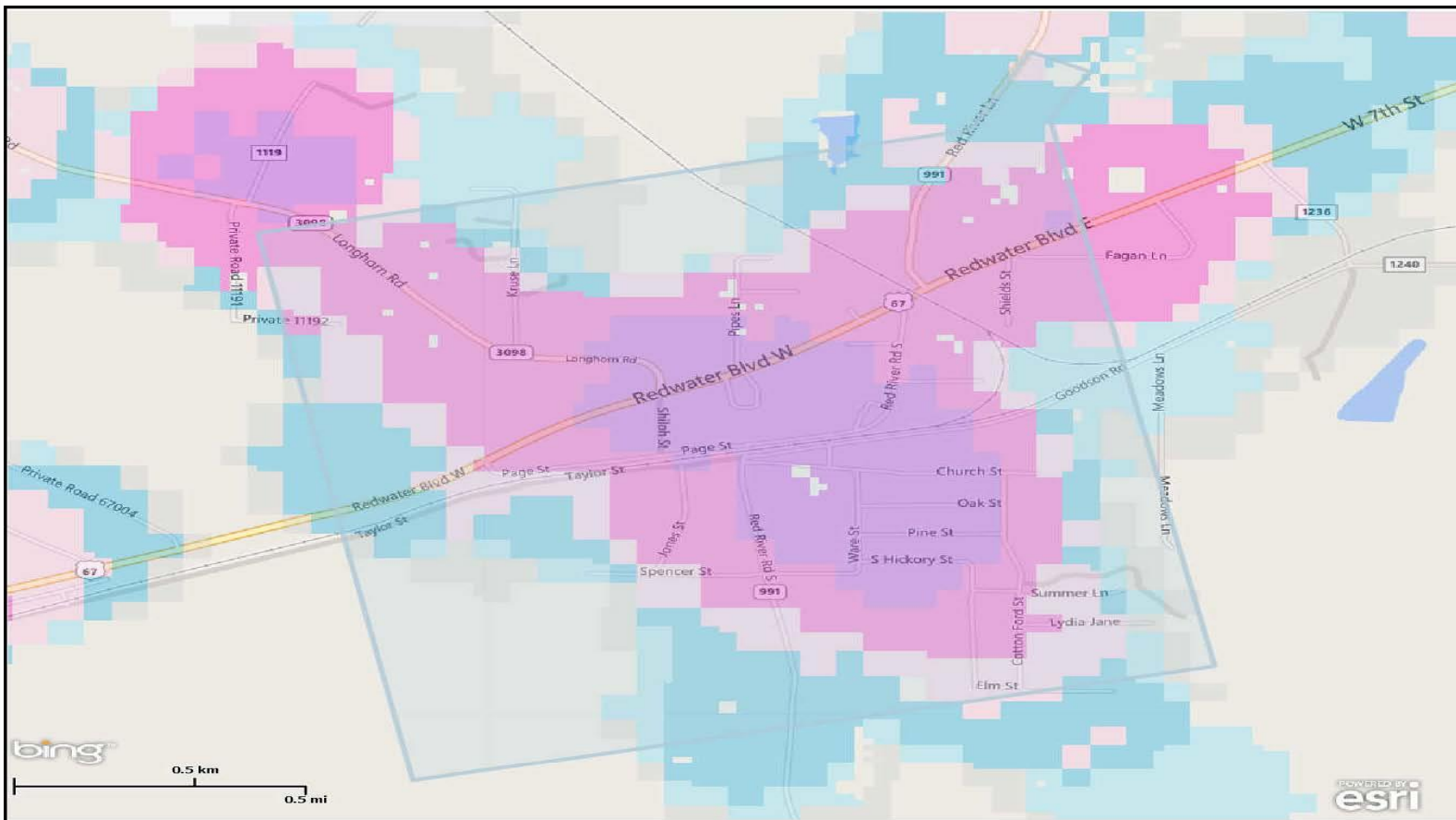


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# Redwater WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:  
06/30/2015 3:28 PM

## Texas Wildfire Risk Assessment 2010

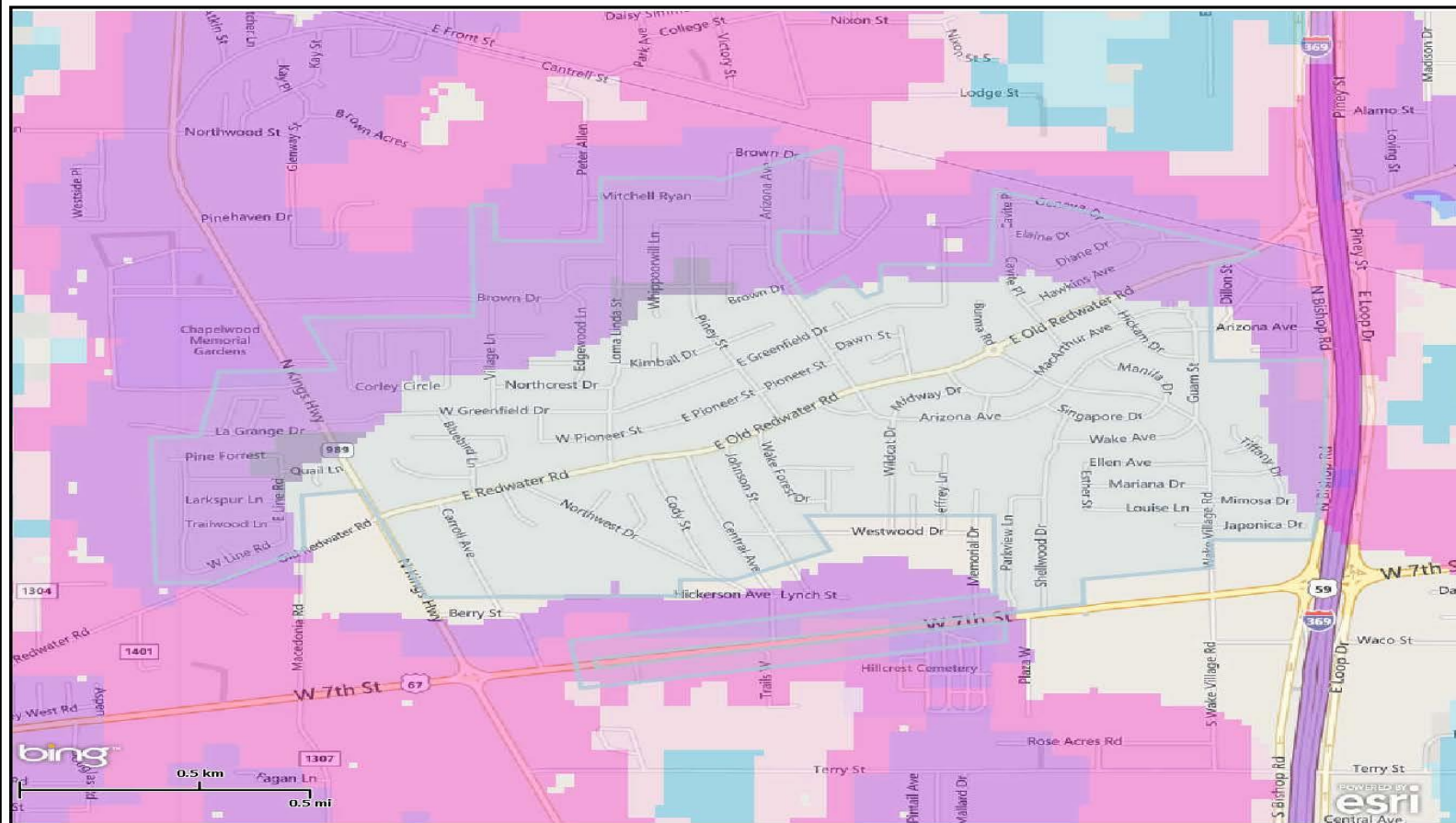
[www.texaswildfirerisk.com](http://www.texaswildfirerisk.com)



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# Wake Village WUI

Depicts where humans and their structures meet or intermix with wildland fuels



Report Created:  
06/30/2015 3:29 PM

## Texas Wildfire Risk Assessment 2010

[www.texaswildfirerisk.com](http://www.texaswildfirerisk.com)

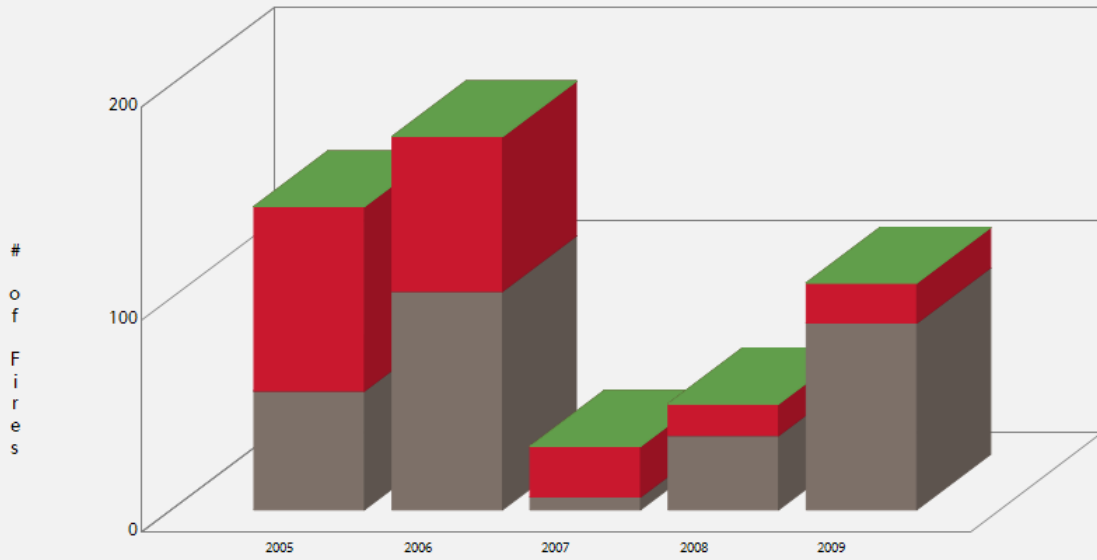


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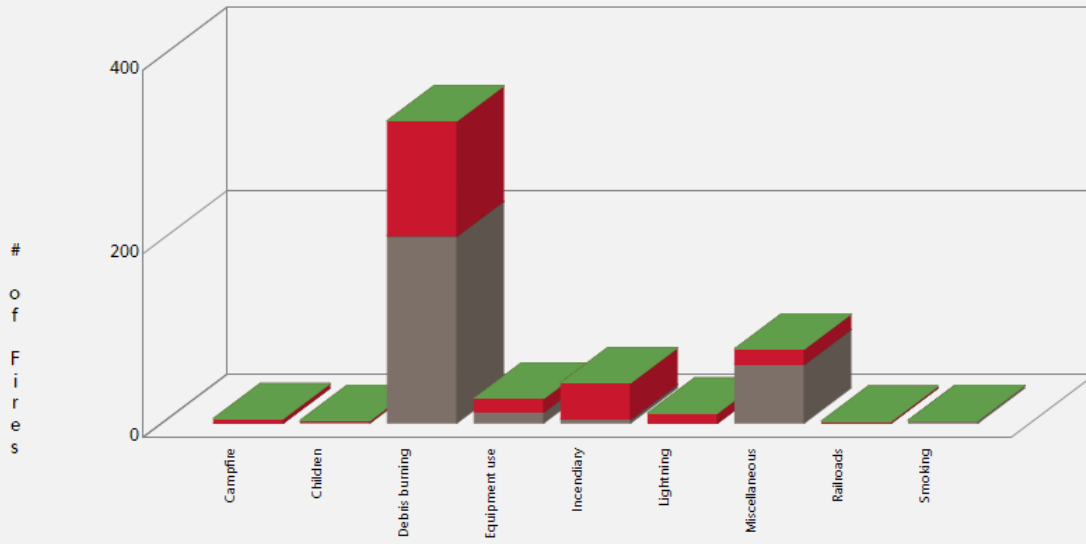
Bowie County

**Number of Wildfires Reported by Agency  
2005 - 2009**



	2005	2006	2007	2008	2009
Local	56	103	6	35	88
State	87	73	24	15	19
Federal	0	0	0	0	0

Bowie County  
**Cause of Wildfires Reported by Agency**  
**2005 - 2009**



	Campfire	Children	Debris burning	Equipment use	Incendiary	Lightning	Miscellaneous	Railroads	Smoking
Local	0	1	204	12	4	0	64	0	3
State	5	2	126	15	40	11	17	2	0
Federal	0	0	0	0	0	0	0	0	0

## WILDFIRES IN BOWIE COUNTY

**Probability:** Historically weather conditions indicate that the probability of occurrence is 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.

Number of Wildfires Reported Since Last Update	
DeKalb	25
Hooks	10
Leary	5
Maud	8
Nash	10
Red Lick	15
Red Water	20
Wake Village	5
Bowie County	23

**Vulnerability:** Bowie County consists of heavily wooded pine, hard wood, bottom land and pasture. Crops, timber, pasture and dwellings are in danger of being destroyed by wildfires. Wildfires are contained by volunteer fire units working in coordination with each other. The fires that have occurred in the county have been contained by the dedicated fighters.

**Extent:** Data is not available to determine the extent that each fire must reach before it runs out of control. There were 122 fires reported to the Texas Forestry Service between January 1 and July 11, 2009. The largest fire reported was a grass fire that covered 150 acres near New Boston Texas. It occurred on March 1, 2009. According to the KBDI map the index for Bowie County was at 0-200. This simply indicates that wildfire can occur in Bowie County at almost any time. It took three volunteer fire departments to contain the fire. The most expensive fire was a 5 acre fire also near New Boston that recorded a loss of \$366.

Texas Forest Service Fire Intensity Ratings		
Jurisdiction	Low	High
DeKalb	1	3
Hooks	1	3
Leary	1	3.5
Maud	1	4
Nash	1	4
Red Lick	1	4
Redwater	1	4.5
Wake Village	1.5	3.5
Bowie County Unincorporated	1	4

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

**Location:** Forests, thick underbrush and dry pastures put Bowie County at risk for Wildfires. due to the droughts that occur throughout the entire County, all of Bowie County could possibly be affected, depending on where the wildfire started.

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

<b>Hazard Disposition From Original Plan</b>			
<b>HAZARD</b>	<b>ACTION</b>	<b>DISPOSTION</b>	<b>EXPLANATION</b>
<b>THUNDERSTORMS</b>	Test emergency alert system weekly	Delete	No longer a viable FEMA action
	Develop Procedures for disseminating weather information to media (Local radio and TV station)	Delete	No longer a viable FEMA action
	Inform general public of emergency alert system procedures and tests	Expand	
	Encourage households to develop plans before severe weather strikes.	Delete	No longer a viable FEMA action
	Inform public of locations of shelters.	Expand and Defer	
<b>WIND STORMS</b>	Work with utility providers and county and local public works agencies to document known hazard areas	Delete	No longer a viable FEMA action
	Develop SOP to require identification of Hangers (limbs) after storms	Delete	No longer a viable FEMA action
	Develop strategies for clearing roads and fallen trees and debris from public and private property.	Delete	No longer a viable FEMA action
	Use underground utilities where possible.	Delete	Cost prohibitive
	Study existing building codes for efficiency in protecting structures from wind damage	Delete	No longer a viable FEMA action
	Adopt new International Building Codes	Defer	
<b>HAILSTORMS</b>	Develop educational materials, such as brochures, advising general public to stay indoors during hailstorms and to protect their animals.	Delete	



HAZARD	ACTION	DISPOSTION	EXPLANATION
HAILSTORMS	Encourage insurance companies to emphasize property and crop coverage for damages caused by hail storms.	Delete	No longer a viable FEMA action
	Encourage utility companies to bury power lines	Delete	No longer a viable FEMA action
	Work with jurisdictions to encourage adoption of building codes.	Delete	No longer a viable FEMA action
WINTER STORMS	Develop strategies for clearing roads of fallen trees, clearing debris from public and property, and for the de-icing of roadways.	Delete	No longer a viable FEMA action
	Collect educational materials for protecting life and property from winter storm events.	Delete	No longer a viable FEMA action
	Distribute educational materials to Bowie County residents concerning actions they may take to protect life, property, and the environment from winter storm events.	Defer and update language	
FLOOD	Identify appropriate and feasible mitigation activities for identified repetitive flood properties. Funding may be available through FEMA Hazard Mitigation Grant and Flood Mitigation Assistance Programs.	Delete	No longer a viable FEMA action
	Evaluate elevation requirements for new residential and non-residential structures.	Delete	No longer a viable FEMA action
	Coordinate with appropriate organizations to evaluate the need for more stream gauges.	Delete	No longer a viable FEMA action

<b>HAZARD</b>	<b>ACTION</b>	<b>DISPOSITION</b>	<b>EXPLANATION</b>
<b>FLOOD</b>	Encourage the development of floodplain maps for all local streams not currently mapped on Flood Insurance Rate Maps or county maps. The maps should show the expected frequency of flooding, the level of flooding, and the areas subject to inundation. Request FIRM studies are accomplished by FEMA.	Delete	Maps for each jurisdiction now available through FEMA and Google maps
<b>TORNADO</b>	Check local building codes and ordinances about wind-resistant designs and strengthening un-reinforced masonry.	Delete	Not a valid FEMA action
	Encourage families to develop emergency communication plan in case family members are separated from one another during a tornado. Have a plan for getting back together.	Delete	Not a valid FEMA action
	Inform citizens about county and local Tornado Watch Warnings via television, radio and local alarms systems. Discuss differences between tornado watch and tornado warning	Delete	Not a valid FEMA action
	Educate citizens on steps that can be taken reduce the impact of tornadoes with the use of disaster supply kits.	Delete	Not a valid FEMA action
<b>DROUGHT</b>	Develop guidelines for drought plan development	Delete	Not a valid FEMA action
	Develop a comprehensive county drought plan.	Delete	Not a valid FEMA action
	Ensure implementation of public utilities/local drought plans.	Delete	Not a valid FEMA action
	Design county-wide/local information and education program.	Delete	Not a valid FEMA action
	Conduct workshops on conserving water and managing drought impacts.	Deferred	Will be reworded

<b>HAZARD</b>	<b>ACTION</b>	<b>DISPOSTION</b>	<b>EXPLANATION</b>
<b>EXTREME HEAT</b>	Radio/TV/newspapers PSA's advising public of hazards of heat and heat advisories.	Delete	Not a valid FEMA action
	Educate public of heat index/heat disorders.	Deferred	To be reworded
	Develop brochures/flyers of heat wave safety tips.	Deferred	To be reworded
	Enlist Red Cross and other public agencies to assist in awareness campaigns.	Delete	Not a valid FEMA action
	Develop agreements with utility companies to offer special arrangements for paying high utility bills during extreme heat periods	Delete	Not a valid FEMA action
	Request local agencies and private businesses to sponsor fan drives for low-income and elderly who cannot afford air conditioning.	Delete	Not a valid FEMA action
<b>WILD FIRE</b>	Ensure that there are an adequate number of reporting stations for better access and coverage.	Delete	Not a valid FEMA action
	Develop a county call list that includes all at-risk residents in Bowie County in order to contact them in case of need for evacuation.	Delete	Not a valid FEMA action
	Inventory bridges on evacuation routes and make assessment for bridge ability to support fire apparatus ingress.	Delete	Not a valid FEMA action
	Consider water storage facilities with fire-resistant electrical pump systems in developments outside of areas not connected to a community water system.	Delete	Not a valid FEMA action
	Develop a protocol for fire jurisdictions to communicate.	Delete	Not a valid FEMA action

HAZARD	ACTION	DISPOSTION	EXPLANATION
Wildfire	Identify and prioritize wildland areas for hazardous fuels reduction treatments, as well as recommend methods for achieving hazardous fuels reductions on both private and public lands.	Delete	Not a valid FEMA action
	Recommend measures of reducing structural ignitability throughout the at-risk communities.	Delete	Not a valid FEMA action
	Involve local governments, local fire authorities, and a state forestry representative so that contents and actions recommended in the Plan will be mutually agreed upon.	Delete	Not a valid FEMA action

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

**Florence Nightingale**

## Mitigation Plan Update Strategy for Bowie County

The previous goals and actions were never acted on and many of the old actions are no longer valid. The plan was never incorporated into other planning mechanisms as intended. Measures have been taken to ensure annual reviews. 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.

- A new way to measure risk has been introduced in the 5 year update. There are no changes noted that would impact the development of the plan.
- Added language reflects a desire to see that the Plan is acted upon in a measured fashion with at least annual meetings being held to monitor overall action priorities and progress.
- No natural event has occurred since the original plan that would alter the current plan's prioritization.
- There have been no new developments in the county or jurisdiction that would alter vulnerability. Bowie County has experienced an 8% variation in population between April, 2010-July, 2014.
- There have been no changes politically or financially that would impact the plan's development.

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

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



## **SECTION III MITIGATION GOALS AND PRIORITIZATION**

### **Mitigation Plan Goals**

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

#### **Goal #1: Protect Life and Property**

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

#### **Goal #2: Public Awareness**

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

#### **Goal #3: Natural Systems**

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

#### **Goal #4: Partnerships and Implementation**

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

#### **Goal #5: Emergency Services**

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

**Method of Prioritization:** The Bowie County Commissioners and County Judge, the City staffs, and Hazard Mitigation Team members were involved in the selection of the above priority actions. Actions were prioritized using the STAPLE+E criteria. The actions do not adversely affect a particular segment of the population or cause relocation of lower income people. They provide long-term reduction of losses and have minimal secondary adverse impacts. They do not have adverse effects on the environment, and are consistent with the community’s environmental goals, and have mitigation benefits while they are environmentally sound.

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

**SECTION IV  
HAZARD MITIGATION ACTIONS**

**DeKalb Mitigation Actions**

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

**DeKalb Flood Actions**

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

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

**DeKalb Tornado Actions**

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

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

<b>DeKalb Tornado Action #3</b>	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.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 2: Public Awareness
<b>Priority</b>	High
<b>Funding Source(s)</b>	City
<b>Estimated Cost</b>	Low (0k-10k)
<b>Responsible Agency</b>	Fire Chief/EMC
<b>Estimated Completion Time</b>	2 years
<b>Effect on New Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
<b>Effect on Existing Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds
<b>Comments:</b>	Educating the public is an integral part of mitigation.

### DeKalb Thunderstorm Wind Actions

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

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

### DeKalb Winter Storm Actions

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

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



<b>DeKalb Winter Storm Action #3 Action</b>	Develop and Implement a new program responsible for road and debris clearing.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 3: Natural Systems
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	DeKalb/County
<b>Estimated Cost</b>	Medium (10-25k)
<b>Responsible Agency</b>	DeKalb Public Works
<b>Estimated Completion Time</b>	7 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	Keeping roads and ditches free of limbs and debris opens transportation, could reduce flash flooding and prevents injury.

