HAZARD MITIGATION ACTION PLAN

FOR

HOPKINS COUNTY TEXAS

Five Year Update

INCORPORATED AND UNINCORPORATED AREAS

DEVELOPED BY ARK-TEX COUNCIL OF GOVERNMENTS
January, 2015

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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. The specific counties are as follows: Bowie, Cass, Morris, Franklin, Hopkins, Lamar, Red River, Titus, and Delta. This section is for HOPKINS COUNTY and includes the cities of Sulphur Springs, Como, Cumby, and Tira, Texas.

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 Hopkins County, Texas

Joint Resolution Between the County of Hopkins, Texas, and the cities of Sulphur Springs, Como, Cumby, and Tira, Texas.

Inter-local Agreements

Genevieve Burtchell, Ark-Tex Council of Governments, Texarkana, Texas reviewed this plan in May, 2007. Area Code 903 832-8636. Fax: 903 832-2627. gburtchell@atcog.org.

Five Year Update, January 2015

SECTION I

HOPKINS COUNTY TEXAS

PURPOSE

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

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

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

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

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

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

The following 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 Hopkins 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 Hopkins 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 Hopkins County during plan development.
- Submit the final plan to the State of Texas and provide follow up technical assistance to the Hopkins 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 Hopkins 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 Hopkins 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 Hopkins 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 Hopkins County for Hazards. The Ark Tex Council of governments worked hand in hand with the jurisdictions within the planning area of Hopkins County to develop the current plan. It is through this regional cooperation that ATCOG can serve its members by working to continually improve the economic, social, educational, and safety aspects of life for citizens

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

Organize Resources:

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

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

- ✓ Each participant was 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 Hopkins 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 Hopkins 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.

Economic Considerations

Hopkins County and the jurisdictions of Como, Cumby, Sulphur Springs, and Tira have very limited budgets. Como, Cumby, and Tira have volunteer fire departments. Tira relies on the County for water, road repair and law enforcement. Hopkins County has a total population of 35,161. Their tax base is and the annual budget is low. They will have to rely on grants and volunteerism to accomplish the bulk of the projects. Building codes are nearly non-existent and the public works department is limited to a few individuals that have multiple job responsibilities.

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 Hopkins Mitigation Plans.

The Emergency Management Plan of Hopkins 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 Hopkins County. This information is found in the wildfire section of the Plan.

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

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

Team Members were informed of the progress, discussed issues, and were notified of any changes to FEMA's guidelines for the creation of the plan. Existing plans were reviewed to determine how they might be incorporated into the HMAP. The Emergency Management Coordinator of Hopkins County and the Mayors (or their appointees) of Como, Cumby, Sulphur Springs and Tira will oversee the Mitigation Plan.

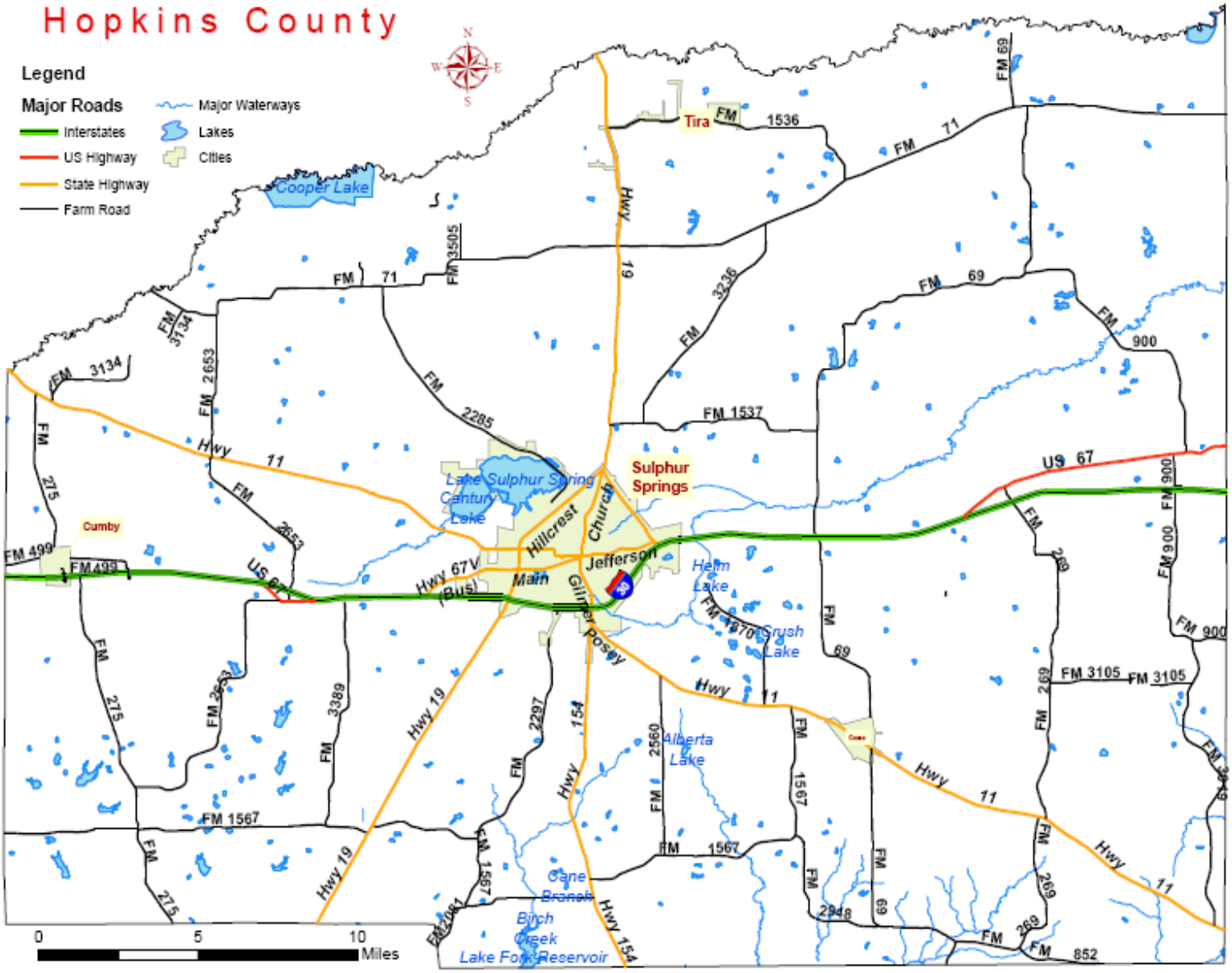
Adoption, Implementation and Maintenance:

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

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

Upon approval by FEMA the plan will be submitted to the County by the Mitigation Planner for final signatures. The Plan will be available for public viewing at the county seat and the city hall of Como, Cumby, Sulphur Springs and Tira.



MAP OF HOPKINS COUNTY

Hopkins County Location in Texas

County Government

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

At the heart of each county is the commissioner's court. Hopkins County has four-precinct commissioners and a county judge who serve on this court. This body conducts the general business of the county and oversees financial matters. The major elective offices found include the county 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.

PARTICIPATING JURISDICTIONS

The plan is a result of a joint effort between Hopkins County officials, mayors, council members, and employees of the cities of Como, Cumby, Sulphur Springs and Tira. Each of these entities has participated in the formation of this plan and Update.

Hopkins County. Hopkins County is located in northeast Texas. Its estimated 2013 population was 35,565. It is bordered on the north by the South Sulphur River. The county seat, Sulphur Springs, is on Interstate Highway 30, eighty-two miles northeast of Dallas. The approximate center of the county is at 33°10' north latitude, 95°40' west longitude. Hopkins County has an area of 789 square miles, divided between Blackland Prairie in its northern half and southwestern quarter and the claypan of the post oak belt in its southeastern quarter. The Blackland Prairie consists primarily of deep, loamy, moderately well-drained soils. There is little timber, except along the streams, where hardwoods are found. The soils of the claypan area differ mainly in their greater ability to absorb and release moisture. In this area of the county numerous hardwoods, as well as evergreens and pines, grow profusely. The terrain of Hopkins County is level to rolling, and its elevations range from 350 to 650 feet above mean sea level. The higher elevations form a divide east-to-west along what is roughly the center of the county. North of the divide the small streams flow north, and south of the divide, south. The county's major interior stream, White Oak Creek, traverses the east-west center of the county, heading slightly to the northeast. The major lakes-Sulphur Springs (which covers about 1,134 acres), Century (613 acres), and Coleman (49 acres)-are man-made impoundments. The county has deposits of oil, gas, gluconate, phosphorite, lignite, industrial sand, and clay used to produce firebrick. The climate is humid and subtropical, with an average rainfall of 45 inches a year. Temperatures range from an average low of 32° F in January to an average high of 95° F in August. The growing season averages 238 days a year.

The county is crossed from virtually all directions by state and federal highways. Interstate Highway 30, the major road between Dallas and Texarkana, passes through the center of Hopkins County; tourism, largely as a result of this highway, produced expenditures in the county in excess of $1 million in 1984. In 1990 Hopkins County was the leading dairy county in the state, with almost 500 dairies producing nearly 17 percent of the state total. At that time the county was also a leader in cattle production. Important crops included silage, hay, wheat, corn, rice, and soybeans. The county offered visitors fishing and hunting opportunities, and Sulphur Springs hosted a series of annual festivals, including a dairy festival in May.

Geography/History

Como

Como is an incorporated community on East Caney Creek at the junction of State Highway 11 and Farm Road 69, on the Louisiana and Arkansas Railway eight miles southeast of Sulphur Springs in southeastern Hopkins County. In 1914, Como had a population of 900, Baptist, Methodist, and Christian churches, two banks, an electric light plant, and a weekly newspaper, the Como Headlight. The community was incorporated in 1932. In the early 1930's, most of the local mines closed down. Many Como residents moved away; and by 1933, the town's population was only 392. In 1948, Como had five churches, a ten-teacher school, sixteen businesses and an estimated population of 450. After that the town grew slowly; and in 1989, it reported a population of 625 and thirteen businesses. In the early 1990's, it had 585 residents and twenty-nine businesses. The population of record in 2013 was 695.

Cumby

D. W. Cole settled Cumby, on the Louisiana, Arkansas, and Texas track a half mile north of Interstate Highway 30 in western Hopkins County, in 1842.

In 1911, the town had two banks, two lumberyards, three gins, a cottonseed oil mill, and a tin shop. By 1948, Cumby had twelve stores, six churches, a broom factory, and several other small businesses. The town reached a peak population of 925 in 1929. The number of residents gradually declined to a low of 405 in 1970 before increasing to 647 by 1980. In 1990 the population was 571. In 2013 the population was 780.

Sulphur Springs

Sulphur Springs is the county seat of Hopkins County, is at the junction of Interstate 30 and State highways 11, 19, and 154, in the central portion of the county.. The town adopted a home-rule charter in 1917 and a commission-manager government in 1947. In 1970, the city reported 10,642 inhabitants and 298 businesses; the 1990 population was 14,062. The last census of record in 2013 shows a population of 15,868.

Industries include manufacture of a variety of products; including men's work clothing, women's dresses, mattresses, dairy equipment, transmission parts, ready-mix concrete, sheet-metal products, movable shutters, high-pressure valves, and petrochemical products.
Sulphur Springs does have a Capital Improvement Plan and a Community Development Plan. Their Community Development Plan includes the Land Use Plan.

Tira

Tira is on Farm Road 1536, thirteen miles north of Sulphur Springs in north central Hopkins County. It was originally known as Chapman Arm for Jimmy Chapman, who settled there in 1850. By 1914, Tira had three general stores, a grocer, two cotton gins, and an estimated population of 100. Its post office was closed in 1919, but Tira continued to prosper during the 1920's and early 1930's. During the 1950's, many Tira residents moved away; and by 1952, its population had dropped to forty. The town, however, began to grow again during the 1960's and 1970's; the population reached 115 in 1966 and 249 in 1986. During the same period, a number of new homes

were built, and two service stations, a café, and a welding shop opened. In 1975, the town incorporated, however, the City is not its own taxing entity. There are no tax records, and Tira is not included in the taxable data base of the Hopkins County Appraisal District. Therefore, there is no tax data available for the City of Tira. Tira has an operating budget of $6, 000.00. The streets are county roads, the water comes from the Sulphur Springs district water supply. The two items of business for each quarterly held council meeting deals with the volunteer fire department and the sheet metal civic center where it is housed. The population of Tira was estimated at 298 in 2013.

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

"The government is us; WE are the government, you and I" – **Theodore Roosevelt**

Section II
PUBLIC INVOLVEMENT

Public participation is a key component to strategic planning processes. Citizen participation offers citizens the chance to voice their ideas and opinions. The Hopkins County Mitigation Action Plan includes a cross-section of citizen input throughout the planning process. Through public involvement, the mitigation plan reflects community issues, concerns, and new ideas on mitigation opportunities and action items.

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 Hopkins County to participate in planning and to review the plan. Public opportunities for review and comment were posted at the court house and in local papers. (See pages)
Plan placed on the Hopkins County Website.

Integrating public participation during the development of the Hopkins County Mitigation Action Plan has resulted in increased public awareness. Through citizen involvement, the plan reflects community issues, concerns, and new ideas and perspectives on mitigation opportunities.

Ark-Tex Council of Governments Contributors

Paul Prange, Ark-Tex Council of Governments Environmental Resources Manager, provided information regarding water contamination due to a natural hazard event in Hopkins County. This information was used to help determine the best actions to take to protect citizens from natural disasters that might impact water supplies in ground water and lakes. Mr. Prange suggested that generators would be needed to prevent sewage overflow during a power outage creating hazardous conditions for water supplies and possibly the eco-system.

Mary Beth Rudel, Ark-Tex Council of Governments Homeland Security Manager, provided information and guidance regarding ATCOG's assistance in developing Emergency management plans for our nine county area which includes Hopkins County. Hazard Mitigation annexes are included in the local emergency management plans. Although these plans do not consider man-made disasters such as terrorist attacks, Ms. Rudel provided valuable information regarding the mitigation of terrorist attacks because the occurrence of either can sometimes have similar effects on a community (e.g. lifeline outages such as lack of electricity or clean water due to either natural or terrorist events).

Richard Powell, ATCOG Economic Development Manager is prepared to help jurisdictions in search of capturing low interest rate loans. Mr. Powell indicated that his department has helped many jurisdictions to obtain loans for sewage and water projects. Mr. Powell offered that loans for placing generators at waste water treatment plants could be available through his department. Generators are a common need when electrical power is lost at a water treatment plant to prevent over flowing sewage from contaminating water supplies. Money may be available for other projects such as widening ditches to help with water flow during heavy rains.

Genevieve Burtchell, Special Projects Director at the Art-Tex Council of Governments, develops grants through the Texas Community Development Block Grant (TxCDBG) Program and the Disaster Recovery Program for post disaster relief. Although not directly related to hazard mitigation pre-disaster activity, Disaster Recovery funds may be used to provide items such as generators that will help prepare for extreme weather events in the future such as flooding. Street work and sewer lines that could be linked to hazard mitigation may be available through the Community Development Block Grant Funds.

The 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. All members attended meetings and were available by phone and e-mails to assist in providing information and observations.

HAZARD MITIGATION TEAM MEMBERS

Butch Adams	Hopkins County Sheriff
Gary Anderson	Mayor of Como
Robert Newsom	Hopkins County Judge
Floyd Payton	Mayor of Tira
Jason Ricketson	Sulphur Springs Emergency Management Coordinator
Scotty Sewell	Cumby Chief of Police
Brent Smith	Hopkins County Emergency Management
Mario Villarino	Hopkins County Extension Agent
Beth Wisenbaker	Hopkins County Commissioner, Pct. 1
Kevin Yates	Hopkins County Fire Chief/EMC

Butch Adams
Butch Adams is the sheriff for Hopkins County. He has served over 18 years in the elected office of sheriff. Sheriff Adams has over 37 years of experience in law enforcement including serving as an officer in the Sulphur Springs Police Department. Mr. Adams provided important information regarding the feasibility of conducting county wide exercises, and about county road flooding.

Gary Anderson
Gary Anderson was appointed mayor of Como in July of 2013 after the elected mayor resigned. Mr. Anderson worked in Information Technology for 35 years. Mr. Anderson has played an active role in selecting actions that will benefit Como. He has participated in our meetings provided valuable information regarding Como finances and infrastructure.

Robert Newsom
Robert Newsom is the Hopkins County Judge. He was appointed originally to his position after his predecessor resigned to become the Executive Director of the Ark-Tex Council of Governments. Judge Anderson has since been elected to the post after serving out his appointed term. Mr. Newsom served as state district judge for 16 years. He has a law degree from Texas Tech University.
Judge Newsom has play a critical role in developing the Hopkins County Team. He has offered guidance and advice regarding hazards, and providing information that helped to form action selection.

Floyd Payton
Floyd Payton is the mayor of Tira. He has been very active in helping choose the hazards we will consider for the Tira Community. Mr. Payton has been a full participant in our program providing valuable information about the needs and limitations of his small jurisdiction.

Jason Ricketson
Jason Ricketson is the Sulphur Springs Emergency Management Coordinator. Mr. Ricketson served 17 years as patrol, patrol Supervisor and K-9 officer. He has a degree in science.

Scotty Sewell
Scott Sewell is the Cumby Chief of Police. He coordinates with first responders and emergency coordinators. Mr. Sewell has been in law enforcement in Hopkins County for 31 years. He has a master Peace Officer License, and over 4,000 hours of training. Mr. Sewell played an active role in the team meetings and providing information regarding hazards and actions.

Brent Smith
Brent Smith is the Emergency Management Coordinator and works closely with disaster management during emergencies. He was part of the emergency team that coordinated efforts during Hurricane Ike and has participated in many disaster drills. Mr. Smith played an active role in the Team meetings and contributed to both selecting Hopkins Hazards and selecting actions.

Mario Villarino
Dr. Mario Villarino is the county extension agent. He has earned advanced degrees in veterinary medicine and microbiology. Dr. Villarino has been very helpful in offering suggestions, actions and observations regarding crop damage due to extreme weather.

Beth Wisenbaker
Beth Wisenbaker is the Hopkins County Commissioner for precinct 1. She has been an advocate for plan update development and has shared her enthusiasm with other planning team members while stressing the importance of plan completion. Ms. Wisenbaker has provided valuable information regarding her county and her precinct.

Kevin Yates
Kevin Yates is the Hopkins County Fire Chief and the Hopkins County Emergency Management Coordinator. He has worked for the California department of Forestry, the US Fish and Wildlife. He was employed by the Army Department from 2000-2007. Mr. Yates had a very active role in organizing and participating in the Team Meetings.

A list of stakeholders was developed by the Team Members and contacts were made by phone and or by e-mail. The list includes the neighboring county judges and members of the school system, the local hospital, the local farm agent, the local director of the Red Cross. All were invited to participate in the plan process beginning with attending our organizational meeting. The Hopkins County Extension Agent, Mario Villarino was contacted as a stakeholder but was made a team member at the first meeting. There was no participation from any other contacts.

Area Stakeholder Contacts				
Name	**Title**	**Company**	**Location**	**Type of Contact**
Bryan Jeans	County Judge	Wood County	Quitman	e-mail and phone call
Dawn Morgan	Director	Hopkins Co. Red Cross	Sulphur Springs	e-mail and phone call
Herbert Brookshire	County Judge	Delta County	Cooper	e-mail and phone call
Horace Garvie	Farm Agent	USDA	Sulphur Springs	e-mail and phone call
John Horn	County Judge	Hunt County	Greenville	e-mail and phone call
Michael McAndrews	Administrator	Hopkins County Memorial Hospital	Sulphur Springs	e-mail and phone call
Mike Lamb	Superintendent	SSISD	Sulphur Springs Texas	e-mail and phone call
Paul Lovier	County Judge	Franklin County Texas	Mt. Vernon	e-mail and phone call
Wayne Wolfe	County Judge	Rains County	Emory	Email and phone call

SECTION III

HAZARDS

Hopkins County is 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:

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

In the 2015 update the plan dropped some hazards due to insufficient data to continue or in the case of windstorm, were integrated into thunderstorms. The category of HAZMAT spills was dropped because it is not a natural hazard. It is addressed in the emergency management plan.

The process for identifying hazards included looking at historical data to determine which hazards had occurred in Hopkins County. Sources used include 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 advise from FEMA Hazard Mitigation Plan reviewers and Texas Department of Emergency Management staff.

Some hazards were chosen that have no history of occurrences in the County. Even though there is no history, these hazards were included because there is the potential for them to occur (such as earthquakes, and dam failures.).

Population Estimates 2013

City	Population
Sulphur Springs	15868
Como	695
Cumby	780
Tira	298

Hazard by Area of Risk	
Hazards with distinct area of risk	Hazards without distinct area of risk
Flood	Tornado
Dam Failure	Drought
Wildfire	Extreme Heat
	Winter Storm
	Thunderstorm
	Hailstorm
	Windstorm (merged with thunderstorm)
	Earthquake

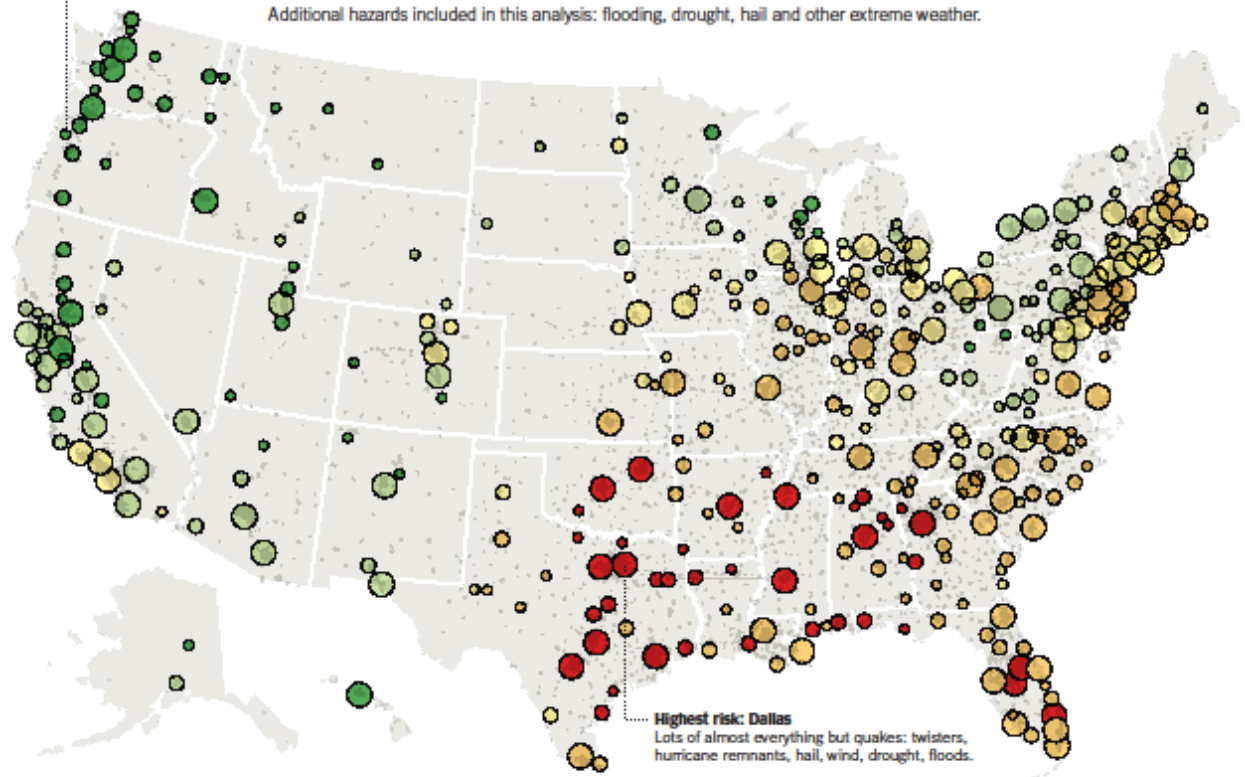
We cannot stop natural disasters but we can arm ourselves with knowledge: so many lives wouldn't have to be lost if there was enough disaster preparedness. **Petra Nemcova, model, philanthropist**

Some Places Are Riskier Than Others

Weather disasters and quakes: who's most at risk? The analysis below, by Sperling's Best Places, a publisher of city rankings, is an attempt to assess a combination of those risks in 379 American metro areas.

Risks for twisters and hurricanes (including storms from hurricane remnants) are based on historical data showing where storms occurred. Earthquake risks are based on United States Geological Survey assessments and take into account the relative infrequency of quakes, compared with weather events and floods.

Additional hazards included in this analysis: flooding, drought, hail and other extreme weather.

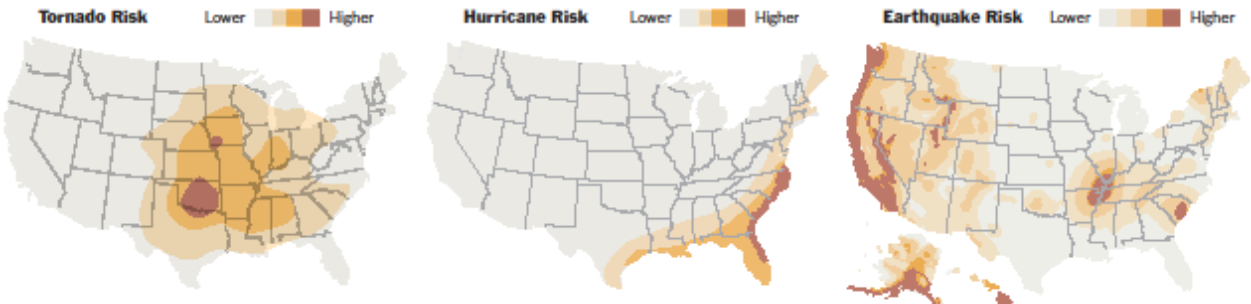


Metro area population
- Less than 175,000
- 175,000 to 500,000
- More than 500,000

Scale of hazards
Lower → Higher

Metro areas with lowest risk:
1. Corvallis, Ore.
2. Mt. Vernon-Anacortes, Wash.
3. Bellingham, Wash.
4. Wenatchee, Wash.
5. Grand Junction, Colo.
6. Spokane, Wash.
7. Salem, Ore.
8. Seattle

Highest risk:
1. Dallas-Plano-Irving, Tex.
2. Jonesboro, Ark.
3. Corpus Christi, Tex.
4. Houston
5. Beaumont-Port Arthur, Tex.
6. Shreveport, La.
7. Austin, Tex.
8. Birmingham, Ala.



Sources: Sperling's Best Places; National Oceanic and Atmospheric Administration (tornado map); University of Miami (hurricane map); U.S. Geological Survey (earthquake map)

MATTHEW ERICSON, JOE BURGESS AND BILL MARSH/THE NEW YORK TIMES

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

Determining Risk

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

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

Potential Severity of Impact: (45% of Priority Risk Index)	
SUBSTANTIAL **Index Value = 4**	• Possible fatalities • Complete shutdown of facilities for 30 days or more • More than 50 percent of property destroyed or with major damage
MAJOR **Index Value - 3**	• Possible permanent disability from Injuries and/illnesses • Complete shutdown of critical facilities for at least 2 weeks • More than 25 percent of property destroyed or with major damage
MINOR **Index Value = 2**	• Injuries and/or illnesses do not result in permanent disability • Complete shutdown of critical facilities for more than 1 week • More than 10 percent of property destroyed or with major damage
LIMITED **Index Value = 1**	• Injuries and/or illnesses are treatable with first aid • Shutdown of critical facilities and services for 24 hours or less • Less than 10 percent of property destroyed or with major damage

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

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

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

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

Priority Risk Index (PRI)

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

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

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

Table 2.1.1

Vulnerability of Hazards	
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.

Property Damage Assessments

The following damage assessment tables are used to estimate monetary loss due to natural hazards in Hopkins County. **The unincorporated community of Tira does not have figures available.**

Hopkins County Damage Assessment				
Structure Type	Value	75%	50 %	25%
Residential	967,940,450	725,955,337	483,970,225	241,985,112
Commercial	162,557,910	121,918,432	81,278,955	40,639,477
Industrial	34,732,390	26,049,292.5	17,366,195	8,683,097
Exempt Property	213,572,365	160,179,273	106,786,182	53,393,091

Como Damage Assessment				
Structure Type	Value	75%	50 %	25%
Residential	9,444,890	708,667	472,445	236,222
Commercial	1,050,150	787,612	525,075	262,537
Industrial	467,120	350,340	233,560	116,780
Exempt Property	1,412,510	1,059,382	706,255	353,127

Cumby Damage Assessment				
Structure Type	Value	75%	50 %	25%
Residential	4,271,150	3,203,362	2,135,575	1,067,787
Commercial	1,879,910	1,409,932	1,409,932	469,977
Industrial	0			
Exempt Property	5,391,361	4,043,520	2,695,680	1,347,840

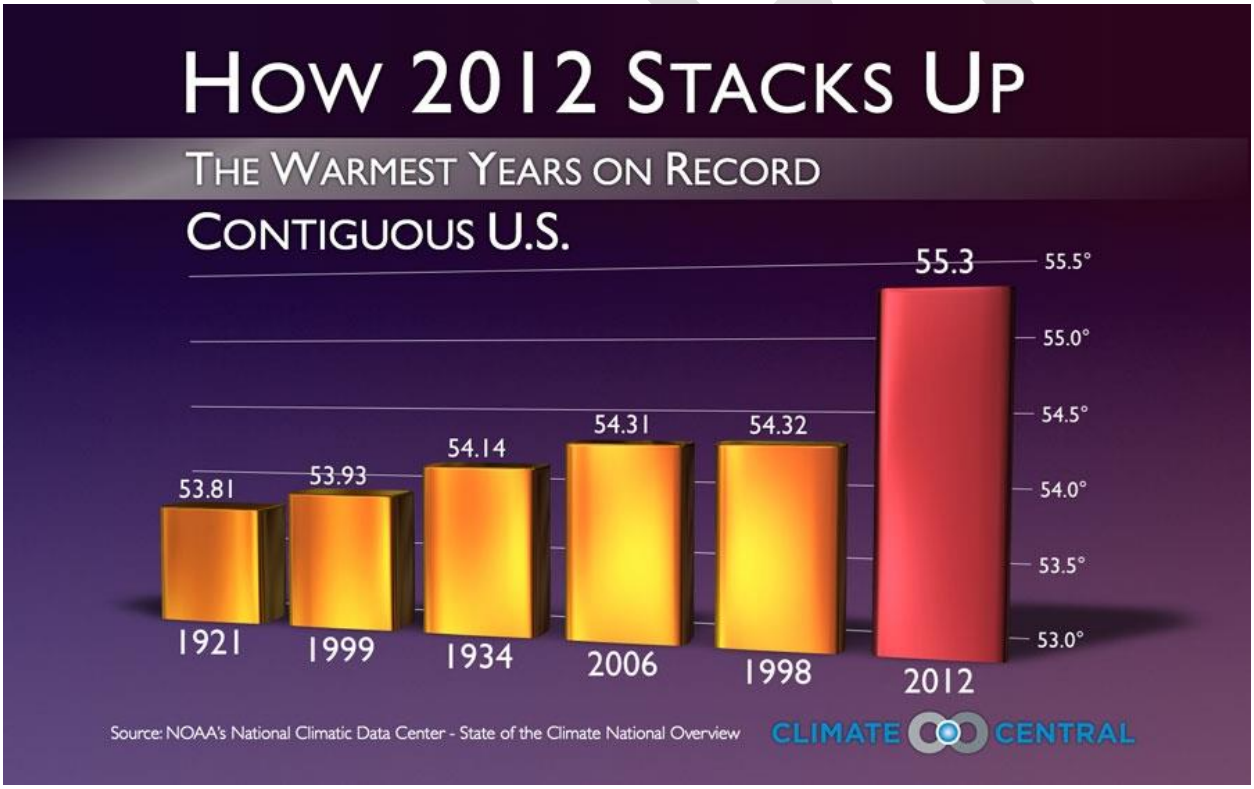
Sulphur Springs Damage Assessment				
Structure Type	Value	75%	50 %	25%
Residential	366,490,630	274,867,972	183,245,315	91,622,657
Commercial	138,506,970	103,880,227	69,253,485	34,626,742
Industrial	30,779,450	23,084,587	15,389,725	7,694,862
Exempt Property	142,456,713	106,842,534	71,228,356	35,614,178

HAZARD IDENTIFICATION AND ASSESSMENT

Extreme Weather

The National Oceanic and Atmospheric Administration said that the year of 2012 as the warmest on record. This is the 3rd consecutive year with global temperatures above the 20th Century average. According to NASA, the hottest temperatures for May and August in recorded history occurred in 2014 had the hottest temperatures months in recorded history!

The year of 2013 was the thirty-seventh consecutive year of above-normal global temperature. According to data from NASA, the global temperature in 2013 averaged 58.3 degrees Fahrenheit (14.6 degrees Celsius), roughly a degree warmer than the twentieth-century average. Since the dawn of agriculture 11,000 years ago, civilization has enjoyed a relatively stable climate. That is now changing as the growing human population rivals long-range geological processes in shaping the face of the planet. Fully 4 billion people alive today have never experienced a year that was cooler than last century's average, begging the question of what is now "normal" with respect to the climate. (Earth Institute)



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

We must prepare for the increased potential of extremes in weather activity. According to an article published in the March 2011 issue of the prestigious science magazine *Nature*, most climate scientists agree that an increase of weather extremes has been a fundamental prediction of climate science for decades. Current data suggests that as the earth warms, precipitation extremes will become more intense, winter and summer, simply because warmer air can carry more water vapor. Weather statistics confirm that this has begun to happen.

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

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

"Drier conditions near the ground combined with higher lightning flash rates per storm may end up intensifying wildfire damage," said study leader Tony Del Genio of NASA's Goddard Institute for Space Studies in New York. The results of the study are detailed in the Aug. 17, 2007 issue of the journal *Geophysical Research Letters*.

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

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

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

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

Hazard Assessment Elements

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

1. Description: Identification and description of hazards likely to affect the multi-jurisdictional area along with the sources used to identify these hazards.

2. **Location:** The location or geographic area affected by each natural hazard along with a map of the areas affected.

3. Impact: Impact describes the hazard's potential severity of impact that the hazard event is capable of inflicting upon the county and four jurisdictions. Classification methods such as the Fujita Scale and Richter Scales are used to illustrate extent. Due to the limited amount of county and city specific documented data, some of the analysis for determining potential severity was limited to obtaining opinion and information furnished by local residents, emergency responders, and the county and city Emergency Management Coordinators.

4. Previous Occurrences: Previous Occurrences describes the hazard in terms of what, when, and where past events have occurred and the extent of damages.

5. Probability of Future Events: Probability of Future Events describes the probability that the hazard will occur within the County and four jurisdictions.

6. Vulnerability: Vulnerability describes how exposed or susceptible to damage the county is in terms of why and where the hazard can occur within the county and/or the two jurisdictions. The vulnerability is the risk of future occurrences. HAZUS, THMP, and other local data were used to establish a base map and conduct risk assessments.

7. Overall Summary of Vulnerability and Impacts: This section summarizes the vulnerability of the entire county and the possible impacts of the natural disaster.

Hazard Analysis

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

The following steps were taken:

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

HAZARD DESCRIPTIONS

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.

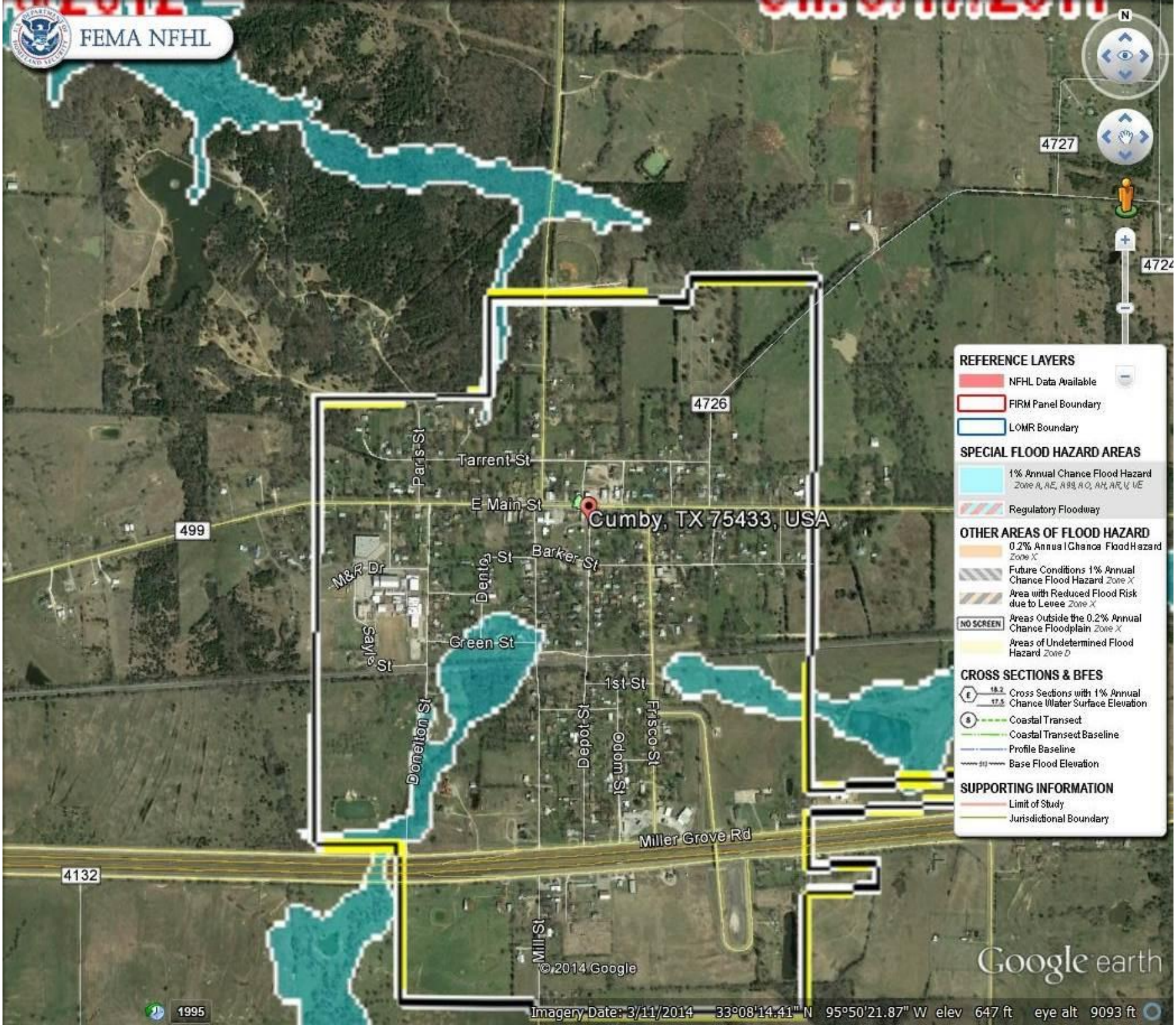
Floodplain: The lowland and flat areas adjoining inland and coastal waters including, at a minimum, that area subject to a one percent or greater chance of flooding in any given year.

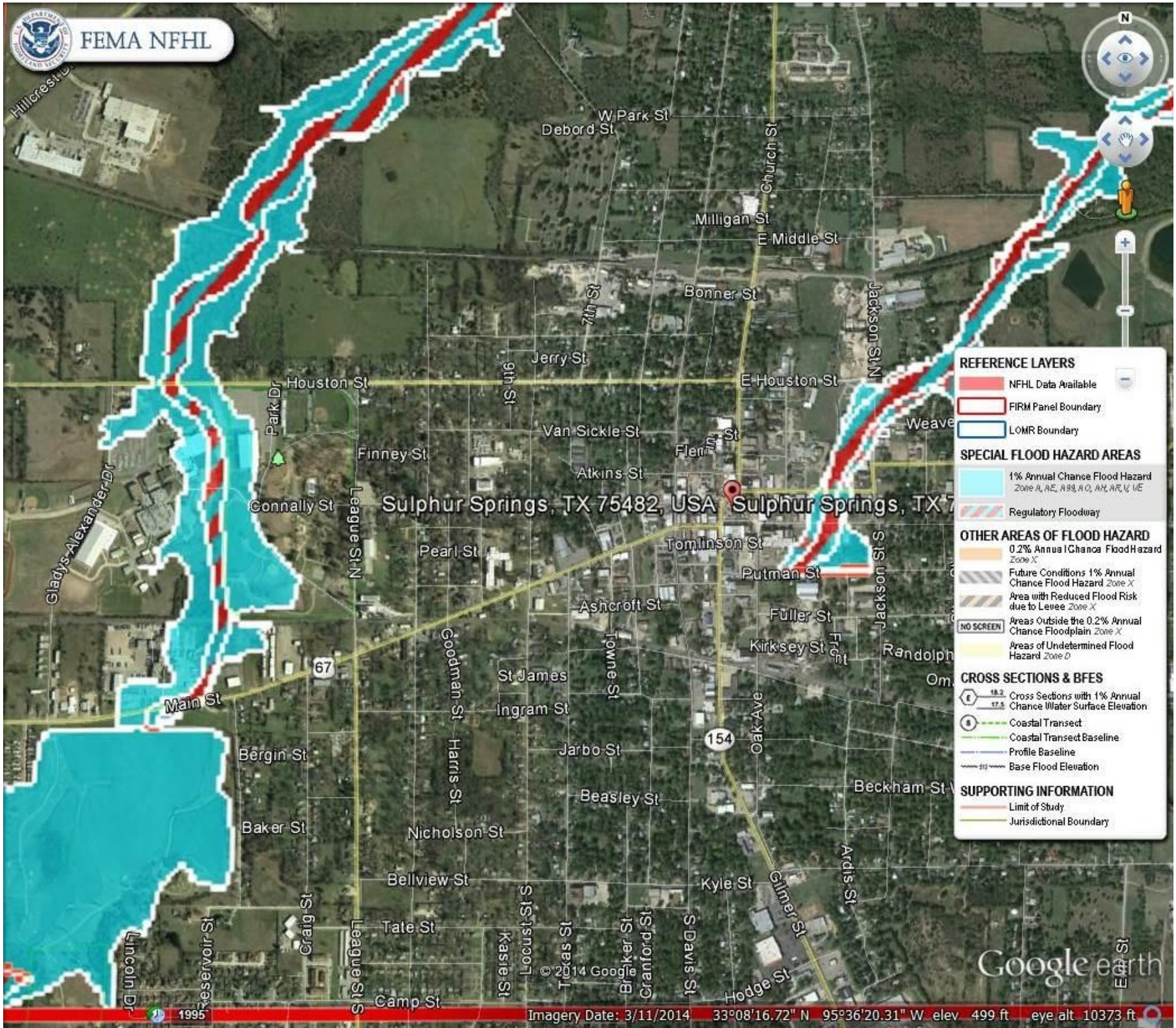
Floodway: That portion of the floodplain which is effective in carrying flow, within which this carrying capacity must be preserved and where water depths and velocities are the greatest. It is the area along the channel that provides for the discharge of the base flood so the cumulative increase in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

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

The following are floodplain maps for Como, Cumby, Sulphur Springs and Tira.


FEMA NFHL
2335
69
6th St
Carroll St
Mills St
Askins St
Como, TX 75431, USA
Smith St
Taylor St
Katy St
Lynch St
2328
11
McBride St
Haywood St
2329
© 2014 Google
Google earth
1995
Imagery Date: 10/30/2012 33°03'39.51" N 95°28'19.03" W elev 534 ft eye alt 10749 ft
REFERENCE LAYERS
NFHL Data Available
FIRM Panel Boundary
LOMR Boundary
SPECIAL FLOOD HAZARD AREAS
1% Annual Chance Flood Hazard
Zone A, AE, A99, AO, AH, AR, V, VE
Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD
0.2% Annual Chance Flood Hazard
Zone X
Future Conditions 1% Annual Chance Flood Hazard Zone X
Area with Reduced Flood Risk due to Levee Zone X
NO SCREEN
Areas Outside the 0.2% Annual Chance Floodplain Zone X
Areas of Undetermined Flood Hazard Zone D
CROSS SECTIONS & BFES
Cross Sections with 1% Annual Chance Water Surface Elevation
Coastal Transect
Coastal Transect Baseline
Profile Baseline
Base Flood Elevation
SUPPORTING INFORMATION
Limit of Study
Jurisdictional Boundary


FEMA NFHL
4727
4724
4726
Tarrent St
Paris St
E Main St
Cumby, TX 75433, USA
499
M&R Dr
Barker St
Green St
1st St
Depot St
Odom St
Fisco St
Donelson St
Miller Grove Rd
4132
Mill St
©2014 Google
Google earth
1995
Imagery Date: 3/11/2014 33°08'14.41" N 95°50'21.87" W elev 647 ft eye alt 9093 ft
REFERENCE LAYERS
NFHL Data Available
FIRM Panel Boundary
LOMR Boundary
SPECIAL FLOOD HAZARD AREAS
1% Annual Chance Flood Hazard
Zone A, AE, A99, AO, AH, AR, V, VE
Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD
0.2% Annual Chance Flood Hazard
Zone X
Future Conditions 1% Annual Chance Flood Hazard Zone X
Area with Reduced Flood Risk due to Levee Zone X
NO SCREEN
Areas Outside the 0.2% Annual Chance Floodplain Zone X
Areas of Undetermined Flood Hazard Zone D
CROSS SECTIONS & BFES
Cross Sections with 1% Annual Chance Water Surface Elevation
Coastal Transect
Coastal Transect Baseline
Profile Baseline
Base Flood Elevation
SUPPORTING INFORMATION
Limit of Study
Jurisdictional Boundary


FEMA NFHL
Sulphur Springs, TX 75482, USA
Sulphur Springs, TX 7
W Park St
Debord St
Church St
Milligan St
E Middle St
Bonner St
7th St
Jackson St N
Jerry St
9th St
E Houston St
Houston St
Park Dr
Van Sickle St
Finney St
Atkins St
Connally St
League St N
Gladys Alexander Dr
Pearl St
Tomlinson St
Putman St
S Jackson St
Ashcroft St
Fuller St
Kirksey St
Goodman St
Towne St
St James
Ingram St
67
Main St
Bergin St
Harris St
Jarbo St
154
Oak Ave
Beckham St
Beasley St
Baker St
Nicholson St
Bellview St
Kyle St
Gilmer St
Ardis St
Craig St
Tate St
Reservoir St
Lincoln Dr
Camp St
Locust St
Kasie St
Texas St
Brooker St
Cranford St
S Davis St
Hodge St
© 2014 Google
Google earth
1995
Imagery Date: 3/11/2014 33°08'16.72" N 95°36'20.31" W elev 499 ft eye alt 10373 ft
REFERENCE LAYERS
NFHL Data Available
FIRM Panel Boundary
LOMR Boundary
SPECIAL FLOOD HAZARD AREAS
1% Annual Chance Flood Hazard
Zone A, AE, A99, AO, AH, AR, V, VE
Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD
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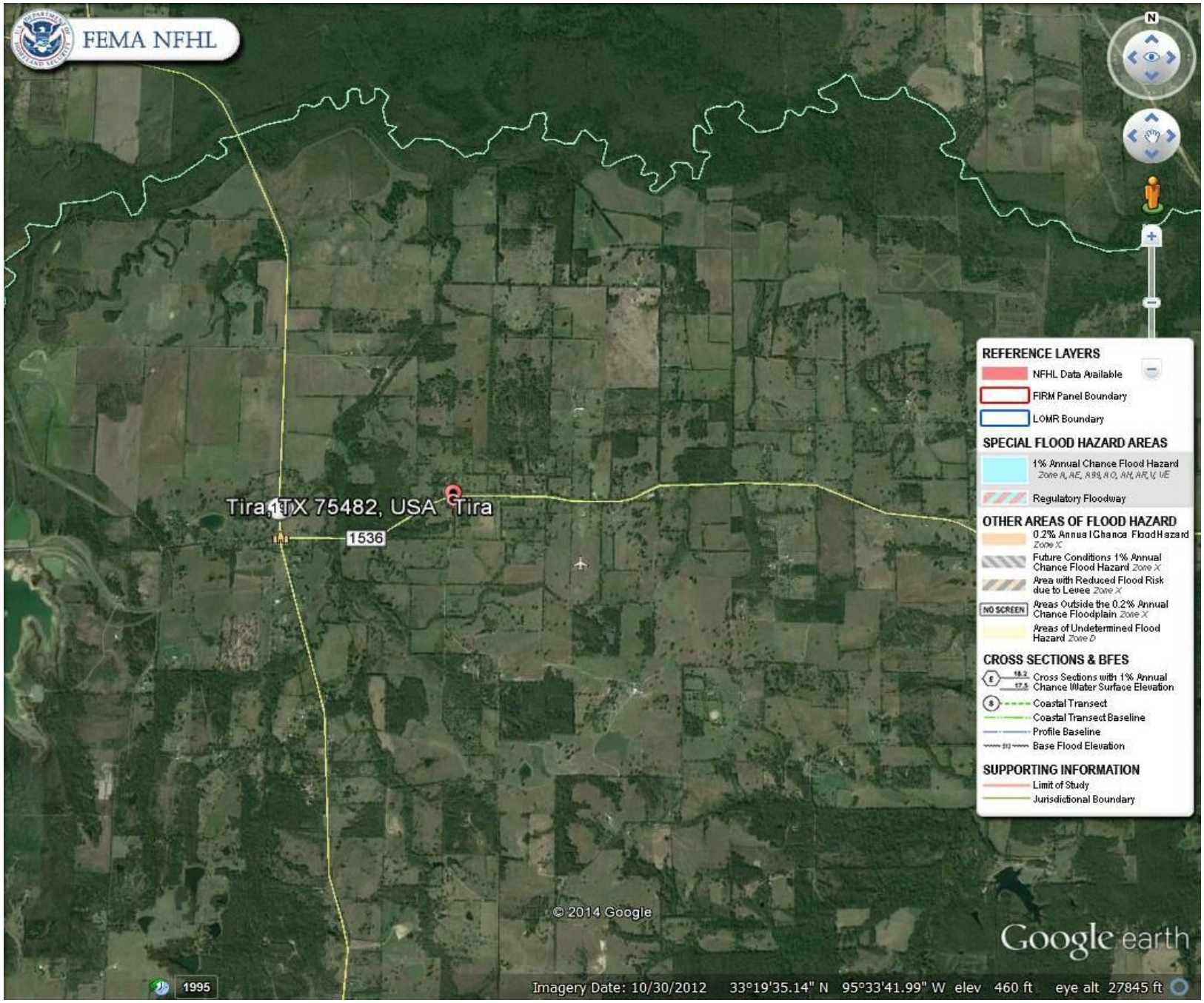
FEMA NFHL
Tira, TX 75482, USA
Tira
1536
REFERENCE LAYERS
NFHL Data Available
FIRM Panel Boundary
LOMR Boundary
SPECIAL FLOOD HAZARD AREAS
1% Annual Chance Flood Hazard
Zone A, AE, A99, AO, AH, AR, V, VE
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Coastal Transect Baseline
Profile Baseline
Base Flood Elevation
SUPPORTING INFORMATION
Limit of Study
Jurisdictional Boundary
© 2014 Google
Google earth
1995
Imagery Date: 10/30/2012 33°19'35.14" N 95°33'41.99" W elev 460 ft eye alt 27845 ft

Flood Plain Maps Narrative

Como Flood Plain page 34

The city of Como has a total of 704 acres inside the city limits. The 100-year flood plain covers approximately 25.9 acres or 3.7% of the total acreage. The total taxable value of all property in the city is approximately 9.9 million dollars. Due to the location of the flood plain, it is estimated that a 100-year flood event in the city would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. No record of repetitive flood losses. Como participates in the NFIP program. They have flood plain maps and a designated representative to monitor new construction to prevent anyone from developing in low areas.