### DeKalb Hail Actions

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

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

### DeKalb Drought Actions

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

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

### DeKalb Extreme Heat Actions

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

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

### DeKalb Wildfire Actions

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

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

## Hooks Mitigation Actions

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

### Hooks Flood Actions

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

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

<b>Hooks Flood Action #3</b>	Purchase emergency mobile generators for critical facility use during power outages.
<b>Mitigation Goal/Objective</b>	<b><i>Goal #1 Protect Life and Property</i></b>
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	FEMA Grants
<b>Estimated Cost</b>	Medium (10k-25k)
<b>Responsible Agency</b>	Hooks City Council
<b>Estimated Completion Time</b>	5 years
<b>Effect on New Buildings</b>	This could protect buildings from sewage flooding and water contamination.
<b>Effect on Existing Buildings</b>	This could protect buildings from sewage flooding and water contamination
<b>Comments:</b>	It is important during times of stress and outages that critical facilities such as waste treatment plants and water supplies remain operational.

### Hooks Tornado Actions

<b>Hooks Tornado Action #1</b>	Develop and implement the Texas Individual Tornado Safe Room Program
<b>Mitigation Goal/Objective</b>	<b><i>Goal #1: Protect Life and Property</i></b>
<b>Priority</b>	High
<b>Funding Source(s)</b>	FEMA Grant
<b>Estimated Cost</b>	Low (0-10k)
<b>Responsible Agency</b>	Hooks EMC
<b>Estimated Completion Time</b>	3 years

<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	A safe room placed in a home or business will save lives.

<b>Hooks Tornado Action #2</b>	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.
<b>Mitigation Goal/Objective</b>	<b><i>Goal #1 Public Awareness</i></b>
<b>Priority</b>	High
<b>Funding Source(s)</b>	City of Hooks
<b>Estimated Cost</b>	Low (0-10k)
<b>Responsible Agency</b>	Hooks Fire Dept./EMC
<b>Estimated Completion Time</b>	3 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	Public Education can create citizen action.

### Hooks Thunderstorm Winds Actions

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

<b>Hooks Thunderstorm Winds Action #2</b>	Develop and Implement participation in the National Weather Service “Storm Ready” Program.
<b>Mitigation Goal/Objective</b>	<b><i>Goal #1: Protects Life and Property</i></b>
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	City of Hooks
<b>Estimated Cost</b>	Low ( 0-10K)
<b>Responsible Agency</b>	Hooks Fire Department/EMC
<b>Estimated Completion Time</b>	5 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	The Storm Ready Program is about building community resilience in the face of increasing vulnerability to extreme weather and water events.



### Hooks Winter Storms Actions

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

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

### Hooks Hail Actions

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

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

### Hooks Drought Actions

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

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

### Extreme Heat Actions

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

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

### Hooks Wildfire Actions

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

<b>Hooks Wildfire Action #2</b>	Develop and implement the Community Wildfire Protection Plan. A collaborative approach to help protect life, property and natural resources through community-based planning.
<b>Mitigation Goal/Objective</b>	Goal #1: Protect life and property Goal #4: Partnerships and Implementation Goal #5 Emergency Services
<b>Priority</b>	High
<b>Funding Source(s)</b>	City of Hooks
<b>Estimated Cost</b>	Low (0-10k)
<b>Responsible Agency</b>	Hooks Fire Chief
<b>Estimated Completion Time</b>	3 years
<b>Effect on New Buildings</b>	Out of control trash burning can destroy a new building
<b>Effect on Existing Buildings</b>	Out of control trash burning can destroy an existing building.
<b>Comments:</b>	Programs such as this can empower citizens to take precautionary action.

## Leary Mitigation Actions

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

### Leary Flood Actions

<b>Leary Flood Action #1</b>	Develop and implement the Turn Around, Don't Drown Program
<b>Mitigation Goal/Objective</b>	Goal #1: Protect Lives and Property
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	TX Dot
<b>Estimated Cost</b>	Low (0-10k)
<b>Responsible Agency</b>	Leary Mayor
<b>Estimated Completion Time</b>	6 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	The Turn Around, Don't Drown Program saves lives

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

### Leary Tornado Actions

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

<b>Leary Tornado Action #1</b>	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.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 2: Public Awareness
<b>Priority</b>	High
<b>Funding Source(s)</b>	City
<b>Estimated Cost</b>	Low (0k-10k)
<b>Responsible Agency</b>	Leary Fire Chief/EMC
<b>Estimated Completion Time</b>	2 years
<b>Effect on New Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
<b>Effect on Existing Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds
<b>Comments:</b>	Educating the public is an integral part of mitigation.

### Leary Thunderstorm Winds

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



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

### Leary Winter Storms

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

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

### Leary Hail

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

<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	

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

### Leary Drought

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

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

### Leary Extreme Heat

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

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

### Leary Wildfire Actions

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

<b>Leary Wild Fire Action #1</b>	Develop and implement the Community Wildfire Protection Plan. A collaborative approach to help protect life, property and natural resources through community-based planning.
<b>Mitigation Goal/Objective</b>	Goal #1: Protect life and property Goal #4: Partnerships and Implementation Goal #5 Emergency Services
<b>Priority</b>	High
<b>Funding Source(s)</b>	City of Leary
<b>Estimated Cost</b>	Low (0-10k)
<b>Responsible Agency</b>	Leary Fire Chief
<b>Estimated Completion Time</b>	3 years
<b>Effect on New Buildings</b>	Out of control trash burning can destroy a new building
<b>Effect on Existing Buildings</b>	Out of control trash burning can destroy an existing building.
<b>Comments:</b>	Programs such as this can empower citizens to take precautionary action.

### Maud Mitigation Actions

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

#### Maud Flood Actions

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

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

### Maud Tornado Actions

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

<b>Maud Tornado Action #2</b>	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.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 2: Public Awareness
<b>Priority</b>	High
<b>Funding Source(s)</b>	City of Maud
<b>Estimated Cost</b>	Low (0k-10k)
<b>Responsible Agency</b>	Maud Fire Chief/EMC
<b>Estimated Completion Time</b>	2 years
<b>Effect on New Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
<b>Effect on Existing Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds
<b>Comments:</b>	Educating the public is an integral part of mitigation.

### Maud Thunderstorm Actions

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



<b>Maud Thunderstorm Winds Action #2</b>	Develop and Implement participation in the National Weather Service “Storm Ready” Program.
<b>Mitigation Goal/Objective</b>	<i>Goal #1: Protects Life and Property</i>
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	City of Maud
<b>Estimated Cost</b>	Low ( 0-10K)
<b>Responsible Agency</b>	Maud Fire Department/EMC
<b>Estimated Completion Time</b>	5 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	The Storm Ready Program is about building community resilience in the face of increasing vulnerability to extreme weather and water events.

### Maud Winter Storms Actions

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

<b>Maud Winter Storms Action #2</b>	Provide and identify new community shelters for the most vulnerable populations of low income elderly and children.
<b>Mitigation Goal/Objective</b>	Goal #1: Protect Life and Property
<b>Priority</b>	Low
<b>Funding Source(s)</b>	City of Maud
<b>Estimated Cost</b>	Medium (10-25k)
<b>Responsible Agency</b>	Maud Mayor
<b>Estimated Completion Time</b>	8 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	Community shelters can offer refuge to those who may be at risk during extreme winter conditions.

### Maud Hail Actions

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

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

### Maud Drought Actions

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

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

### Maud Extreme Heat Actions

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

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

### Maud Wildfire Actions

<b>Maud Wildfire Action #1</b>	Develop and implement the Community Wildfire Protection Plan. A collaborative approach to help protect life, property and natural resources through community-based planning.
<b>Mitigation Goal/Objective</b>	Goal #1: Protect life and property Goal #4: Partnerships and Implementation Goal #5 Emergency Services
<b>Priority</b>	High
<b>Funding Source(s)</b>	City of Maud
<b>Estimated Cost</b>	Low (0-10k)
<b>Responsible Agency</b>	Maud Fire Chief
<b>Estimated Completion Time</b>	3 years
<b>Effect on New Buildings</b>	Out of control trash burning can destroy a new building
<b>Effect on Existing Buildings</b>	Out of control trash burning can destroy an existing building.
<b>Comments:</b>	Programs such as this can empower citizens to take precautionary action.

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

### Nash Mitigation Actions

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

#### Nash Flood Actions

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

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

### Nash Tornado Actions

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

<b>Nash Tornado Action #2</b>	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.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 2: Public Awareness
<b>Priority</b>	High
<b>Funding Source(s)</b>	City of Nash
<b>Estimated Cost</b>	Low (0k-10k)
<b>Responsible Agency</b>	Nash Fire Chief/EMC
<b>Estimated Completion Time</b>	2 years
<b>Effect on New Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
<b>Effect on Existing Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds
<b>Comments:</b>	Educating the public is an integral part of mitigation.



### Nash Thunder Storm Actions

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

<b>Nash Thunderstorm Winds Action #2</b>	Develop and Implement participation in the National Weather Service “Storm Ready” Program.
<b>Mitigation Goal/Objective</b>	<i>Goal #1: Protects Life and Property</i>
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	City of Hooks
<b>Estimated Cost</b>	Low ( 0-10K)
<b>Responsible Agency</b>	Fire Department/EMC
<b>Estimated Completion Time</b>	5 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	The Storm Ready Program is about building community resilience in the face of increasing vulnerability to extreme weather and water events.

### Nash Winter Storm Actions

<b>Nash Winter Storm Action #1</b>	Develop and Implement a new program responsible for road and debris clearing.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 3: Natural Systems
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	Nash/County
<b>Estimated Cost</b>	Medium (10-25k)
<b>Responsible Agency</b>	Nash Public Works
<b>Estimated Completion Time</b>	5 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	Keeping roads and ditches free of limbs and debris opens transportation, could reduce flash flooding and prevents injury.

<b>Nash Winter Storm Action #2</b>	Provide and identify new community shelters for the most vulnerable populations of low income elderly and children.
<b>Mitigation Goal/Objective</b>	Goal #1: Protect Life and Property
<b>Priority</b>	Low
<b>Funding Source(s)</b>	City of Nash
<b>Estimated Cost</b>	Medium (10-25k)
<b>Responsible Agency</b>	Nash City Manager
<b>Estimated Completion Time</b>	8 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	Community shelters can offer refuge to those who may be at risk during extreme winter conditions.

### Nash Hail Actions

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

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

### Nash Drought Actions

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

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

### Nash Extreme Heat Actions

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

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

### Nash Wildfire Actions

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

<b>Nash Wildfire Action #2</b>	Develop and implement the Community Wildfire Protection Plan. A collaborative approach to help protect life, property and natural resources through community-based planning.
<b>Mitigation Goal/Objective</b>	Goal #1: Protect life and property Goal #4: Partnerships and Implementation Goal #5 Emergency Services
<b>Priority</b>	High
<b>Funding Source(s)</b>	City of Nash
<b>Estimated Cost</b>	Low (0-10k)
<b>Responsible Agency</b>	Nash Fire Chief
<b>Estimated Completion Time</b>	3 years
<b>Effect on New Buildings</b>	Out of control trash burning can destroy a new building
<b>Effect on Existing Buildings</b>	Out of control trash burning can destroy an existing building.
<b>Comments:</b>	Programs such as this can empower citizens to take precautionary action.

## Red Lick Mitigation Actions

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

### Red Lick Flood Actions

<b>Red Lick Flood Action #1</b>	Develop and implement the Turn Around, Don't Drown Program
<b>Mitigation Goal/Objective</b>	Goal #1: Protect Lives and Property
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	TX Dot
<b>Estimated Cost</b>	Low (0-10k)
<b>Responsible Agency</b>	Red Lick City Manager
<b>Estimated Completion Time</b>	6 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	The Turn Around, Don't Drown Program saves lives

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

### Red Lick Tornado Actions

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

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

### Red Lick Thunderstorm Winds Actions

<b>Red Lick Thunderstorm Winds Action #1</b>	Develop and Implement participation in the National Weather Service “Storm Ready” Program.
<b>Mitigation Goal/Objective</b>	<i>Goal #1: Protects Life and Property</i>
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	City of Red Lick
<b>Estimated Cost</b>	Low ( 0-10K)
<b>Responsible Agency</b>	Fire Department/EMC
<b>Estimated Completion Time</b>	5 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	The Storm Ready Program is about building community resilience in the face of increasing vulnerability to extreme weather and water events.



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

### Red Lick Winter Storm Actions

<b>Red Lick Winter Storm Action #1</b>	Develop and Implement a new program responsible for road and debris clearing.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 3: Natural Systems
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	Red Lick/County
<b>Estimated Cost</b>	Medium (10-25k)
<b>Responsible Agency</b>	Red Lick Public Works
<b>Estimated Completion Time</b>	5 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	Keeping roads and ditches free of limbs and debris opens transportation, could reduce flash flooding and prevents injury.

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

### Red Lick Hail Actions

<b>Red Lick Hail Action #1</b>	Install hail resistant film on the windows of critical facilities.
<b>Mitigation Goal/Objective</b>	<i>Goal #1 Protect Life and Property</i>
<b>Priority</b>	High
<b>Funding Source(s)</b>	City of Red Lick
<b>Estimated Cost</b>	Low (0-10k)
<b>Responsible Agency</b>	
<b>Estimated Completion Time</b>	3 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	

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

### Red Lick Drought Actions

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

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

### Red Lick Extreme Heat

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

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

## Red Lick Wildfire

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

<b>Red Lick Wildfire Action #2</b>	Develop and Implement participation in the National Weather Service “Storm Ready” Program.
<b>Mitigation Goal/Objective</b>	<i>Goal #1: Protects Life and Property</i>
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	City of Red Lick
<b>Estimated Cost</b>	Low ( 0-10K)
<b>Responsible Agency</b>	Fire Department/EMC
<b>Estimated Completion Time</b>	5 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	The Storm Ready Program is about building community resilience in the face of increasing vulnerability to extreme weather and water events.

## Redwater Mitigation Actions

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

### Redwater Flood Actions

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

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

### Redwater Tornado Actions

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

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

### Redwater Thunderstorm Winds

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

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

### Redwater Winter Storm Actions

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



<b>Redwater Winter Storm Action #2</b>	Develop and Implement a new program responsible for road and debris clearing.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 3: Natural Systems
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	Redwater/County
<b>Estimated Cost</b>	Medium (10-25k)
<b>Responsible Agency</b>	Redwater Public Works
<b>Estimated Completion Time</b>	5 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	Keeping roads and ditches free of limbs and debris opens transportation, could reduce flash flooding and prevents injury.

### Redwater Hail Action

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

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

### Redwater Drought Actions

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

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

### Redwater Extreme Heat Actions

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

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

### Redwater Wildfire Actions

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

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

## Wake Village Mitigation Actions

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

### Wake Village Flood Actions

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

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

### Wake Village Tornado Action

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

<b>Wake Village Tornado Action #2</b>	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.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 2: Public Awareness
<b>Priority</b>	High
<b>Funding Source(s)</b>	City
<b>Estimated Cost</b>	Low (0k-10k)
<b>Responsible Agency</b>	Wake Village Fire Chief/EMC
<b>Estimated Completion Time</b>	2 years
<b>Effect on New Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
<b>Effect on Existing Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds
<b>Comments:</b>	Educating the public is an integral part of mitigation.

### Wake Village Thunderstorm Winds Actions

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

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

### Wake Village Winter Storm Actions

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

<b>Wake Village Winter Storm Action #2</b>	Develop and Implement a new program responsible for road and debris clearing.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 3: Natural Systems
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	Redwater/County
<b>Estimated Cost</b>	Medium (10-25k)
<b>Responsible Agency</b>	Wake Village Public Works
<b>Estimated Completion Time</b>	5 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	Keeping roads and ditches free of limbs and debris opens transportation, could reduce flash flooding and prevents injury.



### Wake Village Hail Actions

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

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

### Wake Village Drought Actions

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

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

### Wake Village Extreme Heat

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

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

### Wake Village Wildfire Actions

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

<b>Wake Village Wildfire Action #2</b>	Develop and implement the Community Wildfire Protection Plan. A collaborative approach to help protect life, property and natural resources through community-based planning.
<b>Mitigation Goal/Objective</b>	Goal #1: Protect life and property Goal #4: Partnerships and Implementation Goal #5 Emergency Services
<b>Priority</b>	High
<b>Funding Source(s)</b>	City of Wake Village
<b>Estimated Cost</b>	Low (0-10k)
<b>Responsible Agency</b>	Wake Village Fire Chief
<b>Estimated Completion Time</b>	3 years
<b>Effect on New Buildings</b>	Out of control trash burning can destroy a new building
<b>Effect on Existing Buildings</b>	Out of control trash burning can destroy an existing building.
<b>Comments:</b>	Programs such as this can empower citizens to take precautionary action.

### Unincorporated Bowie County Mitigation Actions

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

#### Bowie County Flood Actions

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

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

### Bowie County Tornado Actions

<b>Bowie County Tornado Action #1</b>	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.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 2: Public Awareness
<b>Priority</b>	High
<b>Funding Source(s)</b>	City
<b>Estimated Cost</b>	Low (0k-10k)
<b>Responsible Agency</b>	Bowie County EMC
<b>Estimated Completion Time</b>	2 years
<b>Effect on New Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds.
<b>Effect on Existing Buildings</b>	This could help reduce damage by implementing ideas about home and business protection from tornadic winds
<b>Comments:</b>	Educating the public is an integral part of mitigation.

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

### Bowie County Thunderstorm Wind Actions

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

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

### Bowie County Winter Storm Actions

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

<b>Bowie County Winter Storm Action #2</b>	Develop and Implement a new program responsible for road and debris clearing.
<b>Mitigation Goal/Objective</b>	<i>Goal 1: Protect Life and Property</i> Goal 3: Natural Systems
<b>Priority</b>	Medium
<b>Funding Source(s)</b>	Bowie County
<b>Estimated Cost</b>	Medium (10-25k)
<b>Responsible Agency</b>	County Judge/County Commissioners
<b>Estimated Completion Time</b>	5 years
<b>Effect on New Buildings</b>	
<b>Effect on Existing Buildings</b>	
<b>Comments:</b>	Keeping roads and ditches free of limbs and debris opens transportation, could reduce flash flooding and prevents injury.

### **Bowie County Hail Actions**

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

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



### Bowie County Drought Actions

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

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

### Bowie County Extreme Heat Actions

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

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

### Bowie County Wildfire Actions

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

<b>Bowie County Wildfire Action #2</b>	Develop and implement the Community Wildfire Protection Plan. A collaborative approach to help protect life, property and natural resources through community-based planning.
<b>Mitigation Goal/Objective</b>	Goal #1: Protect life and property Goal #4: Partnerships and Implementation Goal #5 Emergency Services
<b>Priority</b>	High
<b>Funding Source(s)</b>	Bowie County
<b>Estimated Cost</b>	Low (0-10k)
<b>Responsible Agency</b>	Bowie County EMC
<b>Estimated Completion Time</b>	3 years
<b>Effect on New Buildings</b>	Out of control trash burning can destroy a new building
<b>Effect on Existing Buildings</b>	Out of control trash burning can destroy an existing building.
<b>Comments:</b>	Programs such as this can empower citizens to take precautionary action.

## SECTION V

### **Implementation, Monitoring, Evaluating, Updating and Integration**

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

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

#### **Monitoring**

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

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

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

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

The Status of the Hazard Mitigation Actions will be monitored by the designated emergency management coordinator for each jurisdiction on a quarterly basis. Preparation for the Five Year Plan Update will begin no later than 1 year prior to the plan expirations date. Again, the public will be invited to attend and will be encouraged to provide feedback.

## **Implementation**

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

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

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

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.

## **Updating**

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

assist will the plan update. The committee members will also assess the need for additional participating jurisdictions for the plans update. The public will be invited to attend and will be encouraged to provide feedback.

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

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

## **Integration**

**DeKalb**, population 1,685, The following are the city of DeKalb's authorities, policies, programs and resources available to accomplish hazard mitigation actions and strategies. The city of DeKalb has a mayor, a fire chief, and a police department, and maintenance department. DeKalb has building codes, and zoning ordinances. DeKalb will integrate data and action recommendations into the existing capital improvements plan so that hazard mitigation will always be a consideration for future growth. A city council member or the mayor will propose the plans integration into the city council who will vote on it at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the City of DeKalb should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan. They could benefit from additional training and staff to support mitigation plan activities.

**Hooks**, population 2,757. The following are the city of Hooks authorities, policies, programs and resources available to accomplish hazard mitigation actions and strategies. The city of Hooks has a mayor, a fire chief, who also serves as the emergency management coordinator, and a maintenance program and chief building official. The city of Hooks will integrate data and action recommendations from the mitigation plan into the existing capital implements plan into the local emergency operations plan. A city council member or the mayor will propose the plans integration to the city council who will vote on it at the monthly city council meeting. The mayor will sign thin into action after a majority vote. To improve and expand the City of Hooks should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations. They could also benefit from additional training and staff to support mitigation plan activities.

**Leary**, Population 478, The following are the city of Leary's authorities, policies, programs and resources available to accomplish hazard mitigation actions and strategies. The city of Leary has a mayor and a city council, The jurisdiction of Leary will integrate data and action recommendations into the existing maintenance program. A city council member or the

mayor will propose it to the city council who will vote on it at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the City of Bloomburg should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations.

**Maud**, population, 1,060. The following are the city of Maud's authorities, policies, programs and resources available to accomplish hazard mitigation actions and strategies. The city of Maud has a mayor, a fire chief, who also serves as the emergency management coordinator, and a public works department as well as a police officer. The city of Maud will integrate data and actions recommendations into elements of the local emergency management plan and the zoning ordinance. . A city council member or the mayor will submit proposals to the city council who will vote on it at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the City of Maud should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations.

**Nash**, population 3,081. The following are the city of Nash's authorities, policies, programs and resources available to accomplish hazard mitigation action and strategies The city of Nash has a mayor, city manager, fire department, police department, and public works department. It also has building codes and zoning ordinances. The city of Nash will integrate mitigation data and action recommendations into elements of the local master plan. The mayor will make this proposal at the quarterly city council meeting. The mayor will sign this update upon the city council's majority vote. To improve and expand capabilities the City of Nash should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations. They could also benefit from additional training and staff to support mitigation plan activities.

**Red Lick**, population 1,010. The following are the city of Red Lick's authorities, policies, programs and resources available to accomplish hazard mitigation action and strategies The city of Red Lick has a mayor, and a city council. The Emergency Management Coordinator will propose this at the monthly city council meeting. The mayor will sign this into + action after a majority vote. To improve and expand capabilities, the City of Red Lick should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations.

**Redwater**, population 1,057. The following are the city of Redwater's authorities, policies, programs and resources available to accomplish hazard mitigation action and strategies. Redwater has a mayor, a city council and a fire chief. Redwater will integrate actions and recommendations of the mitigation plan into the Redwater Capital Improvement Plan. The mayor or city council member will propose this action at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the City of Redwater should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations. They could also benefit from additional training and staff to support mitigation plan activities



**Wake Village**, population 5,488: The **following are the city of Wake Village's** authorities, policies, programs and resources available to accomplish hazard mitigation action and strategies. Wake village has a mayor and a city manager. It also has a fire department, a police department and a public works department. International building codes are in place and enforced. Wake Village will integrate actions and recommendations of the mitigation plan into the Capital improvements plan and the master plan the city manager will propose these actions at the monthly city council meeting. The mayor will sign this into action after a majority vote. To improve and expand capabilities, the city of Wake Village should establish a Hazard Mitigation Team to address their Hazard Mitigation Plan recommendations. They could also benefit from additional training and staff to support mitigation plan activities.