Cumby Flood Plain Page 35

The city of Cumby has a total of 576 acres inside the city limits. The 100-year flood plain covers approximately 14 acres or 2.4% of the total acreage. Due to the location of the flood plain, it is estimated that a 100-year flood event would cause minimal damage. There would be minimal or no property damage, but possibly some public threat or inconvenience. No record of repetitive flood losses. Cumby participates in the NFIP program. They have flood plain maps and a designated representative to monitor new construction to prevent anyone from developing in low areas.

Sulphur Springs Flood Plain Page 36

The city of Sulphur Springs has a total of 11,200 acres inside the city limits. The 100-year flood plain covers approximately 3,136 acres or 28% of the total acreage. The total taxable value of all property in the city is approximately 585.5 million dollars. A 100-year flood event would cause moderate damage. There would be some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations would be necessary. No record of repetitive flood losses in Sulphur Springs. Sulphur Springs participates in the NFIP program. They have flood plain maps and a designated representative to monitor new construction to prevent anyone from developing in low areas.

Although Tira does not reside within a flood plain that are shown to Participates in National Flood Insurance Program. Page 37

PAST OCCURRENCE OF FLOODING IN HOPKINS COUNTY

(Data from National Climatic Data Center)

28 flash flood events were reported in Hopkins County, between 10/19/93and 12/23/2009. There were no fatalities reported.

Index values of severity: substantial 4, major 3, minor 2, limited 1

Date	Location	Description	PrD	Severity
10/19/93	Hopkins County	Water 5 inches deep over Hwy 11 and 275	0	Limited
12/03/93	Hopkins County	High water over Hwy 69	5K	Limited
07/15/94	Sulphur Springs and County	Secondary roads flooded countywide, with structural damage to roads and bridges. 8.11 inches of rain fell in 24 hours causing major flooding in Sulphur Springs	500K	Major
07/26/96	Sulphur Springs	Streets had 6 to 8 inches water over them in town.	0	Minor
11/24/96	Sulphur Springs	Highway 11 was reported flooded. Flooding closed bridges on Highway 2381 Heavy rain flooded streets and two homes which were eventually evacuated.	25K	Major
02/20/97	Sulphur Springs	Numerous roads were closed throughout the county due to flooding. A car was submerged in water with one rescue necessary. Several residences received minor flooding. A local cooperative observer measured three inches of rain in the area	120K	Major
04//04/97	Sulphur Springs	Several roads were flooded and closed in and around town.	0	Limited
06/13/97	Sulphur Springs	Several streets were reported flooded and one was closed due to high water.	0	Limited
05/17/99	Sulphur Springs	Twenty seven streets were closed due to flooding and thirty cars were stalled by the high water from thunderstorms.	0	Major
06/04/00	Countywide	Numerous roads and highways were closed due to high water. Heavy thunderstorm rain brought water over Interstate 30 in Sulphur Springs.	0	Minor
06/15/00	Countywide	County and farm to market roads closed.	0	Minor
06/21/00	Sulphur Springs	Numerous high water rescues had to be performed. Five miles of Interstate 30 were closed. Numerous county and farm to market roads were closed. 5.01 inches was reported in Sulphur Springs in Hopkins county	0	Major

Date	Location	Description	PrD	Severity
11/05/00	Sulphur Springs	Three homes flooded, county courthouse basement flooded, truck swept of CR 1174.	0	Minor
02/15/01	Countywide	Widespread heavy rain caused flooding countywide. A high water rescue was performed near Satillo. Several county and farm to market roads were flooded along with Interstate 30 service roads. The water did not begin receding until Friday morning on the 16th.	0	Major
12/16/01	Weaver	Water over several FM roads in eastern part of county.	0	Limited
10/19/02	Countywide	Hwy 19 and 2653 north of Brashear closed. Hwy 11 west of Sulphur Springs closed.	0	Limited
08/08/05	11 miles Northeast of Sulphur Springs	Roads were under two feet of water	0	Limited
6/27/07	Sulphur Springs	Street flooding in town	0	Limited
7/10/07	Hopkins County	FM 71 near Sulphur Bluff was under water, as was CR 4760 north of Sulphur Springs	0	Limited
9/26/07	Sulphur Springs	A few roads were barricaded due to flooding	0	Limited
03//18/08	Hopkins County	Flooding was reported in the following areas: on Highway 11 between Sulphur Springs and Commerce; along FM 71 west, one mile from the Hopkins-Delta County line; along the southbound lane of Highway 19; FM 2653 at CR 4809 near Oakland; FM 69 south; CR 1178 off of FM 275; CR 4776 and 4766; and CR 2270 along FM 69 and 269.	0	Minor
3/30/8	Hopkins county	CR 2270 was washed out by 10 AM and had to be blockaded. A section of road near the intersection of Highway 69 and FM 1537 was underwater. In addition, firefighters from Dike helped move seventy dogs out of an animal shelter after it was flooded.	8K	Major
6/16/08	Hopkins County near Brinkner	FM 269 south of Interstate 30 was flooded as was FM 2705. FM 3270 was damaged by floodwaters and had a large hole in it.	15 K	Major

Date	Location	Description	PrD	Severity
06/17/08	Hopkins County 2 miles west of Dike	A high water rescue was needed after a woman tried to drive through high water on CR 3567 where Cross timbers Creek goes under the road. The water was about a foot deep and moving swiftly.	2k	Major
05/02/09	Hopkins County	Numerous roads were closed or covered in water across Hopkins County. These roads and areas included: FM 71 near the Delta/Hopkins county line, CR 2276, CR 2321, CR 4708, CR 3518, CR 4763, CR 2322, CR 4764, CR 2270, FM 2560, FM 71 at CR 3567, FM 69 north at CR 3918, FM 1567 west, CR 3380 at FM 900, and SH 11 west just past CR 4738. A car was reported stuck in flood waters on CR 3523 north of FM 69 in Dike and a vehicle was washed off CR 2275, but no injuries were reported with either incident. In addition, several yards in Sulphur Spring were underwater due to heavy rain that overwhelmed the drainage system.	60 K	Major
08/01/09	Sulphur Springs	Numerous streets were flooded in the city of Sulphur Springs. The water was knee to waist deep and several water rescues were performed for trapped motorists.	50K	Major
10/13/09	Sulphur Springs	Numerous city streets in Sulphur Springs were inundated and a few were barricaded. Highway 19 just north of Sulphur Springs was under water, and FM 1870 southeast of Sulphur Springs had high water over the road. FM 69 north of Interstate 30 had to be closed down because the water was a foot deep over a 100 feet section of the road. CR 4766 south of FM 71 was impassable but possibly because it lies near a swollen section of the South Sulphur River.	12K	Major

Date	Location	Description	PrD	Severity
12/23/09	Hopkins County 1WSW Pine Forest	Periods of heavy rainfall during the late afternoon and evening hours resulted in flash flooding in Hopkins County. The following roads were impassable at some point during the evening hours: CR 1197 near FM 2297 and CR 1174, FM 69 north of Interstate 30, FM 1870 near the bridges, FM 2560, CR 1444, CR 1152 near FM 1567, FM 71 west, CR 2276 near FM 69 south, and several of the main streets in Sulphur Springs. It was also reported that some vehicles got trapped in water on SH 11, CR 2276, and SH 154.	15k	Minor
			$812,000	

FLOOD RISK					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Hopkins Unincorporated	Major PRI=3	Highly Likely PRI=4	6 to 12 hrs. PRI=2.	< 24 hrs. PRI=2	High 3.2
Como	Limited PRI=1	Unlikely PRI=1	6 to 12 hrs. PRI=2.	< 24 hrs. PRI=2	Low 1.25
Cumby	Limited PRI=1	Unlikely PRI=1	6 to 12 hrs. PRI=2.	< 24 hrs. PRI=2	Low 1.25
Sulphur Springs	Major PRI=3	Highly Likely PRI=4	6 to 12 hrs. PRI=2.	< 24 hrs. PRI=2	High 3.2
Tira	Limited PRI=1	Unlikely PRI=1	6 to 12 hrs. PRI=2	< 24 hrs. PRI=2	Low 1.25

Location: Historically, the entire County has suffered from flash flooding. If future trends occur as they have in the past, the County area will continue to have floods. Countywide, the highways and county roads will continue to flood. Como, Cumby and Tira have no record of flooding issues but Sulphur Springs has had multiple events recorded over the last sixteen years of record.

Probability: Flash floods are highly likely county wide, however there are no historical records of Como, Cumby or Tira experiencing significant flash flood events. From the maps we see that Como and Cumby have a 1% chance of flooding in any given year. The Tira flood map does not indicate any flooding probability. We can look for Sulphur Springs and the rural parts of Hopkins County to continue to have flooding events annually.

Estimated Property Damage from Flood at 75%	
Como	$2,906,001
Cumby	$8,656,814
Sulphur Springs	$508,675,980
Tira	Not Applicable

Impact The magnitude of observed or forecast flooding is conveyed using flood severity categories. Each category has a definition based on property damage and public threat. These flood severity categories include substantial, major, minor, and limited flooding, Hopkins County and Sulphur Springs were rated as MAJOR because they have a history of frequent flooding with some rescues from flooded autos being necessary and/or property or infrastructure damage. Como and Cumby were rated LIMITED because they have no history of flooding in the 16 years that records have been kept by the NOAA Weather Service for Hopkins County. The impact of flash floods varies locally**.** Roads may flood in Sulphur Springs and in rural county areas after heavy rains. There are no repetitive loss properties, and no reported deaths or injuries due to flooding and minimal financial loss. Improvements such as new culverts could help to minimize the problem, however, should it rain hard enough in a short period of time streets will flood. All the cities are responsive to the dangers of high water and know to place warning signs out for motorists when needed. The Damage Assessment Tables on page 29 address the amount of loss that can occur with flooding.

Possible Amounts of Flooding Within Jurisdictions		
Jurisdiction	**From**	**To**
Hopkins County	¼ inch	3 feet
Sulphur Springs	¼ inch	1 foot
Como	No history of flash flooding	
Cumby	No history of flash flooding	
Tira	No history of flash flooding.	

Vulnerability: Flash flooding, and the inability to accommodate the existing drainage on some of the rural FM roads and in Sulphur Springs is a constant problem. The vulnerability for Hopkins County and Sulphur Springs is rated HIGH. The Vulnerability of Como, Cumby and Tira is LOW.

Summary: Historically, Hopkins County and Sulphur Springs have suffered from flooding. If future trends continue, Sulphur Springs and rural county roads will continue to flood during periods of heavy rains. Countywide, the FM roads and State Highway 11 have seen flooding in the past and will continue to do so. FM roads and state highways are depicted on the Hopkins County map on page 14.

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. Hopkins County tornadoes are shown by magnitude in Figure 2.2, and by amount of property damage in Figure 2.3.

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

Tornadoes in Hopkins County 1955-2014
Probability/Severity
Table 2.3

Fujita Scale	Tornadoes	Percent
F0	10	34
F1	6	21
F2	12	41
F3	1	4
F4	0	0
F5	0	0
Total	29	100

Figure 2.1
Wind Zone Map

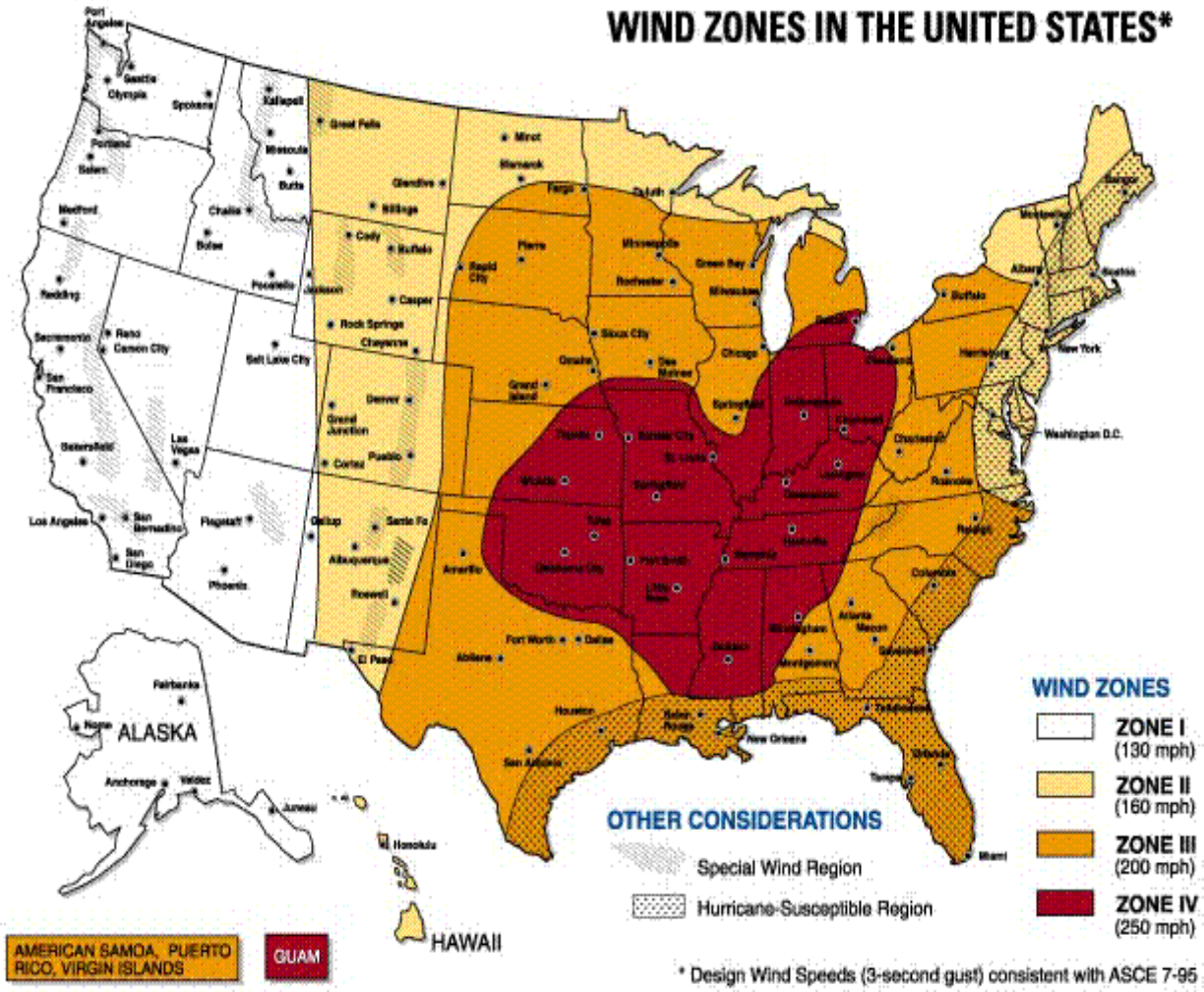


Figure I.2 Wind zones in the United States

The **Enhanced Fujita Scale**, or **EF Scale**, shown below in Table 2.51, 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.

Enhanced Fujita (EF) Scale

Enhanced Fujita Category	Wind Speed (mph)	Potential Damage
EF0	65-85	**Light damage.** Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	**Moderate damage.** Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	**Considerable damage.** Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	**Severe damage.** Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	**Devastating damage.** Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200	**Incredible damage.** Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd); high-rise buildings have significant structural deformation; incredible phenomena will occur.

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

TORNADO PAST OCCURRENCES IN HOPKINS COUNTY

Table 2.6 (National Climatic Data Center)

22 Tornadoes were reported in Hopkins County between 04/06/1955 and 04/03/2014 Only those with reported property or crop damage are shown in the table.

Date	**Location**	**F SCALE**	**Description**	**PrD**
01/14/60	Nea4 highway 67 East of Cumby	F2	One person injured/no deaths	2.5K
05/04/60	33.12/-95.60	F1	1 mile long, 30 yards wide	3K
03/26/61	South of Hwy.71,West of Sulphur Bluff	F2	1 mile long, 280 yards wide	25K
03/26/61	Rural South Central Hopkins County	F2	5 miles long, 250 yards wide	25K
03/24/62	North West of Pickton	F2	2 miles long, 300 yards wide	25K
05/14/69	10 Miles South East of Sulphur Springs	F3	A small tornado destroyed three barns on the McClure Farm near Sulphur Springs and caused considerable damage to two barns on neighboring farms. The damaged area was in the Pine Forest community. . .	25K
03/10/73	NW Sulphur Springs, Hopkins County	F2	Two barns on the Gregory farm, just northwest of Sulphur Springs in the Gafford Chapel community, were demolished. Tow barns south of the Gregory farm also suffered heavy damage.	25K
10/27/74	Sulphur Springs	F2	The tornado struck first near Hwy. 144 and I-30 and skipped northeastward across FM 1870 into the Rock Creek bottoms. One man was injured by flying glass. Major damage was reported to 13 businesses and 36 homes, Additional damage was sustained by about 60 homes. Water damage was responsible for much of the interior damage as 4 inches of rainfall accompanied the storm.	2.5M
04/11/79	Sulphur Springs	F2	The tornado followed a skipping path of about 8 miles from the south side of Sulphur Springs into the Mahoney area. Minor damage occurred to 5 or 6 houses in town and several more rural homes northeast of Sulphur springs. The Rockwell Manufacturing plant in Sulphur Springs was unroofed causing $100,000 damage. Out buildings and farms were damaged northeast of Sulphur springs. One mobile home was overturned in Mahoney.	250K
10/16/80	SW Sulphur Springs and I 30	F2	3 miles long, 77 yards wide. No further description available	250K
10/18/84	Hopkins County	F1	Developing out of thunderstorm activity the first tornado touched down south of Brashears in Hopkins county. A barn was destroyed and several outbuildings. Trees and power lines were damaged.	25K
05/11/92	Rural SW Hopkins county Near FM 1142	F2	4 miles long, 400 yards wide No further description available	25K
10/02/98	.Cumby	F0	20 yards wide A narrow tornado briefly touched down north of Cumby. Numerous power lines were downed	5K
04/23/00	Tira	F0	Extensive damage from a possible tornado. The damage path was apparently intermittent as it paralleled F.M. 1536 from Tira to one mile north of Nelta; a distance of around four miles. A barn was destroyed and numerous trees and fences were damaged. Minor damage was reported on two homes. Two minor injuries from flying glass were also reported.	25K

Date	**Location**	**F SCALE**	**Description**	**PrD**
03/18/08	Hopkins County.	0	The National Weather Service in Fort Worth conducted a damage survey and found that an EF-1 tornado occurred north of Sulphur Springs. Damage was first noted west of Highway 19, along the northbound part of CR 4761. Trees and a shed were damaged. Along Highway 19 and between CR 3620 and CR 4508, several trees were snapped and power lines were damaged. More significant damage occurred along CR 4508 where several homes and a barn sustained damage. Most of the damage to houses was confined to the roofs. A shed was destroyed and debris from it struck a light pole. The impact along with the strong winds bent the light pole to the ground. A semi- trailer was blown over and trees snapped along FM 3236 and CR 4510. Additional trees were damaged north of CR 3510 and east of FM 3236. Maximum winds were estimated at 85-90 MPH.	250 K
01/20/10	Hopkins County Rural SW of Sulphur Springs	0	A NWS Storm Survey found evidence of a tornado touchdown approximately 4 miles southwest of Sulphur Springs and tracked approximately 5.5 miles to the northeast. One mobile home was destroyed resulting in two injuries. A pre-fabricated metal building on Highway 19 south of County Road 174 suffered considerable damage. The damage was consistent with the upper end of the EF-0 rating with wind speeds estimated near 80 mph.	100K
1/20/10	3 miles east northeast of Sulphur Springs	0	A NWS storm survey found evidence of a tornado in a sub-division 2 miles east of Sulphur Springs. Around 50 homes suffered some degree of roof damage, two of which sustained more severe damage after being impaled by large tree branches. This damage was consistent with the rating of an EF-0 with wind speeds around 80 to 85 mph.	750K
4/03/2012	Greenview	0	A very brief tornado touched down in open field near FM 3389 and CR 1170, south of Brashear.	0.00k
04/03/2012	Sulphur Spring Airport	0	Trained spotters and Sulphur Springs PD reported a tornado near Highway 19 North and Loop 301 on the north side of town. This tornado touched down in open country but did damage to a few power poles, power lines, and trees. The tornado was rated an EF-0 with maximum estimated winds near 85 mph. The total path length was around 0.6 miles long with a width of approximately 50 yards.	0.00k
04/03/12	2 miles South East of Pickton, Hopkins County	0	Trained storm spotters reported a tornado 6 miles northwest of Winnsboro which is also about 2 miles southeast of Pickton. The tornado damaged a few trees. Maximum wind speeds were likely around 80 mph.	10K (Crops)

Date	Location	F SCALE	Description	PrD
04/03/14	Rural Hopkins County	0	A National Weather Service damage survey crew determined a tornado produced EF1 damage in northern Hopkins County, near the city of Birthright. This tornado caused damage to several homes and businesses, including the Birthright Volunteer Fire Department building. A total of 76 houses or businesses were damaged in this tornado. One death reported.	425K
			total	**$4,776,000**

Hopkins County Tornado Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Hopkins Unincorporated	Substantial PRI=4	Highly Likely PRI=4	< 6 hrs. PRI=4	< 6 hrs. PRI=1	High 3.7
Como	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4	< 6 hrs. PRI=1	Medium 2.8
Cumby	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
Sulphur Springs	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8
Tira	Substantial PRI=4	Unlikely PRI=1	< 6 hrs. PRI=4.	< 6 hrs. PRI=1	Medium 2.8

Location: All of Hopkins County can possibly be affected. Tornadoes have an unpredictable pattern, so the entire County is subject to being hit by a tornado. Como, Cumby, Sulphur Springs and Tira with the unincorporated parts of Hopkins County could be affected.

Probability: Tornadoes are most frequent in the months of April, May and June. While tornadoes can occur at any time during the day or night, they tend to form during the late afternoon and into the evening. Based on a historical trending over the past 59 years there is a 41% chance that a tornado will strike Hopkins County in any given year. Strong scientific evidence predicts an increase in violent weather in Hopkins County may increase. Most tornadoes are expected to touchdown for relatively short periods of time in a bounce type pattern. The possibility of a tornado touchdown on an annual basis is considered highly likely for the County. The possibility is remains unlikely for the participating jurisdictions because they occupy a smaller portion of Hopkins County.

Vulnerability Due to the frequency and unpredictable pattern of tornadoes, all of Hopkins County is vulnerable to tornado-induced damages. The damage potential is high due to the concentrations of populated areas, number of mobile homes and manufactured housing units throughout the county. Tira, Cumby and Como consist of mostly older wood frame homes and mobile homes. Sulphur Springs has more valuable property such as the county courthouse and places of business

that could be destroyed. Because of a larger population, Sulphur Springs could experience more damage and injury than the other jurisdictions.

Impact: Based on a historical trend over the past 59 years, Hopkins County will 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 towns of Como, Cumby, and Tira. Small towns can experience a complete loss of communications. Roads could be blocked by downed trees and building debris. There are no modern buildings in any of the jurisdictions other than Sulphur Springs. This would contribute to the possibility of injury and death. The Damage Assessment Tables on page 29 demonstrate the amount of loss that can occur from a tornado. The extent of damage can be substantial.

Estimated Property Loss at 50%	
Como	1,937,335
Cumby	6,241,187
Sulphur Springs	339,116,881
Tira	Not Available

Historically the severity has ranged from F0 to F2. The entire scale presented is used to determine ranges and severity. The expected tornado size would range between 25 to 1000 yards wide, with a path from one to several miles long. The full range of 65 (F0) to 200 mph (F5 +) are possible in Hopkins County and its jurisdictions. Should a F5 tornado hit Sulphur Springs a 50% property loss could add up to over 339 million dollars.

Summary: Hopkins County is located in tornado alley. There have been 22 tornado events in Hopkins County with no deaths and 6 injuries recorded over the 59 year history. Warning sirens, safe rooms, enforced modern building codes and generators for emergency power are needed safeguards for the small communities of Como, Cumby, Sulphur Springs and Tira to help protect its citizens from tornadoes.

Toto, I've a feeling we're not in Kansas anymore. Dorothy: The Wizard of Oz

THUNDERSTORM

A thunderstorm is a storm with lightning and thunder, produced by a cumulonimbus cloud, usually producing gusty winds, heavy rain and sometimes hail. The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Nearly 1,800 thunderstorms are occurring at any moment around the world.

Thunderstorms may occur singly, in clusters, or in lines. Some of the most severe occur when a single thunderstorm affects one location for an extended time. Thunderstorms typically produce heavy rain for a brief period, anywhere from 30 minutes to an hour. Warm, humid conditions are highly favorable for thunderstorm development. Every thunderstorm needs (1) moisture to form clouds and rain; (2) unstable air - warm air that can rise rapidly; and (3) lift - cold or warm fronts, sea breezes, mountains, or the sun's heat are capable of lifting air to help form thunderstorms.

All thunderstorms are dangerous. About 10% of the thunderstorms that occur each year in the United States are classified as severe. (A thunderstorm is considered severe if it produces hail at least ¾ inch in diameter, winds 58 mph or greater or tornadoes). Every thunderstorm produces lightning, which kills more people each year than tornadoes. Heavy rain from thunderstorms can lead to flash flooding (which is the number one thunderstorm killer). Strong winds, hail, and tornadoes are also dangers associated with some thunderstorms.

According to research by Jeremy Pal, a professor of civil engineering and environmental science at Loyola Marymount University severe thunderstorms 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.

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

The Beaufort Scale depicted in the chart below shows wind speeds and the effects of winds on land.

Beaufort Scale

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

Thunderstorm Past Occurrences in Hopkins County (Thunderstorms with recorded property damage)				
Begin Date	Location	Description	$ PD	Magnitude
01/23/93	Peerless	Power lines downed	5K	Not Avail.
02/15/93	Sulphur Springs	Wind gusts at 85 mph blew down signs in Sulphur Springs and structural damage to a barn.	50K	Not Avail.
04/14/93	Peerless	Mobile home destroyed by winds, and trees and power lines blown down.	50K	Not Avail.
05/09/93	Dike	Barn was destroyed by high winds. Trees blown down.	50K	Not Avail.
10/18/93	8 Miles SW of Como	Damage to trees.	5K	Not Avail.
12/13/93	Sulphur Springs (5 counties)	Tree limbs and Christmas decorations were blown down by high winds 58 mph winds.	55K	58 knots
05/29/94	Cumby	Trees blown down by winds.	5K	Not Avail.
11/04/94	6 Miles W of Sulphur Springs	Trees blown down by high winds.	5K	Not Avail.
11/04/94	Cumby	Trees blown down by high winds.	5K	Not Avail.
11/05/94	Sulphur Springs	Trees blown down by winds.	5K	Not Avail.
11/05/94	Saltillo	Trees blown down by winds.	5K	Not Avail.
04/19/95	Sulphur Springs	Trees were uprooted and a calf barn destroyed.	5K	Not Avail.
04/30/95	Sulphur Springs	Trees and power lines blown down, a metal roof blown off a building, feed store destroyed, signs downed.	40K	Not Avail.
11/01/95	7 Miles SW of Sulphur Springs	Several sheds were blown down and trees blown across the road.	1K	Not Avail.
01/18/96	Cumby	Trees and power lines were blown down by high winds.	2K	Not Avail.
03/05/96	Dike	A barn was partially unroofed by high winds.	1K	Not Avail.
07/08/96	Sulphur Springs	A mobile home was flipped over and damaged by high winds.	4K	Not Avail.
04/22/97	Sulphur Springs	Strong winds blew down trees and power lines.	2K	57 knots
05/08/98	Sulphur Springs	High winds blew off a sidewalk cover, blew the windows out of 5 cars and downed trees and signs.	5K	61 knots
07/12/98	Sulphur Springs	High winds unroofed houses and blew down trees & power lines.	20K	Not Avail.
10/02/98	3 Miles W of Sulphur Springs	Power lines blown down by high winds.	2K	65 knots
5/17/99	Sulphur Springs	The roof of an office was blown off by high winds.	2K	52 knots
05/27/00	Sulphur Springs	Power lines were blown down by high winds.	2K	Not Avail.
09/01/00	Miller Grove	Strong thunderstorm winds blew trees down onto seven cars and a storage building.	20K	Not Avail.
04/11/01	17 Miles N of Sulphur Springs	Strong winds destroyed a bait shop, outbuildings, damaged a café, and a garage.	35K	Not Avail.

Begin Date	Location	Description	$ PD	Magnitude
04/14/01	Sulphur Bluff	Large trees and power lines blown down and barn unroofed.	10K	52 knots
04/06/03	Hopkins County	Trees and utility lines blown down	5K	60 knots
04/23/03	Cumby	150 yard wide swath of trees up to 4 feet in diameter blown down, power lines blown down, and outbuildings unroofed.	15K	60 knots
05/24/03	Cumby	Barns were blown down, trees blown onto houses and utility poles down in a widespread area around Cumby southwest to Lone Oak in Hunt County	150K	52 knots
03/04/04	Countywide, mostly in eastern Hopkins County	Widespread rural damage occurred, mainly in the eastern part of the county. 8 homes were destroyed, 13 were heavily damaged, and 27 sustained moderate damage	350K	61 knots
03/04/04	4 miles South South East of Como	The Bain Poultry Farm had 6-500 foot long poultry barns destroyed, 80,000 baby chicks were killed, and there was heavy damage to a dairy barn. Several area homes had roof and structural damage, and several barns were destroyed, and trees and powerlines were blown down.	150K	50 knots
03/20/04	15 Miles East South East of Sulphur Spgs. Occurred near the community of Pine Forest	3 large transmission towers were blown down, and there were numerous reports of trees and power lines down.	50K	61 knots
06/01/04	Countywide	Trees and power lines were blown down across the county. A series of slow moving upper level disturbances produced unusually heavy rain across most of North Central Texas in June. Sporadic severe weather occurred the rest of the month, but heavy rain and flooding were the main problems.	25K	61 knots
04/05/05	Sulphur Springs	Tree blown onto house	1K	60 knots
04/05/05	Sulphur Springs	Strong winds split a large oak tree at the Sulphur Springs courthouse at the intersection of Oak Avenue and Jefferson Street. An awning was also torn off a building on Main Street.	2K	60 knots
04/10/05	Sulphur Springs	Numerous trees uprooted, trees blown down on utility poles, and a number of fences were destroyed throughout Sulphur Springs. Most of the damage was reported along College, Jefferson, and Weaver Streets, but additional damage was located at the intersections of Clayton Road and Dena Drive, Fuller and Stacy Street, and Church and Middle Street.	40K	50 knots

Thunderstorms Since 2007 Plan Submission				
Begin Date	**Location**	**Description**	**$ PD**	**Magnitude**
05/14/08	Three Miles SE of Pickton	According to a damage survey conducted by the National Weather Service in Shreveport, a downburst occurred along the Hopkins/Wood County line. A significant number of trees were downed in Hopkins County along CR 2408, CR 2407, and CR 2403.	25.00	65 Knots
06/16/08	Saltillo	Numerous trees were blown down in the eastern part of the county.	5.00K	50 Knots
02/10/09	Martin Springs	Numerous homes in the Sandy Ranch area south of Sulphur Springs sustained extensive damage. Roofs were torn off, meter boxes were ripped off homes, and one garage was destroyed. Large trees were also uprooted and power lines were blown down. Additional large trees were also blown down to the east of Sandy Ranch along FM 2560 and CR 2174.	75K	80 Knots
05/02/09	Sulphur Bluff	Trees and power lines were down across the western and northern portions of the county. Several electrical fires were reported from trees falling onto power lines and blown transformers.	10.00k	55 Knots
05/02/09	Posey	A tree fell on a vehicle at CR 4761 near SH 19. The occupants of the vehicle were not injured**.**	5.00k	55knots
06/10/09	Shirley	Trees and large limbs were reported down on State Highway 19 near CR 1116.	2.00k	60 knots
06/10/09	Sulphur Springs	In Sulphur Springs, trees and large limbs were down in the 1500 block of East Industrial Drive and along State Highway 154 south of the city. A large tree on South Davis Street was also snapped near the base and fell against a house. Power outages were reported on the south side of town.	5.00k	60 knots
6/10/09	Black Oak	Trees and large limbs were reported down on FM 69 in the Black Oak area south of Como.	2.00k	60 knots
6/10/09	Sulphur Bluff	Trees and large limbs were reported down near the intersection of CR 4546 and 4544.	1.00 k	65 Knots
08/20/09	Reilly Springs	Trees were reported down across southeastern Hopkins County.	8 k	50 Knots

Begin Date	Location	Description	$ PD	Magnitude
01/20/2010	Sulphur Springs	Power poles and large trees were damaged at the intersection of Highway 19 and Highway 154 on the north side of Sulphur Springs.	5	50 Knots
01/20/10	Sulphur springs	A roof was caved in, a truck was overturned, and debris was noted on Irwin Rd between Drexel Drive and Hines Drive in Sulphur Springs.	5	55 Knots
1/20/10	2 miles NW of Brinkner	Two tractor trailers were overturned on Interstate 30 at mile marker 127.	20K	50 Knots
4/24/10	Arbala	A county commissioner reported approximately 50 trees were over roads in the Precinct 2 area. Most of these trees were broken off at 30 to 40 feet up the tree trunk. It took two days to clean up the tree debris.	3K	52 Knots
05/20/10	Weaver	Hopkins County local and county Emergency Management officials determined that damage and debris reported near the intersection of Interstate 30 and Highway 67 was caused by straight line winds of approximately 70 mph. Winds damaged trees, powerlines and power poles near this location.	30k	61 knots
08/06/10	Cumby	Trees were knocked down by thunderstorm winds on CR 4127, two miles south of Cumby.	10 k	52 Knots
04//04/11	Reilly Springs	Trees were blown down in the Greenpond area, southwest of Como. Some of these trees were blocking roads.	3 k	56 Knots
04/11/11	Cumby	Several trees were knocked down across the county but the hardest hit area was along Hwy 19 north of Sulphur Springs. On either side of the highway, numerous trees were knocked down and many trees blocked roads. On CR 4769, a carport was blown across the road. The roof of an unoccupied trailer on CR 4591 was ripped off. A few trees were also knocked down across the southern half of the county.	15 k	65 Knots
04/11/11	Sulphur Springs	Several trees were knocked down across the county but the hardest hit area was along Hwy 19 north of Sulphur Springs. On either side of the highway, numerous trees were knocked down and many trees blocked roads. On CR 4769, a carport was blown across the road. The roof of an unoccupied trailer on CR 4591 was ripped off. A few trees were also knocked down across the southern half of the county.	7.00 k	70 Knots

Begin date	Location	Description	$ PD	Magnitude
04/25//11	Sulphur Springs	Several travel trailers were blown over, many trees and power poles were knocked down, and a metal building was severely damaged in Sulphur Springs. A tree at The Propane Company on Loop 27 was snapped and fell on a carport which damaged the car underneath the covering.	45 k	61 Knots
04/25/11	1 Mile SSW of Mahoney	Trees were knocked down on CRs 3511 and 3504. A barn in the area was also destroyed.	4 k	52 Knots
04/25/11	Dike	Several trees were blown down by estimated 60 MPH winds. One tree fell on a house on CR 3504. Trees were also reported down on CR 3511, and a barn in the area was destroyed	10 k	52 Knots
04/25/11	Como	Winds were estimated to be near 60 mph in Como.	7 k	52 Knots
04/25/11	1 mile SSE of Askew	A barn in the Pickton-Pine Forest area lost its metal roof.	3 k	55 Knots
07/04/11	2 miles S SW of North Shirley	Medium sized trees were knocked down along FM 3236 north-northeast of Sulphur Springs. Some sheds were also displaced several yards along the same road. One residential home on FM 3236 sustained damage. The damage was the result of a microburst from a dissipating, high-based thunderstorm.	25 k	61 Knots
09/18/11	Sulphur Springs	Power lines and a large tree blocked a highway about 4 miles southwest of Sulphur Springs.	2 k	52 Knots
04/03/12	Sulphur Springs	Approximately 10 moderate sized trees in Sulphur Springs were knocked down by thunderstorm winds. The emergency manager noted that the trees were all already dead or dying.	5 k	39 Knots
08/12/12	Sulphur Springs	Law enforcement reported large trees blown down throughout the city of Sulphur Springs.	10 k	54 Knots
12/19/12	Sulphur Springs	Sulphur Springs Municipal Airport (KSLR) measured a 62 MPH thunderstorm wind gust.	5 k	54 Knots
		Total $ PD	**1527k**	

Hopkins County Thunderstorm Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Hopkins Unincorporated	Minor PRI=2	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.8
Como	Minor PRI=2	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.8
Cumby	Minor PRI=2	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.8
Sulphur Springs	Minor PRI=2	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.8
Tira	Minor PRI=2	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.8

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 storms may occur at any time in Hopkins County given the right conditions.

Vulnerability: The County is susceptible to flash flooding and wind damage from severe thunderstorms. Vulnerability depends on the magnitude of the storm. Damage potential is high in populated areas.

Thunderstorms can produce high winds and fires generated from lightening. Lightning will be dangerous to people and property from a Lightning Activity Level (LAL) of 2 to a LAL of 6. See table page 51.

Impact: According to NOAA Satellite and Information Service of the National Climatic Data Center, there were 129 thunderstorm wind events reported in Hopkins County between 1956 and 2008. The magnitudes ranged from 50 knots to 90 knots.

There have been no reported injuries or deaths from thunderstorm wind events in Hopkins 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 page 29 demonstrating possible loss for the county and each participating jurisdiction.

Estimated Property Loss at 15%		
Hopkins County	Residential	145,191,068
Como	Residential	1,416,734
Cumby	Residential	640,673
Sulphur Springs	Residential	54,973,595
Tira	Residential	Not Available

Location: Historically, all of Hopkins County has been affected by thunderstorms. If this trend continues, the entire County will be subject to thunderstorms. This would include the jurisdictions of Como, Cumby, Sulphur Springs and Tira.

Summary: High winds, and lightning are the two main destructive forces associated with thunderstorms. Thunderstorms also spawn tornadoes. Deteriorating infrastructure, mobile homes business signage and crops are most susceptible to damage. Como, Cumby, Sulphur Springs, Tira and Hopkins County residents share susceptibility to thunderstorm damage.

The rain set early in tonight,
The sullen wind was soon awake,
It tore the elm-tops down for spite,
And did its best to vex the lake **Robert Browning**

WINTER STORMS

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

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

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

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

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

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

- snowfall accumulating to 4" or more in depth in 12 hours or less; or
- snowfall accumulating to 6" or more in depth in 24 hours or less

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

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

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

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

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

Winter Storm WARNING: Means sustained winds or frequent gusts to 35 miles per hour or greater and considerable falling or blowing snow (reducing visibility to less than a quarter mile)

are expected to prevail for a period of three hours or longer, and dangerous wind chills are expected in the warning area.

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

Wind Chill Chart

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

Frostbite Times: 30 minutes | 10 minutes | 5 minutes

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

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

Source: National Weather Service and NOAA

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

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

For drivers, the consequences of icing can be serious, for stopping distances on glaze 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. Hopkins County was one of several counties declared a disaster area.

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

Potential Damage/Loss Due To Ice Storms

Life and Property

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

Roads and Bridges

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

Power Lines

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

Water Lines

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

PAST OCCURRENCES OF ICE STORMS IN HOPKINS COUNTY

(Data from National Climatic Data Center)

10 Snow and Ice events were reported in Hopkins County between 01/01/50 and 12/27/02

Date	Location	Description	$ PD
02/09/94	77 Counties	An Arctic cold front moved into Northern Texas during the afternoon of the 8th, 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	Hopkins	3 to 5 inches of snow occurred in the southern 2/3's of the county while the northern third received 1 to 3 inches.	0
12/22/98	48 Counties	Strong arctic cold front moved through North Texas bringing freezing temperatures by the 22nd. All counties had icy streets, bridges and highways. 6 fatalities attributed to this storm.	0
01/25/00	48 Counties	Sleet and snow accumulations ranged from 2 inches in NW to 5 inches in NE. Numerous schools and businesses closed.	0
12/12/00	48 Counties	Sleet and freezing rain up to 1 inch.	123 m
12/25/00	48 Counties	Up to 4 inches of ice covered trees and power lines along the Red River eastward to Hopkins County	27.5m
12/27/00	48 Counties	1-3 inches of snow accumulated over the region, melted on streets then refroze after sunset.	0
01/01/01	48 Counties	Snow from 27st lingered for several days.	0
11/27/01	41 Counties	Mixture of freezing rain and sleet changing to snow.	0
02/05/02	20 Counties	Minor icing problems during the day and night.	0
Winter Storm Events Post Original 2007 Hopkins County Plan			
02/24/03		Mostly sleet and snow, with most of the snow falling north of interstate 20. Sleet and snow accumulations were generally 1 to 3 inches, Schools and businesses closed early on the 24th, many not reopening until the afternoon of the 26th. Conditions did not improve significantly until Thursday afternoon the 27th,	0
12/07/05	County Wide Hopkins County	A cooperative observer in Sulphur Springs reported a quarter-inch of ice accumulation. Numerous accidents were reported Wednesday.	0

Date	Location	Description	$ PD
12/05/13	County Wide Hopkins county	Up to 2 in. of freezing rain and sleet fell across the county causing significant damage to trees, tree branches, utility poles and lines due to the heavy collection of ice. A trained spotter reported 0.50 of freezing rain in Cumby. The newspaper in Sulphur Springs reported over 1.75 of sleet. Hundreds of trees, tree branches, and power lines were knocked down. Falling tree branches and ice damaged cars and roofs. Bridges, overpasses, and elevated surfaces became icy but other roads were largely not impacted by the ice. One railroad employee was injured when a tree fell on him as he was working to remove tree debris from the railroad tracks.	2.00m
03/02/14	County wide Hopkins county	Sleet and freezing rain affected Hopkins County resulting in slick roads. The freezing rain total averaged 0.10 but sleet totals between 1.5-2 was reported in Cumby with another 1.5 reported northwest of Sulphur Springs and around 0.50 in Sulphur Springs. Over 3 of sleet and ice was reported in Tira.	200.00m
			202.00m

Hopkins County Winter Storms Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Hopkins Unincorporated	Minor PRI=2	Highly Likely PRI=4	6 to 12 hrs. PRI 3	< 1 week PRI 3	Medium 2.85
Como	Minor PRI=2	Highly Likely PRI=4	6 to 12 hrs. PRI 3	< 1 week PRI 3	Medium 2.85
Cumby	Minor PRI=2	Highly Likely PRI=4	6 to 12 hrs. PRI 3	< 1 week PRI 3	Medium 2.85
Sulphur Springs	Minor PRI=2	Highly Likely PRI=4	6 to 12 hrs. PRI 3	<1 week. PRI 3	Medium 2.85
Tira	Minor PRI=2	Highly Likely PRI=4	6 to 12 hrs. PRI 3	<1 week. PRI 3	Medium 2.85

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

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

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

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

Estimated Property Loss at 15%		
Hopkins County	Residential	145,191,068
Como	Residential	1,416,734
Cumby	Residential	640,673
Sulphur Springs	Residential	54,973,595
Tira	Residential	Not Available

The Damage Assessment Tables found on page 29 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 county wide that would create conditions for winter storms. (see the wind chill chart on page 61).

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

Vulnerability Hopkins County has a significant amount of acreage designated as conservation, public lands and agricultural land uses. The small towns of Como, Cumby Sulphur Springs and Tira are vulnerable to power outages, icy roads and delayed emergency services.

Summary: In rural east Texas, when moist gulf air meets arctic temperatures winter storms can occur. The storms usually take their toll from heavy accumulations of ice that form, often overnight, on trees, power lines and structures. In the more remote areas of the county homes may be without electrical power for days but critical facilities in more urban areas are operating within a few days. Como, Cumby, Sulphur Springs, Tira and rural Hopkins County may have power outages lasting one to two weeks.

What good is the warmth of summer, without the cold of winter to give it sweetness? **John Steinbeck, Travels with Charley: In Search of America**

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 fatal harm to human and animal life.

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

Size Code	Intensity Category	Typical Hail Diameter (inches)	Approximate Size	Typical Damage Impacts
H5	Destructive	1.6-2.0	Silver dollar to Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	2.0-2.4	Lime or Egg	Aircraft bodywork dented, brick walls pitted
H7	Very destructive	2.4-3.0	Tennis ball	Severe roof damage, risk of serious injuries
H8	Very destructive	3.0-3.5	Baseball to Orange	Severe damage to aircraft bodywork
H9	Super Hailstorms	3.5-4.0	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	4+	Softball and up	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

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

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.

HISTORY OF HAILSTORMS IN HOPKINS COUNTY

The NOAA Satellite and Information Service, National Climatic Data Center, reports that there have been 149 hail events reported between 1950 and 2012 in Hopkins County. Eight (8) of those events reported the largest magnitude of 2.75 inches, and forty one (41) of those events reported the smallest magnitude of .75 inches. A hailstorm caused approximately $116 million in damages on March 29, 2000, in the Sulphur Springs area. This storm was widespread with thunderstorms and tornadoes in Ft. Worth, Arlington, Grand Prairie, and Navarro County. Another storm on April 5, 2003, caused three (3) injuries by baseball size hail. The storm developed in Kent County and moved eastward into western Young County in North Central Texas. The damage path across North Texas extended from Padgett, in western Young County, to west of Sulphur Springs, a distance of approximately 192 miles. This was one of the costliest storms on record to hit North Texas, with damage estimates approximately 885 million dollars.

Past Occurrence of Hailstorm in Hopkins County

149 events were reported between 05/23/1957 and 04/30/2014

Hail storms.