**Unincorporated Bowie County** population 3,490. The following are Bowie County's Village's authorities, policies, programs and resources available to accomplish hazard mitigation action and strategies. Bowie County has a county judge and four commissioners. It has volunteer fire departments and a public works department. There is a county emergency management coordinator. Unincorporated Bowie County will integrate data and action recommendations into the existing maintenance program. The county judge or county commissioner will propose the integration to the County which will vote on it at the monthly city council meeting. The county judge will sign this into action after a majority vote. To improve and expand capabilities, Bowie County should establish a team to develop public-private initiatives addressing disaster related issues.

# RESOLUTION

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

**WHEREAS**; the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have each have recognized the need to prepare a Five Year Update to Mitigation Action Plan; and

**WHEREAS**, the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have decided to jointly update the Mitigation Action Plan.

**THEREFORE BE IT RESOLVED** that the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick hereby jointly adopt and approve said updated Mitigation Action Plan; and

**BE IT FURTHER RESOLVED** that the Bowie County Judge and the Mayors of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the updated Mitigation Action Plan including its review and maintenance, for the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick in accordance with this resolution.

**RESOLVED THIS** \_\_\_\_\_ **DAY OF** \_\_\_\_\_, 2016.

\_\_\_\_\_  
County Judge, Bowie County

ATTEST \_\_\_\_\_  
County Clerk

# RESOLUTION

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

**WHEREAS**; the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have each have recognized the need to prepare a Five Year Update to Mitigation Action Plan; and

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**RESOLVED THIS** \_\_\_\_\_ **DAY OF** \_\_\_\_\_, 2016.

\_\_\_\_\_  
Mayor, City of Wake Village

ATTEST \_\_\_\_\_  
City Secretary

# RESOLUTION

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

**WHEREAS**; the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have each have recognized the need to prepare a Five Year Update to Mitigation Action Plan; and

**WHEREAS**, the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have decided to jointly update the Mitigation Action Plan.

**THEREFORE BE IT RESOLVED** that the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick hereby jointly adopt and approve said updated Mitigation Action Plan; and

**BE IT FURTHER RESOLVED** that the Bowie County Judge and the Mayors of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the updated Mitigation Action Plan including its review and maintenance, for the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick in accordance with this resolution.

**RESOLVED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2016.**

\_\_\_\_\_  
Mayor, City of Hooks

ATTEST \_\_\_\_\_  
City Secretary

# RESOLUTION

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

**WHEREAS**; the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have each have recognized the need to prepare a Five Year Update to Mitigation Action Plan; and

**WHEREAS**, the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have decided to jointly update the Mitigation Action Plan.

**THEREFORE BE IT RESOLVED** that the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick hereby jointly adopt and approve said updated Mitigation Action Plan; and

**BE IT FURTHER RESOLVED** that the Bowie County Judge and the Mayors of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the updated Mitigation Action Plan including its review and maintenance, for the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick in accordance with this resolution.

**RESOLVED THIS** \_\_\_\_\_ **DAY OF** \_\_\_\_\_, **2016**

\_\_\_\_\_  
Mayor, City of Nash

ATTEST \_\_\_\_\_  
City Secretary

# RESOLUTION

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

**WHEREAS**; the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have each have recognized the need to prepare a Five Year Update to Mitigation Action Plan; and

**WHEREAS**, the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have decided to jointly update the Mitigation Action Plan.

**THEREFORE BE IT RESOLVED** that the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick hereby jointly adopt and approve said updated Mitigation Action Plan; and

**BE IT FURTHER RESOLVED** that the Bowie County Judge and the Mayors of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the updated Mitigation Action Plan including its review and maintenance, for the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick in accordance with this resolution.

**RESOLVED THIS** \_\_\_\_\_ **DAY OF** \_\_\_\_\_, 2016

\_\_\_\_\_  
Mayor, City of DeKalb

ATTEST \_\_\_\_\_  
City Secretary



# RESOLUTION

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

**WHEREAS**; the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have each have recognized the need to prepare a Five Year Update to Mitigation Action Plan; and

**WHEREAS**, the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have decided to jointly update the Mitigation Action Plan.

**THEREFORE BE IT RESOLVED** that the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick hereby jointly adopt and approve said updated Mitigation Action Plan; and

**BE IT FURTHER RESOLVED** that the Bowie County Judge and the Mayors of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the updated Mitigation Action Plan including its review and maintenance, for the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick in accordance with this resolution.

**RESOLVED THIS** \_\_\_\_\_ **DAY OF** \_\_\_\_\_, 2016

\_\_\_\_\_  
Mayor, City of Maud

ATTEST \_\_\_\_\_  
City Secretary

# RESOLUTION

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

**WHEREAS**; the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have each have recognized the need to prepare a Five Year Update to Mitigation Action Plan; and

**WHEREAS**, the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have decided to jointly update the Mitigation Action Plan.

**THEREFORE BE IT RESOLVED** that the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick hereby jointly adopt and approve said updated Mitigation Action Plan; and

**BE IT FURTHER RESOLVED** that the Bowie County Judge and the Mayors of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the updated Mitigation Action Plan including its review and maintenance, for the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick in accordance with this resolution.

**RESOLVED THIS** \_\_\_\_\_ **DAY OF** \_\_\_\_\_, **2016.**

\_\_\_\_\_  
Mayor, City of Redwater

ATTEST \_\_\_\_\_  
City Secretary

# RESOLUTION

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

**WHEREAS**; the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have each have recognized the need to prepare a Five Year Update to Mitigation Action Plan; and

**WHEREAS**, the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have decided to jointly update the Mitigation Action Plan.

**THEREFORE BE IT RESOLVED** that the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick hereby jointly adopt and approve said updated Mitigation Action Plan; and

**BE IT FURTHER RESOLVED** that the Bowie County Judge and the Mayors of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the updated Mitigation Action Plan including its review and maintenance, for the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick in accordance with this resolution.

**RESOLVED THIS** \_\_\_\_\_ **DAY OF** \_\_\_\_\_, 2016.

\_\_\_\_\_  
Mayor, City of Leary

ATTEST \_\_\_\_\_  
City Secretary

# RESOLUTION

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

**WHEREAS**; the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have each have recognized the need to prepare a Five Year Update to Mitigation Action Plan; and

**WHEREAS**, the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick have decided to jointly update the Mitigation Action Plan.

**THEREFORE BE IT RESOLVED** that the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick hereby jointly adopt and approve said updated Mitigation Action Plan; and

**BE IT FURTHER RESOLVED** that the Bowie County Judge and the Mayors of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the updated Mitigation Action Plan including its review and maintenance, for the County of Bowie and the Cities of Wake Village, Hooks, Nash, DeKalb, Maud, Redwater, Leary, and Red Lick in accordance with this resolution.

**RESOLVED THIS** \_\_\_\_\_ **DAY OF** \_\_\_\_\_, 2016.

\_\_\_\_\_  
Mayor, City of Red Lick

ATTEST \_\_\_\_\_  
City Secretary

# Bowie County Appendix

DRAFT

## Existing Reservoirs

(North East Regional Water Plan) Table 1.1

Lake/Reservoir	County	Built	Area (acres)	Capacity (ac-ft)	Supply (ac-ft)
<b>Red River Basin</b>					
Crook	Lamar	1923	1,226	9,664	1,000
Pay Mayse Lake	Lamar	1967	5,993	124,500	59,900
<b>Sulphur River Basin</b>					
Big Creek Lake	Delta	1986	520	4,890	1,518
Cooper	Delta	1991	19,280	310,000	146,520
Rivercrest	Red River	1953	555	7,100	10,000
Langford Creek Lake	Red River	1966	162	2,334	1,215
Lake Sulphur Springs	Hopkins	1974	1,557	14,370	7,800
<b>Lake Wright Patman</b>	<b>Bowie/Cass</b>	<b>1954</b>	<b>33,750</b>	<b>265,300</b>	<b>180,000</b>
<b>Cypress Creek Basin</b>					
Lake Bob Sandlin	Titus/Franklin	1975	9,460	213,350	60,500
Cypress Springs	Franklin	1971	3,400	72,800	15,300
Ellison Creek	Morris	1943	1,516	24,700	23,000
Monticello Lake	Titus	1973	2,000	40,100	16,300
Tankersley Lake	Titus	Na	Na	Na	2,230
Welsh Reservoir	Titus	Na	1,365	23,587	0



Table 1.2  
Population

City	Population
Wake Village	5,129
Hooks	2,973
Nash	2,169
De Kalb	1,769
Maud	1,028
Redwater	872
Leary	555
Red Lick	853

(All Demographic Data from U.S. Census Bureau) There is no data for Simms or Malta

Table 1.3  
Comparisons

People Facts	Bowie County	Texas
Population 2002 estimate	89,961	21,325.018
Population, percent change, 1990-2000	9.4%	22.8%
Persons under 5 years old, percent 2000	6.4%	7.8%
Persons under 18 years old, percent 2000	24.8%	28.2%
Persons 65 years old and over, percent 2000	13.8%	9.9%
White persons, percent, 2000	73.3%	71.0%
Black or African American persons, percent 2000	23.4%	11.5%
American Indian and Alaska Native person, percent 2000	.06%	.06%
Persons reporting some other race, percent, 2000	1.1%	11.7%
Persons reporting two or more races, percent, 2000	1.1%	2.5%
Female persons, percent 2000	49.6%	50.4%
Persons of Hispanic or Latino origin, percent, 2000	4.5%	32.0%
White person, not of Hispanic/Latino origin, percent 2000	70.2%	52.4%

Economy  
Table 1.4

Business Quick Facts	Bowie County	Texas
Private non-farm establishments, 1999	2,137	467,087
Private non-farm employment, 1999	31,190	7,763,815
Private non-farm employment % change, 1990 – 1999	30.0%	32.4%
Non-employer establishments, 1999	4,328	1,236,927
Manufacturers shipments, 1997 (\$1000)	975,222	297,657,003
Retail sales, 1997 (\$1000)	940,695	182,516,112
Retail sales per capita, 1997	\$11,251	\$9,430
Minority-owned firms, percent of total, 1997	4.8%	23.9%
Women-owned firms, percent of total	29.5%	25.0%
Housing units authorized by building permits, 2000	258	141,231
Federal funds and grants, 2001 (\$1000)	640,018	112,530,383
Local government employment – full-time equivalent, 1997	3,723	850,3

Employed Civilian Population 16 Years And Over  
Bowie County

Occupation	Number	Percent
Population 16 years and over	35,947	100
Management, professional, and related	9,921	27.6
Service occupations	5,884	16.4
Sales & office occupations	10,005	27.8
Farming, fishing, and forestry occupations	219	.06
Construction, extraction, and maintenance occupations	3,925	10.9
Production, transportation, and material moving occupations	5,993	16.7
<b>Industry</b>		
Agriculture, forestry, fishing and hunting, and mining	606	1.7
Construction	2,361	6.6
Manufacturing	4,181	11.6
Wholesale trade	1,497	4.2
Retail Trade	5,318	14.8
Transportation and warehousing, and utilities	1,770	4.9
Information	558	1.6
Finance, insurance, real estate and rental/leasing	1,579	4.4
Professional, scientific, management, administrative, and waste management services	8,190	22.8
Arts, entertainment, recreation, food service	2,128	6.1
Public administration	3,773	10.5

Other services	2,172	6.0
----------------	-------	-----

Table 1.8  
Workers

Class of Worker (Of Total Table 1.)	Number	Percent
Private wage and salary workers	25,794	71.8
Government workers	7,221	20.1
Self-employed workers in own business	2,821	7.8
Unpaid family workers	111	.03

Table 1.9  
Income

	Number	Percent
Households	33,052	100
Less than \$10,000	4,616	14
\$10,000 to \$14,999	2,946	8.9
\$15,000 to \$24,999	5,390	16.3
\$25,000 to \$34,999	4,317	13.1
\$35,000 to \$49,999	5,395	16.3
\$50,000 to \$74,999	5,719	17.3
\$75,000 to \$99,999	2,535	7.7
\$100,000 to \$149,999	1,349	4.1
\$150,000 to \$199,999	302	0.9
\$200,000 +	483	1.5
Median household income (dollars)	33,001	(X)

Table 1.10  
Education

Educational attainment	Number	Percent
Population 25 years and over	58,767	100
Less than 9 <sup>th</sup> grade	4,393	7.5
9 <sup>th</sup> to 12 <sup>th</sup> grade, no diploma	8,954	15.2
High school graduate (includes equivalency)	18,711	31.8
Some college, no degree	14,201	24.2
Associate degree	3,028	5.2
Bachelor's degree	5,959	10.1
Graduate or professional degree	3,521	6.0
Percent high school graduate or higher	77.3	(x)
Percent bachelor's degree or higher	16.1	(X)

Bowie County has two institutions of higher learning: **Texarkana Junior College, and Texas A&M at Texarkana.**

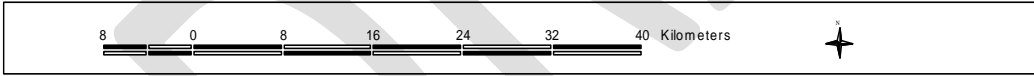
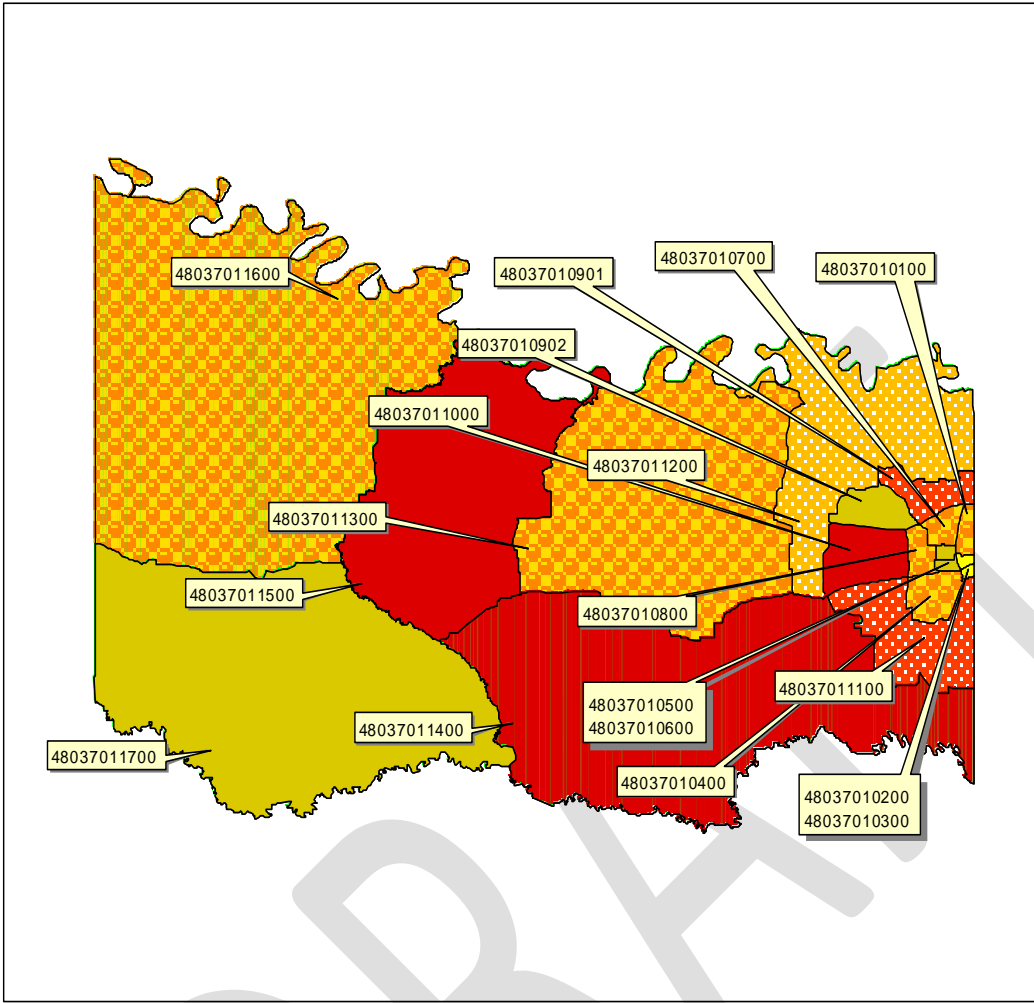
Table 1.11  
Housing

County Units	Number	Percent
Total housing units	36,463	100
Units built 1939 or earlier	2,151	5.9
Units built 1940 to 1959	7,354	20.2
Units built 1960 to 1969	1,733	4.8
Units built 1970 to 1979	7,390	20.3
Units built 1980 to 1989	7,211	19.8
Units built 1990 to 1994	2,468	6.8
Units built 1995 to 1998	2,777	7.6
Units built to March 2000	1,063	2.9

Table 1.12  
Bowie County City Finances (2002)

Taxing Unit Name	Total Tax Rate	\$ Total Levy
De Kalb ISD	1.490000	1,300,303
De Kalb	0.389100	142,959
Hooks ISD	1.360000	1,354,796
Hooks	0.658500	348,637
Maud ISD	0.063300	376,940
Maud	0.242700	42,353
Redwater ISD	1.398600	1,254,837
Redwater	0.090800	13,317
Wake Village	0.369700	470.857
Nash	0.310500	388,383
Liberty Eylau ISD	1.380000	4,249,378
Leary	0.023700	1,324
Red Lick	0.120000	40,000
Red Lick ISD	0.967400	639,208

(Window on State Government)



**Bowie  
County**

**Mitigation  
Action  
Plan**

**Sectors**

- Population
- 276 - 1659
  - 1659 - 3043
  - 3043 - 4426
  - 4426 - 5809
  - 5809 - 7193
  - 7193 - 8576
  - Srbndry.shp

Aug. 26 2003



(c) 1997-2002 FEMA.

Figure 1.1  
Bowie County Sectors

Dollar Exposure by Sector Number in \$1000's of Dollars  
Bowie County (HAZUS)

Table 1.13

Sector #	Residential	Commercial	Industrial	Agriculture	Religious	Government	Education	Total
100	203,786	69,800	4,168	101	3,768	568	1,653	283,844
200	31,065	128,814	3,253	44	4,495	73	0	167,745
300	17,719	39,676	2,140	0	3,299	34	482	63,349
400	172,642	29,381	21,090	63	10,272	608	3,512	237,568
500	78,637	29,138	1,079	0	2,896	242	707	112,699
600	96,569	27,413	2,615	0	1,664	310	1,102	129,671
700	180,259	74,066	1,450	36	3,789	552	14,373	274,524
800	181,157	45,522	2,071	156	2,824	756	864	233,350
901	176,110	34,583	2,740	146	3,998	681	3,531	221,789
902	77,432	11,811	1,264	33	490	310	175	91,514
1000	248,662	34,513	13,177	258	3,134	1,111	952	301,806
1100	194,295	6,855	16,184	64	3,249	1,556	983	223,186
1200	88,499	3,997	1,907	32	1,023	360	0	95,819
1300	170,269	16,221	496	184	4,546	647	1,302	193,666
1400	229,913	6,766	1,454	38	2,024	1,150	3,331	244,676
1500	245,995	42,309	4,630	164	5,496	878	3,255	302,727
1600	191,895	17,899	1,040	606	2,147	636	2,510	216,733
1700	58,588	2,396	427	114	605	231	2,323	64,684

Building Count by Sector Number – Bowie County

Table 1.14

Sector #	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
100	1,662	75	4	1	3	0	1	1,746
200	278	48	4	0	4	0	0	334
300	39	40	1	0	3	0	0	83
400	2,032	36	17	0	10	0	3	2,098
500	674	33	1	0	3	0	1	712
600	1,081	32	2	0	2	0	1	1,118
700	1,551	83	0	0	4	0	7	1,645
800	1,269	49	2	1	3	0	1	1,325
901	1,917	32	3	1	4	0	3	1,960
902	946	12	1	0	0	0	0	959
1000	2,963	45	14	2	3	1	1	3,029
1100	1,871	7	16	0	3	1	1	1,899
1200	1,158	4	2	0	1	0	0	1,165
1300	2,278	22	1	1	4	0	1	2,307
1400	3,343	9	1	0	2	1	3	3,359
1500	2,900	46	5	1	5	1	3	2,961
1600	2,292	20	0	4	2	0	2	2,320
1700	858	2	1	1	1	0	2	865



**Residential Square Footage Inventory for Bowie County Sectors  
By Sector Number and Type (1,000's of Square Feet)**

**Table 1.15**

Sector No.	Single Family	Mobile Home	Multi-Family	Temporary Lodging	Institutional Dormitory	Nursing Home
100	2,413.5	0.0	636.0	49.5	261.1	140.0
200	405.0	0.0	135.0	0.0	0.0	0.0
300	15.0	0.0	79.0	48.2	98.0	0.0
400	2,805.0	149.0	203.0	19.8	0.0	0.0
500	975.0	0.0	377.0	0.0	4.9	0.0
600	1,608.0	0.0	137.0	3.4	0.0	0.0
700	2,245.5	0.0	860.0	0.0	7.0	0.0
800	1,758.0	24.0	1,058.0	0.0	165.9	34.6
901	2,752.5	63.0	279.0	84.6	0.0	0.0
902	1,113.0	195.0	144.0	0.0	0.0	0.0
1000	3,612.0	525.0	481.0	0.0	0.0	8.6
1100	2,220.0	360.0	28.0	7.4	856.8	0.0
1200	1,509.0	152.0	0.0	0.0	0.0	15.7
1300	2,488.5	608.0	183.0	0.0	0.0	0.0
1400	3,399.0	1,073.0	47.0	0.0	27.3	0.0
1500	3,580.5	487.0	358.0	30.4	89.6	18.9
1600	3,076.5	230.0	112.0	0.0	80.5	55.0
1700	889.5	265.0	5.0	0.0	0.0	0.0

**Commercial Square Footage Inventory for Bowie County Sectors  
By Sector Number and Type (1,000's of Square Feet)**

**Table 1.16**

Sector No.	Retail	Wholesale	Personal Repair	Professional	Banks	Hospitals	Med Offices	Recreation	Theaters
100	427.4	257.7	122.7	300.7	14.3	0.0	139.0	70.8	4.5
200	153.5	104.4	81.8	147.9	0.0	914.0	152.1	2.4	0.0
300	198.0	186.9	140.6	204.6	21.2	0.0	17.0	19.4	0.0
400	186.1	313.1	146.8	38.7	4.4	0.0	0.0	11.6	1.4
500	136.0	670.6	40.0	27.2	0.0	0.0	0.0	0.0	0.0
600	245.1	79.3	77.9	79.2	7.2	0.0	16.1	36.0	2.8
700	648.5	74.9	69.0	158.0	99.1	11.6	149.6	90.2	3.1
800	322.0	69.7	130.8	210.5	30.2	0.0	10.0	62.9	0.0
901	110.4	83.1	100.9	189.0	0.0	0.0	40.1	77.3	4.7
902	47.7	32.5	36.2	68.6	0.0	0.0	24.4	7.5	0.0
1000	329.6	151.3	171.5	57.9	6.9	0.0	2.0	18.5	1.4
1100	41.8	40.4	19.4	36.6	0.0	0.0	0.0	6.0	0.0
1200	16.0	14.3	14.6	22.6	0.0	0.0	0.2	0.0	10.3
1300	165.8	51.5	81.4	23.9	4.1	0.0	0.0	12.0	0.0

1400	60.9	22.1	23.7	20.3	0.0	0.0	2.2	8.4	0.0
1500	298.6	53.7	114.9	158.2	18.6	26.8	30.5	50.0	5.4
1600	145.8	62.6	56.3	45.1	18.2	0.0	5.7	18.3	0.0
1700	19.4	16.6	8.5	9.6	0.0	0.0	0.0	0.0	0.0

**Industrial/Agricultural/Religious Square Footage Inventory for Bowie County By Sector Number and Type (1,000's of Square Feet)**

**Table 1.17**

Sector No.	Heavy Ind.	Light Ind.	Drugs/Food	Metals Processing	Hi-Tech	Construction	Agriculture	Religious
100	14.6	7.5	42.5	0.0	0.0	32.0	9.2	52.3
200	0.0	35.2	0.0	0.0	0.0	40.2	4.0	62.4
300	10.1	27.7	7.4	0.0	0.0	4.4	0.0	45.8
400	273.6	21.8	74.3	11.4	0.0	107.7	5.7	142.6
500	0.0	5.4	6.8	0.0	0.0	12.8	0.0	40.2
600	0.0	29.4	0.0	6.9	0.0	24.3	0.0	23.1
700	8.6	6.5	3.3	7.3	0.0	7.9	3.3	52.6
800	7.5	9.1	0.0	0.0	0.0	31.4	14.2	39.2
901	0.0	7.4	0.0	6.3	0.0	49.8	13.3	55.5
902	0.0	9.6	0.0	0.0	0.0	19.7	3.0	6.8
1000	68.8	16.5	5.5	119.7	0.0	94.9	23.5	43.5
1100	118.4	211.4	15.3	0.0	0.0	30.0	5.8	45.1
1200	5.4	8.4	0.0	0.0	0.0	30.4	2.9	14.2
1300	0.0	1.2	0.0	0.0	0.0	10.3	16.7	63.1
1400	14.6	0.0	0.0	0.0	0.0	19.1	3.5	28.1
1500	7.5	5.4	0.0	50.7	0.0	43.7	14.9	76.3
1600	9.9	3.2	2.8	0.0	0.0	8.2	55.1	29.8
1700	0.0	0.0	0.0	0.0	0.0	9.9	10.4	8.4

**Government/Education Square Footage Inventory for Bowie County By Sectors Number and Type (1,000's of Square Feet)**

**Table 1.18**

Sector No.	General Government	Emergency Response	Schools	Colleges
100	10.1	0.0	26.4	0.0
200	1.3	0.0	0.0	0.0
300	0.6	0.0	7.7	0.0
400	10.8	0.0	56.1	0.0
500	4.3	0.0	11.3	0.0
600	5.5	0.0	17.6	0.0
700	9.8	0.0	46.2	135.7
800	9.1	2.6	13.8	0.0
901	12.1	0.0	56.4	0.0
902	5.5	0.0	2.8	0.0
1000	16.4	2.0	15.2	0.0
1100	11.8	9.5	15.7	0.0
1200	6.4	0.0	0.0	0.0
1300	11.5	0.0	20.8	0.0
1400	17.1	2.0	53.2	0.0
1500	15.6	0.0	52.0	0.0
1600	11.3	0.0	40.1	0.0

1700	4.1	0.0	37.1	0.0
------	-----	-----	------	-----

**INVENTORY CLASSIFICATION  
BY OCCUPANCY CLASS Bowie County**

Table 1.19

TYPE	VALUE \$
Residential	\$1,574,651,375
Apartments	\$74,528,755
Vacant Lots	\$111,092,643
Agriculture	\$800,236,313
Commercial	\$561,112,539
Mobile Homes	\$48,933,677
Industrial	\$43,565,457
Schools	\$264,580,427
Hospitals	\$72,770,413
<b>TOTAL</b>	<b>\$3,551,471,599</b>

The following table shows property value for specific structures in Bowie County

Table 1.20

Address	Department	Building Value \$	Contents Value
105 W. Front – Texarkana	Correction Building	5,637,680	156,000
107 W. Front	Corrections	2,080,000	52,000
FM 3244	County Barn	46,800	15,000
4929 W. 7 <sup>th</sup> Texarkana	Juvenile Detention	2,288,000	156,000
5302 W. 7 <sup>th</sup>	Human Services Building	832,000	
601 Main Texarkana	Office Building	1,092,000	52,000
801 S. Hwy 8 New Boston	Shop Building	208,000	26,000
780 NW Front New Boston	JP Office	36,400	5,200
FM 125	Garage	10,400	2,600
FM 1398	Truck Repair	31,200	2,600
FM 559	Building	31,200	2,600
100 N. State Line Texarkana	Jail/Courthouse		358,000
1320 W. 7 <sup>th</sup> Texarkana	Juvenile Detention	263,718	52,000
710 C. McCoy New Boston	Courthouse	9,597,120	780,000

Table 1.21  
BOWIE COUNTY PROFILE

<b>POPULATION</b>	
<i>County Population</i>	
Census 2000:	89,306
Census 1990:	81,665
Census 1950:	61,966
<i>Population of the County Seat (New Boston)</i>	
Census 2000:	4,808
Census 1990:	5,057
<b>GENERAL INFORMATION</b>	
<i>County Size in Square Miles</i>	
Land Area:	888
Water Area	35
Total Area:	923
Population Density (per Square Miles) 2000:	100.56
<b>INCOME</b>	
Per Capita income, 1999 (BEA):	\$21,741
Median Per Capita Income, 1999 (Census)	\$33,001
Median Household Income, 1999 (Census)	\$41,108
Median Family Income, 1999 (Census)	\$17,357
<i>Poverty (1999)</i>	
Percent of Population in Poverty	17.10
Percent of Population under 18 in Poverty	24.98
<b>COUNTY FINANCES</b>	
<i>Property Taxes, 2001 (Comptroller)</i>	
Total County Tax Rate:	\$0.286900
Total Market Value	\$3,437,953,149
Total Appraised Value Available for County Taxation	\$2,784,708,292
Total Actual Levy:	\$7,989.328
<i>Average Wage Per Job (BEA)</i>	
2001:	\$26,344
2000:	\$25,881
1990:	\$19,079
<b>ROAD AND BRIDGE EXPENDITURES, 2001</b>	
County Roads, Construction:	\$0
County Roads, Maintenance	\$3,832,380
County Roads, Rehabilitation:	\$0
County Bridges, Construction:	\$0

County Bridges, Rehabilitation:	\$0
Right of Way Acquisition:	\$270,815
Other Road Expenditures:	\$0
<b>TOTAL ROAD AND BRIDGE EXPENDITURES</b>	<b>\$4,103,195</b>

(The County Information Project, May 2003)

**BOWIE COUNTY  
ENVIRONMENTAL PROFILE**

Population  
**Table 1.22**

Number	Value (Rank)
Population in 2000	89,306 (36)
Population Projected for 2020	107,853 (42)

Water Quality  
**Table 1.23**

Indicator	Value (Rank)
Toxics Released to Surface Waters, 1999 (Pounds)	120 (45)
Number of State Wastewater Discharge Permits, 2000	19 (42)
Total Permitted Discharge (Millions of Gallons Per Day)	23.44 (37)
Number of Quality Impaired Surface Water Bodies, 1998	2 (27)

Water Quantity  
**Table 1.24**

Indicator	Value (Rank)
Total Water Use 1997 (Acre-Feet)	18,515 (108)
Surface Water Use, 1997 (Acre-Feet)	15,864 (54)
Ground Water Use, 1997 (Acre-Feet)	2,651 (184)
Water Used for Irrigation, 1997 (Acre-Feet)	4,007 (100)
Per Capita Water Use 1997 (Gallons per Day)	116 (237)
Projected Total Water Use, 2020 (Acre-Feet)	27,495 (111)
Total Number of Active Surface Water Rights Permits, 2000	34 (77)
Total Authorized Volume of Water, 2000 (Acre-Feet)	313,282 (37)
Number of Real-Time Stream-flow Monitors in County	0

Land  
**Table 1.25**

Indicator	Value (Rank)
Total Area of County (Thousands of Acres)	938 (105)

Area Dedicated to Irrigated Cropland 1997 (Acres)	2,041 (124)
Toxics Released to Land, 1999 (Pounds)	398,203 (18)
Toxics Released by Underground Injection, 1999 (Pounds)	0 (13*)
Number of National Superfund Sites, 2000	3 (2)
Number of State Superfund Sites, 2000	0 (37*)
Number of Contaminated Voluntary Cleanup Sites, 2000	2 (46)

Wildlife and Biodiversity

Table 1.26

Indicator	Value (Rank)
<b><u>Number of Eco-Regions Found in the County</u></b>	2

Air Quality

Table 1.27

Indicator	Value (Rank)
Industrial Air Emissions of Criteria Pollutants, 1999 (Tons)	2,140.87 (115)
Toxics Released to Air, 1999 (Pounds)	48,130 (94)
Additional Cancer Risk Due to Hazardous Air Pollutants (Per 1,000,000 people)	180 (23)
Number of Ambient Air Quality Monitors	0

Waste

Table 1.28

Indicator	Value (Rank)
<b><u>Number of Facilities Releasing Toxics, 1999</u></b>	5 (45)
<b><u>Total Environmental Releases of Toxics, 1999 (Pounds)</u></b>	446,453 (49)
<b><u>Industrial Hazardous Waste Generated, 1997 (Tons)</u></b>	127,029 (18)
<b><u>Hazardous Waste Managed, 1997 (Tons)</u></b>	1,592.9 (44)
<b><u>Facilities with Permits to Treat, Store or Dispose of Hazard Waste, 2000</u></b>	3 (14)
<b><u>Number of Leaking Underground Storage Tanks, 2001</u></b>	148 (28)
<b><u>Number That Still Need to be Cleaned Up, 2001</u></b>	44 (24)
<b><u>Number of Municipal Solid Waste Landfills Operating, 1996</u></b>	2 (16)
<b><u>Volume of Landfills in, 1996 (Acres)</u></b>	163.5 (43)

Energy

Table 1.29

Indicator	Value (Rank)
-----------	--------------



<b><u>Number of Power Plants, 1999</u></b>	0 (86*)
<b><u>Total Number of Oil Wells, 2000</u></b>	22 (192)
<b><u>Number of Regular Producing Oil Wells, 2000</u></b>	15 (191)
<b><u>Total Number of Gas Wells, 2000</u></b>	7 (174)
<b><u>Number of Regular Producing Gas Wells, 2000</u></b>	2 (177)

\*Indicator value for this county is tied for lowest value in the state

Note: Rankings are done across all 254 counties in Texas. Counties with the highest value for an indicator are ranked number one. Chart Information taken from **Texas Environmental Profiles**.

Bowie County Utility System Dollar Value (\$1000's)  
Table 1.30

Potable Water Distribution Lines	554,406
Waste Water Distribution Lines	332,642
Oil Pipelines	5,343
Natural Gas Distribution Lines	221,759
Electric Power Distribution Lines	166,321
Communication Facilities	42,000
Communication Distribution Lines	73,921

Bowie County Transportation System Dollar Value (\$1000's)  
Table 1.31

Highway Roads	3,510,700
Highway Bridges	336,000
Railway Tracks	453,375
Railway Bridges	25,000
Airport Facilities	10,000
Airport Runways	28,000

(INFORMATION TAKEN FROM HAZUS)

Bowie County (Texarkana, Texas) Industry  
Table 1.5

Company Name	Product
ALCOA Mill Products	Aluminum rolling mill
Applied Control Technology	Control panels, electrical and instrumental systems
American Dehydrated Foods	Pet food ingredients
AmeriCold Logistics	Freezer/warehouse distribution

Candle Corporation of American	Canned heat and distribution
Carpco, Inc.	Steel fabrication and supply
DOW Chemical	Insulation board
Coleman Cable	Telecommunications cable
Commercial Manufacturing	Contract metal finishing
Cooper Tire and Rubber Co.	Automobile and light truck tires
Davis Roof Truss Manuf. Co.	Roof trusses
Day & Zimmerman, Inc	Military ammunition and explosives
Detroit Forms, Inc.	Disposable plastic packaging for food products
Domtar, Inc.	Finished paper products
East Texas Coatings, Inc.	Tank car linings
Fay-J Packaging	Multi-wall paper bags
FCM Products, Inc	Metal fabrication
Flowers Baking Co.	Hamburger buns for fast food industry
GE Railcar Repair	Repair tank cars
Humco Holding Group, Inc	Over-the-counter pharmaceuticals
International Paper	Bleached paper board and hardwood pulp products
JCM Industries	Fabricated pipe fittings and couplings
Kerr-McGee Chemical Corp	Wood preserving
Larkotex Co.	Medical equipment and orthopedic appliances
Ledwell & Son, Inc	Truck bodies and equipment
Lear Siegler Service, Inc	Rebuilds military vehicles
M & M Milling	Glue extender
Martin Marietta Materials, Inc	Hot and cold asphalt
Mayo Manufacturing Co.	Upholstered furniture
N.L. Baroid Petroleum Services	Oils and gas drilling fluids
Newcourt, Inc.	Laminated panels for material handling industry
Paper Chemicals, Inc	Defoamer for paper industry
Parks Metal Fabricators	Custom machinery and fabricating
Precision Metal Industries	Industrial hard chrome plating and machine welding
Red River Army Depot	Vehicle repair and supply mission

Rimcor	Chemical resistant construction, masonry, fiber glass
River Valley Animal Foods	Ingredients for pet foods
Smith-Blair, Inc	Pipe fittings and water meters
Southwest Tire Molds	Tire mold repair
Texana Tank Car Manufacturer	Railroad tank car repair and manufacture
Truss Plant	Roof trusses
W. W. Metal Products	Custom machinery and fabrication
Ward-Davis, Inc	Pallets

(Table 1.5Continued)

### Industrial Parks

The Falvey Industrial Park, fronting on U.S. Highway 59 in Texarkana, Texas, has 28 acres available in tracts ranging from two to 10 acres. Highway 59 connects with U.S. Highway 67 and 82 and Interstate 30. Sites have concrete streets and utilities.

The Interstate 30 Industrial Park has 35 acres fronting Interstate 30 and Texas FM 2148. The park is rail served by the Texas Northeastern Railroad with switching service to the Union Pacific and Kansas City Southern lines. All utilities are available. There are no comprehensive plans for land use in the cities covered by this plan.

### Quarterly Sales Report

Table 1.6

City	Year	Quarter	Gross Sales\$	Outlets (avg.)
<i>Bowie County</i>	2002	1, 2, and 3	2,154,399,084	1,854
Nash	2002	1, 2, and 3	256,227,873	44
De Kalb	2002	1, 2, and 3	13,486,821	58
Wake Village	2002	1, 2, and 3	13,134,981	65

Hooks	2002	1, 2, and 3	11,879,331	39
Leary	2002	1, 2, and 3	4,101,057	10
Maud	2002	1, 2, and 3	3,733,855	21
Redwater	2002	1, 2, and 3	2,537,117	11
Red Lick	No Data			

(Figures from Window on State Government)

Table 1.7

DRAFT

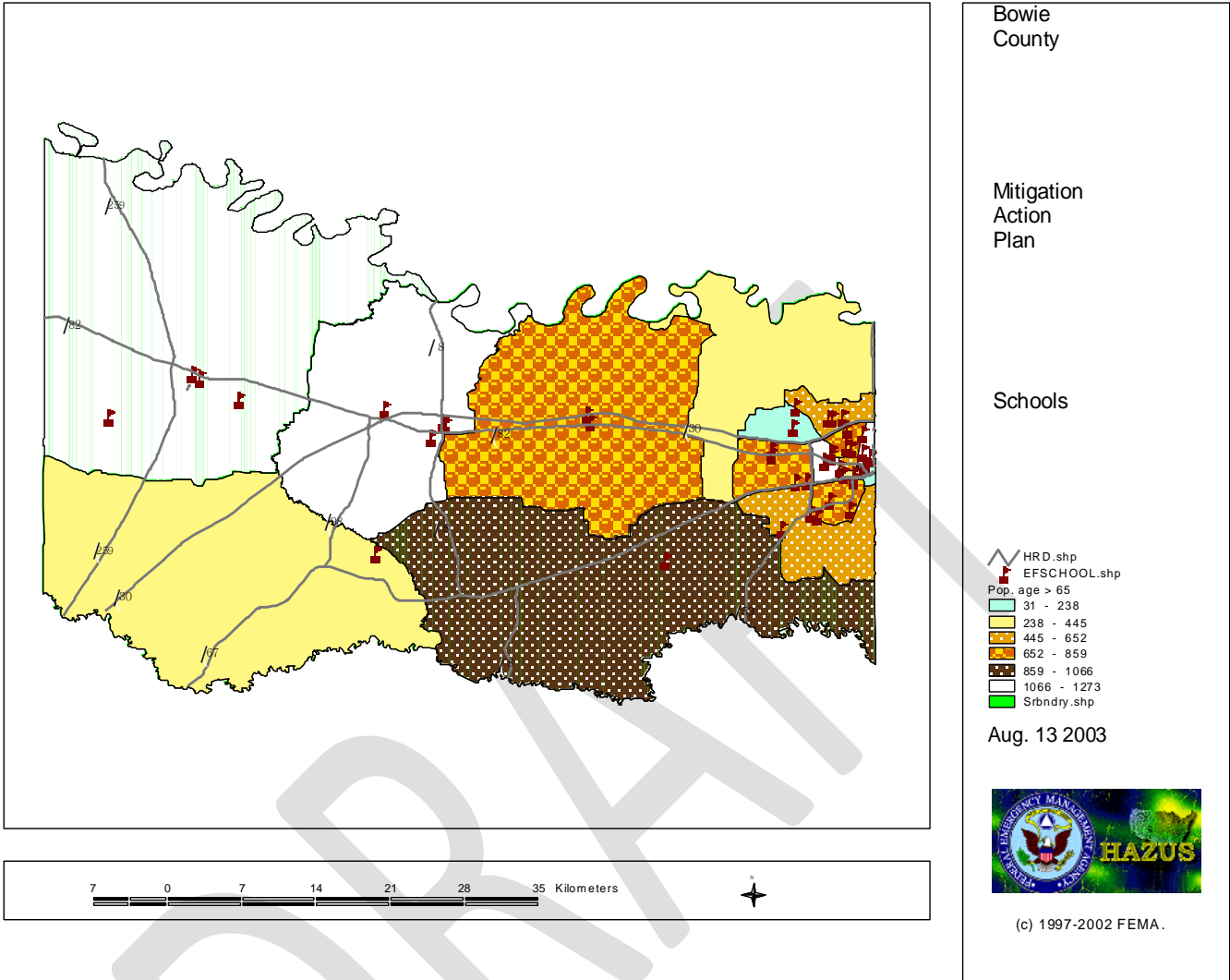


Figure 1.3  
 Bowie County Schools

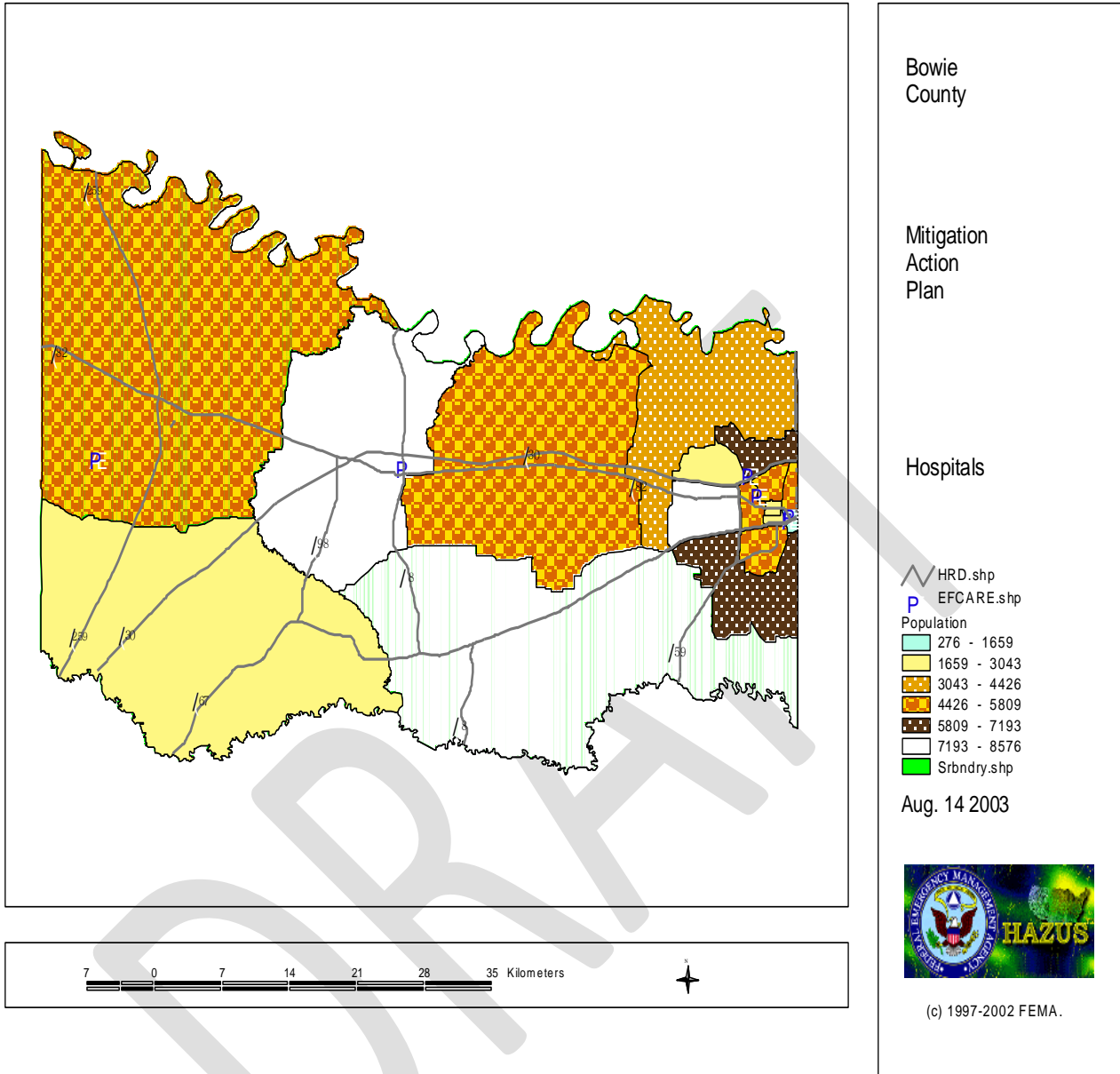


Figure 1.4  
Bowie County Hospitals



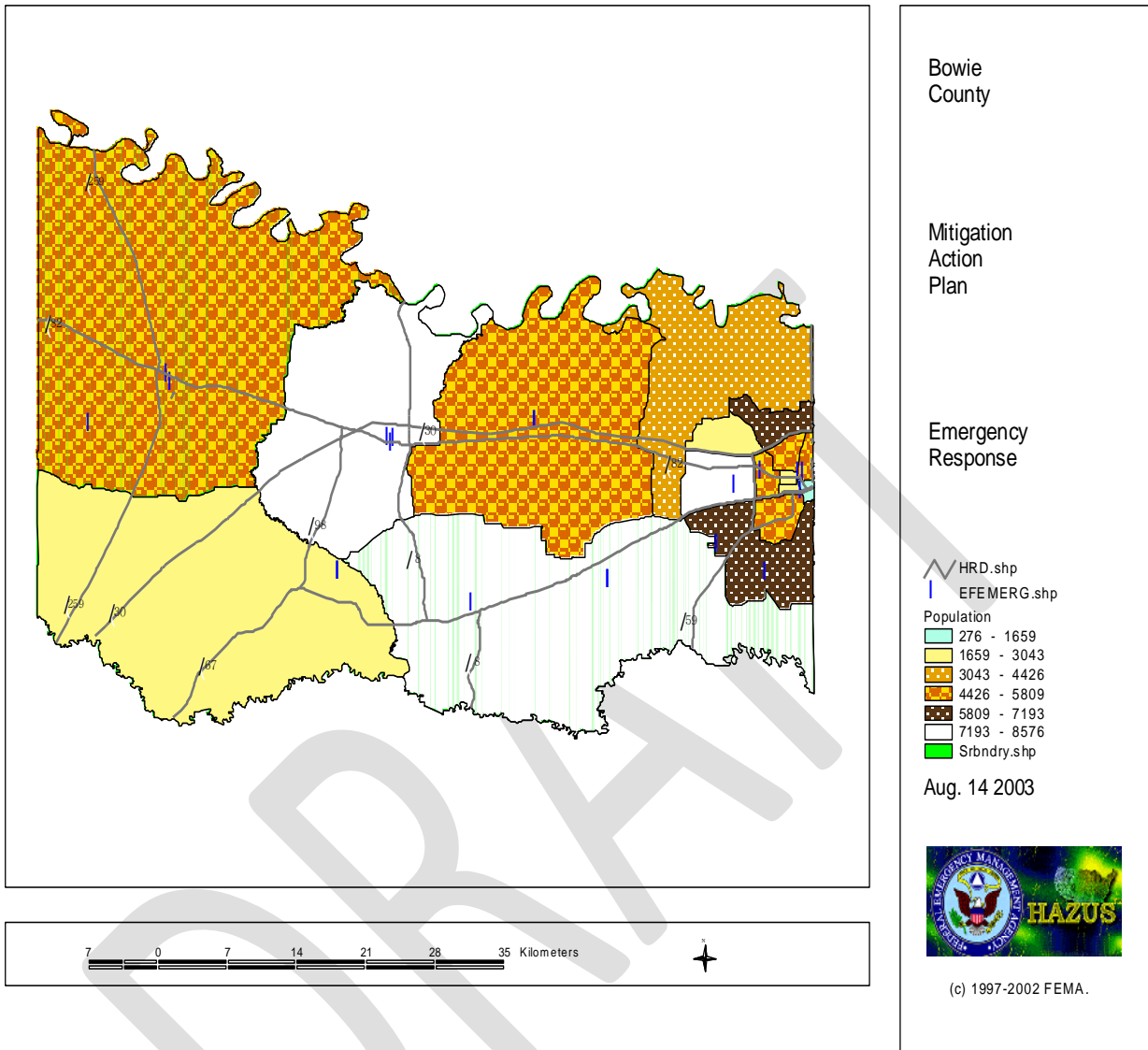


Figure 1.5  
Bowie County Emergency Response (HAZMAT)