Summary Info:

Number of County/Zone areas affected:	7
Number of Days with Events	105
Number of Events	149
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	1
Number of Days with Event and Property Damage:	5
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:

'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Location	Date	Time	Size	Inj.	PrD
Totals:				3	188.00 K
HOPKINS CO.	05/23/1957	14:20	1.00 in.	0	0.00K
HOPKINS CO.	04/09/1958	18:30	2.00 in.	0	0.00K
HOPKINS CO.	05/23/1966	18:00	1.75 in.	0	0.00K
HOPKINS CO.	02/04/1975	23:30	1.75 in.	0	0.00K
HOPKINS CO.	03/27/1977	20:10	1.75 in.	0	0.00K
HOPKINS CO.	04/07/1980	16:55	0.75 in.	0	0.00K
HOPKINS CO.	04/11/1980	17:53	1.75 in.	0	0.00K
HOPKINS CO.	05/01/1980	19:50	1.00 in.	0	0.00K
HOPKINS CO.	05/13/1981	20:15	1.75 in.	0	0.00K
HOPKINS CO.	04/15/1982	16:35	1.75 in.	0	0.00K
HOPKINS CO.	04/15/1982	16:45	1.75 in.	0	0.00K
HOPKINS CO.	05/26/1982	14:00	0.88 in.	0	0.00K
HOPKINS CO.	02/26/1984	17:50	1.75 in.	0	0.00K
HOPKINS CO.	02/26/1984	18:20	1.75 in.	0	0.00K
HOPKINS CO.	04/30/1985	14:20	0.75 in.	0	0.00K
HOPKINS CO.	05/27/1985	08:08	1.50 in.	0	0.00K
HOPKINS CO.	07/03/1985	20:13	1.00 in.	0	0.00K
HOPKINS CO.	11/30/1985	21:05	1.00 in.	0	0.00K
HOPKINS CO.	04/04/1986	04:30	0.75 in.	0	0.00K
HOPKINS CO.	04/04/1986	17:10	1.00 in.	0	0.00K
HOPKINS CO.	04/04/1986	20:30	1.75 in.	0	0.00K
HOPKINS CO.	04/19/1986	13:55	1.00 in.	0	0.00K
HOPKINS CO.	04/19/1986	14:03	2.75 in.	0	0.00K
HOPKINS CO.	09/15/1987	15:35	0.75 in.	0	0.00K
HOPKINS CO.	07/03/1988	17:00	1.75 in.	0	0.00K
HOPKINS CO.	11/15/1988	17:15	2.00 in.	0	0.00K
HOPKINS CO.	11/19/1988	12:00	1.25 in.	0	0.00K
HOPKINS CO.	11/25/1988	17:45	0.75 in.	0	0.00K
HOPKINS CO.	11/25/1988	19:00	0.75 in.	0	0.00K

Location	Date	Time	Size	Inj.	PrD
HOPKINS CO.	04/03/1989	20:01	1.75 in.	0	0.00K
HOPKINS CO.	04/03/1989	21:10	1.75 in.	0	0.00K
HOPKINS CO.	05/16/1989	20:40	0.75 in.	0	0.00K
HOPKINS CO.	03/07/1990	16:15	0.75 in.	0	0.00K
HOPKINS CO.	04/05/1990	19:55	1.00 in.	0	0.00K
HOPKINS CO.	05/16/1990	12:40	2.75 in.	0	0.00K
HOPKINS CO.	05/16/1990	12:45	2.75 in.	0	0.00K
HOPKINS CO.	05/30/1990	18:10	1.50 in.	0	0.00K
HOPKINS CO.	10/07/1990	21:10	2.75 in.	0	0.00K
HOPKINS CO.	02/18/1991	19:25	0.75 in.	0	0.00K
HOPKINS CO.	02/18/1991	20:15	1.75 in.	0	0.00K
HOPKINS CO.	04/25/1991	00:15	1.75 in.	0	0.00K
HOPKINS CO.	04/27/1991	23:25	0.75 in.	0	0.00K
HOPKINS CO.	05/03/1991	15:00	1.00 in.	0	0.00K
HOPKINS CO.	03/24/1992	15:15	0.75 in.	0	0.00K
HOPKINS CO.	05/11/1992	19:55	1.75 in.	0	0.00K
HOPKINS CO.	05/11/1992	20:18	2.75 in.	0	0.00K
HOPKINS CO.	06/10/1992	23:42	1.00 in.	0	0.00K
HOPKINS CO.	06/11/1992	00:00	0.88 in.	0	0.00K
Sulphur Springs	04/19/1993	19:25	1.75 in.	0	0.00K
Greenwood	04/19/1993	19:45	1.75 in.	0	0.00K
Cumby	09/20/1993	15:15	0.75 in.	0	0.00K
Como	10/18/1993	17:15	1.00 in.	0	0.00K
Black Oak	01/26/1994	19:00	1.75 in.	0	0.00K
Arbala	04/29/1994	21:25	1.00 in.	0	0.00K
Cumby	11/03/1994	18:25	0.75 in.	0	0.00K
Sulphur Springs	11/04/1994	17:40	1.75 in.	0	0.00K
Reilly Springs	03/25/1995	20:25	0.75 in.	0	0.00K
Arbala	03/26/1995	14:55	1.75 in.	0	0.00K
Cumby	04/19/1995	15:54	0.75 in.	0	0.00K
Sulphur Springs	04/19/1995	16:00	1.00 in.	0	0.00K
Shirley	04/22/1995	15:30	0.88 in.	0	0.00K
Peerless	04/30/1995	22:22	1.75 in.	0	0.00K
Sulphur Springs	04/30/1995	22:52	1.00 in.	0	0.00K
Sulphur Springs	04/30/1995	23:02	1.75 in.	0	0.00K
Sulphur Springs	04/30/1995	23:05	0.88 in.	0	0.00K
Sulphur Springs	04/30/1995	23:10	1.75 in.	0	0.00K
Sulphur Bluff	05/01/1995	00:40	1.75 in.	0	0.00K
Peerless	06/02/1995	22:15	1.00 in.	0	0.00K
DIKE	03/05/1996	17:30	0.75 in.	0	0.00K
PEERLESS	03/24/1996	17:10	1.75 in.	0	0.00K
BIRTHRIGHT	03/24/1996	17:25	0.75 in.	0	0.00K
Sulphur Springs	04/12/1996	18:55	0.75 in.	0	0.00K
RIDGEWAY	04/13/1996	23:28	1.75 in.	0	0.00K
BRASHEAR	04/19/1996	18:15	0.75 in.	0	0.00K
Sulphur Springs	04/19/1996	18:30	0.75 in.	0	0.00K
PICKTON	04/19/1996	19:45	1.75 in.	0	0.00K
DIKE	06/18/1996	16:45	1.00 in.	0	0.00K
TIRA	07/26/1996	18:13	0.75 in.	0	0.00K
BRASHEAR	03/02/1997	08:40	0.75 in.	0	0.00K
Sulphur Springs	03/02/1997	10:49	0.75 in.	0	0.00K
EMBLEM	03/29/1997	23:02	0.75 in.	0	0.00K

Location	Date	Time	Size	Inj.	PrD
Sulphur Springs	04/22/1997	05:08	0.75 in.	0	0.00K
Sulphur Springs	05/15/1997	07:53	1.00 in.	0	0.00K
PEERLESS	05/27/1997	02:35	0.75 in.	0	0.00K
SALTILLO	06/12/1997	14:45	0.75 in.	0	0.00K
SULPHUR BLUFF	06/13/1997	17:06	0.75 in.	0	0.00K
Sulphur Springs	06/13/1997	18:33	0.75 in.	0	0.00K
Sulphur Springs	06/13/1997	18:40	1.75 in.	0	0.00K
Sulphur Springs	06/13/1997	18:50	1.75 in.	0	0.00K
COMO	06/13/1997	19:03	1.75 in.	0	0.00K
WEAVER	10/25/1997	12:40	0.75 in.	0	0.00K
Sulphur Springs	05/02/1998	22:03	1.00 in.	0	0.00K
PEERLESS	05/02/1998	22:30	0.88 in.	0	0.00K
PEERLESS	05/02/1998	22:45	1.00 in.	0	0.00K
EMBLEM	05/08/1998	23:15	0.75 in.	0	0.00K
SULPHUR SPGS	05/08/1998	23:35	0.88 in.	0	0.00K
BIRTHRIGHT	02/06/1999	21:35	0.75 in.	0	0.00K
SULPHUR BLUFF	04/04/1999	15:05	1.75 in.	0	0.00K
COMO	05/04/1999	15:05	0.75 in.	0	0.00K
Miller Grove	05/11/1999	20:36	1.75 in.	0	0.00K
Sulphur Springs	05/17/1999	13:25	0.75 in.	0	0.00K
Sulphur Springs	05/17/1999	13:55	0.75 in.	0	0.00K
Sulphur Springs	05/17/1999	15:45	0.75 in.	0	0.00K
Sulphur Springs	03/10/2000	15:30	0.75 in.	0	0.00K
BIRTHRIGHT	03/26/2000	23:10	1.00 in.	0	0.00K
BIRTHRIGHT	03/26/2000	23:28	1.75 in.	0	0.00K
Sulphur Springs	03/26/2000	23:50	0.75 in.	0	0.00K
Sulphur Springs	03/29/2000	00:35	1.75 in.	0	116
Sulphur Springs	04/07/2000	17:15	1.75 in.	0	0.00K
Sulphur Springs	04/07/2000	17:25	1.00 in.	0	0.00K
SALTILLO	04/23/2000	14:20	1.75 in.	0	0.00K
CUMBY	04/05/2003	22:50	1.75 in.	0	0.00K
Sulphur Springs	04/05/2003	23:40	2.00 in.	0	0.00K
Sulphur Springs	04/05/2003	23:45	2.75 in.	3	0.00K
Sulphur Springs	04/06/2003	00:35	1.00 in.	0	0.00K
Sulphur Springs	04/06/2003	15:05	0.75 in.	0	0.00K
CUMBY	05/24/2003	20:17	0.75 in.	0	0.00K
Sulphur Springs	07/13/2003	14:25	0.88 in.	0	0.00K
Sulphur Springs	03/20/2004	21:34	1.75 in.	0	0.00K
Sulphur Springs	03/20/2004	21:36	1.75 in.	0	0.00K
Sulphur Springs	03/20/2004	21:38	1.75 in.	0	0.00K
Sulphur Springs	04/05/2005	18:55	1.75 in.	0	0.00K
Sulphur Springs	04/11/2005	00:54	0.75 in.	0	0.00K
Sulphur Springs	04/25/2005	22:54	1.00 in.	0	0.00K
Sulphur Springs	04/25/2005	23:15	1.00 in.	0	0.00K
Sulphur Springs	04/25/2005	23:45	1.75 in.	0	0.00K
Sulphur Springs	04/25/2005	23:47	2.75 in.	0	0.00K
Sulphur Springs	04/25/2005	23:58	0.75 in.	0	0.00K
Sulphur Springs	04/26/2005	00:03	1.00 in.	0	0.00K
TIRA	09/28/2005	18:44	0.88 in.	0	0.00K

Location	Date	Time	Size	Inj.	PrD
CUMBY	03/19/2006	15:30	1.00 in.	0	0.00K
CUMBY	05/13/2006	23:42	1.75 in.	0	5.00K
SULPHUR SPGS	05/14/2006	00:04	2.50 in.	0	10.00K
CUMBY	05/14/2006	04:06	1.75 in.	0	5.00K
Hail Storms After the original 2007 Hopkins County Plan					
Sulphur Springs	03/29/2008	03:14	1.75 in.	0	10.00K
Sulphur Springs	03/29/2008	23:10	1.75 in.	0	10.00K
WEAVER	03/30/2008	07:00	0.75 in.	0	0.00K
REILLY SPGS	07/08/2009	14:50	0.88 in.	0	0.00K
GREENVIEW	01/20/2010	18:05	1.00 in.	0	0.00K
CUMBY	08/06/2010	13:12	0.75 in.	0	0.00K
Sulphur Springs	10/24/2010	13:00	1.00 in.	0	2.00K
PICKTON	10/24/2010	13:25	0.75 in.	0	0.00K
Sulphur Springs	10/24/2010	18:24	1.75 in.	0	30.00K
NELTA	03/08/2011	18:15	1.00 in.	0	0.00K
Sulphur Springs	04/25/2011	15:25	1.00 in.	0	0.00K
COMO	04/25/2011	17:15	1.00 in.	0	0.00K
CUMBY	04/26/2011	17:10	1.25 in.	0	0.00K
CUMBY	09/18/2011	18:25	0.88 in.	0	0.00K
CUMBY	08/17/2012	19:40	1.00 in.	0	0.00K
Totals:				3	188.00 K

Hopkins County Hail Storms Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Hopkins Unincorporated	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Como	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Cumby	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Sulphur Springs	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2.35
Tira	Limited PRI=1	Highly Likely PRI=4	<6 hrs. PRI 4	<6 hrs. PRI 1	Medium 2..35

Descriptions of Hail Storms in Hopkins County with Property Damage

Location	Date	Time	Description	Size	PrD
Sulphur Springs	03/29/00	00:35	Hail did extensive damage to roofs and autos the Sulphur springs area	1.75 in.	116.00k
Cumby	05/13/06	23:42	Golf ball size hail reported on Highway 11 North of Cumby	1.75 in.	5.00k
Sulphur Springs	05/14/06	00:04	Tennis ball-size hail reported in the community of Shirley	2.50 in.	10.00
Cumby	05/14/06	04:06	No description available	1.75 in	5.00
Sulphur Springs Municipal Airport	03/29/08	03:14	Van Zandt and Hopkins Counties had reports of large hail, high winds, and flooding as the boundary wavered in the area on the 30th. Several super-cells and a line of severe storms moved through north Texas on the evening of the 27st as a dry line approached from the west and the warm front remained nearby.	1.75 in.	10.00k
Sulphur springs Municipal Airport	03/29/08	23:10	Golf ball-size hail was reported in Sulphur Springs.	1.75 in.	10.00k
Sulphur Springs	10/24/10	13:00	Quarter size hail was reported on I-30 at mile marker 125 on the southeast side of Sulphur Springs.	1.00 in.	2.00k
Sulphur Springs	10/24/10	18:24	Golf ball-size hail was reported in Sulphur Springs	1.75 in.	30k
				Totals	**188K**

Location: Hailstorms can strike anywhere in Hopkins County including the jurisdictions of Como, Cumby, Sulphur Springs and Tira.

Probability: The probability of a hailstorm strike in Hopkins County is highly likely. The jurisdictions of Como, Cumby, Sulphur Springs and Tira are at risk.

Impact: The impact of a hailstorm has historically been limited however, the baseball size hail recorded on April 4, 2003 caused three 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 $19,358,809. See the tables on page 29 for a more comprehensive look at possible damage values.

Estimated Property Loss at 25%		
Hopkins County	Residential	241,985,112
Como	Residential	236,222
Cumby	Residential	1,067,787
Sulphur Springs	Residential	91,622,657
Tira	Residential	Not Available

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

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

I grew up in Texas, but that was 20 years ago. Last year, in Fort Worth, they had hail the size of softballs. We're seeing more and more powerful storms, of all types, almost on a biblical level. **Bill Paxton, actor**

WINDSTORMS

Because of the very small sampling of high wind events recorded in the NOAA weather database, high winds will be mitigated under the heading of Thunderstorms in the updated edition dated January 2015.

Severe wind can be as destructive as tornadoes. Strong winds can exceed 100 mph, and can cause damage equal to that of a tornado. Strong winds can also be extremely dangerous to aviation. The Beaufort Scale as depicted earlier shows wind speeds and the effects of winds on land.

HISTORY OF WINDSTORMS IN HOPKINS COUNTY

According to NOAA Satellite and Information Service of the National Climatic Data Center, there were 3 high wind or strong wind events reported in Hopkins County between January of 2006 and January of 2012 In Hopkins County the vast majority of high wind incidents are associated with thunderstorms**.**

WINDSTORM EVENTS

Storm Events Database
3 events were reported between 01/19/06 and 04/30/2014

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	3
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	3
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Hopkins County Strong Winds					
Location	Date	Time	Description	Mag	PrD
HOPKINS (ZONE)	01/19/2006	09:30	A carport and a roof were blown off two buildings in Como.	40 kts. ES	10.00K
HOPKINS (ZONE)	01/29/2008	11:40	Strong winds downed power lines and trees across the county sparking several grass fires**.**	33 kts. MS	30.00K
HOPKINS (ZONE)	01/25/2012	02:00	A tree fell on a home along FM 69 South, and knocked a hole in the roof of the home. Many of the trees in the county had been weakened or killed by the persistent drought that plagued the region for the previous 15 months.	26 kts. EG	5.00K
Totals:					**45.00K**

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.

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.

<u>The 1996, 1998 and 2000 Texas Droughts</u>

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 127 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.

The majority of Texas is currently experiencing in drought that started in October 2010. Most of the state has been under drought conditions for over three years.

State Climatologist John-Nielsen Gammon has warned that Texas could be in the midst of a drought worse than the drought of record in the 1950s. 2011 was the driest year ever for Texas, with an average of only 14.8 inches of rain. 2011 also set new records for low rainfall from March through May, and again from June through August. The high summer temperatures increased evaporation, further lowering river and lake levels.

The state experienced a short and rainy respite in the winter and spring of 2012, but by the fall of 2012 dry conditions had returned to much of the state. Those persisted until late in the summer of 2013, when a sustained rainy period lowered the percentage of the state experiencing drought.

That doesn't mean that the drought is over. As of June, 2014, 70 percent of Texas is still in drought conditions, while 21 percent is in the worst two stages of drought, either extreme or exceptional drought. The state's reservoirs are 67 percent full. StateImpact: National Public Radio report on drought

The current drought, which started four years ago, is among the five worst in the past 500 years. If it continues to be as dry as it is has been, the drought could be the third worst. May 15, 2014, Houston Chronicle

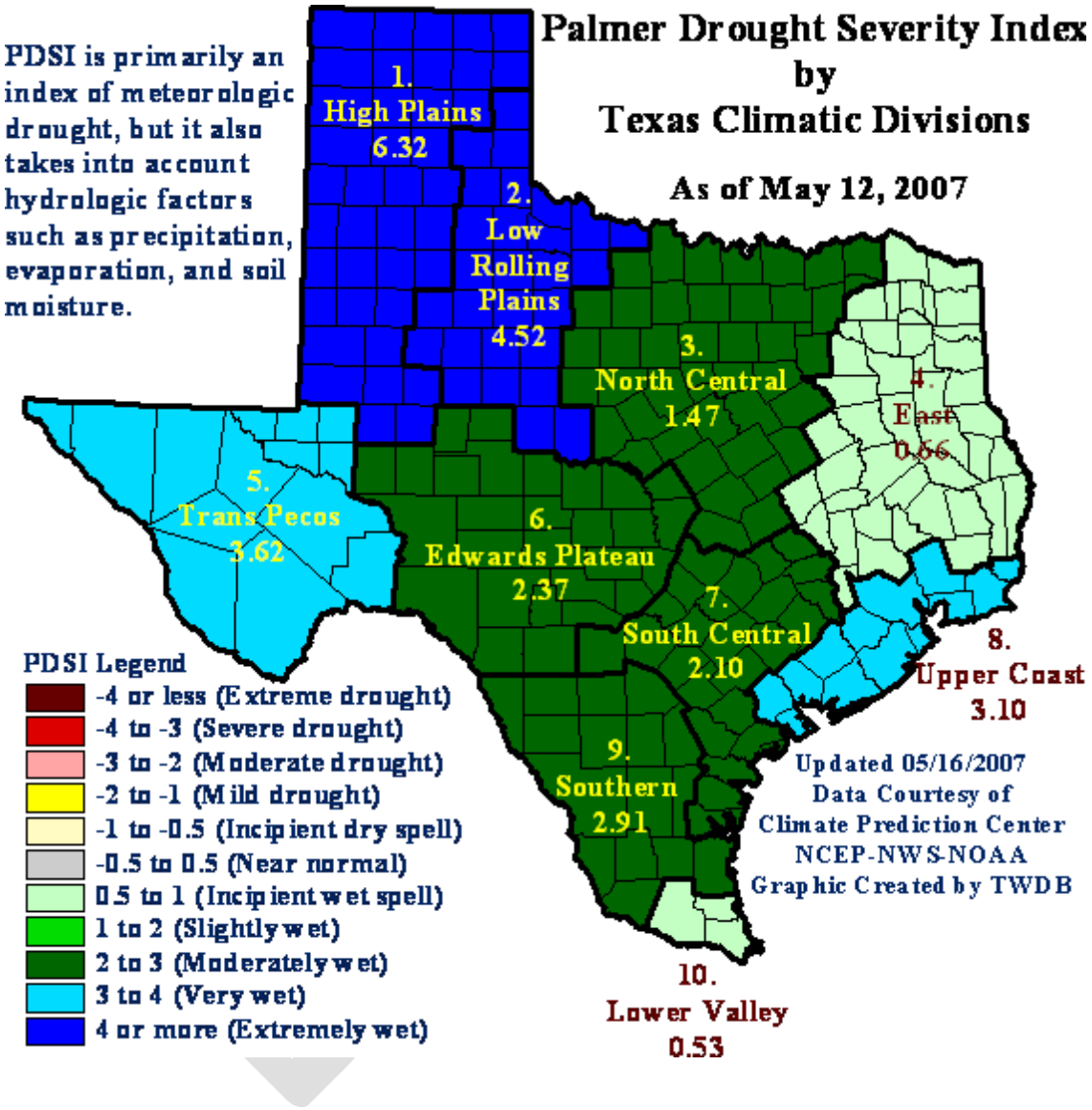
Data is insufficient to project total losses on a severe drought. A severe drought like the 1996, 1998 and 2000 droughts would cause significant loss in basic agriculture items along with timber and livestock losses.

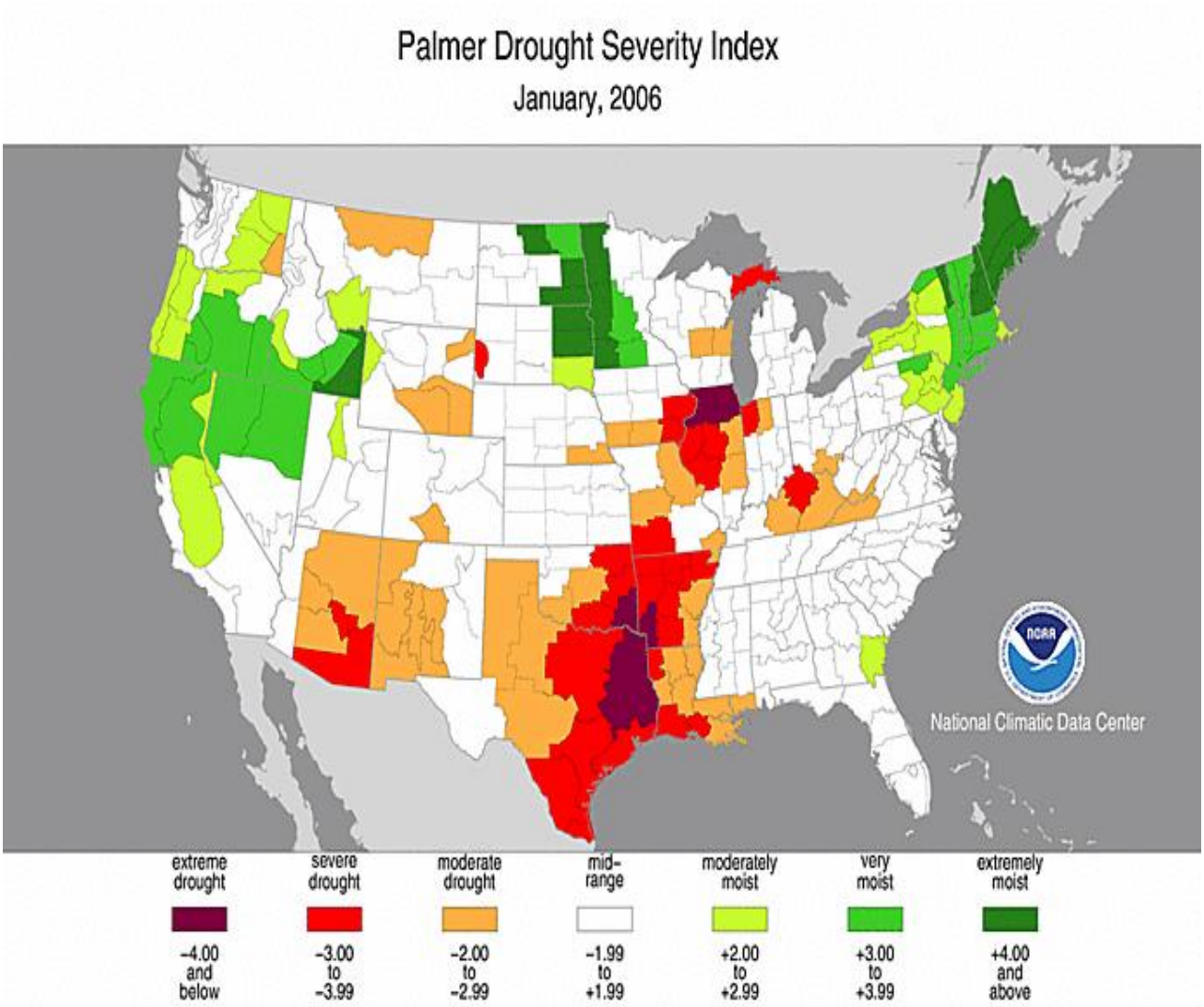
Figure 2.12 provided by TexasWaterInfo.Net provides an Explanation of the Palmer Drought Severity Index by Texas Climatic Divisions. PDSI is primarily an index of meteorological drought, but it also takes into account hydrologic factors such as precipitation, evaporation, and soil moisture. As of July 1, 2006, Texas Climatic Division, which includes Hopkins County, is shown to be –3.82. The PDSI Legend shows that –4 to –3 is severe drought. Hopkins County is experiencing a severe drought.