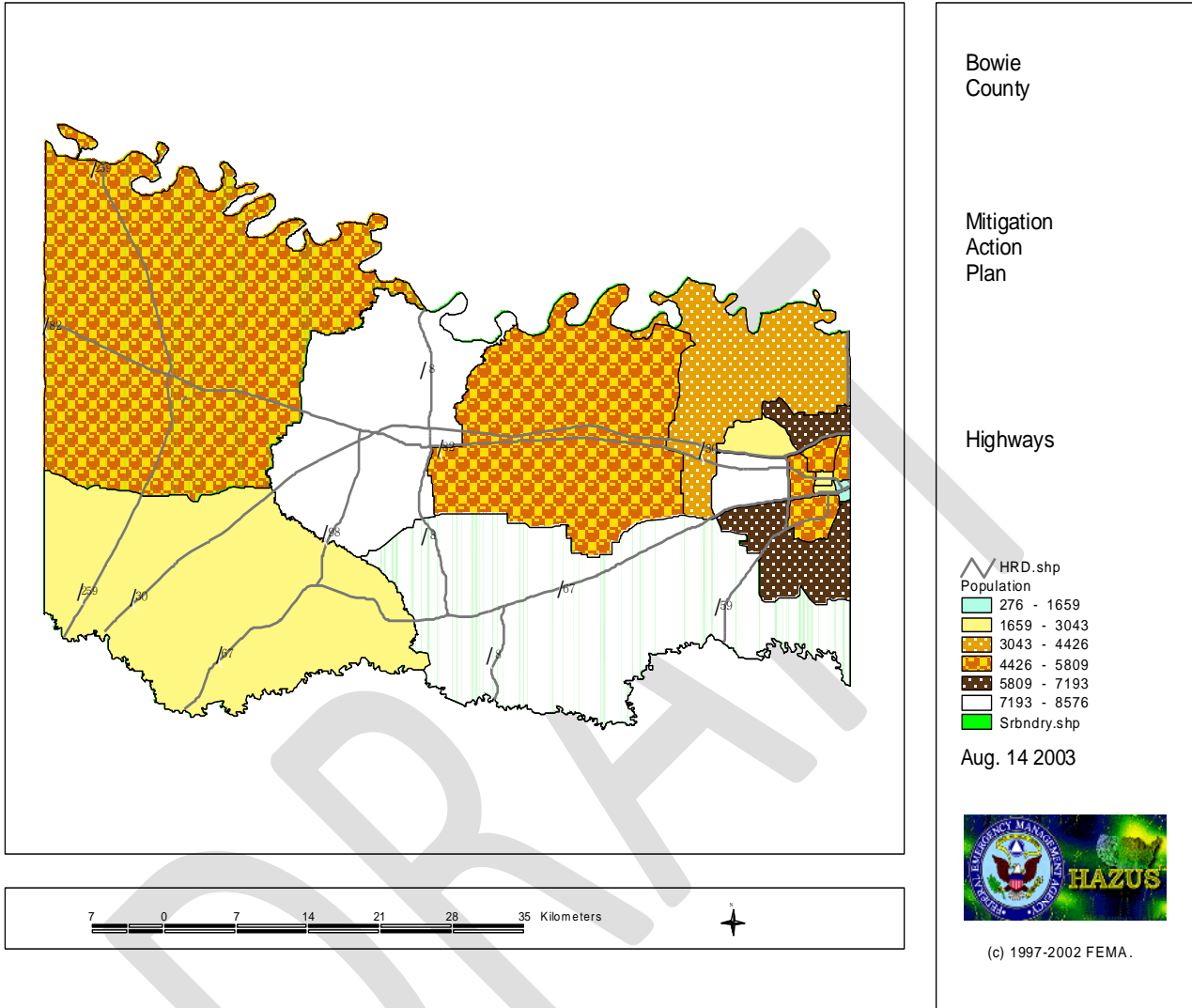


Figure 1.6  
Bowie County Highways

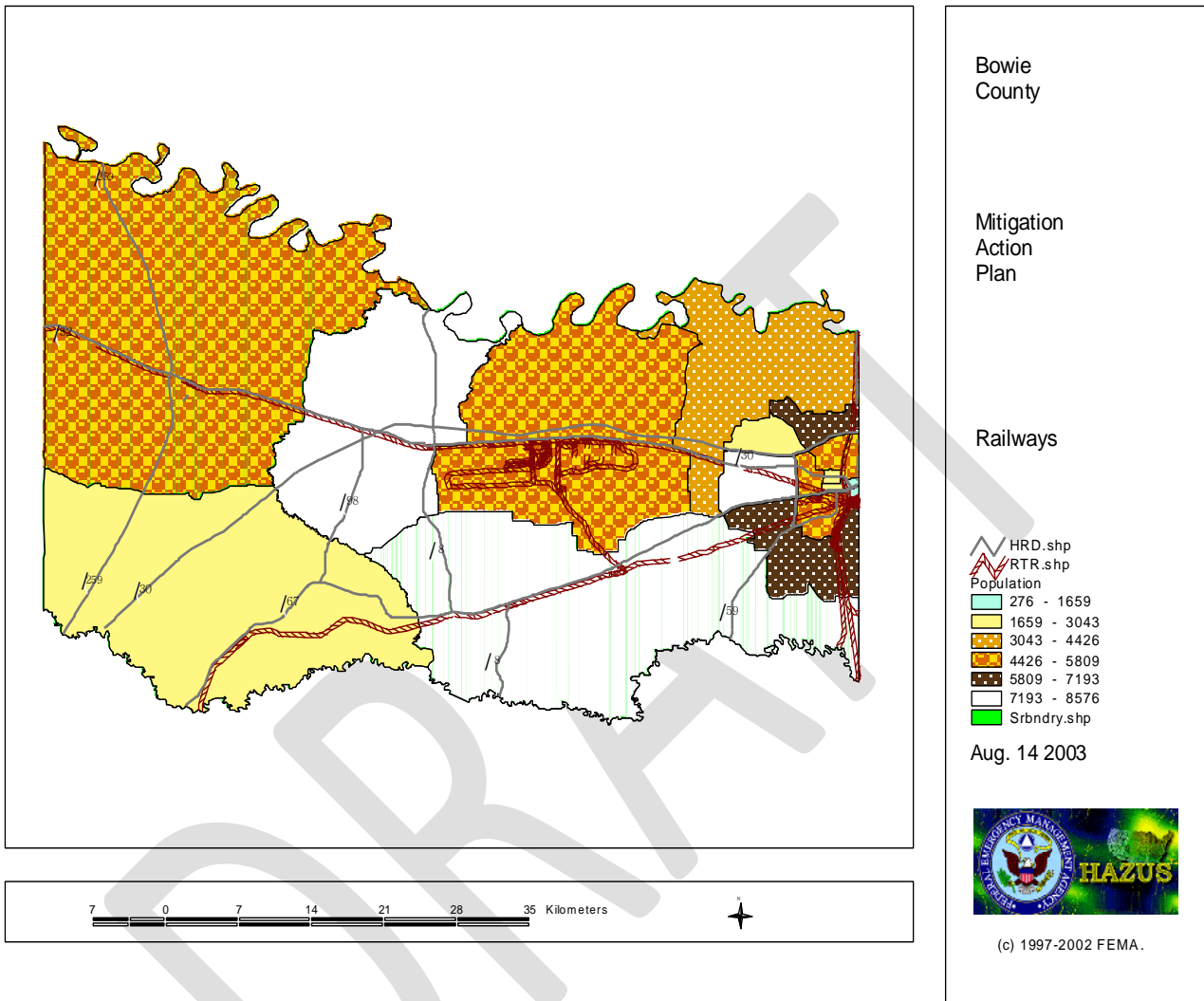


Figure 1.7  
Bowie County Railways

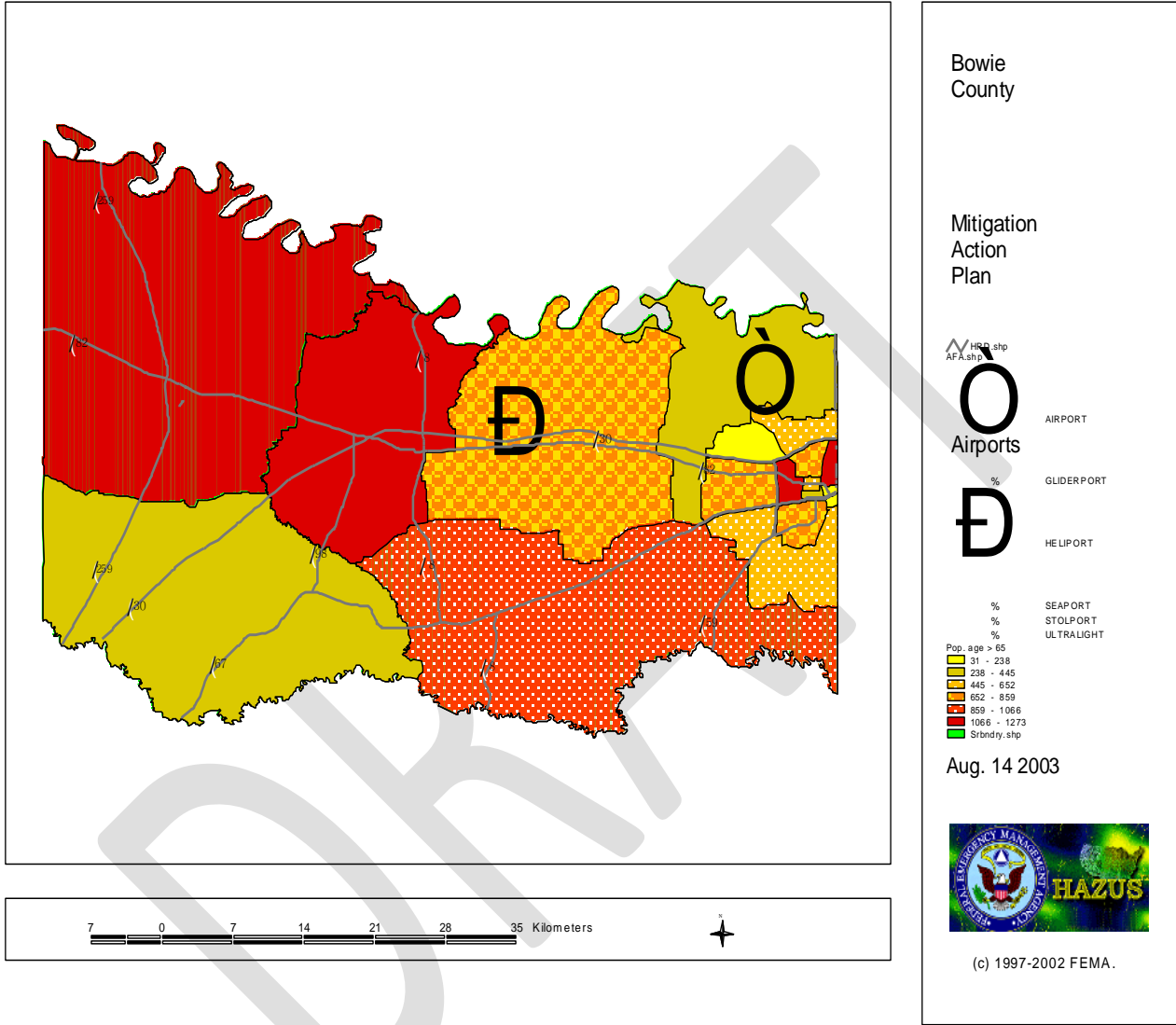


Figure 1.8  
 Bowie County Airports/Heliports

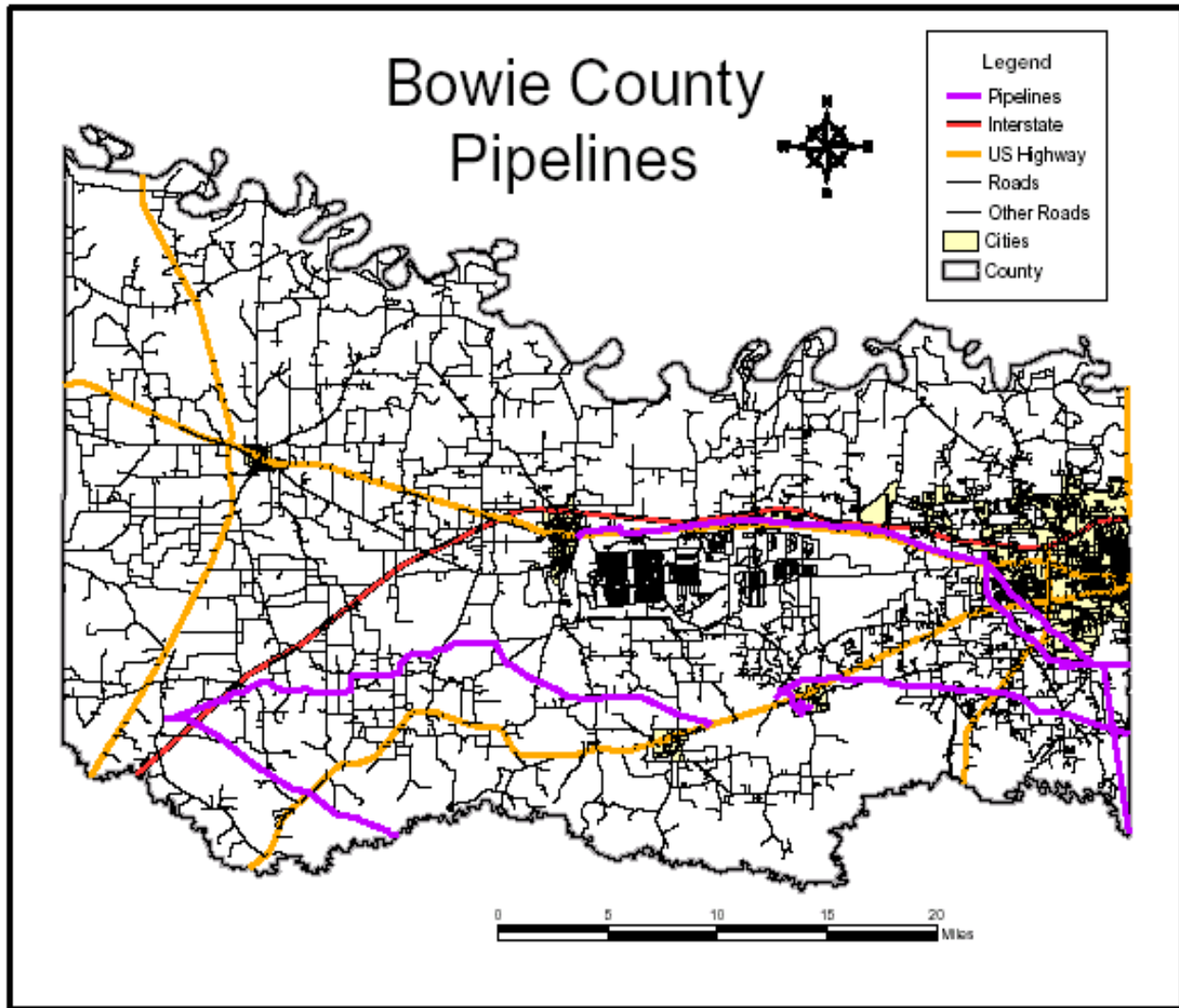
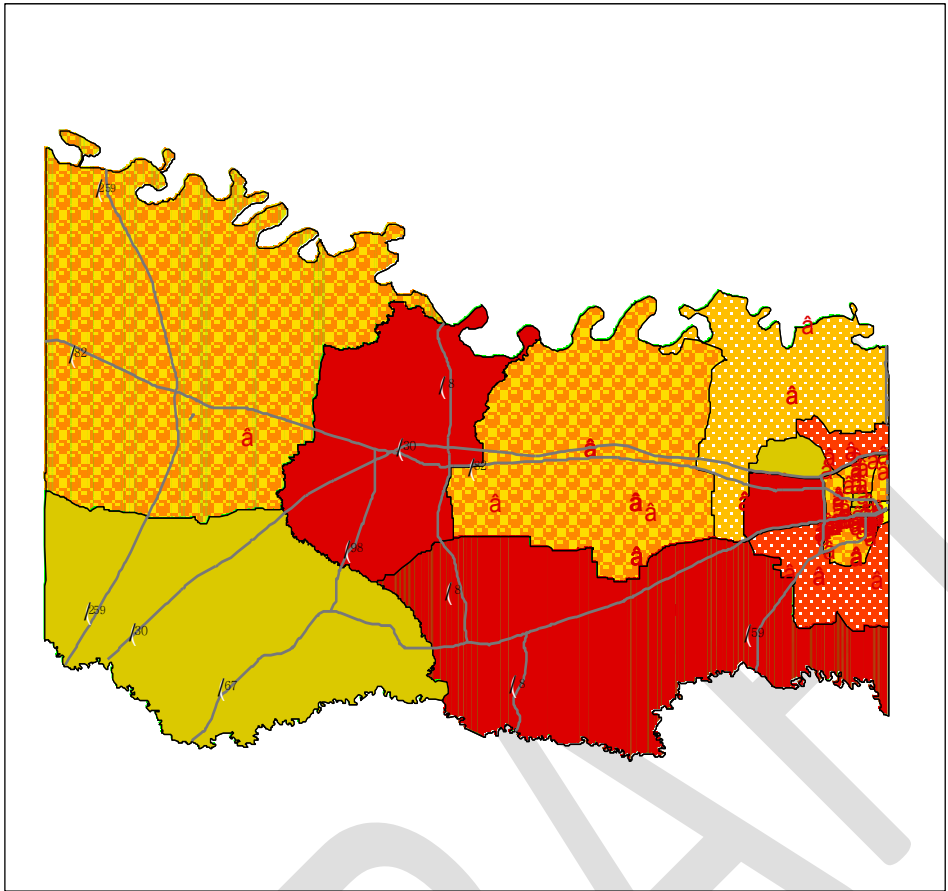


Figure 1.9  
Bowie County Pipe Line  
(Texas Railroad Commission)



Study Region :  
Bowie

Table Description :  
Inventory - Highway  
Segment

Scenario Description :  
NONE\_

- ∟ HRD.shp
- â HAZMAT.shp
- Population
- 276 - 1659
- 1659 - 3043
- 3043 - 4426
- 4426 - 5809
- 5809 - 7193
- 7193 - 8576
- Srbndry.shp

Aug. 14 2003



(c) 1997-2002 FEMA.

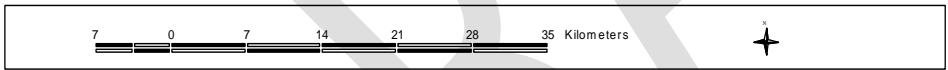


Figure 1.10  
Bowie County HAZMAT

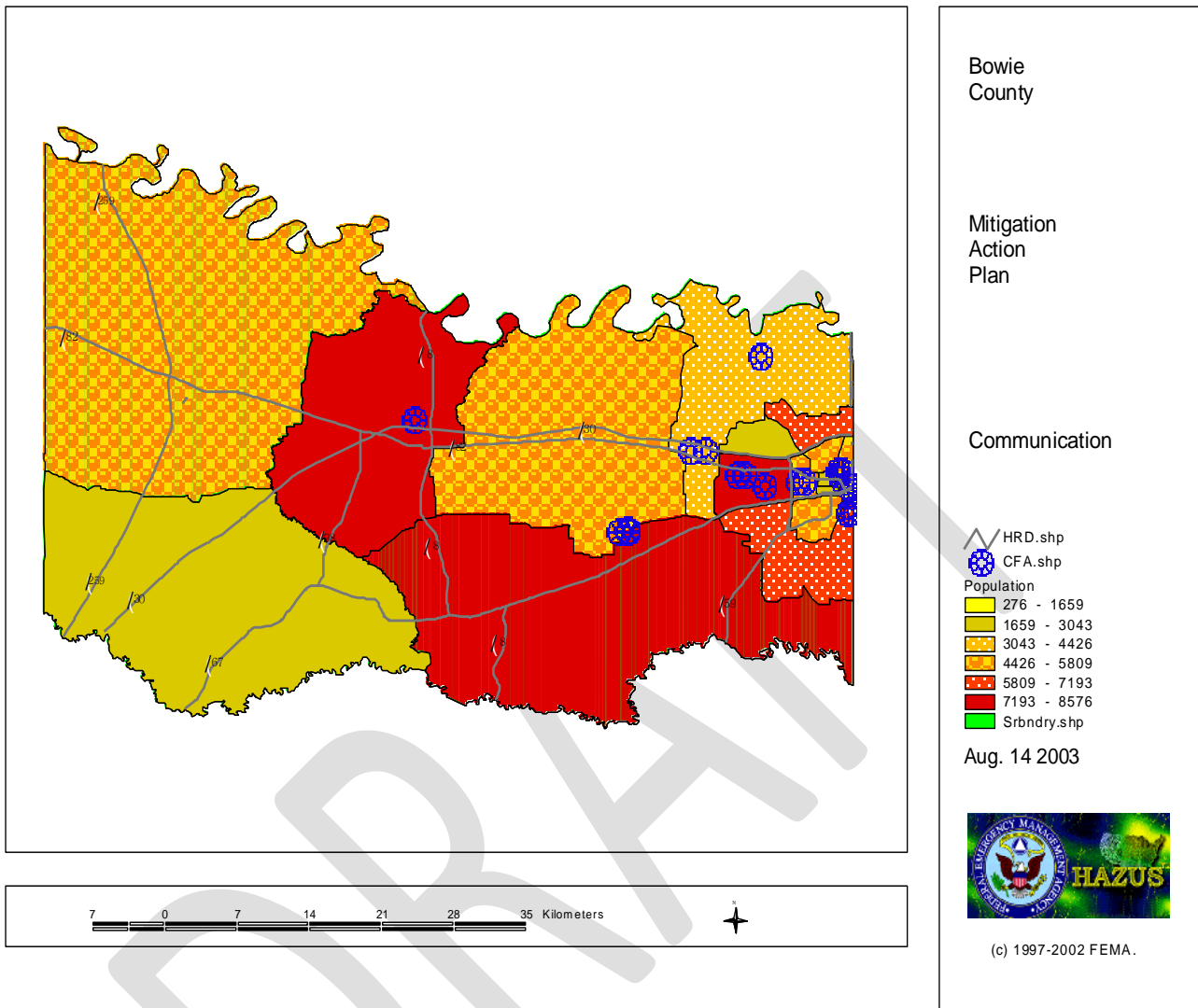


Figure 1.11  
Bowie County Communications



Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Flood Plain – Bowie County, Census Tract Sector 110

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	78	.268	2,943,492,000	\$5,965,808	.20	89,306	208	.233
Commercial	595	3	.5	621,160,000	1,603,618	.258	89,306	N/a*	N/a
Industrial	75	0	0	81,185,000	0	0	89,306	N/a	Na/
Agricultural	12	0	0	2,039,000	0	0	89,306	N/a	N/a
Religious/ Non-profit	57	0	0	59,719,000	0	0	89,306	N/a	N/a
Government	4	0	0	10,703,000	0	0	89,306	N/a	N/a
Education	30	0	0	41,055,000	0	0	89,306	N/a	N/a
Utilities	14,446.55 km	0	0	1,396,392,000	0	0	89,306	N/a	N/a
<b>Total</b>	<b>**29,885</b>	<b>**81</b>	<b>**77</b>	<b>**3,459,350,000</b>	<b>7,569,426</b>	<b>.46</b>	<b>89,306</b>	<b>*208</b>	<b>*.233</b>

\*N/A - Not Available

Source: HAZUS & Census 2000

\*\* - Excluding Utilities

County Tax Appraisal

District

WAKE VILLAGE  
Table 1.33  
Comparisons

People Facts (percent 2000)	Number	Percent
Population 2000	5,129	100
Persons under 5 years old	359	7.0
Persons 18 years and older	3,808	74.2
Persons 65 years and older	669	13.0
White persons	4,245	82.8
Black or African American persons	728	14.2
American Indian and Alaska Native	47	0.9
Asian persons	24	0.5
Native Hawaiian & Other Pacific Islander	2	X
Persons reporting some other race	49	1.0

Female population	2,690	52.4
Persons of Hispanic or Latino origin	163	3.2
White persons, not of Hispanic/Latino origin	4,966	96.8

Table 1.34  
Income

	Number	Percent
Households	2,049	100
Less than \$10,000	146	7.1
\$10,000 to \$14,999	104	5.1
\$15,000 to \$24,999	356	17.4
\$25,000 to \$34,999	252	12.3
\$35,000 to \$49,999	413	20.2
\$50,000 to \$74,999	407	19.9
\$75,000 to \$99,999	260	12.7
\$100,000 to \$149,000	86	4.2
\$150,000 to \$199,999	20	1.0
\$200,000 or more	5	0.2
Median household income (dollars)	39,961	(x)

Table 1.35  
Education

Educational Attainment	Number	Percent
Population 25 and over	3,381	100
Less than 9 <sup>th</sup> grade	133	3.9
9 <sup>th</sup> to 12 <sup>th</sup> grade, no diploma	231	6.8
High school graduate (includes equivalency)	940	27.8
Some college, no degree	966	28.6
Associate degree	222	6.6
Bachelor's degree	529	15.6
Graduate or professional degree	360	10.6
Percent high school graduate or higher	89.2	(x)
Percent bachelor's degree or higher	26.3	(x)

Table 1.36  
Housing

Wake Village Units	Number	Percent
Total housing units	2,186	100
Units built 1939 or earlier	35	1.6
Units built 1940 to 1959	292	13.4
Units built 1960 to 1969	508	23.2
Units built 1970 to 1979	520	23.8
Units built 1980 to 1989	461	21.1
Units built 1990 to 1994	226	10.3
Units built 1995 to 1998	103	4.7
Units built 1999 to March 2000	41	1.9

Table 1.37  
Poverty Status 1999

Below poverty level	Number	Percent
Families	13	X
Percent below poverty level		<b>11.6</b>
Individuals	696	X
Percent below poverty level		<b>15.0</b>

Table 1.38  
Wake Village Finances

Total taxable value	\$127,362,040
2000 City tax rate	\$0.369700
Actual levy	\$470,857

INVENTORY CLASSIFICATION  
BY OCCUPANCY CLASS  
CITY OF WAKE VILLAGE, TEXAS

Table 1.39

TYPE	VALUES \$
Residential	130,224,539
Apartments	4,878,816
Vacant Lots	2,373,119

Agriculture	618,891
Commercial	11,590,935
Mobile Homes	720,003
Schools	6,564,736
TOTAL	156,971,039

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The following table shows property/content values for specific structures. The city is not in a flood plain.

Table 1.40

Address	Department	Year Built	Building Value \$	Contents Value \$
King Park	Public Works	1980	17,320	
Hwy. 67 W.	Sewer Dept.	1975	40,000	
200 Village Ln.	Water Tank	1975	464,800	
624 Burma	City Hall	1980	215,770	65,000
King Park	Comfort Sta.	1995	39,420	
501 Redwater	Fire Station	1985	165,273	37,750
Loop 151	Lift Station	1980	20,000	
200 Village	Lift Pumps	1980	15,900	
West Line Rd.	Lift Station	1980	20,000	
615 Burma	Meter/Storage	1965	8,282	
Arizona/Guam	Storage	1970	68,300	30,000
615 Burma	Tool Storage	1970	16,473	
200 Village	Water Control	1970	7,676	
624 Burma	Water Tank	1980	202,000	
King Park	Concession Bldg.	1996	33,687	3,000
Hwy 67 E.	Lift Station	1975	40,000	
King Park	Storage/Office	2000	20,000	10,000
King Park	Concession Bldg.	2001	23,515	

(Taken from Texas Municipal League Risk Pool and Tax Records)

**RED LICK**  
**Comparisons**  
**Table 1.41**

People Facts (percent 2000)	Number	Percentage
Population 2000	853	100
Persons under 5 years old	64	7.5
Persons 18 years and older	597	70
Persons 65 years and older	62	7.3
White persons	811	95.1
Black or African American persons	27	3.2
American Indian and Alaska Native persons	4	0.5
Persons reporting some other race	3	0.4
Female population	318	37.3
Persons of Hispanic or Latino origin	8	0.9
White persons, not of Hispanic/Latino origin	806	94.5

Table 1.42  
**Income**

	Number	Percent
Households	302	100
Less than \$10,000	12	4.0
\$10,000 to \$14,999	19	6.3
\$15,000 to \$24,999	29	9.6
\$25,000 to \$34,999	26	8.6
\$35,000 to \$49,999	36	11.9
\$50,000 to \$74,999	75	24.8
\$75,000 to \$99,999	29	12.9
\$100,000 to \$149,999	51	16.9
\$150,000 to \$199,999	5	1.7
\$200,000 or more	10	3.3
Median household income (dollars)	57,045	X

Table 1.43  
Education

Educational Attainment	Number	Percent
Population 25 and over	544	100
Less than 9 <sup>th</sup> grade	2	0.4
9 <sup>th</sup> to 12 <sup>th</sup> grade, no diploma	49	9.0
High school graduate (includes equivalency)	114	21.0
Some college, no degree	153	28.1
Associate degree	31	5.7
Bachelor's degree	126	23.2
Graduate or professional degree	69	12.7
Percent high school graduate or higher	90.6	X
Percent bachelor's degree or higher	35.8	X

Table 1.44  
Housing

New Boston Units	Number	Percent
Total housing units	358	100
Units built 1939 or earlier	7	2.1
Units built 1940 to 1959	14	4.3
Units built 1960 to 1969	27	8.2
Units built 1970 to 1979	55	16.8
Units built 1980 to 1989	73	22.3
Units built 1990 to 1994	70	21.3
Units built 1995 to 1998	69	21.0
Units built 1999 to March 2000	13	4.0

Table 1.45  
Poverty Status 1999

Below poverty level	Number	Percent
Families	11	X
Percent below poverty level	X	<b>4.1</b>
Individuals	35	X
Percent below poverty level	X	3.9



Table 1.46  
Red Lick Finances

Total Taxable Value for City	33,333,018
Actual Levy Red Lick ISD	67,688,385
City Tax Levy	40,000

INVENTORY CLASSIFICATION  
BY OCCUPANCY CLASS (Red Lick)

Table 1.47

TYPE	VALUE \$
Residential	31,989,043
Apartments	0
Vacant Lots	1,125,356
Agriculture	6,206,479
Commercial	702,259
Mobile Homes	212,799
Industrial	0
Schools	751,259
Hospitals	0
TOTAL	40,987,791

The following chart shows property/content values for specific structures for the city of (Red Lick). (The city is partially in a flood plain).

Table 1.48

Department	Building Value
Middle School	524,928
School	36,931

(Taken from Personal Property Schedule – Tax Roles)

**National Flood Insurance**

Red Lick, Texas is a small sparsely populated township. It is currently not participating in the National Flood Insurance Program and is not listed in the **Federal Emergency Management Agency Community Status Book Report** “Communities Participating in the National Flood Program.” There are no structures listed in the Red Lick floodplain.

**Geography/History**  
**RED LICK**

The Red Lick Community is located south of the Red River in northeast Texas just 12 miles west of the Arkansas border. Red Lick ISD is a small, k-8 school district with approximately 340 students. The name “Red Lick” is derived from the mineral rich soil found there. Early settlers observed that a red clay hill located in the heart of the community was visited on a regular basis by deer and served as a natural salt lick for area wildlife. The red salt lick is the basis of the name. No other information available for Red Lick. Red Lick was incorporated in November of 1997.

DRAFT

Date: August, 2004

What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Flood Plains – Bowie County, Census Tract Sector 113

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	207	.71	2,943,492,000	10,538,874	.358	89,306	507	.56
Commercial	595	10	1.68	621,160,000	927,787	.149	89,306	*N/A	N/A
Industrial	75	0	0	81,185,000	0	0	89,306	0	0
Agricultural	12	0	0	2,039,000	0	0	89,306	0	0
Religious/ Non-profit	57	0	0	59,719,000	0	0	89,306	0	0
Government	4	2	50	10,703,000	47,749		89,306	N/A	N/A
Education	30	1	3.32	41,055,000	1,562,400	3.80	89,306	N/A	N/A
Utilities	14,446.55 km	2,856.1k ms	20	1,396,392,000	*N/A	*N/A	89,306	N/A	N/A
<b>Total</b>	<b>**29,885</b>	<b>**220</b>	<b>**75.71</b>	<b>**3,459,350,000</b>	<b>**13,076,810</b>	<b>**4.31</b>	<b>89,306</b>	<b>**507</b>	<b>**56</b>

\*N/A – Not Available

Source: HAZUS & Census 2000

\*\* - Excluding Utilities

County Tax Appraisal District

**HOOKS**  
Table 1.49  
Comparisons

People Facts (percent 2000)	Number	Percent
Population 2000	2,973	100
Persons under 5 years old	215	7.2
Persons 18 years and older	2,164	72.8
Persons 65 years and older	437	14.7
White persons	2,498	84.0
Black or African American persons	301	10.1
American Indian and Alaska Native	29	1.0
Native Hawaiian and Other Pacific Islander	2	0.1
Persons reporting some other race	43	1.4
Female populations	1,593	53.6

Persons of Hispanic or Latino origin	88	3.0
White persons, not of Hispanic/Latino origin	2,885	97.0

Table 1.50  
Income

	Number	Percent
Households	1,216	100
Less than \$10,000	139	11.4
\$10,000 to \$14,999	80	6.6
\$15,000 to \$24,999	260	21.4
\$25,000 to \$34,999	184	15.1
\$35,000 to \$49,999	250	20.6
\$50,000 to \$74,999	212	17.4
\$75,000 to \$99,999	48	3.9
\$100,000 to \$149,000	34	2.8
\$150,000 to \$199,000	4	.03
\$200,000 or more	5	.04
Median household income (dollars)	32,083	(X)

Table 1.51  
Education

Educational Attainment	Number	Percent
Population 25 and over	1,929	100
Less than 9 <sup>th</sup> grade	142	7.4
9 <sup>th</sup> to 12 <sup>th</sup> grade, no diploma	226	11.7
High school graduate (includes equivalency)	750	38.9
Some college, no degree	490	25.4
Associate degree	126	6.5
Bachelor's degree	137	7.1
Graduate or professional degree	58	3.0
Percent high school graduate or higher	80.9	X
Percent bachelor's degree or higher	10.1	X

Table 1.52

### Housing

Hooks Units	Number	Percent
Total housing units	1,351	100
Units built 1939 or earlier	23	1.7
Units built 1940 to 1959	403	29.8
Units built 1960 to 1969	186	13.8
Units built 1970 to 1979	100	8.2
Units built 1980 to 1989	143	11.8
Units built 1990 to 1994	113	8.4
Units built 1995 to 1998	151	11.2
Units built 1999 to March 2000	35	2.6

Table 1.53  
Poverty Status 1999

Percent Poverty Level	Number	Percent
Families	103	X
Percent below poverty level		12.1
Individuals	508	X
Percent below poverty level		17.1

Table 1.54  
Hooks Finances

Total taxable value	\$52,994,044
2000 City tax rate	0.658500
ISD Tax Rate	1.369000

### INVENTORY CLASSIFICATION BY OCCUPANCY CLASS (Hooks)

Table 1.55

TYPE	VALUE \$
Residential	49,099,997
Apartment	2,374,296,
Vacant Lots	1,448,423
Agriculture	735,232
Commercial	5,885,905

Mobile Homes	2,774,248
Industrial	0
Schools	5,790,167
Hospitals	0
TOTAL	68,108,268

DRAFT

The following chart shows property/content values for specific structures for the city of Hooks. The city is not in a flood plain.

Table 1.56

Address	Department	Building Value
603 E Ave. A	Fire/Police	\$176,500
601 E Ave. A	City Hall	63,700
1733D FM 1398	Sewer Plant	90,000
1733C FM 1398	Sewer Plant	125,000
215 W 4 <sup>th</sup> St.	Water Tower	299,000
Ave. G	Sewer Station	12,500
S of I-30	Sewer Station	9,000
West Hooks	Sewer Station	10,000
106 W. Ave. A	Maintenance	12,700

(Taken from Personal Property Schedule – Tax Roles)

Worksheet #3a

Inventory Assets

step 3

Date: August, 2004

What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Flood Plain – Bowie County Census Tract Sector 109.02

Type of	Number of Structures	Value of Structures	Number of People
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Structure (Occupancy Class)	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	8	.0275	2,943,492,000	470,881.00	.0160	89,306	20	.0224
Commercial	595	0	0	621,160,000	0	0	89,306	0	0
Industrial	75	0	0	81,185,000	0	0	89,306	0	0
Agricultural	12	0	0	2,039,000	0	0	89,306	0	0
Religious/ Non-profit	57	0	0	59,719,000	0	0	89,306	0	0
Government	4	0	0	10,700,000	0	0	89,306	0	0
Education	30	0	0	175,000	0	0	89,306	0	0
Utilities	14,446.55 km	0	0	1,396,392,000	0	0	89,306	0	0
<b>Total</b>	<b>**29,885</b>	<b>8</b>	<b>.0275</b>	<b>**3,459,350,000</b>	<b>470,881,000</b>	<b>.0160</b>	<b>89,306</b>	<b>20</b>	<b>.0224</b>

\*NA – Not Available

Source: HAZUS & Census 2000  
County Tax

\*\* - Excluding Utilities  
Appraisal District

**NASH**  
Table 1.57  
Comparisons

People Facts (percent 2000)	Number	Percent
Population 2000	2,169	100
Persons under 5 years old	172	7.9
Persons 18 years and older	1,595	73.5
Persons 65 years and older	221	10.2
White persons	1,689	77.9
Black or African American persons	381	17.6
American Indian and Alaska Native	20	0.9
Asian persons	7	0.3
Persons reporting some other race	58	2.7
Female population	1,122	48.3
Persons of Hispanic or Latino origin	83	3.8
White persons not Hispanic/Latino origin	2,086	96.2

(U. S. Census Bureau)

Table 1.58  
Income

	Number	Percent
Households (1999)	880	100

Less than \$10,000	103	11.7
\$10,000 to \$14,999	89	10.1
\$15,000 to \$24,999	197	22.4
\$25,000 to \$34,999	152	17.3
\$35,000 to \$49,999	149	16.9
\$50,000 to 74,999	128	14.5
\$75,000 to \$99,999	29	3.3
\$100,000 to \$149,999	17	1.9
\$200,000 or more	16	1.8
Median household income (dollars)	27,614	(X)

Table 1.59  
Education

Educational Attainment	Number	Percent
Population 25 and over	1,283	100
Less than 9 <sup>th</sup> grade	89	6.9
9 <sup>th</sup> to 12 <sup>th</sup> grade, no diploma	178	13.9
High school graduate (includes equivalency)	368	28.7
Some college, no degree	403	31.4
Associate degree	72	5.6
Bachelor's degree	145	11.3
Graduate or professional degree	28	2.2
Percent high school graduate or higher	79.2	(X)
Percent bachelor's degree or higher	13.5	(X)

Table 1.60  
Housing

Nash Units	Number	Percent
Total housing units	991	100
Units built 1939 or earlier	52	5.2
Units built 1940 to 1959	226	22.8
Units built 1960 to 1969	90	9.1
Units built 1970 to 1979	220	22.2

Units built 1980 to 1989	212	21.4
Units built 1990 to 1994	56	5.7
Units built 1995 to 1998	65	6.6
Units built 1999 to March 2000	70	7.1

Table 1.61  
Poverty Status 1999

Below poverty level	Number	Percent
Families	74	X
Percent below poverty level		12.9
Individuals	311	X
Percent below poverty level		14.8

Table 1.62  
Nash Finances

Total Taxable Value	\$125,083,206
2000 Tax Rate	0.310500
Actual levy	\$388,383

INVENTORY CLASSIFICATION  
BY OCCUPANCY CLASS  
NASH, TEXAS

Table 1.63

TYPE	VALUE \$
Residential	35,372,762
Apartments	4,388,514
Vacant Lots	2,061,668
Agriculture	4,783,978
Commercial	11,066,130
Mobile Homes	2,255,285
Industrial	13,778,132
Schools	5,811,803
TOTAL	79,518,272

The following chart shows property values for specific structures for Nash, Texas. The city is not in a flood plain.

Department	Building Value
Schools	5,811,803
Pavilion	3,800
Storage	5,100
City Hall	59,792

Worksheet #3a Inventory Assets step **3**

Date: August, 2004

What will be affected by the hazard event?

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Flood Plain – Bowie County, Census Tract Sector 116

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	0	0	2,943,492,000	0	0	89,306	0	0
Commercial	595	0	0	621,160,000	0	0	89,306	0	0
Industrial	75	0	0	81,185,000	0	0	89,306	0	0
Agricultural	12	0	0	2,039,000	0	0	89,306	0	0
Religious/ Non-profit	57	0	0	59,719,000	0	0	89,306	0	0
Government	4	0	0	10,703,000	0	0	89,306	0	0
Education	30	0	0	41,055,000	0	0	89,306	0	0
Utilities	14,446.55 kms	0	0	1,396,392,000	0	0	89,306	0	0
<b>Total</b>	<b>**29,885</b>	<b>0</b>	<b>0</b>	<b>**3,459,350,000</b>	<b>0</b>	<b>0</b>	<b>89,306</b>	<b>0</b>	<b>0</b>

\*\* - Excluding Utilities

Source: HAZUS

**DE KALB**Table 1.65  
Comparisons

People Facts (percent 2000)	Number	Percent
Population 2000	1,769	100
Persons under 5 years old	103	5.8
Persons 18 years and over	1,315	74.3
Person 65 years old and over	446	25.2
White persons	1,180	66.7
Black or African American Persons	545	30.8
American Indian and Alaska Native	10	0.6
Asian persons	1	-
Person reporting some other race	12	0.7
Female population	985	55.7
Persons of Hispanic or Latino origin	43	2.4
White persons not of Hispanic/Latino origin	1,156	97.6

Table 1.66  
Income (1999)

	Number	Percent
Households	751	100
Less than \$10,000	206	27.4
\$10,000 to \$14,999	80	10.7
\$15,000 to \$24,999	107	14.2
\$25,000 to \$34,999	110	14.6
\$35,999 to \$49,999	79	10.5
\$50,000 to \$74,999	124	16.5
\$75,000 to \$99,999	22	2.9
\$100,000 to \$149,999	10	1.3
\$150,000 to \$199,999	6	0.8
\$200,000 or more	7	0.9
Median household income (dollars)	23,713	(X)

Table 1.67

### Housing

De Kalb Units	Number	Percent
Units built 1939 or earlier	102	11.7
Units built 1940 to 1959	279	31.9
Units built 1960 to 1969	191	21.8
Units built 1970 to 1979	122	13.9
Units built 1980 to 1989	138	15.8
Units built 1990 to 1994	25	2.9
Units built 1995 to 1998	14	1.6
Units built 1999 to March 2000	4	0.5

Table 1.68  
Poverty Status 1999

Below Poverty Level	Number	Percent
Families	124	X
Percent below poverty level		25.3
Individuals	493	X
Percent below poverty level		28.3

Table 1.69  
De Kalb Finances

Total Taxable Value for City	\$36,740,843
Total tax rate	0.389100 for \$142,959
De Kalb ISD	1.490000 for \$1,300,303

INVENTORY CLASSIFICATION  
BY OCCUPANCY CLASS

Table 1.70

TYPE	VALUE \$
Residential	24,984,604
Apartments	822,673
Vacant Lots	1,042,172
Agriculture	448,644
Commercial	7,031,437
Mobile Homes	263,947
Industrial	3,125
Schools	17,710,358
<b>TOTAL</b>	<b>52,306,960</b>

The following chart shows property/content values for specific structures for DEKALB, Texas. The city is not in a flood plain.