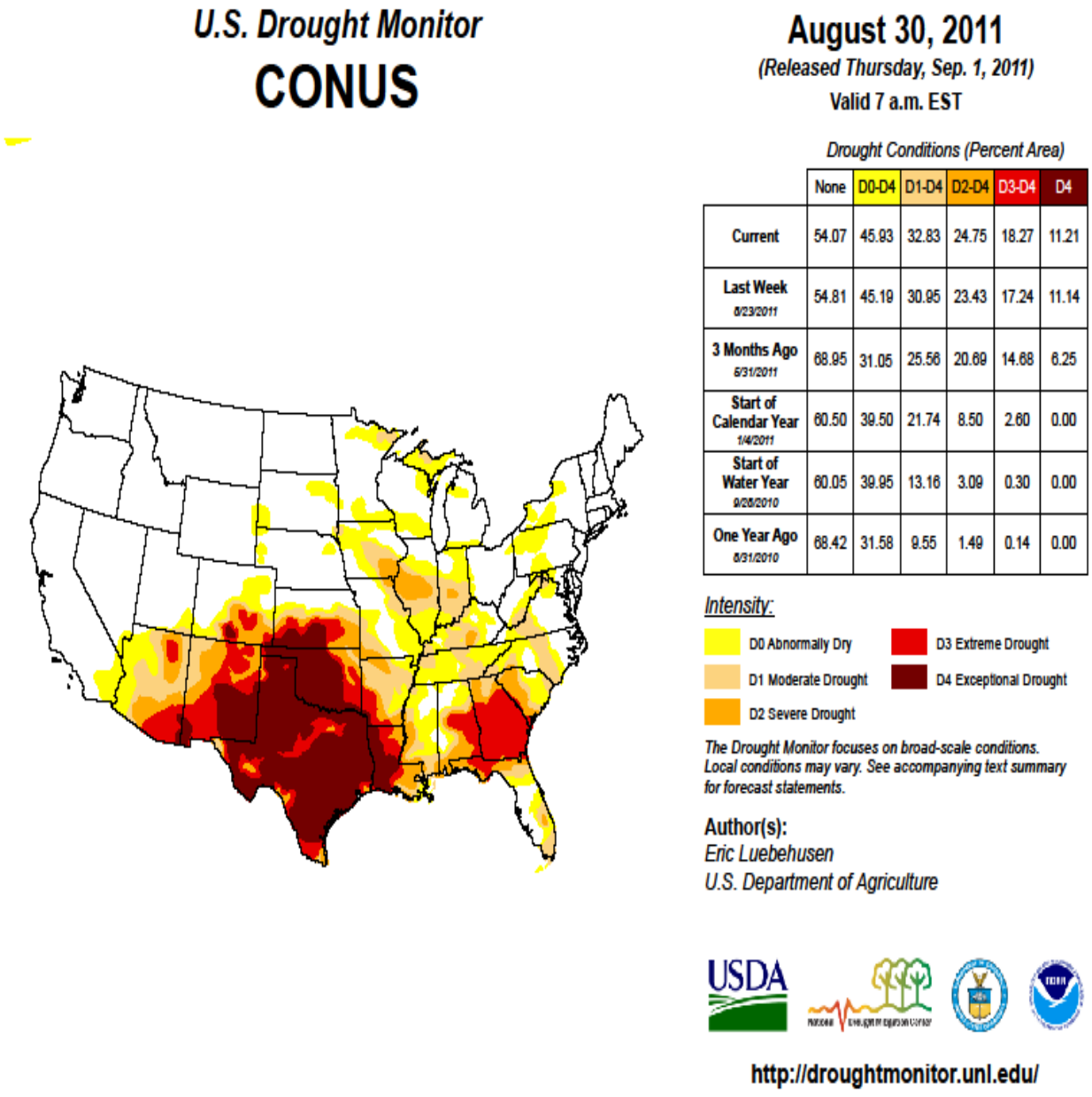
God has cared for these trees, saved them from drought, disease, avalanches, and a thousand tempests and floods. But he cannot save them from fools. John Muir

Figure 2.12

Explanation of PDSI



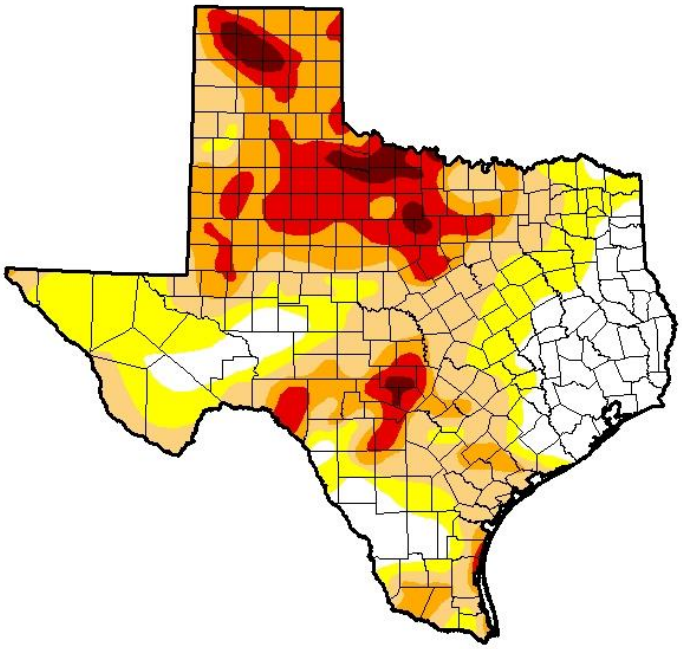

Palmer Drought Severity Index
January, 2006
National Climatic Data Center
extreme drought
severe drought
moderate drought
mid-range
moderately moist
very moist
extremely moist
-4.00 and below
-3.00 to -3.99
-2.00 to -2.99
-1.99 to +1.99
+2.00 to +2.99
+3.00 to +3.99
+4.00 and above



Worst Drought on Record 2011.

U.S. Drought Monitor

Texas



August 19, 2014

(Released Thursday, Aug. 21, 2014)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	19.17	80.83	59.28	34.23	15.16	2.76
Last Week 8/12/2014	17.26	82.74	57.68	35.71	14.06	2.62
3 Months Ago 5/20/2014	9.82	90.18	72.31	56.11	40.35	25.05
Start of Calendar Year 12/31/2013	28.48	71.52	43.84	21.15	5.82	0.79
Start of Water Year 10/1/2013	6.62	93.38	70.95	25.08	4.01	0.12
One Year Ago 8/20/2013	2.82	97.18	88.93	66.88	17.80	2.58

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

http://droughtmonitor.unl.edu/

Hopkins County Drought Past Occurrences

Hopkins County is part of the National Weather Service Ft. Worth Region. It is a large area that covers the Metroplex of Dallas/Ft. Worth. The region runs north to Gainsville, West to Abilene, south to Cameron and east to Sulphur Springs and Lufkin. Hopkins County is *geographically* located in the extreme western part of north east Texas.

August 1996 marked the end of the first drought listed for Hopkins county and its region. Many locations in the Northern Region of Texas received above average rainfall. The heavy rain that the area received at the end of the month combined with scattered activity that affected northern Texas the past several months had pretty much alleviated the agricultural drought as ample soil moisture returned. Below normal lake and reservoir levels continued, however, and interests relying on this remained stressed.

July 1998

The severe drought that began across north Texas in April persisted through July. In the period from April 1, 1998 through July 27, 1998, Dallas/Ft. Worth International Airport was 8.18 inches below normal on rainfall, while Waco was running 9.84 inches below normal. Hopkins County was 9.02 inches below normal. The Drought Severity Index (Long Term, Palmer) showed north Texas under extreme drought conditions, with the Crop Moisture Index indicating extremely dry soil moisture conditions. The dry and hot conditions across north Texas placed a high stress on crops, and an increase in grasshopper infestation caused additional reductions in crop yields. Excessive heat, combined with empty stock tanks and a near total loss of the alfalfa crop, severely stressed the ranching and dairy industries. Hopkins County leads the nation in milk production.

Drought 1998	Hopkins Rainfall	Normal Avg. Rainfall 1981-2010	Difference
April	2.81	3.83	-1.02
May	1.57	4.79	-3.22
June	.97	4.36	-3.39
July	1.99	3.38	-1.39
August.	2.62	2.44	+.18
September	6.85	2.99	+3.86
October	10.37	5.39	+4.98

The drought of 1998 has caused an estimated $1.5 billion dollars damage to the agribusiness industry statewide through July. However, specific damage amounts by County were unavailable.

Drought of August –September 2000

The month of August 2000 was extremely dry, with many areas not receiving any rain for the month. This increased the grass fire danger and prompted water rationing for some areas. It also pushed most of North Texas deeper into a severe drought. By the end of the month, no measurable rainfall had been recorded at the D/FW Airport (the official site for the Dallas/Ft. Worth Metroplex) for 62 days. This broke the record for the longest period without measurable rainfall in the Metroplex. The old record was 58 days from Nov 4 - Dec 27, 1950.

The long summer drought continued across Texas in September along with the hot temperatures. At Dallas/Fort Worth International Airport, 84 consecutive days with no measurable rainfall were recorded before the streak was finally broken on September 23rd. However, a meager .17 of an inch of rain was recorded the whole month at DFW, which was over 3 inches (3.22) below normal, and brought the yearly deficit to 4.69 inches. Also, it was the fourth driest September for DFW (the 3 drier Septembers occurred in 1984 (.09), 1921 (.11) and 1939 (.12)) Waco received a bit more rain, 1.11 inches, but was still almost 2 ½ (2.41) below normal for the month. Most locations across the state experienced similar fates, which only seemed to prolong the long hot summer. Drought relief began in October, with more widespread rainfall. **Hopkins County** experienced negative rainfall numbers in July-Oct.

Drought 2000	**Hopkins Rainfall**	**Normal Avg. Rainfall 1981-2010**	**Difference**
July	**.29**	**3.38**	**-3.09**
August.	**0.00**	**2.44**	**-2.44**
September	**1.58**	**2.99**	**-1.41**
October	**4.69**	**5.39**	**-.7**
November	**16.42**	**4.54**	

The Drought of June 2005-January 2007

The drought beginning in June of 2005 has no narrative available from NOAA until January of 2006. The National Climatic Data Center has provided data in the following table to help clarify the extreme conditions.

Drought 2005	Avg. temp	Normal temp. 1981-2010	Rainfall	Normal Rainfall	Difference
June	80.4	78.1	.76	4.36	-3.6
July	81.3	82.0	4.27	3.38	+.93
August	83.8	82.3	2.33	2.44	+.11
September	80.1	74.9	1.96	2.99	-1.03
October	64.6	64	.19	5.39	-5.2
November	57.	53.8	1.69	4.54	-2.85
December	44.8	44.3	.59	4.32	-3.73

In **January of 2006** all of north Texas was classified in either extreme drought (D3) or exceptional drought (D4) as classified by the U.S. Drought Monitor. Every county in north Texas was eligible for federal disaster relief due to the drought. The weather continued to be unseasonable warm. The average high temperature for January 2006 In Hopkins County was 53.6 degrees, a full 10.7 degrees above normal. Wildfires increased and continued to be a major problem throughout this drought period throughout the Region.

Hydrological and agricultural impacts worsened over the past month due to the lack of rainfall. Most water reservoirs across north Texas were 60% to 85% of normal capacity. Several lakes across the region were 10 to 15 feet below normal pool elevation. The North Texas Municipal

Water District implemented watering restrictions earlier than normal this year due to the lowering lake levels. Watering restrictions were also in effect on a voluntary basis in some cities.

The Texas Cooperative Extension estimated agricultural losses for north Texas to be close to $1 billion in January. Only half of the state's hay crop was fit for harvesting, and hay prices were three to four times their normal price. Many other crops failed to grow at all. Agricultural groups appealed for federal grants to aid the cattle industry. One emergency measure considered by the federal government included providing cash to ranchers to offset high feed costs and losses due to the drought and wildfires. A drought summit was held in San Antonio to discuss the crisis. **Hopkins County** received nearly 2 time the normal predicted rainfall in January

The drought was also affecting wildlife in north Texas. The Texas Department of Parks and Wildlife reported an overall decline in habitat conditions, and noted that the lack of green plants would affect the survival rate of certain animals.

In **February of 2006** all of North Texas was again considered to be in either extreme or exceptional drought, as classified by the U.S. Drought Monitor. Some areas along the Red River did see some rainfall this month, and the area of exceptional drought had shrunk considerably since last month. A drought disaster was declared for all Texas counties, and almost all north Texas counties were under burn bans. **Hopkins County** registered more than a two inch deficit (2.77 inches) from the predicted normal rainfall in February.

The month of **March** had some much needed rainfall, falling mostly on only two days, the 18th and 19th. Although this rainfall helped the crops and put some much needed water into lakes and reservoirs, the drought persisted. March's rainfall helped drop north Texas down a category from Extreme to Severe Drought, Again, in March, Hopkins County had a deficit rainfall of 2.44 inches.

In **April** drought conditions improved somewhat over North Texas, with the area considered to be in severe drought (D2) having shrunk considerably, according to the U.S. Drought Monitor. Areas of northern and western north Texas did not receive the beneficial rains that the eastern areas saw this month. Heavy rains helped many area lakes recover to within at least a few feet of their normal pool elevations. **Hopkins County** recorded a 2.35 deficit.

After a few weeks of respite, (**Hopkins County** receiving near normal rainfall amounts for May and June) north Texas was once again placed into the category of severe drought (D2) according to the U.S. Drought Monitor. NOAA reported that 12 to 15 inches of rain was needed across north Texas to bring the Palmer Drought Severity Index back to near normal values. Spring rainfall continued to lack, increasing rainfall deficits since January 2006 to anywhere from a couple of inches to almost nine inches in some locations. Temperatures also remained quite warm, and the National Climatic Data Center reported that the first half of the year was the warmest ever on record for the U.S. They also reported that Texas in particular was warmer than average for the period.

The drought remained a problem for the agricultural sector as well. Recent data showed that wheat production in Texas was down 64% from last year, and oat production was down 18%. The current U.S. seasonal outlook through September 2006 forecasts drought conditions over north

Texas to persist or intensify, with marginal improvement possible in areas of southeastern north Texas.

Drought conditions across north Texas worsened in **July** as rainfall continued to be scarce Temperatures were well above normal, with this July ranking as the 9th warmest on record for the last 108 years. The highest temperature recorded in **Hopkins County** was 105 degrees with 27 days recording highs above 90 degrees. In fact, 2006 was one of the hottest years in Hopkins County weather history.

Farmers continued to have a difficult time getting crops to produce this season. Although cotton tends to grow best in hot weather, the extreme heat and dryness caused much of the cottonseed plant not to germinate. Cotton is Texas' number one cash crop, and represented $1 billion of the losses statewide due to the drought. Hay also continued to decrease in quality and number. Bales which were selling for $35 last year were selling for $80 this year. Many farmers were forced to drive to other parts of the state or even to other states to buy cheaper hay. Much of the state's corn and soybean crops were made into hay in order to feed livestock. Wheat production across north Texas was 70% below normal. In addition, many locations with very high rainfall deficits were having trouble finding enough grazing land for their cattle. The Farm Service Agency expected many farmers to give up the farm business altogether because of the rising costs due to the drought. Although several counties were named disaster areas already this year, relief funds have been delayed in Congress. The Texas Cooperative Extension recently estimated statewide drought losses at $4.1 billion. North Texas alone has incurred around $1.9 billion.

Significant, widespread drought conditions persisted across North Texas throughout the month of August. This drought now ranks as the worst in north Texas since the severe multi-year drought of the 1950s. The U.S. Drought Monitor continued to place the region in the exceptional drought category, D4, which is the worst possible category and is reserved for particularly damaging events. Hopkins County registered highs over 90 degrees for 28 days with a high temperature of 104 degrees recorded.

August marked the greatest number of 100-degree-days ever for the month at Waco, with a total of 27 days that reached or exceeded 100 degrees. The previous record of 26 days was set in 1951. Dallas/Fort Worth set a streak of 19 consecutive 100-degree-days, which ranked 6th on the list of longest 100-degree-day streaks. In fact, Dallas County even considered declaring a heat emergency due to the very hot days and hot nights.

Drought conditions in **September** have improved as a whole across Texas, but north Texas remained in the extreme and exceptional categories (D3 and D4) according to the U.S. Drought Monitor. Despite several rainfall events this month, water deficits continued to be quite high. It will take several more months of normal to above normal precipitation to make up for the lost rainfall incurred over the last 18 months**. Hopkins County** recorded 1.42 inches of rain, while the normal rainfall for the month would be 2.99 inches.

In **October** persistent drought conditions continued across portions of north Texas. According to the U.S. Drought Monitor, much of the region was still experiencing extreme (D3) drought conditions. The areas which were rated exceptional drought (D4) last month had received enough

rainfall to be downgraded into the D3 category this month. Even though drought conditions were lessened by a few rain events this month, serious hydrological problems remained. Hopkins County recorded 3.52 inches of rain this month but still lagging behind the normal projected amounts of 5.39 inches. The winter months are commonly drier and windier than the summer months, and with plenty of dead vegetation available for fuel, these conditions could contribute to higher fire danger.

In **November** the U.S. Drought Monitor included more of North Texas in the Extreme Drought (D3) category by the end of November than in the previous month, but did eliminate the Exceptional Drought (D4) area from North Texas. Hopkins County 2.94 inches of rainfall this month, again behind the 4.54 projected normal levels.

Drought conditions for **December** improved across much of North Texas this month. Only a few counties in North Texas were listed under the extreme drought (D3) category this month, according to the U.S. Drought Monitor. But impacts were felt even in areas that are not considered to be in extreme drought or worse. Even with reduced water usage and evaporation rates during the winter months, lake levels remained extremely low, and above normal precipitation will be needed for several months to improve the deficits. **Hopkins County** recorded a total of 4.34 inches of rain, matching the normal projection of 4.32 inches.
Drought conditions in January of 2007 continued to improve for the region and Hopkins County. Hopkins County received 4.34 inches of rain, contributing to the improved conditions.

Drought 2005	Avg. temp	Normal temp. 1981-2010	Rainfall	Normal Rainfall	Difference
June	80.4	78.1	.76	4.36	-3.6
July	81.3	82.0	4.27	3.38	+.93
August	83.8	82.3	2.33	2.44	+.11
September	80.1	74.9	1.96	2.99	-1.03
October	64.6	64	.19	5.39	-5.2
November	57.	53.8	1.69	4.54	-2.85
December	44.8	44.3	.59	4.32	-3.73
Drought 20006	Avg. temp	Normal temp. 1981-2010	Rainfall	Normal Rainfall	Difference
January	39.7	42.9	6.53	3.07	+3.46
February	45.3	46.8	0.96	3.66	-2.77
March	61.3	54.4	1.97	4.41	-2.44
April	58.8	62.2	1.48	3.83	-2.35
May	71.6	70..6	4.50	4.79	-.29
June	78.1	78.1	5.91	4.36	+1.55
July	78.6	82.0	6.54	3.38	+3.16
August	82.8	82.3	3.26	2.44	+.82
September	77.0	74.9	3.46	2.99	+.47
October	67.3	64.0	1.84	5.39	-3.55
November	57.4	53.8	1.65	4.54	-2.89
December	47.5	44.3	4.79	4.32	+.47

Drought conditions improved across much of north Texas in **January of 2007** as several rainfall events helped the situation. One small area in the southeast and also in the northeast portion of north Texas were still considered to be in extreme drought (D3) according to the U.S. Drought Monitor. Total rainfall for the month of January was almost six inches at Dallas/Fort Worth International Airport. Average for January is only 1.90 inches. In contrast Hopkins County recorded 6.53 inches of rain with an expected normal of 3.07.

The Record Breaking Drought of 2011

Many areas of north Texas received beneficial rain and snowfall during the month of January 2011. Most drought areas had slight improvements except for Lamar, Delta, and **Hopkins** County where conditions worsened according to the U.S. Drought Monitor. A total of 27 counties were in burn bans at some point during the month. The southern counties of north Texas all saw improvements to agricultural areas and slight rises of water levels on area lakes. **Hopkins County** recorded a total of 1.44 inches of rain well under the normal average of 3.07 inches.

Drought conditions improved during the early part of **February 2011** due to precipitation from three winter storms, but then conditions deteriorated near the end of the month from lack of significant rainfall. During the latter half of the month, severe to extreme drought conditions began expanding. Drought conditions were the worse over the eastern and southeastern counties of north Texas during the month. Extreme drought (D3) as defined by the US Drought Monitor persisted across the southeast for much of the month. Twenty-five counties had Burn Bans during the month. According to the US Drought Monitor, extreme drought conditions (D3) were observed across the eastern half of the county for most of the month of February. Severe drought conditions (D2) were observed across the remainder of the county for the entire month. Hopkins County recorded 3.22 inches of rain with an average rainfall of 3.88 inches for the month.

Most counties in the region received less than an inch of rain during in **March** and drought conditions continued to worsen. Many locations started the month in abnormally dry (D0) or moderate (D1) drought and ended the month in severe (D2) or extreme (D3) drought. In north Texas, the drought was the worst in the southern and eastern counties. At the end of the month, 40 of the 46 counties in north Texas were experiencing at least severe drought (D2) conditions and 26 counties had burn bans in effect.

According to the US Drought Monitor, **Hopkins County** started the month of **March** in severe drought (D2). With little to no rainfall, (less than ½ inch) drought conditions worsened and the county ended the month in extreme drought (D3).

The prolonged drought continued to worsen during the month of **April** but some rainfall near the end of the month provided a little relief to mainly the northeastern counties of north Texas. However, several rounds of severe weather during the latter half of the month damaged crops and fields. During the month, 33 counties had Burn Bans.

According to the US Drought Monitor, Hopkins County was classified as extreme drought (D3) for the entire month of **April.**

Rain during the end of April and scattered throughout the month of **May** did little to ease the prolonged drought conditions across much of north Texas. The area that saw the most relief was locations in and northeast of the DFW Metroplex. However, the rainfall during the month still provided some temporary relief to area farmers and helped corn, grain sorghum, soybeans, pastures, and hay land. Unfortunately, with the rain also came hail and high winds that damaged fields and crops as well. Exceptional drought conditions (D4), according to the US Drought Monitor, continued across much of the southern and

southeastern counties of north Texas. Drought impacts include fields shriveling up leaving farmers little if anything to harvest, pastures burning up due to wildfires, and ranchers forced to sell their herds early. According to the US Drought Monitor, Hopkins County was classified as severe drought (D2) during the beginning of the month. However, beneficial rain during the month brought relief and the drought conditions improved.

June and July were abnormally dry months with no local observation sites receiving more than an inch of rain in **July.** Drought conditions worsened across the Fort Worth County Warning Area (CWA) and by the end of the month all but 6 of the 46 counties were classified in severe drought (D2) or worse according to the US Drought Monitor. The agriculture community also continued to experience detrimental conditions. Hay production was nearly halted with most farmers only producing a small fraction of what is produced in a normal season. Hay prices were up to $90 a bale, which is almost double the normal price. Many cattle farmers had to sell their cows early because of the scarcity of grasses and hay. Corn farmers also witnessed poor corn production and had to try to grow other crops to salvage their growing season. The drought has also caused trees to suffer, with many trees dying or toppling due to weakened roots from little rainfall. **Hopkins County** recorded .01 inches of rain in July while the norm was 3.38 inches.

Drought conditions continued to worsen across much of the Fort Worth County Warning Area (CWA) during the month of **August** due to very little rainfall. All 46 counties in the Fort Worth CWA were experiencing at least severe drought conditions (D2) throughout the entire month, and all but portions of Tarrant, Dallas, and Denton counties were in at least extreme drought (D3) by the end of the month. Also, all areas except locations along the Interstate 20/30 corridors experienced exceptional drought (D4) at some point in the month. Ranchers continued to sell some of their cattle because they did not have sufficient water or grass to survive. Farmers were forced to harvest cotton crops three weeks early due to the drought conditions, and the size of the cotton crop was much smaller than normal. Area lakes and reservoirs continued to experience well below normal pool levels which led to some communities issuing water conservation notices for residents and businesses. One to three inches of rain did fall in the western portions of the CWA, near Eastland and Palo Pinto Counties, and this area did see some improvement in the drought conditions because of the rain.

According to the US Drought Monitor, Hopkins County was classified as extreme drought (D3) at the beginning of the month. With little to no rain, conditions worsened and the county was classified in exceptional drought (D4) by the end of the month. A total of .27 inches of rain fell in Hopkins County in August.

Drought conditions continued to worsen across much of the Fort Worth County Warning Area (CWA) during the month of **September** due to very little rainfall. All 46 counties in the Fort Worth CWA were experiencing at least extreme drought conditions (D3) throughout the entire month. By the end of the month, 37 out of the 46 counties in the Fort Worth CWA were classified in exceptional drought (D4). Counties along the Interstate 20 corridor continued to experience slightly better drought conditions than counties along the Red River and the counties to the south. Every county had burn bans established by local officials throughout the month.

According to the US Drought Monitor, Hopkins County was classified as extreme drought (D3) at the beginning of the month. With little to no rain, conditions worsened and the county was classified in exceptional drought (D4) by the end of the month.

The brutal ongoing drought across north Texas saw some improvements during the month of **October**. The northwestern counties of the Fort Worth County Warning Area saw the most dramatic improvements as several counties received up to nine inches of rainfall during the

month.. Unfortunately, locations to the south received very little rainfall and remained in the exceptional drought (D4) category.. All 46 counties in north Texas had burn bans at the end of the month, but several counties were able to lift their burn bans during the month.
According to the US Drought Monitor, **Hopkins County** was classified as exceptional drought (D4) at the beginning of the month. The official measured rainfall for the county seat of Sulphur Springs registered over two inches of rain in **October.**

Drought conditions across portions of north Texas continued to improve during the month. Several counties in the northwestern portion of the County Warning Area (CWA) improved below severe drought status after 2 inches of rain fell during the month. Other areas, primarily north of Interstate 20, also improved. Counties in the southern portions of the CWA saw little rainfall and remained in exceptional drought. By the end of the month, only 12 out of 46 counties had burn bans in place. Although recent rainfall improved some of the overall drought conditions, the rain was easily absorbed into the ground and did not runoff into local lakes. Many lakes and reservoirs remained well below normal and water restrictions remained in place for many municipalities. In Limestone County, the drought impacts became so severe that the town of Groesbeck nearly ran dry of water near the end of the month.