Table 1.71

Address	Department	Building Value	Contents Value
	Schools	17,710,358	
110 SE Front	Sr. Citizen Cntr.	51,266	
	City Shelter	377,155	
	City Dump	4,440	
	City Hall	246,480	
	Fire Station	18,900	
850 NW Front	Office Bldg.	208,000	26,000

(Taken from Property Schedule – Tax Rolls)

Worksheet #3a

Inventory Assets

step **3**

Date: August, 2004

*What will be affected by the hazard event?*

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Flood Plain – Bowie County, Census Tract Sector 114.01 & 114.02

Type of	Number of Structures	Value of Structures	Number of People
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Structure (Occupancy Class)	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	2	.01	2,943,492,000	68,874	.0023	89,306	5	.0056
Commercial	595	0	0	621,160,000	0	0	89,306	0	0
Industrial	75	0	0	81,185,000	0	0	89,306	0	0
Agricultural	12	0	0	2,039,000	0	0	89,306	0	0
Religious/ Non-profit	57	0	0	59,719,000	0	0	89,306	0	0
Government	4	0	0	10,703,000	0	0	89,306	0	0
Education	30	0	0	41,055,000	0	0	89,306	0	0
Utilities	14,446.55 kms	N/A	N/A	1,396,392,000	N/A	N/A	89,306	N/A	N/A
<b>Total</b>	<b>**29,885</b>	<b>**2</b>	<b>**01</b>	<b>**3,459,350,000</b>	<b>**68,874</b>	<b>**0023</b>	<b>89,306</b>	<b>**5</b>	<b>**0056</b>

\*N/A - Not Available

\*\* - Excluding Utilities

District

Source: HAZUS & Census 2000

County Tax Appraisal

DRAFT

MAUD

Table 1.72  
Comparisons

People Facts (percent 2000)	Number	Percent
Population 2000	1,028	100
Persons under 5 years old	72	7.0
Persons 18 years and older	760	73.9
Persons 65 years old and over	193	18.8
White persons	933	90.8
Black or African American persons	78	7.6
American Indian and Alaska Native persons	6	0.6
Asian persons	1	-
Persons reporting some other race	1	-
Female population	527	51.3
Persons of Hispanic or Latino origin	14	1.4
White persons, not of Hispanic/Latino origin	1,014	98.6

Table 1.73  
Income

	Number	Percent
Households	396	100
Less than \$10,000	64	16.2
\$10,000 to \$14,999	36	9.1
\$15,000 to \$24,999	66	16.7
\$25,000 to \$34,999	61	15.4
\$35,000 to \$49,999	68	17.2
\$50,000 to \$74,999	49	12.4
\$75,000 to \$99,999	31	7.8
\$100,000 to \$149,999	15	3.8
\$150,000 to \$199,999	2	0.5
\$200,000 or more	4	1.0
Median household income (dollars)	29,773	X

Table 1.74  
Education

Educational Attainment	Number	Percent
Population 25 and over	654	100
Less than 9 <sup>th</sup> grade	44	6.7
9 <sup>th</sup> to 12 <sup>th</sup> grade, no diploma	140	21.4
High school graduate (includes equivalency)	225	34.4
Some college, no degree	148	22.6
Associate degree	16	2.4
Bachelor's degree	53	8.1
Graduate or professional degree	28	4.3
Percent high school graduate or higher	71.9	(x)
Percent bachelor's degree or higher	12.4	(x)

Table 1.75  
Housing

Maud Units	Number	Percent
Total housing units	463	100
Units built 1939 or earlier	55	11.9
Units built 1940 to 1959	120	25.9
Units built 1960 to 1969	100	21.6
Units built 1970 to 1979	53	11.4
Units built 1980 to 1989	56	12.1
Units built 1990 to 1994	36	7.8
Units built 1995 to 1998	41	8.9
Units built 1999 to March 2000	2	0.4

Table 1.76  
Poverty Status 1999

Below Poverty Level	Number	Percent
Families	23	X
Percent below poverty level		9.1
Individuals	109	X
Percent below poverty level		11.4

Table 1.77  
Maud Finances

Total Taxable Value for City	\$17,450,968
Total tax rate	0.242700 for \$42,353
Total Maud ISD	1.344900 for \$376,940

INVENTORY CLASSIFICATION  
BY OCCUPANCY CLASS  
MAUD, TEXAS

Table 1.78

TYPE	VALUE \$
Residential	14,948,388
Vacant Lots	830,002
Agriculture	1,547,461
Commercial	1,752,914
Mobile Homes	728,237
Schools	3,858,412
<b>TOTAL</b>	<b>23,665,414</b>

The following chart shows property/content values for specific structures for Maud, Texas. The city is, is not in a flood plain.

Table 1.79

Address	Department	Year Built	Building Value\$	Contents Value\$
135 Main	City Hall	1948	259,104	75,000
132 Main	Library	1948	50,000	25,000
130 Main	Police Dept.	1955	29,981	10,000
301 Maple	V Fire Dept.	1955	89,050	15,000
115 Bonham	Pump Building	1964	1,264	5,000
115 Bonham	Water Tower	1964	202,000	
123 Rogers	Sewer Plant	1994	9,000,000	20,000
123 Rogers Ln.	Lab Building	1994	5,090	5,000
312 Maple	Storage	1950	16,937	
314 Maple	Storage	1950	14,628	9,000
CR 1113	Lift Station	1994	30,000	
532 Birch	Lift Station	1994	30,000	
330 Broadway	Lift Station	2002	25,000	
115 Bonham	Grnd. Strg. Tank	1964		
752 Broadway	Lift Station	1994	30,000	
326 Main	Fire		20,800	2,600

Date: August, 2004

*What will be affected by the hazard event?*

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Flood Plain – Bowie County, Census Tract Sector 114.01 &amp; 114.02

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	0	0	2,943,492,000	0	0	89,306	0	0
Commercial	595	0	0	621,160,000	0	0	89,306	0	0
Industrial	75	0	0	81,185,000	0	0	89,306	0	0
Agricultural	12	0	0	2,039,000	0	0	89,306	0	0
Religious/ Non-profit	57	0	0	59,719,000	0	0	89,306	0	0
Government	4	0	0	10,703,000	0	0	89,306	0	0
Education	30	0	0	41,055,000	0	0	89,306	0	0
Utilities	14,446.55 kms	N/A	N/A	1,396,392,000	N/A	N/A	89,306	N/A	N/A
<b>Total</b>	<b>**29,885</b>	<b>**0</b>	<b>**0</b>	<b>**3,459,350,000</b>	<b>**0</b>	<b>**0</b>	<b>89,306</b>	<b>**0</b>	<b>**0</b>

\*N/A - Not Available

Source: HAZUS &amp; Census 2000

\*\* - Excluding Utilities

County Tax Appraisal

District

**REDWATER**

Table 1.80  
Comparisons

People Facts (percent 2000)	Number	Percent
Population 2000	872	100
Persons under 5 years old	58	6.7
Persons 18 years and older	617	70.8
Persons 65 years old and over	106	12.2
White persons	761	98.1
Black or African American persons	87	10.0
American Indian and Alaska Native	7	0.8
Female Population	443	50.8
Persons of Hispanic or Latino origin	11	1.3
White persons, not of Hispanic/Latino origin	752	86.2

Table 1.81  
Income

	Number	Percent
Households	340	100
Less than \$10,000	42	12.4
\$10,000 to \$14,999	33	9.7
\$15,000 to \$24,999	58	17.1
\$25,000 to \$34,999	52	15.3
\$35,000 to \$49,999	49	14.4
\$50,000 to \$74,999	64	18.8
\$75,000 to \$99,999	29	8.5
\$100,000 to \$149,999	11	3.2
\$200,000 or more	2	.06
Median household income (dollars)	31,111	(X)

Table 1.82  
Education

Educational Attainment	Number	Percent
Population 25 and over	546	100
Less than 9 <sup>th</sup> grade	40	7.3
9 <sup>th</sup> to 12 <sup>th</sup> grade, no diploma	87	15.9
High school graduate (includes equivalency)	211	38.6
Some college, no degree	130	23.8
Associate degree	26.	4.8
Bachelor's degree	27	4.9
Graduate or professional degree	25	4.6
Percent high school graduate or higher	76.7	(x)
Percent bachelor[s degree or higher	9.5	(x)

Table 1.83  
Housing

Redwater Units	Number	Percent
Total housing units	372	100
Units built 1939 or earlier	12	3.2
Units built 1940 to 1959	62	16.7
Units built 1960 to 1969	55	14.8
Units built 1970 to 1979	86	23.1
Units built 1980 to 1989	109	29.3
Units built 1990 to 1994	12	3.2
Units built 1995 to 1998	28	7.5
Units built 1999 to March 2000	8	2.2

Table 1.84  
Poverty Status

Below Poverty Level	Number	Percent
Families	28	(x)
Percent below poverty level		10.9
Individuals	157	(x)
Percent below poverty level		16.6



Table 1.85  
Redwater Finances

Total taxable value	\$14,666,276
2000 city tax rate	0.090800 for \$13,317
Redwater Ind. School District	1.398600 for \$1,254,837

INVENTORY CLASSIFICATION  
BY OCCUPANCY CLASS  
REDWATER, TEXAS

Table 1.86

TYPE	VALUE \$
Residential	10,616,830
Apartments	465,680
Vacant Lots	410,177
Agriculture	4,304,121
Commercial	1,481,817
Mobile Homes	1,381,308
Schools	5,427,701
TOTAL	24,087,634

The following table shows property/content values for specific structures for Redwater, Texas. The city is not in a flood plain.

Table 1.87

Address	Department	Year Built	Building Value\$	Contents Value
Spencer Well	Chlorinator Bldg.	1990	1,300	2,996
Jr. High School	Chlorinator House	1992	3,000	2,996
120 Redwater	City Hall	1995	117,800	20,000
120 Redwater	Storage Bldg.	2003	5,000	2,000
100K Elm St.	Contact Chamber	2003	27,000	
3098 North	Lift Station	1999	13,500	12,000
Fagan Lane	Lift Station	1970	1,500	6,250
Shiloh St.	Lift Station	1999	13,500	
Will Bell Road	Lift Station	1970	1,500	10,500
2 <sup>nd</sup> Lift Stat.	Lift Station	1999	13,500	
FM 991	Lift Station	1999	13,500	
100 Elm	Aerator Tank	1991	225,000	
100 E. Elm	Chlorinator HSG	1991	12,000	
100 B. Elm	Clarifier Tanks	1991	15,000	
100 G. Elm	Effluent Tank	1991	8,000	
100 H. Elm	Office/Lab	1981	7,500	5,000
100 M. Elm	Pump Housing	2003	8,000	
100 F. Elm	Pump Station	1991	35,000	
100 N. Elm	Pump Station	1991	35,000	
100 L. Elm	Pump Station	2003	53,000	
100 I. Elm	Storage Shed	1995	16,000	
100 J. Elm	Drying Beds	2003	110,000	
Junior High Sch.	Storage Tank	1961	18,500	
Tri-State Rd./82	Storage Tank	1977	41,000	
Tri-State Rd.	Vault Meter	1977	5,000	
FM 991	Pressure Tank	1987	22,333	

Tri-State Rd/82	Pressure tank	2000	15,357	
Tri-State Rd.	Abandoned	Pressure Tank	1995	13,350
FM 991	Pump House	1987	5,800	3,500
Junior High	Pump House	1998	2,300	1,000
Tri-State Rd/82	Pump House	1977	5,800	3,500
Spencer Grocery	Pump & Well	1990	2,300	1,000
Tri-State Rd.	Pump House	1995	4,400	1,500
FM991	Pump House	1987	3,700	3,500
Hwy 67 & Trexler	Pump Station	1977	4,000	
FM 991	Storage Tank	1987	117,300	

(Taken from Personal Property Schedule – Tax Rolls)

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Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard Flood Plains – Bowie County, Census Tract Sector 113

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	207	.71	2,943,492,000	10,538,874	.358	89,306	507	.56
Commercial	595	10	1.68	621,160,000	927,787	.149	89,306	*N/A	N/A
Industrial	75	0	0	81,185,000	0	0	89,306	0	0
Agricultural	12	0	0	2,039,000	0	0	89,306	0	0
Religious/ Non-profit	57	0	0	59,719,000	0	0	89,306	0	0
Government	4	2	50	10,703,000	47,749		89,306	N/A	N/A
Education	30	1	3.32	41,055,000	1,562,400	3.80	89,306	N/A	N/A
Utilities	14,446.55 km	2,856.1k ms	20	1,396,392,000	*N/A	*N/A	89,306	N/A	N/A
<b>Total</b>	<b>**29,885</b>	<b>**220</b>	<b>**75.71</b>	<b>**3,459,350,000</b>	<b>**13,076,810</b>	<b>**4.31</b>	<b>89,306</b>	<b>**507</b>	<b>**56</b>

\*N/A – Not Available

Source: HAZUS & Census 2000

\*\* - Excluding Utilities

**LEARY**  
Table 1.88  
Comparisons

People Facts (percent 2000)	Number	Percent
Population 2000	555	100
Persons under 5 years old	28	5.0
Persons 18 years and older	441	79.5
Persons 65 years and over	91	16.4
White persons	511	92.1
Black or African American persons	32	5.8
American Indian and Alaska Native	3	0.5
Persons reporting some other race	2	0.4
Female population	288	51.9
Persons of Hispanic or Latino origin	6	1.1
White persons, not of Hispanic/Latino origin	549	98.9

Table 1.89  
Income

	Number	Percent
Households	211	100
Less than \$10,000	25	11.8
\$10,000 to \$14,999	22	10.4
\$15,000 to \$24,999	38	18.0
\$25,000 to \$34,999	28	13.3
\$35,000 to \$49,999	44	20.9
\$50,000 to \$74,999	39	18.5
\$75,000 to \$99,999	8	3.8
\$100,000 to \$149,000	6	2.8
\$200,000 or more	1	0.5
Median household income (dollars)	33,295	(x)

Table 1.90  
Education

Educational Attainment	Number	Percent
Population 25 and over	379	100
Less than 9 <sup>th</sup> grade	23	6.1
9 <sup>th</sup> to 12 <sup>th</sup> grade, no diploma	77	20.3
High school graduate (includes equivalency)	164	43.3
Some college, no degree	79	20.8
Associate degree	14	3.7
Bachelor's degree	12	3.2
Graduate or professional degree	10	2.6
Percent high school graduate or higher	73.6	(x)
Percent bachelor's degree or higher	5.8	(x)

Table 1.91

### Housing

Leary Units	Number	Percent
Total housing units	255	100
Units built 1939 or earlier	17	6.7
Units built 1940 to 1959	32	12.5
Units built 1960 to 1969	43	16.9
Units built 1970 to 1979	79	31.0
Units built 1980 to 1989	50	19.6
Units built 1990 to 1994	9	3.5
Units built 1995 to 1998	14	5.5
Units built 1999 to March 2000	11	4.3

Table 1.92  
Poverty status 1999

Below Poverty Level	Number	Percent
Families	17	(x)
Percent below poverty level	(x)	9.8
Individuals	59	(x)
Percent below poverty level	(x)	11.2

Table 1.93  
Leary Finances

Total taxable value	\$5,587,868
2000 City tax rate	\$0.023700 for \$1,324
Leary Ind. School District	\$1.302000 for \$161,071

### INVENTORY CLASSIFICATION BY OCCUPANCY CLASS

LEARY, TEXAS

Table 1.94

TYPE	VALUE \$
Residential	3,280,413
Vacant Lots	566,303
Agriculture	1,599,691
Commercial	719,308

Mobile Homes	289,163
Schools	4,750,000
TOTAL	11,204,878

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## Worksheet #3a

## Inventory Asset

step 3

Date: August, 2004

What will be affected by the hazard event?

Jurisdiction: Bowie County, Census Tract Sector 110

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornadoes, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	2,963	10	2,943,492,000	248,662,000	8	89,306	7,022	8
Commercial	595	45	8	621,160,000	34,513,000	6	89,306	7,022	8
Industrial	75	14	19	81,185,000	13,177,000	16	89,306	7,022	8
Agricultural	12	2	17	2,039,000	258,000	13	89,306	7,022	8
Religious/Non-profit	57	3	5	59,719,000	3,134,000	5	89,306	7,022	8
Government	4	1	25	10,703,000	1,111,000	10	89,306	7,022	8
Education	30	1	3	41,055,000	952,000	2	89,306	7,022	8
Utilities	14,446.55 kms	445.01 kms	3	1,396,392,000	*NA	*NA	89,306	7,022	8
<b>Total</b>	<b>**29,885</b>	<b>**3,029</b>	<b>**10</b>	<b>**3,459,350,000</b>	<b>**301,806,000</b>	<b>**9</b>	89,306	7,022	8

## Worksheet #3a

## Inventory Assets

step 3

Date: August, 2004

What will be affected by the hazard event?

Jurisdiction: Bowie County, Census Tract Sector 111

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornadoes, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquake, Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	1,871	6	2,943,492,000	194,295,000	7	89,306	6,812	8
Commercial	595	7	1	621,160,000	6,855,000	1	89,306	6,812	8
Industrial	75	16	21	81,185,000	16,184,000	20	89,306	6,812	8



Agriculture	12	0	0	2,039,000	64,000	3	89,306	6,812	8
Religious/ Non-profit	57	3	5	59,719,000	3,249,000	5	89,306	6,812	8
Government	4	1	25	10,703,000	1,556,000	15	89,306	6,812	8
Education	30	1	3	41,055,000	983,000	2	89,306	6,812	8
Utilities	14,446.55 kms	618.05 kms	4	1,396,392,000			89,306	6,812	8
<b>Total</b>	<b>**29,885</b>	<b>**1,899</b>	<b>**6</b>	<b>**3,459,350,000</b>	<b>**223,186,000</b>	<b>**6</b>	89,306	6,812	8

**Worksheet #3a** **Inventory Assets** **step 3**

Date: August, 2004

*What will be affected by the hazard event?*

Jurisdiction: Bowie County, Census Tract Sector 112

**Task A.** Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornados, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	1,158	4	2,943,492,000	88,499,000	3	89,306	4,030	5
Commercial	595	4	.67	621,160,000	3,997,000	.64	89,306	4,030	5
Industrial	75	2	3	81,185,000	1,907,000	2	89,306	4,030	5
Agricultural	12	0	0	2,039,000	32,000	2	89,306	4,030	5
Religious/ Non-profit	57	1	2	59,719,000	1,023,000	2	89,306	4,030	5
Government	4	0	0	10,703,000	360,000	3	89,306	4,030	5
Education	30	0	0	41,055,000	0	0	89,306	4,030	5
Utilities	14,446.55 kms	990.07 kms	7	1,396,392,000	*NA	*NA	89,306	4,030	5
<b>Total</b>	<b>**29,885</b>	<b>**1,165</b>	<b>**4</b>	<b>**3,459,350,000</b>	<b>**95,819,000</b>	<b>**3</b>	89,306	4,030	5

\*NA – Not Available

Source: HAZUS

\*\* -Excluding Utilities

**Worksheet #3a** **Inventory Assets** **step 3**

Date: August, 2004

*What will be affected by the hazard event?*

Jurisdiction: Bowie County, Census Tract Sector 113

**Task A.** Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornadoes, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	2,278	8	2,943,492,000	170,269,000	6	89,306	6,254	7
Commercial	595	22	4	621,160,000	16,221,000	3	89,306	6,254	7
Industrial	75	1	1	81,185,000	496,000	.6	89,306	6,254	7
Agricultural	12	1	8	2,039,000	184,000	9	89,306	6,254	7
Religious/Non-profit	57	4	7	59,719,000	4,546,000	8	89,306	6,254	7
Government	4	0	0	10,703,000	647,000	6	89,306	6,254	7
Education	30	1	3	41,055,000	1,302,000	3	89,306	6,254	7
Utilities	14,446.55 kms	2,856.1 kms	20	1,396,392,000	*NA	*NA	89,306	6,254	7
<b>Total</b>	<b>**29,885</b>	<b>**2,307</b>	<b>**8</b>	<b>**3,459,350,000</b>	<b>**193,666,000</b>	<b>**6</b>	89,306	6,254	7

Worksheet #3a Inventory Assets step 3

Date: August, 2004

What will be affected by the hazard event?

Jurisdiction: Bowie County, Census Tract Sectors 114.01 & 114.02

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornadoes, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	3,343	11	2,943,492,000	229,913,000	8	89,306	9,891	11
Commercial	595	9	2	621,160,000	6,766,000	1	89,306	9,891	11
Industrial	75	1	1	81,185,000	1,454,000	2	89,306	9,891	11
Agricultural	12	0	0	2,039,000	38,000	2	89,306	9,891	11
Religious/Non-profit	57	2	3	59,719,000	2,024,000	3	89,306	9,891	11

Government	4	1	25	10,703,000	1,150,000	11	89,306	9,891	11
Education	30	3	10	41,055,000	3,331,000	8	89,306	9,891	11
Utilities	14,446.55 kms	1,881.84 kms	13	1,396,392,000	*NA	*NA	89,306	9,891	11
<b>Total</b>	<b>**29,885</b>	<b>**3,359</b>	<b>*11</b>	<b>**3,459,350,000</b>	<b>**244,676,000</b>	<b>**7</b>	89,306	9,891	11

**Worksheet #3a** **Inventory Assets** **step 3**

Date: August, 2004

*What will be affected by the hazard event?*

Jurisdiction: Bowie County, Census Tract Sector 116

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornados, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfire

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	2,292	8	2,943,492,000	191,895,000	7	89,306	5,630	9
Commercial	595	20	3	621,160,000	17,899,000	3	89,306	5,630	9
Industrial	75	0	0	81,185,000	1,040,000	1	89,306	5,630	9
Agricultural	12	4	33	2,039,000	606,000	30	89,306	5,630	9
Religious/ Non-profit	57	2	3	59,719,000	2,147,000	4	89,306	5,630	9
Government	4	0	0	10,703,000	636,000	6	89,306	5,630	9
Education	30	2	7	41,055,000	2,510,000	6	89,306	5,630	9
Utilities	14,446.55 kms	2,903.23 kms	20	1,396,392,000	*NA	*NA	89,306	5,630	9
<b>Total</b>	<b>**29,885</b>	<b>**2,320</b>	<b>**8</b>	<b>**3,459,350,000</b>	<b>**216,733,000</b>	<b>**6</b>	89,306	5,630	9

**Worksheet #3a** **Inventory Assets** **step 3**

Date: August, 2004

*What will be affected by the hazard event?*

Jurisdiction: Bowie County, Census Tract Sector 117

Task A. Determine the proportion of buildings, the value of buildings, and the population in your community or state that are located in hazard areas.

Hazard: Tornados, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Wildfire

Type of	Number of Structures	Value of Structures	Number of People
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Structure (Occupancy Class)	# in Community Or State	# in Hazard Area	% in Hazard Area	\$ in Community Or State	\$ in Hazard Area	% in Hazard Area	# in Community Or State	# in Hazard Area	% in Hazard Area
Residential	29,112	858	3	2,943,492,000	58,588,000	2	89,306	2,457	3
Commercial	595	2	.33	621,160,000	2,396,000	.39	89,306	2,457	3
Industrial	75	1	1	81,185,000	427,000	.53	89,306	2,457	3
Agricultural	12	1	8	2,039,000	114,000	6	89,306	2,457	3
Religious/ Non-profit	57	1	2	59,719,000	605,000	1	89,306	2,457	3
Government	4	0	0	10,703,000	231,000	2	89,306	2,457	3
Education	30	2	7	41,055,000	2,323,000	6	89,306	2,457	3
Utilities	14,446.55 kms	1,640.17 kms	11	1,396,392,000	*NA	*NA	89,306	2,457	3
<b>Total</b>	<b>**29,885</b>	<b>**865</b>	<b>**3</b>	<b>**3,459,350,000</b>	<b>**64,684,000</b>	<b>**2</b>	89,306	2,457	3

**Worksheet #3b Inventory Assets step 3**

Date: August, 2004

*What will be affected by the hazard event?*

**Task C. Compile a detailed inventory of what can be damaged by a hazard event.**

Inventory the assets (critical facilities, businesses, historic, cultural, and natural resource areas, and areas of special consideration), that can be damaged by a hazard event.

Hazard Tornadoes, Winter Storms, Thunderstorm Winds, Drought, Hazardous Materials, Earthquakes, Floods, Wildfire

Name or Description of Asset	Sources of Information	Critical Facility	Vulnerable Populations	Economic Assets	Special Considerations	Historic/Other Considerations	Size of Building (sq ft)	Replacement Value (\$)	Contents Value (\$)	Function Use or Value (\$)	Displacement Cost (\$ per day)	Occupancy or Capacity (#)	Other Hazard Specific Information
		✓	✓	✓	✓	✓							
Courthouse	Tax Roles	X					NA	\$9,597,120	\$780,000	NA	NA	NA	NA
Correction Bldg. – 105 W. Front	Tax Roles				X		NA	\$5,637,680	\$156,000	NA	NA	NA	NA
Corrections – 107 W. Front	Tax Roles				X		NA	\$2,080,000	\$52,000	NA	NA	NA	NA

County Barn	Tax Roles	X					NA	\$46,800	\$15,000	NA	NA	NA	NA
Juvenile Detention 4929 W 7	Tax Roles				X		NA	\$2,288,000	\$156,000	NA	NA	NA	NA
Juvenile Detention 1320 W 7	Tax Roles				X		NA	\$263,718	\$52,000	NA	NA	NA	NA
Human Services Building	Tax Roles		X				NA	\$832,000	NA	NA	NA	NA	NA
Office Bldg. (601 Main)	Tax Roles	X					NA	\$1,092,000	\$52,000	NA	NA	NA	NA
Shop Bldg.	Tax Roles	X					NA	\$208,000	\$26,000	NA	NA	NA	NA
JP Office	Tax Roles	X					NA	\$36,400	\$5,200	NA	NA	NA	NA
Garage	Tax Roles	X					NA	\$10,400	\$2,600	NA	NA	NA	NA
Jail	Tax Roles					X	NA	NA	\$358,000	NA	NA	NA	NA

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<b><u>Wake Village</u></b>												
Public Works	Tax Roles	X					NA	\$17,320	NA	NA	NA	NA
Sewer Dept.	Tax Roles	X					NA	\$40,000	NA	NA	NA	NA
Water Tank-200 Village Lane	Tax Roles	X					NA	\$464,800	NA	NA	NA	NA
City Hall	Tax Roles	X					NA	\$215,770	\$65,000	NA	NA	NA
Fire Station	Tax Roles	X					NA	\$165,273	\$37,750	NA	NA	NA
Lift Station-Redwater Road	Tax Roles	X					NA	\$20,000	NA	NA	NA	NA
Lift Pumps	Tax Roles	X					NA	\$15,900	NA	NA	NA	NA
Lift Station-West Line Road	Tax Roles	X					NA	\$20,000	NA	NA	NA	NA
Meter/Storage	Tax Roles	X					NA	\$8,282	NA	NA	NA	NA
Storage	Tax Roles	X					NA	\$68,300	\$30,000	NA	NA	NA
Tool Storage	Tax Roles	X					NA	\$16,473	NA	NA	NA	NA
Water Control	Tax Roles	X					NA	\$7,676	NA	NA	NA	NA
Water Tank – 624 Burma	Tax Roles	X					NA	\$202,000	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	\$40,000	NA	NA	NA	NA
<b><u>Red Lick</u></b>												
Middle School	Tax Roles				X		NA	\$524,928	NA	NA	NA	NA
School	Tax Roles				X		NA	\$36,931	NA	NA	NA	NA
<b><u>Hooks</u></b>												
City Hall	Tax Roles	X					NA	\$63,700	NA	NA	NA	NA
Fire/Police	Tax Roles	X					NA	\$176,500	NA	NA	NA	NA
Sewer Plant	Tax Roles	X					NA	\$90,000	NA	NA	NA	NA
Sewer Plant	Tax Roles	X					NA	\$125,000	NA	NA	NA	NA
Water Tower	Tax Roles	X					NA	\$299,000	NA	NA	NA	NA
Sewer Station	Tax Roles	X					NA	\$12,500	NA	NA	NA	NA
Sewer Station	Tax Roles	X					NA	\$9,000	NA	NA	NA	NA
Sewer Station	Tax Roles	X					NA	\$10,000	NA	NA	NA	NA
Maintenance	Tax Roles	X					NA	\$12,700	NA	NA	NA	NA
<b><u>Nash</u></b>												
Schools	Tax Roles				X		NA	\$5,811,803	NA	NA	NA	NA
City Hall	Tax Roles	X					NA	\$59,792	NA	NA	NA	NA
Storage	Tax Roles	X					NA	\$5,100	NA	NA	NA	NA
<b><u>DeKalb</u></b>												
Schools	Tax Roles				X		NA	\$17,710,358	NA	NA	NA	NA
City Hall	Tax Roles	X					NA	\$246,480	NA	NA	NA	NA
Fire Station	Tax Roles	X					NA	\$18,900	NA	NA	NA	NA
St. Citizen Center	Tax Roles		X				NA	\$51,266	NA	NA	NA	NA
City Shelter	Tax Roles	X					NA	\$377,155	NA	NA	NA	NA
Office Building	Tax Roles	X					NA	\$208,000	\$26,000	NA	NA	NA
<b><u>Maud</u></b>												
City Hall	Tax Roles	X					NA	\$259,104	\$75,000	NA	NA	NA
Library	Tax Roles				X		NA	\$50,000	\$25,000	NA	NA	NA
Police Dept.	Tax Roles	X					NA	\$29,981	\$10,000	NA	NA	NA
Vol. Fire Dept.	Tax Roles	X					NA	\$89,050	\$15,000	NA	NA	NA

Pump Building	Tax Roles	X					NA	\$1,264	\$5,000	NA	NA	NA	NA
Water Tower	Tax Roles	X					NA	\$202,000		NA	NA	NA	NA
Sewer Plant	Tax Roles	X					NA	\$9,000,000	\$20,000	NA	NA	NA	NA
Lab Bldg.	Tax Roles	X					NA	\$5,090	\$5,000	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	\$30,000	NA	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	\$30,000	NA	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	\$25,000	NA	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	\$30,000	NA	NA	NA	NA	NA
Fire Dept.	Tax Roles	X					NA	\$20,800	\$2,600	NA	NA	NA	NA
<b><u>Redwater</u></b>													
City Hall	Tax Roles	X					NA	\$117,800	\$20,000	NA	NA	NA	NA
Chlorinator Bldg.	Tax Roles	X					NA	\$1,300	\$2,996	NA	NA	NA	NA
Chlorinator House	Tax Roles	X					NA	\$3,000	\$2,996	NA	NA	NA	NA
Contact Chamber	Tax Roles	X					NA	\$27,000	NA	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	\$13,500	\$12,000	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	\$1,500	\$6,250	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	\$13,500	NA	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	\$1,500	\$10,500	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	\$13,500	NA	NA	NA	NA	NA
Lift Station	Tax Roles	X					NA	\$13,500	NA	NA	NA	NA	NA
Aerator Tank	Tax Roles	X					NA	\$225,000	NA	NA	NA	NA	NA
Chlorinator HSG	Tax Roles	X					NA	\$12,000	NA	NA	NA	NA	NA
Clarifier Tanks	Tax Roles	X					NA	\$15,000	NA	NA	NA	NA	NA
Effluent Tank	Tax Roles	X					NA	\$8,000	NA	NA	NA	NA	NA
Office/Lab	Tax Roles	X					NA	\$7,500	\$5,000	NA	NA	NA	NA
Pump Housing	Tax Roles	X					NA	\$8,000	NA	NA	NA	NA	NA
Pump Station	Tax Roles	X					NA	\$35,000	NA	NA	NA	NA	NA
Pump Station	Tax Roles	X					NA	\$35,000	NA	NA	NA	NA	NA
Pump Station	Tax Roles	X					NA	\$53,000	NA	NA	NA	NA	NA
Drying Beds	Tax Roles	X					NA	\$110,000	NA	NA	NA	NA	NA
Storage Tank	Tax Roles	X					NA	\$18,500	NA	NA	NA	NA	NA
Storage Tank	Tax Roles	X					NA	\$41,000	NA	NA	NA	NA	NA
Vault Meter	Tax Roles	X					NA	\$5,000	NA	NA	NA	NA	NA
Pressure Tank	Tax Roles	X					NA	\$22,333	NA	NA	NA	NA	NA
Pressure Tank	Tax Roles	X					NA	\$15,357	NA	NA	NA	NA	NA
Pump House	Tax Roles	X					NA	\$5,800	\$3,500	NA	NA	NA	NA
Pump House	Tax Roles	X					NA	\$2,300	\$1,000	NA	NA	NA	NA
Pump House	Tax Roles	X					NA	\$5,800	\$3,500	NA	NA	NA	NA
Pump & Well	Tax Roles	X					NA	\$2,300	\$1,000	NA	NA	NA	NA
Pump House	Tax Roles	X					NA	\$4,400	\$1,500	NA	NA	NA	NA
Pump House	Tax Roles	X					NA	\$3,700	\$3,500	NA	NA	NA	NA
Pump Station	Tax Roles	X					NA	\$4,000	NA	NA	NA	NA	NA
Storage Tank	Tax Roles	X					NA	\$117,300	NA	NA	NA	NA	NA

NA—Not Available



**METHODOLOGY:** Methodology used to determine the potential dollar loss estimates includes information from 1990 Hazus, 2000 Census data, insurance policies, and data from the County Tax Assessor's Office.

DRAFT

**IDENTIFYING ASSETS  
ESTIMATING POTENTIAL LOSSES**

Tables 2.30 and 2.31 analyze the development trends in Bowie County. U.S. Census data shows that there has been an increase in population from 81,665 in 1990 to 89,306 in 2000 and an increase in total housing units of 2,229 from 1990 to 2000. The employed civilian labor force age 16 years and over in 2000 was 35,947, and 34,219 in 1990, an increase in 2000 of 1,728. Projections from the Texas State Data Center and Office of the State Demographer show the population estimates of Bowie County as of July 1, 2002, increasing from 89,306 in 2000 to 91,178; increasing to 91,474 as of January 1, 2003; 91,439 in July, 2004; and increasing to 91,555 in January, 2005.

The only Bowie County city included in this plan that was able to provide information about future developments was Wake Village. Kings Way Subdivision is proposed as a 3 phase project with 100 platted lots. A map with the proposed subdivision is included as Figure 2.22.

There are no known abandoned structure codes for any of the cities included in this plan or for the county. If any **NEW** homes are built later in any of the cities listed in this plan, or in the county, builders will adhere to the codes as outlined in Table 5.1.

**Population Trends**

<b>JURISDICTION</b>	<b>1990</b>	<b>2000</b>
Wake Village	4,757	5,129
Red Lick	*NA	853
Hooks	2,684	2,973
Nash	2,162	2,169
DeKalb	1,976	1,769
Maud	1,049	1,028
Redwater	824	872
Leary	395	555
**New Boston	5,057	4,808
**Texarkana	31,656	34,782
Bowie County	81,665	89,306

*\*Not Available - Red Lick incorporated Nov., 1997*

*\*\*Not included in this Plan*

*Source: U.S. Census Data*

**Table 2.35**  
Housing Trends

<b>JURISDICTION</b>	<b>TOTAL HOUSING UNITS</b>	<b>OCCUPIED</b>	<b>VACANT</b>	<b>OWNER OCCUPIED</b>	<b>RENTER OCCUPIED</b>
Wake Village	2000-2,198 1990-1,900	2000-2,042 1990-1,783	2000-156 1990-117	2000-1,529 1990-1,296	2000-513 1990-487
Red Lick	2000-315 1990-*NA	2000-302 1990-*NA	2000-13 1990-*NA	2000-283 1990-*NA	2000-19 1990-*NA
Hooks	2000-1,345 1990-1,207	2000-1,215 1990-1,052	2000-130 1990-155	2000-857 1990-789	2000-358 1990-263
Nash	2000-1,003 1990-968	2000-891 1990-861	2000-112 1990-107	2000-557 1990-618	2000-334 1990-243
DeKalb	2000-853 1990-889	2000-725 1990-787	2000-128 1990-102	2000-475 1990-546	2000-250 1990-241
Maud	2000-473 1990-486	2000-433 1990-442	2000-40 1990-44	2000-352 1990-352	2000-81 1990-90
Redwater	2000-357 1990-326	2000-330 1990-306	2000-27 1990-20	2000-235 1990-241	2000-95 1990-65
Leary	2000-240 1990-172	2000-223 1990-155	2000-17 1990-17	2000-202 1990-134	2000-21 1990-21
**New Boston	2000-2,229 1990-2,171	2000-1,968 1990-2,007	2000-261 1990-164	2000-1,295 1990-1,358	2000-673 1990-649
**Texarkana	2000-15,105 1990-14,313	2000-13,569 1990-12,475	2000-1,536 1990-1,838	2000-7,970 1990-7,200	2000-5,599 1990-5,275
Bowie County	2000-36,463 1990-34,234	2000-33,058 1990-30,595	2000-3,405 1990-3,639	2000-23,456 1990-21,660	2000-9,602 1990-8,935

*\*Not Available - Red Lick incorporated Nov., 1997*

*\*\*Not included in this Plan*

*Source: U.S. Census Data*

# COUNTY OF BOWIE

Bi-State Justice Center  
100 North State Line Avenue  
Texarkana, Texas 75501

Bowie County Courthouse  
Post Office Box 248  
New Boston, Texas 75570-0248



*posted*  
*7-7-03*

DATE: MONDAY JULY 30, 2003

TO: MEDIA

FROM: BOWIE COUNTY JUDGE'S OFFICE

RE: MITIGATION ACTION PLAN MEETING

THE BOWIE COUNTY MITIGATION ACTION PLANNING COMMITTEE HAS SCHEDULED AN INITIAL MEETING TO PREPARE THE MITIGATION ACTION PLAN (MAP). THIS PLAN IS TO PREPARE BOWIE COUNTY FOR NATURAL DISASTERS, i.e. FLOOD, TORNADO AND/OR ICE STORM. THE PUBLIC IS INVITED.

CONTACT: CINDY WHITE 903.585.5428

LISA THOMAS 903.628.6718

WHEN: THURSDAY JULY 10, 2003

TIME: 10:00 A. M.

WHERE: COMMISSIONERS' COURTROOM

BOWIE COUNTY COURTHOUSE

NEW BOSTON TX

## COUNTY OF BOWIE

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# COUNTY OF BOWIE

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100 North State Line Avenue  
Texarkana, Texas 75501

Bowie County Courthouse  
Post Office Box 248  
New Boston, Texas 75570-0248



DATE: MONDAY AUGUST 25, 2003

TO: MEDIA

FROM: BOWIE COUNTY JUDGE'S OFFICE

RE: PUBLIC MEETING RE: MITIGATION ACTION PLAN (MAP)

THE MITIGATION ACTION PLANNING COMMITTEE WILL HOLD A PUBLIC MEETING AT 5:30 P. M., THURSDAY AUGUST 28, 2003. THE MEETING WILL BE HELD IN THE COMMISSIONERS' COURTROOM AT THE BOWIE COUNTY COURTHOUSE NEW BOSTON TEXAS. THE PUBLIC IS ENCOURAGED TO ATTEND.

CONTACT: CINDY WHITE 903.585.5428  
LISA THOMAS 903.628.6718

*Lisa T  
8-26-03  
8:10*

## COUNTY OF BOWIE

Bi-State Justice Center  
100 North State Line Avenue  
Texarkana, Texas 75501

Bowie County Courthouse  
Post Office Box 248  
New Boston, Texas 75570-0248



DATE: MONDAY JULY 30, 2003

TO: MEDIA

FROM: BOWIE COUNTY JUDGE'S OFFICE

RE: MITIGATION ACTION PLAN MEETING

THE BOWIE COUNTY MITIGATION ACTION PLANNING COMMITTEE HAS SCHEDULED AN INITIAL MEETING TO PREPARE THE MITIGATION ACTION PLAN (MAP). THIS PLAN IS TO PREPARE BOWIE COUNTY FOR NATURAL DISASTERS, i.e. FLOOD, TORNADO AND/OR ICE STORM. THE PUBLIC IS INVITED.

CONTACT: CINDY WHITE 903.585.5428

LISA THOMAS 903.628.6718

WHEN: THURSDAY JULY 10, 2003

TIME: 10.00 A. M.

WHERE: COMMISSIONERS' COURTROOM

BOWIE COUNTY COURTHOUSE

NEW BOSTON TX

# COUNTY OF BOWIE

Bi-State Justice Center  
100 North State Line Avenue  
Texarkana, Texas 75501

Bowie County Courthouse  
Post Office Box 248  
New Boston, Texas 75570-0248



DATE: MONDAY AUGUST 25, 2003

TO: MEDIA

FROM: BOWIE COUNTY JUDGE'S OFFICE

RE: PUBLIC MEETING RE: MITIGATION ACTION PLAN (MAP)

THE MITIGATION ACTION PLANNING COMMITTEE WILL HOLD A PUBLIC MEETING AT 5:30 P. M., THURSDAY AUGUST 28, 2003. THE MEETING WILL BE HELD IN THE COMMISSIONERS' COURTROOM AT THE BOWIE COUNTY COURTHOUSE NEW BOSTON TEXAS. THE PUBLIC IS ENCOURAGED TO ATTEND.

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LISA THOMAS 903.628.6718

*Lisa T  
8-26-03  
8:10*



Table 5.1

RULE – REGULATION – POLICY – PLAN - ENTITY	CONTENTS
Bowie County Decree	March 9, 1992.Sending employees to HAZMAT Training
Bowie County Decree	October 8, 1990. Fire Prevention Ordinance for Bowie County.
Bowie County Decree/Ordinance	September 27 <sup>th</sup> , 1991. Flood Damage Prevention Ordinance.
Resolution 130-92	Bowie County/Texarkana Contract for Ambulance Service.
Bowie Court Order #08-97	August 11, 1997. Flood Damage Prevention Court Order.
Bowie County Court Orders	Burn Bans.
Bowie County Resolution	911 Addressing System.
Bowie County Resolution.	Inter-Jurisdictional Mutual-Aid Agreement with cities and Mutual-Aid Agreement with Ark-Tex Councils of Government.
Bowie County	Corps of Engineers Study: Mauldin Lake Campground
Hazard Mitigation Grant Programs (HPGP) Projects Bowie County	FEMA Grant of \$101,250 for ATCOG to produce Mitigation Action Plan For Eight Counties. DR-1379-145
Public Assistance Program Projects (PA) Bowie County	FEMA Grants for 2001 Ice Storm.
Bowie County	Septic Tank Ordinance September, 1989. 201 septic inspections last 12 months.
Bowie County	Flood Plain Study September 25, 1990; Flood Insurance Rate Map September 27, 1991.
Bowie County Floodplain Management	Permit Process: Property owner contacts Flood Plain Administrator and is given a Land Development Permit Application to be completed. Study is done on deed and property involved. FEMA Flood Plain Map is used to determine whether property is in or out of flood plain. If out of flood plain, Development Permit Exemption Certification issued. Copies and records kept in flood plain administrator office. 4 flood plain permits completed for 12 month period. One flood plain Administrator—licensed police officer.
Sulphur River Authority Project	Marvin C. Nichols Dam and Reservoir.
Southern Building Code/National Fire Codes	Wake Village, Nash, DeKalb, Hooks,
Nash CDFG 2002	Replace undersized and dead-end water lines.
Nash Codes	Southern Building Code 1992; National Fire Code One inspector with state inspector license. 56 building starts in base 12 months with 890 inspections.
Nash Floodplain Management	No ordinance. Flood Map January 23, 1974.
Hooks CDFG 2002	Replace old undersized water lines/give new sewer service
Maud Codes	Southern Building Code 12 Building permits issued last 12 months. Unknown if inspector is available.
Maud Floodplain Management	No ordinance. Flood Map April 12, 1974.
Hooks	2000 TCDP Grant to improve sewer flow to west end of town. Current TCDP Grant to increase water supply from above ground storage tank to elevated storage facility.

Hooks Codes	International Building Codes/National Fire Codes. Past 12 Months: 19 permits issued; 39 Inspections; one inspector holds state plumbing and code enforcement officer licenses
Hooks Floodplain Management	Flood Map April 23, 1976. Permit process requires engineer's certification of being flood proof if below elevation. Mayor is the floodplain administrator. No inspections or variances in last 12 months.
DeKalb	HMP Grant to construct Storm Shelter. PA funds for 1999 tornado and 2000 Ice Storm.
DeKalb	TWDB Manhole Rehab and WWTP Improvements.
DeKalb Codes	Standard Building Code; National Electric Code; Life Safety Code/ Utilize David Ruff of New Boston for inspections. Last 12 months-15 building starts with 4-6 inspections for each permit.
DeKalb Floodplain Management	Not in floodplain.
Wake Village	No HMPG. PA Funds for 2000 Ice Storm
Wake Village	Comprehensive Plan June, 1980
Wake Village Codes	Southern Building Code and National Fire Code. One Certified Building Inspector. One Fire Marshall. 15 building permits last 12 months. 336 total inspections for new permits/fire inspections in 2002.
Wake Village Floodplain Management	Floodplain Map – 1985. Subdivision Ordinance #10-75 requirements for slabs elevation in floodplain. No variances in flood plains in past 12 months. Flood Insurance Rate Map October 15, 1985 o Community Number 480061-B
Redwater	PA 1999 Step Grant Wastewater Line
Redwater	DACW63-9-01-0532 Jan 8, 2002, City Park Corps
Redwater	2003 USDA Rural Development Water Grant Upgrade.
Redwater Codes	Southern Building Codes and National Fire Code. Fire Chief and Volunteer Fire Department conduct inspections.
Redwater	Floodplain Resolution 00-06-05, February 15, 2000. Utilize county floodplain administrator. No inspections last 12 months.
Redwater	ATCOG 911 Rural Addressing/GIS Dept., December 16, 2002.
Leary Codes	None
Leary Floodplain Management	No ordinance. Flood Map November 26, 1976.
Red Lick	None. Ordinance has been passed which requires approval for construction of any new businesses in Red Lick.
No PI, PDM, PP-M Programs. No Community Assistance Visits	

(There are no communities in this plan participating in the Community Rating System) Table 5.1 Cont'd