According to the US Drought Monitor, **Hopkins County** was classified as extreme drought (D3) throughout the month. The county received little rainfall and drought conditions did not improve **December** was another wet month for North Texas and drought conditions continued to improve. Most counties received 3-6 inches of rainfall throughout the month which helped many southern counties be downgraded into extreme drought (D3). However, the ground was still dry and absorbed much of the rain, and the water did not run into area lakes. Many municipalities continued water restrictions due to the low lake levels. By the end of the month, only 21 out of the 46 counties in the Fort Worth County Warning Area remained in severe drought (D2) or worse and only 3 counties had burn bans in effect.

According to the US Drought Monitor, Hopkins County was classified as severe drought (D2) at the beginning of the month. The county received up to 6 inches of rainfall and was classified as moderate drought (D1) at the end of the month.

Drought 2011	Avg. temp	Normal temp. 1981-2010	Rainfall	Normal Rainfall	Difference
January	40.1	42.9	1.44	3.07	-1.63
February	46.4	46.8	3.22	3.66	-.44
March	57.7	54.4	0.46	4.41	-3.95
April	66.6	62.2	3.64	3.83	-.19
May	70.0	70.6	4.63	4.79	.16
June	84.2	78.1	2.35	4.36	-2.01
July	88.9	82.0	0.01	3.38	-3.37
August	90.9	82.3	0.27	2.42.	-2.11
September	77.2	74.9	0.37	2.99	-2.62
October	66.0	64.0	2.06	5.39	-3.33
November	55.4	53.8	1.69	4.54	-2.85
December	44.8	44.3	5.87	4.32	+1.55

August 2012

Brief Severe drought (D2) conditions developed in Delta and **Hopkins County**, but then beneficial rainfall around the middle of the month quickly improved conditions to Moderate drought (D1).

December 2012-January 2013

Severe to extreme drought conditions expanded across North Texas as rainfall remained below normal for the month of December. A few of the counties southwest of the Dallas-Fort Worth metro area had deteriorated to D4/Exceptional drought severity by the middle of the month. The least impacted locations were east and southeast of the Dallas-Fort Worth area where precipitation totals, though still below normal, generally exceeded those of their western neighbors.

According to the U.S. drought monitor, **Hopkins County** remained in severe/D2 drought conditions through the entire month of December

While Hopkins County began the month of January 2013 in severe drought (D2). An average of four to five inches of rain fell and by the end of the month the county was no longer in severe drought.

The Drought of February-December 2013

Severe drought over the western third of **Hopkins County** at the beginning of February improved to moderate drought by the end of week two, and remained as such through the end of the month. The rest of **Hopkins County** was classified as moderate drought for the whole month.

Most counties of North Texas began the month in severe (D2) or extreme (D3) drought. Little rain fell throughout the month and there was no improvement in drought conditions. Erath, Hood and Jack Counties actually had worsening conditions and were downgraded to extreme drought in the month of **March.**

According to the U.S. Drought Monitor the **Hopkins County** began the **March** in severe drought (D2). Little rain fell throughout the month and conditions did not improve.

Drought conditions continued to plague north Texas during the month of **April,** especially over the western half of the region. Fortunately, most locations experienced at least some improvement due to beneficial rains during the first half of the month, even though rainfall totals in general remained below normal for **April.**

D2/severe drought affected most of **Hopkins County** for the first, second and third weeks of April. Conditions improved to D1/moderate drought over all of the county for the last week of the month

Drought conditions continued to plaque much of North Texas during the month of **May.** Fortunately, some counties experienced overall improvement in drought severity due to periods of active convective weather**.**

Hopkins County experienced d2/severe drought during the middle part of May. Conditions were classified as d1/moderate or better for the rest of the month.

Dry conditions continued in August of 2013 with most of the region experiencing rainfall deficits

between 1 and 2 inches for the month. Extreme / D3 drought was felt over the southern and far western reaches of north Texas during August 2013. Otherwise Severe/D2 drought covered the vast majority of the region due to the below-normal summer rainfall.
Severe/D2 conditions over **Hopkins County** were downgraded to extreme/D3 over the northern fourth of the county during the final week of **August 2013**. D2 conditions remained in place across the rest of the county during that final week.
Widespread severe drought conditions held strong across North Texas in September. Rainfall was generally near normal, which was fortunately enough to eradicate most cases of extreme drought.
Extreme/D3 conditions over the western half of **Hopkins County** at the beginning of **September** were expanded to include all of the county by September 17. These conditions were downgraded to Severe/D2 following the 9/19 rain event. D2 conditions remained in place through the end of the month

Hopkins County Drought Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Hopkins Unincorporated	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Como	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Cumby	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Sulphur Springs	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55
Tira	Substantial PRI 4	Highly Likely PRI 4	> than 24 hours PRI 1	>Week PRI 4	High 3.55

Probability: Droughts will continue to occur in the Hopkins County and the participating ur when the conditions are right. It is a normal, recurrent feature of climate. A drought will affect Hopkins County and its participating jurisdictions. Historically a drought can last from a few days to several months.

Vulnerability The region is vulnerable when there is a deficiency of precipitation over an extended period of time. All of Hopkins County and its jurisdictions are vulnerable to drought. For Como, Cumby, Sulphur Springs and Tira droughts have a social dynamic that includes affecting the elderly and young, causing depression, creating job loss, requiring residents to relocate due to economic impact and rising costs for food**.**

Impact: Hopkins County drought defined: Drought is determined by using the Palmer Drought Index which is illustrated on page 79. 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. Since 1996 the NOAA weather data base indicates that Hopkins County has lost $532,000 in property loss and $1,516,000 in crop damage. See the Damage Assessment Tables on page 29. The extent of drought experienced in Hopkins County and its jurisdictions will range from ***0 Abundantly Dry to 4 Exceptional Drought***

The impact of a drought on the jurisdictions of Hopkins County 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 Cooper Lake become low there would be a decrease in recreational activities such as fishing and swimming for the residents of both jurisdictions.

Location: Historically, drought has affected all of Hopkins County including the jurisdictions of Como, Cumby, Tira and Sulphur Springs. 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 Hopkins County, Como, Cumby, Sulphur Springs and Tira, however the county has never experienced shortages of potable water. Water rationing has never been necessary in any of the jurisdictions but this remains a real possibility due to climate change.

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

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

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

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

Hopkins County Extreme Heat

All of Hopkins County including the jurisdictions of Como, Cumby, Sulphur Springs and Tira will suffer from the impact of heat. Extreme heat is often categorized in terms of weather events with drought.

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

Infrastructure is often affected in urban areas such as county 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 and distort. Refrigerated goods experience a significant greater rate of spoilage due to extreme heat. Additional impact will be felt as food prices rise due to crop loss.

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

Extreme Heat Past Occurrences

Month/year	Highest Temperature	Days Over 90
June 2001	94	5
July 2001	102	18
August 2001	104	28
September 2011	94	25
June 2002	94	20
July 2002	99	25
August 2002	104	28
September 2002	99	20
June 2003	98	16
July 2003	101	31
August 2003	105	29
September 2003	93	9
June 2004	94	18

July 2004	100	26
August 2004	98	21
September 2004	99	25
June 2005	101	27
July 2005	101	266
August 2005	106	30
September 2005	103	28
Month/year	**Highest Temperature**	**Days Over 90**
June 2006	97	24
July 2006	105	27
August 2006	104	28
September 2006	96	11
June 2007	93	6
July 2007	92	8
August 2007	100	26
September 2007	91	5
June 2008	91	17
July 2008	100	26
August 2008	103	17
September 2008	92	3
June 2009	99	16
July 2009	100	22
August 2009	94	18
September 2009	93	6
June 2010	97	23
July 2010	99	26
August 2010	103	30
September 2010	97	19
2011 The Hottest Summer in Recorded History		
June 2011	**100**	**29**
July 2011	**103**	**31**
August 2011	**110**	**30**
September 2011	**106**	**18**
June 2012	101	17
July 2012	105	29

August 2012	105	27
September 2012	102	18
June 2013	101	17
July 2013	100	21
August 2013	102	26
September 2013	102	24

The NOAA Satellite and Information Service, National Climatic Data Center shows that the following 5 temperature extreme events (excessive heat) were reported in Hopkins County between 01/01/1950 and 04/30/2006:

Type of Temperature Extreme	High Temperature	Location	Date	# of Fatalities
Excessive Heat	110 degrees	46 Texas Counties, including Hopkins	07/01/98	32, mostly in Dallas area
Excessive Heat	107 degrees	48 Texas Counties, including Hopkins	08/01/99	3
Excessive Heat	106 degrees	48 Texas Counties, including Hopkins	07/01/2000	8, Dallas County
Excessive Heat	100 degrees	48 Texas Counties, including Hopkins	08/01/2000	5, D/FW Area
Excessive Heat	114 degrees	48 Texas Counties, including Hopkins	09/01/2000	5

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.

NOAA national weather service: heat index

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

Caution
Extreme Caution
Danger
Extreme Danger

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

Hopkins County Extreme Heat Risk

COMMUNITY	POTENTIAL IMPACT 45%	PROBABLITY 30%	Warning 15%	Duration 10%	RISK
Hopkins Unincorporated	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Como	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Cumby	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Sulphur Springs	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1
Tira	Limited PRI 1	Highly Likely PRI 4	> 24 hrs. PRI 1	< a week PRI 3	Medium 2.1

Probability: It is likely that extreme heat waves will continue to occur in the region when the conditions are right. It is a normal, recurrent feature of climate. Hopkins County typically has three or four heat occurrences every summer. It is highly likely that Hopkins 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 Hopkins County and the jurisdictions of Como, Cumby, Sulphur Springs and Tira are vulnerable. The elderly, young and ill are most vulnerable to extreme heat. Crops and livestock are stressed during extended periods of extreme heat suffer,. 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 Hopkins County and its jurisdictions. There is no specific history regarding property or crop damage due to excessive heat available. For a better idea of the possible property losses see Damage Assessment Tables on page 29 for examples of loss in dollars. The Heat Index will be mitigated to any combination of temperature and humidity that ranges from 100 degrees F to 114 degrees F

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

Summary: Hot temperatures are part of the East Texas landscape. During the months of June, July and August we can expect temperatures of over 100 degrees. The citizens who live in Hopkins County and the participating jurisdictions of Como, Cumby, Sulphur Springs and Tira 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.

EARTHQUAKES

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

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

Earthquakes are measured by scales that have been developed throughout the years. The most common scales are known as the Richter scale and the Mercalli scale. In order to understand the severity of earthquakes, the following information will shed light on the different levels of damage that may occur during a specific earthquake.

Modified Mercalli Intensity Scale

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

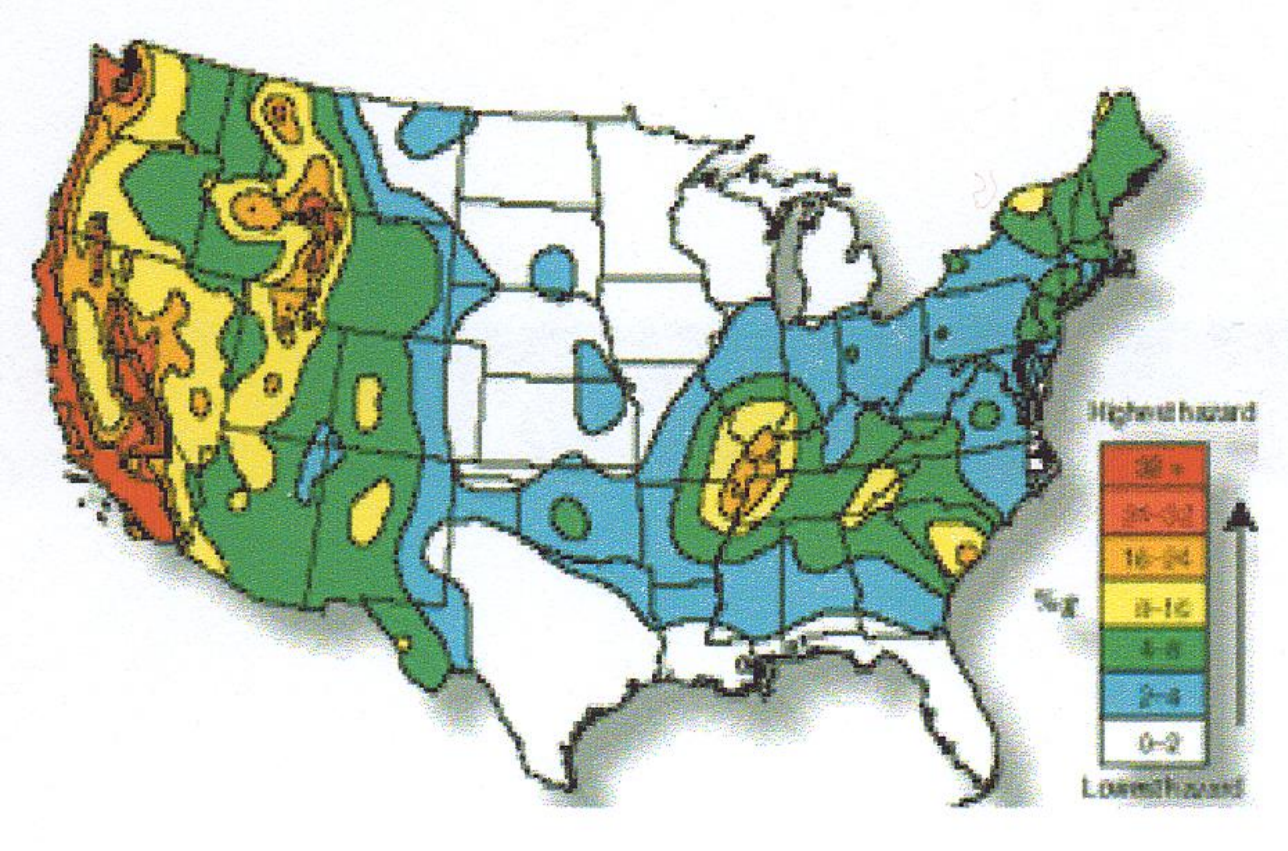
Earthquake Magnitude

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

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

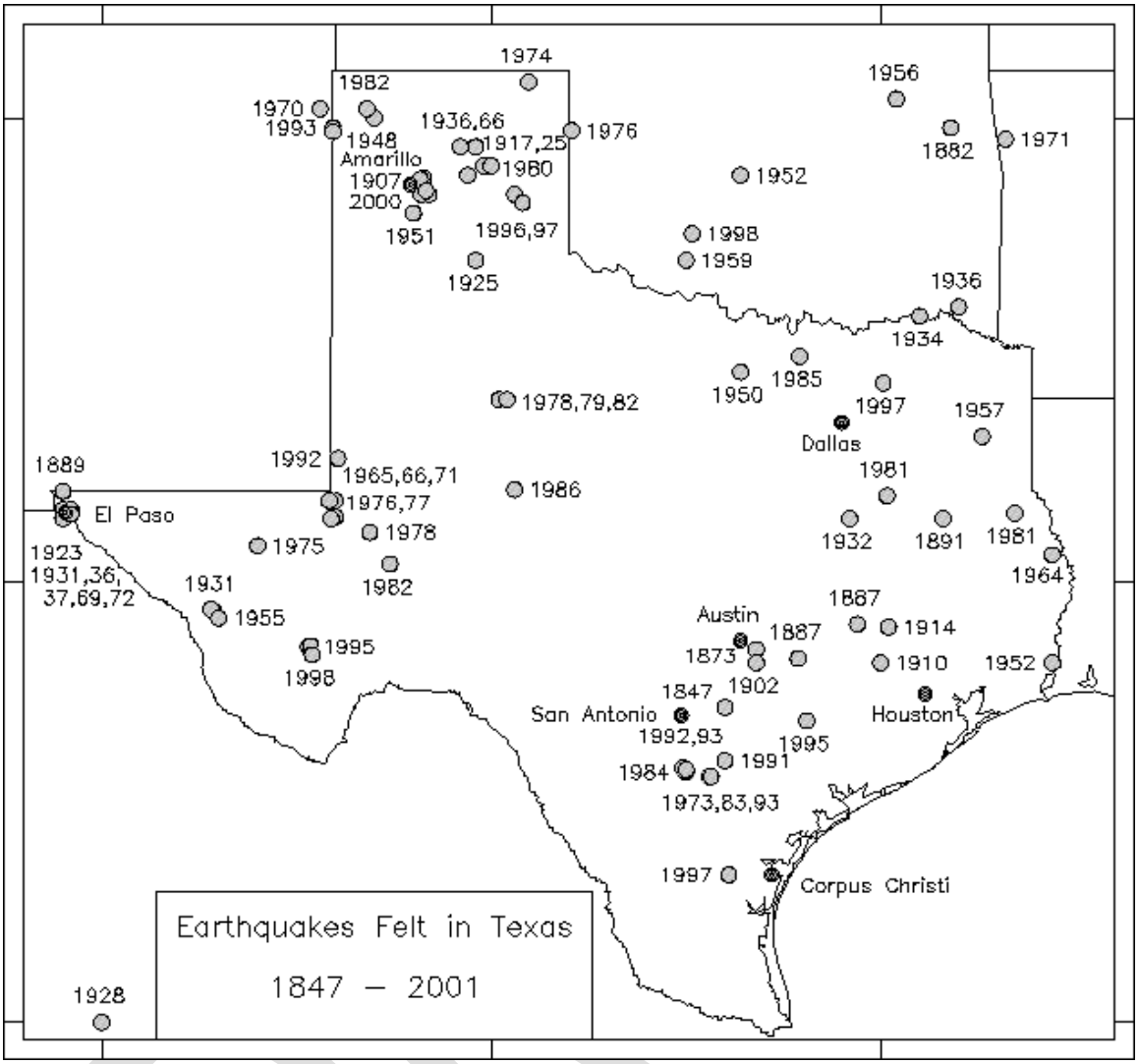
Earthquake Risk

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



As indicated on Table 2.18, earthquakes in the past have occurred in and around the Northeast Texas area. The information listed in this table covers a Magnitude of 3.0 or greater.

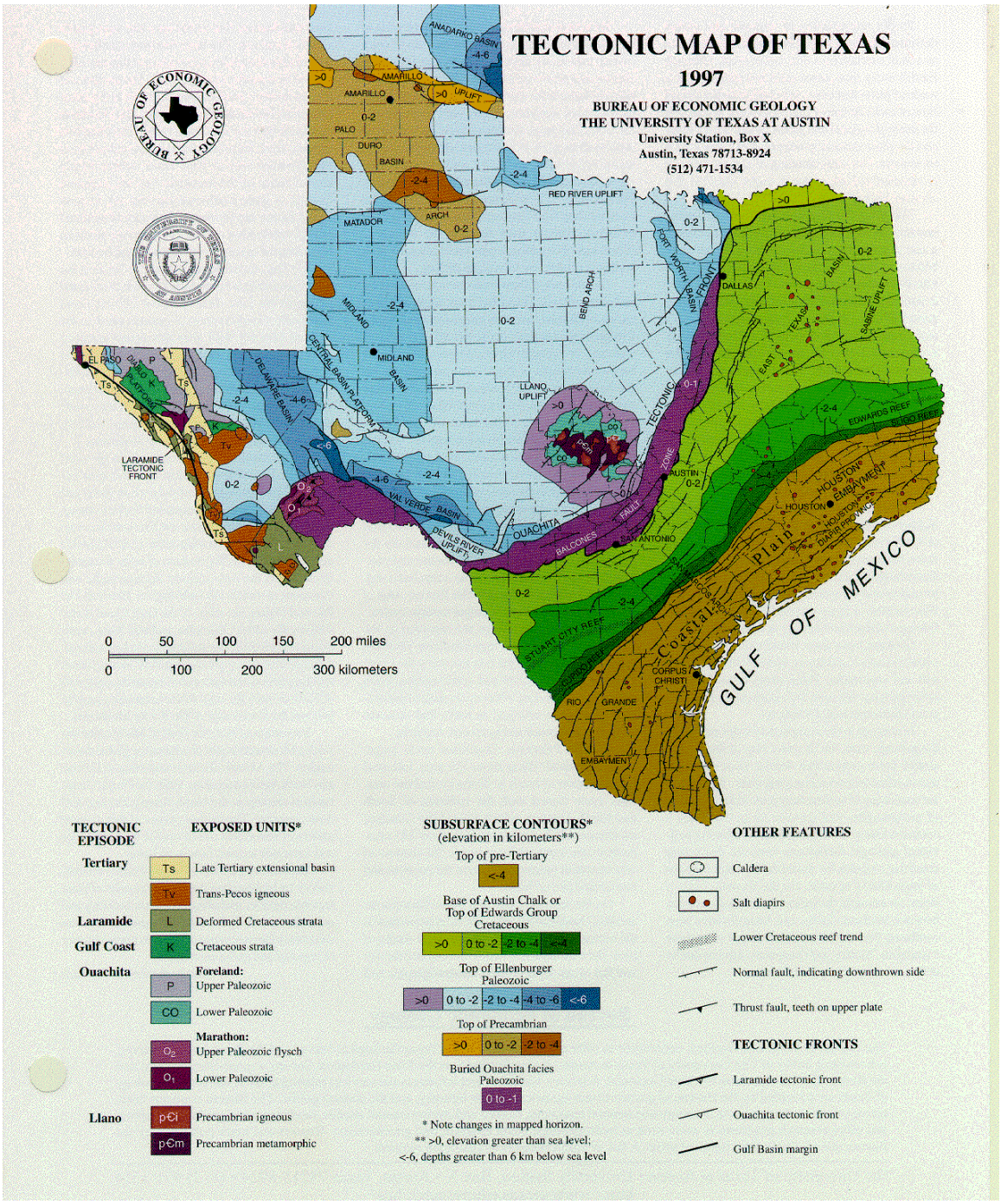
The map above indicates that the Northeast Texas area poses more of an increased threat than some areas in the United States due to the fact that it is bordered by three states that are ranked the same as our area. On Table 2.18 you will notice that these states have had activity in the past. Also, due to the fact that aftershocks can occur, the threat lingers.



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

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

While all earthquakes occur on faults, not all faults have earthquakes. A fault is simply a fracture in rock material accompanied by displacement along the two sides of the fracture. If the displacement occurs slowly enough, no earthquake waves are generated. And, often the displacement may have occurred millions of years ago, so that the fault remains but there is no present earthquake threat. Finally, many faults go undiscovered because they lie far beneath the surface, covered by soil. It is not accident that fault maps show the most faults in regions where bedrock is exposed at the surface. See **Figure 2.7** below.



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

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

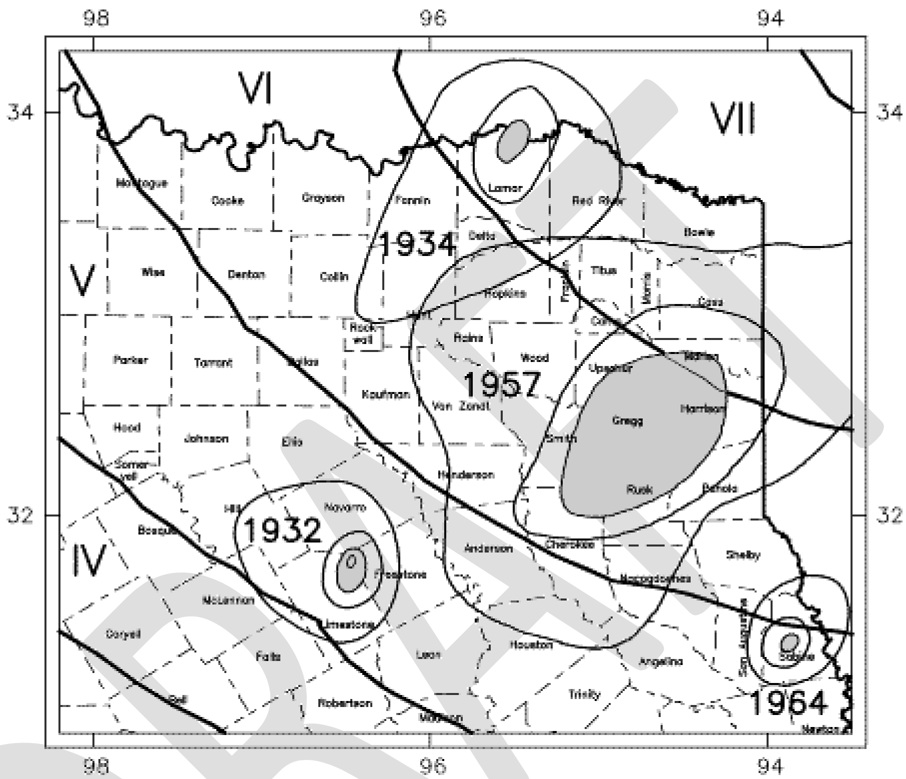
Throughout most of this region, the most intense shaking experienced over the past two centuries originated from several earthquakes with magnitude about 8 which occurred in Missouri-Tennessee in 1811-1812, or an earthquake with magnitude 5.6 which occurred in eastern Oklahoma in 1882. Although such distant earthquakes are unlikely to produce severe damage, they can cause failure in very large structures, or structures which are designed with absolutely no earthquake-resistant features. Figure 2.8 shows Earthquakes in the Central United States from 1699 through 2002.

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

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

- A magnitude 3.4 earthquake centered near Commerce in Hunt County; this occurred on May 27, 1997.

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



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

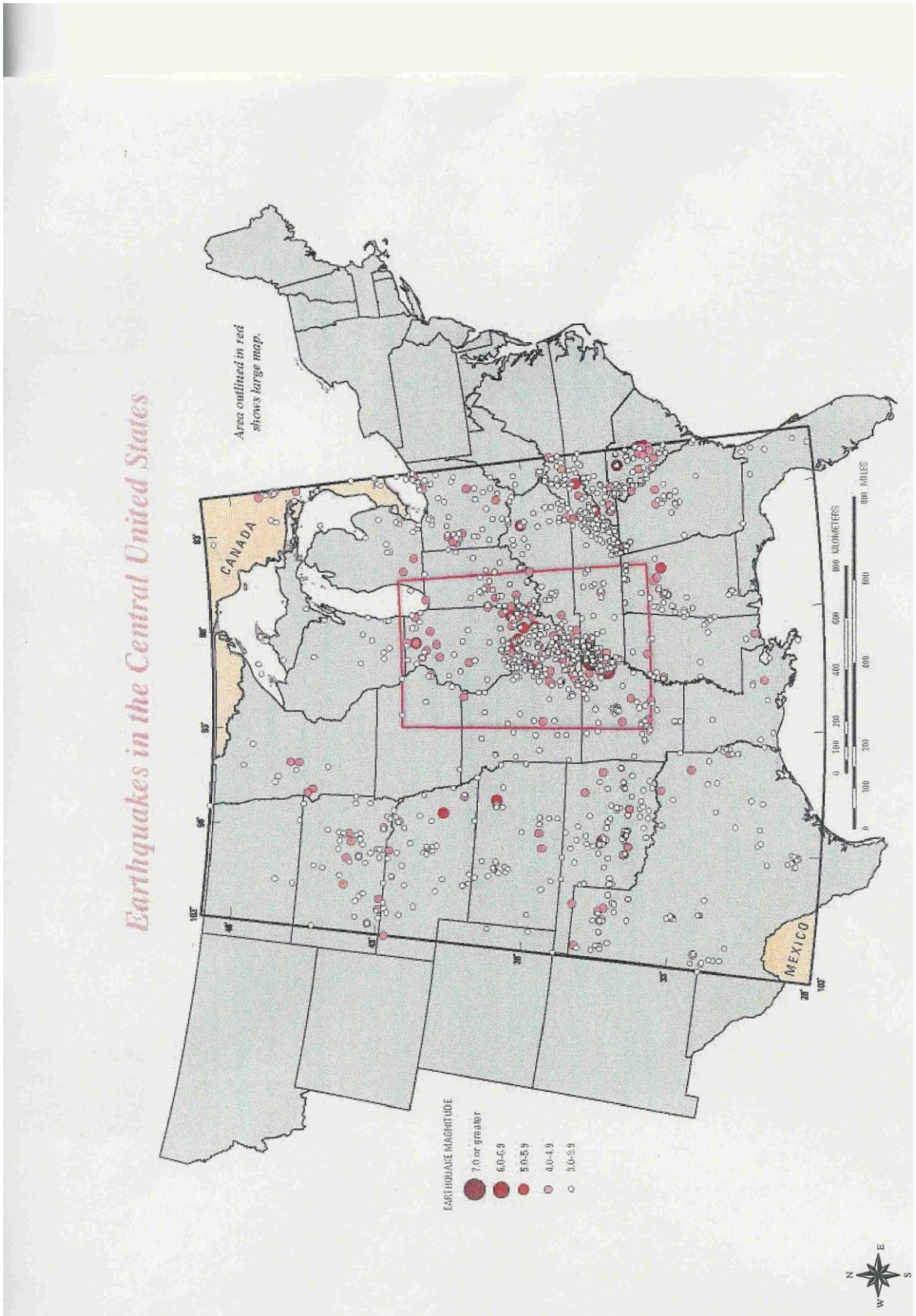

Earthquakes in the Central United States
Area outlined in red shows large map.
CANADA
MEXICO
EARTHQUAKE MAGNITUDE
7.0 or greater
6.0-6.9
5.0-5.9
4.0-4.9
3.0-3.9
KILOMETERS
MILES
N
E
S
W

Figure 2.9

Table 2.18

Northeast Texas Earthquakes of Magnitude 3 Or Greater

*I_{max} = Maximum Modified Mercalli intensity reported in Texas.
**Cause: T = probably tectonic in origin. M = probably man-made (induced). ? = poorly constrained event, insufficient or conflicting evidence.

Date	Origin time (UTC)	Lat. °N	Long. °W	Magnitude	I_{max}*	Felt area (km^2)	Cause**	Location	County
16 Dec. 1811	08:15	36.0	90.0	8.1	VII	5,000,000	T	New Madrid, MO	
23 Jan. 1812	15:00	36.3	89.6	7.8	VII	5,000,000	T	New Madrid, MO	
07 Feb. 1812	09:45	36.5	89.6	8.0	VII	5,000,000	T	New Madrid, MO	
Comments: Probably felt in Texas, but no verifiable accounts known. The formation of Caddo Lake in northeast Texas has been attributed to these earthquakes, but accounts of the lake exist prior to 1811.									
22 Oct. 1882	22:15	35.9	95.1	5.6	V	740,000	T	Ft. Gibson, OK	
Comments: Previously listed as occurring near Paris, TX. Bricks were shaken loose from walls and chimneys at Bonham, TX.									
08 Jan. 1891	06	31.7	95.2	4.0	VI	—	T	Rusk	Cherokee
Comments: Several chimneys thrown to the ground.									
09 Apr.1932	10:17	31.7	96.4	4.0	VI	6,400	M	Wortham-Mexia	Limestone
Comments: In Wortham, bricks from several chimneys were shaken loose. The mortar of one building was cracked.									

12 Apr.1934	01:40	33.9	95.5	4.2	V	13,000	T	Trout Switch	Lamar
Comments: One house needed releveling after the shock.									
20 Mar.1950	13:23	33.3	97.8	3.3	IV	—	?	Chico	Wise
09 Apr.1952	16:29:34	35.4	97.8	5.5	V	640,000	T	El Reno, OK	
Comments: Intensities III-V noted in much of north Texas. Felt as far south as Austin, TX.									
19 Mar. 1957	16:37:39	32.6	94.7	4.7	V	45,000	M	Gladewater	Gregg
19 Mar. 1957	17:41:17	32.6	94.7	3.0	III	3,000	M	Gladewater	Gregg
19 Mar. 1957	22:36	32.6	94.7	3.0	III	3,000	M	Gladewater	Gregg
19 Mar. 1957	22:45	32.6	94.7	3.0	III	3,000	M	Gladewater	Gregg
24 Apr. 1964	01:20:55	31.5	93.9	3.7	V	—	T	Hemphill	Sabine
24 Apr. 1964	07:33:53	31.6	93.9	3.7	IV	—	T	Hemphill	Sabine
24 Apr. 1964	12:07:07	31.3	93.8	3.2	IV	—	T	Hemphill	Sabine
27 Apr. 1964	21:50:27	31.3	93.8	3.2	IV	—	T	Hemphill	Sabine
28 Apr. 1964	21:18:35	31.3	93.8	4.4	VI	2,700	T	Hemphill	Sabine
Comments: A small fissure opened up in the yard of a Plainview resident on April 27. Wallpaper and plaster cracked during the April 23 shock.									
30 Apr. 1964	20:30:00	31.5	93.8	3.0	III	—	T	Hemphill	Sabine
07 May 1964	07:33:53	31.2	94.0	3.2	V	—	T	Hemphill	Sabine
02 June 1964	23:00:00	31.3	94.0	4.2	V	—	T	Hemphill	Sabine

03 June 1964	00:00:00	31.3	94.0	4.2	V	—	T	Hemphill	Sabine
03 June 1964	02:27:24	31.5	93.9	3.1	III	—	T	Hamphill	Sabine
03 June 1964	09:37:00	31.0	94.0	3.6	IV	—	T	Hemphill	Sabine
09 June 1981	01:46:33	31.76	94.28	3.2	III	—	T	Center	Shelby
06 Nov. 1981	12:36:41	31.95	95.92	3.3	V	800	T	Jacksonville	Anderson

Comments: Reports of minor damage include cracks in concrete patios and windows and a broken water pipe.

18 Sept. 1985	15:54:04	33.47	97.04	3.3	V	700	T	Valley View	Cooke
27 May 1997	03:26:41	33.2	96.1	3.4	IV	1,100	T	Commerce	Hunt

Comments: Slight damage

While Texas does face some earthquake hazard, this hazard is very small in comparison to that in many other states, including California, Missouri, Montana, South Carolina, and Washington. In most parts of Texas, earthquake hazard is also small compared to the hazard attributable from other natural phenomena, such as hurricanes, tornadoes, and floods. According to Chapter 12 of *State of Texas Hazards Analysis*, by the Governor's Division of Emergency Management, Department of Public Safety, Austin, Texas, 1998, "Thus there is no need for Texas to enact sweeping changes in construction practices, or take other drastic measure to mitigate earthquake hazard.

Past Occurrence of Earthquake in Hopkins County

Hopkins County will continue to monitor earthquake activity. There is no record of earthquake in Hopkins County. However, there has been an increase in fracking in the area. Fracking has been connected to increased earthquake activity in some areas.

The website FracFocus.org, a chemical disclosure registry, provided information regarding the location of fracking wells in Hopkins and neighboring counties. The following is a list of Hopkins and adjoining counties with fracking activity:

- Delta 0
- Fannin 0
- Franklin 0
- Hopkins 4
- Hunt 0
- Lamar 1
- Rains 0
- Wood 6

Hopkins County Earthquake Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Hopkins Unincorporated	Limited PRI 1	Unlikely PRI=1	< 6 hrs. PRI = 4	< 6 hrs. PRI = 1	Low 1.45
Como	Limited PRI 1	Unlikely PRI=1	<6 hrs. PRI = 4	< 6 hrs. PRI = 1	Low 1.45
Cumby	Limited PRI 1	Unlikely PRI=1	< 6 hrs. PRI = 4	< 6 hrs. PRI = 1	Low 1.45
Sulphur Springs	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI = 4	< 6 hrs. PRI = 1	Low 1.45
Tira	Limited PRI=1	Unlikely PRI=1	< 6 hrs. PRI = 4	< 6 hrs. PRI = 1	Low 1.45

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

Location: All of Hopkins County including the participating jurisdictions of Como, Cumby, Sulphur Springs and Tira could experience earthquake activity.

Vulnerability: The principal hazard is from rare, distant, but very large earthquakes occurring outside of Texas and there is mounting scientific evidence that the process for fracking for gas and oil wells may increase the likelihood of mild quakes.

Impact: There has never been an earthquake in Hopkins County, and the County would probably receive minimal damage from distant earthquakes. The process of fracking has also begun in

Hopkins County. Sulphur Springs would be the most likely jurisdiction to suffer damage due to building and population density. The rest of the County has a small population and would probably not be affected. See page 29 for more comprehensive loss tables.

Estimated Structure loss at 25%	
Como	$3,093,668
Cumby	$2,885,605
Sulphur Springs	$169,558,441
Tira	Estimates not Available

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

You can no more win a war than you can win an earthquake.

Jeannette Rankin: 1st woman in US congress

DAM FAILURE

A dam is "any barrier, including one for flood detention, designed to impound liquid volumes and which has a height of dam greater than six feet. This does not include highway, railroad or other roadway embankments, including low water crossing that may temporarily detain floodwater, levees designed to prevent inundation by floodwater, closed dikes designed to temporarily impound liquids in the event of emergencies, or off-channel impoundments authorized by the commission in accordance with Texas Water Code, Chapter 26, or the Texas Solid Waste Disposal Act, Texas Civil Statutes Article 4477-7". (Regulations section 299.1).

The FEMA states that there are 75,900 dams in the United States, according to the 2005 update to the National Inventory of Dams. Approximately one third of these pose a "high" or "significant" hazard to life and property if failure occurs. Dam failure or levee breeches can occur with little warning. Intense storms may produce a flood in a few hours or even minutes for upstream locations. Flash floods occur within six (6) hours of the beginning of heavy rainfall, and dam failure may occur within hours of the first signs of breaching. Other failures and breeches can take much longer to occur, from days to weeks, as a result of debris jams or the accumulation of melting snow.

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

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

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

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

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

Texas has more dams listed in the National Inventory of Dams than any other state. Currently, there are 7,069 dams listed in the National Inventory of Dams, and 42 of those dams are located within Hopkins County.

The following table lists the dams in Hopkins County.

HOPKINS COUNTY DAMS

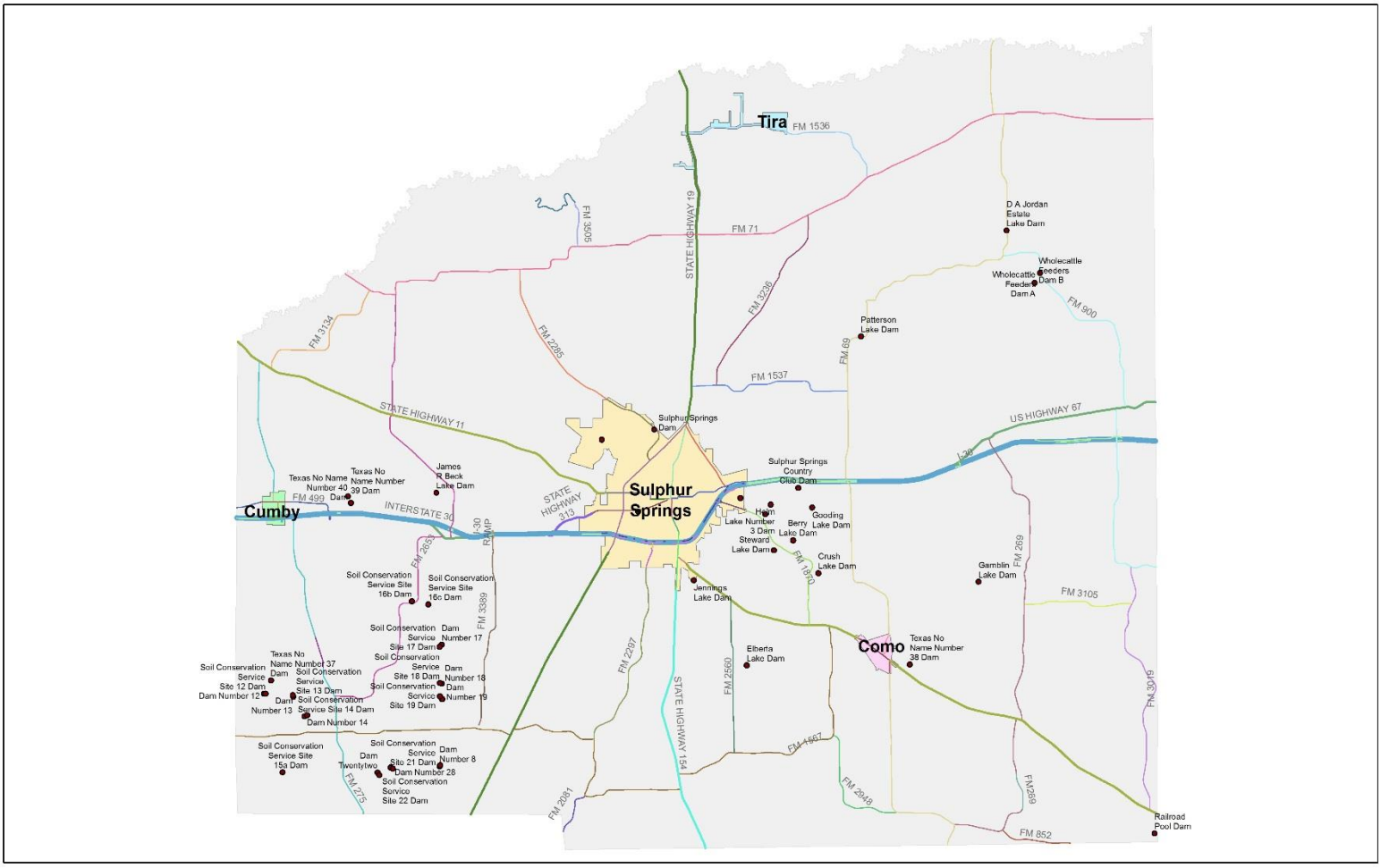
NID ID	DAM NAME	STORAGE (AC-FT)	HEIGHT (FT)	HAZARD CLASSIFICATION CATEGORY
TX00645	GAMBLIN LAKE DAM	264	22	L
TX00646	WHOLECATTLE FEEDERS DAM B	198	16	L
TX00647	ELBERTA LAKE DAM	243	19	L
TX00648	STEWART LAKE DAM	250	20	L
TX00649	BERRY LAKE DAM	202	18	L
TX00650	CRUSH LAKE DAM	397	16	L
TX00651	UPPER LAKE FORK CREEK WS SCS SITE 21 DAM	1786	30	L
TX00652	UPPER LAKE FORK CREEK WS SCS SITE 19 DAM	1056	33	L
TX00663	UPPER LAKE FORK CREEK WS SCS SITE 23 DAM	5056	35	L
TX00664	UPPER LAKE FORK CREEK WS SCS SITE 22 DAM	1502	33	L
TX00665	UPPER LAKE FORK CREEK WS SCS SITE 13 DAM	4288	32	L
TX00666	UPPER LAKE FORK CREEK WS SCS SITE 14 DAM	768	26	L
TX00667	WHOLECATTLE FEEDERS DAM A	174	15	L
TX00668	DA JORDAN ESTATE LAKE DAM	132	10	L
TX00669	RAILROAD POOL DAM	346	18	L
TX00670	PATTERSON LAKE DAM	619	18	L
TX00653	UPPER LAKE FORK CREEK WS SCS SITE 18 DAM	1730	30	L
TX00654	UPPER LAKE FORK CREEK WS SCS SITE 17 DAM	1600	27	L
TX00656	JAMES R BECK LAKE DAM	109	13	L
TX00657	GOODING LAKE DAM	90	16	L
TX00658	HELM LAKE NO 1 DAM	314	28	L
TX00659	HELM LAKE NO 2 DAM	184	23	L
TX00660	SULPHUR SPRINGS COUNTRY CLUB DAM	145	19	L
TX00661	LAKE COLEMAN DAM	733	18	H

TX00662	**UPPER LAKE FORK CREEK WS SCS SITE 12 DAM**	**1301**	**27**	**L**
TX04249	**UPPER LAKE FORK CREEK WS SCS SITE 15A DAM**	**1869**	**30**	**L**
TX04356	**LAKE SULPHUR SPRINGS DAM**	**34700**	**34**	**H**
TX04474	**UPPER LAKE FORK CREEK WS SCS SITE 16B DAM**	**1131**	**27**	**L**
TX04475	**UPPER LAKE FORK CREEK WS SCS SITE 16C DAM**	**669**	**21**	**L**
TX05412	**TX NO NAME NO 37 DAM**	**140**	**18**	**L**
TX05414	**TX NO NAME NO 38 DAM**	**119**	**16**	**L**
TX05415	**HELM LAKE NO 3 DAM**	**155**	**26**	**L**
TX05416	**JENNINGS LAKE DAM**	**117**	**17**	**H**
TX05417	**TX NO NAME NO 39 DAM**	**200**	**25**	**L**
TX05418	**TX NO NAME NO 40 DAM**	**51**	**16**	**L**
TX06354	**JOHNSON KNIGHT LAKE DAM**	**318**	**22**	**L**
TX06359	**CAMPS LAKE DAM**	**51**	**21**	**L**
TX06447	**CROSS TIMBER RANCH LAKE NO 1 DAM**	**846**	**23**	**L**
TX06719	**UPPER LAKE FORK CREEK WS SCS SITE 20C DAM**	**1441**	**31**	**L**
TX06888	**DE VRIES LAKE DAM**	**255**	**19**	**L**
TX06911	**DEREK LAMBERT DAM**	**88**	**15**	**L**
TX08012	**JIM CHAPMAN LAKE**	**797300**	**95**	**H**

There is no past occurrence on record of dam failure in Hopkins County.

Hopkins County Dam Failure Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Hopkins Unincorporated	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI = 4	< 6 hrs. PRI =1	Low PRI = 1.45
Como	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI = 4	< 6 hrs. PRI =1	Low PRI = 1.45
Cumby	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI = 4	< 6 hrs. PRI =1	Low PRI = 1.45
Sulphur Springs	Major PRI =3	Unlikely PRI = 1	< 6 hrs. PRI = 4	< 6 hrs. PRI =1	Medium PRI= 2.35
Tira	Limited PRI = 1	Unlikely PRI = 1	< 6 hrs. PRI = 4	< 6 hrs. PRI =1	Low PRI = 1.45

Hopkins County Dams



Location: Dams are located in the rural areas of Hopkins County, including the participating jurisdictions of Como, Cumby, Sulphur Springs and Tira. There are a total of 42 dams listed in Hopkins County, most of which are small and having a hazard rating of low. Most of the dams are in rural Hopkins County, in the Southwest part of the County south of Interstate 30, and the Southeast section of the County in the Helm Lake and Crush Lake areas along FM 1870 between Interstate 30 and Highway 11. These rural areas would experience limited impact if there was a dam failure. The two Sulphur Springs dams of Lake Sulphur Springs and Coleman Lake will be the main focus because they have a High risk rating. (See map on preceding page.)

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

Vulnerability: Sulphur Springs is the most vulnerable of all the jurisdictions in Hopkins County. According to the Texas Dam Safety Program, heavy rains after a severe drought leave earthen dams vulnerable. Lake Sulphur Springs and Lake Coleman have hazard ratings of high, *should one of the dams collapse major property damage and death could occur*.

Impact: The overall impact of dams in Hopkins County is low. Como, Cumby, Tira, and the rural areas of Hopkins County have little risk of being impacted by a dam break. Sulphur Springs could experience some damage and injury should one of its dams break. According to the Texas Dam Safety Program dams are rated high if the break could inundate 3 or more homes. Reviewing the inundation maps for Sulphur Springs indicates that some dwellings may flood. Most of the inundation falls on rural property with few dwellings. A breach in Lake Sulphur Springs Dam embankment would have a width of 90.9 feet, and would result in a maximum peak flow from the reservoir of 114,092 CFS. The flood wave resulting from such a breach would travel downstream through the floodplain of White Oak Creek, attenuating approximately 17 mile downstream of Lake Sulphur Springs Dam. (See map on preceding page)

Estimated Property Loss at 25%		
Hopkins County	Residential	241,985,112
Como	Residential	236,222
Cumby	Residential	1,067,787
Sulphur Springs	Residential	91,622,657
Tira	Residential	Not Available

A breach of the Lake Coleman Dam embankment would have a width of 44.1 feet and would result in a maximum peak flow from the reservoir of 9,073 CFS. The flood wave resulting from such a breach would travel downstream through the floodplain of Coleman Creek attenuating approximately 3.5 miles downstream of Lake Coleman Dam at the confluence with White Oak Creek. (See map on preceding page)

Summary: It is unlikely that a dam break will occur that would have more than a limited effect on most of the County. Sulphur Springs would possibly experience major damage should Lake Sulphur Springs Dam, or Lake Coleman Dam, break. Both have a hazard rating of high. Lake Jim Chapman lies in the rural area of Hopkins County and Delta County. More damage would occur in neighboring counties should the dam break. In accordance with **Title 30 Texas Administrative Code (TAC) Chapter 299, Dams and Reservoirs, §299.61(b)**, owners of significant and high hazard dams were required to submit an Emergency Action Plan, which may be a draft version, to the executive director for review by January 1, 2011. The High Hazard Dams of Sulphur Springs Lake and Coleman Lake have an EAP Plan in accordance with this code. The jurisdictions of Como, Cumby and Tira do not have actions related to dams.

An Ant may well destroy a whole dam. **Chinese Proverb**

WILDFIRE

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

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

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, Texas Fire burned 141structures and 16,000 acres in Parker and Wise counties west of Fort Worth. During the 2000 fire season, 48 homes were lost to wildfires in Texas that burned more than a quarter of a million acres.

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

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

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

Major Fire Causes – East Texas Commercial Forest Regions - 1966

Rank	Cause	Percentage
1	Debris burning	55.5
2	Arson	10
3	Miscellaneous	21.5
4	Equipment/railroads	5
5	Lightning	3.5
6	Smoking	2
7	Campfires	1.5

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 2.20:

ISO FIRE PROTECTION CLASSES FOR HOPKINS COUNTY

Fire Protection Area	Protection Class	Primary Fire Response
Como	9/10*	Cumby FD
Cumby	7/9	Cumby FD
Sulphur Springs	5	Sulphur Springs 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.

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

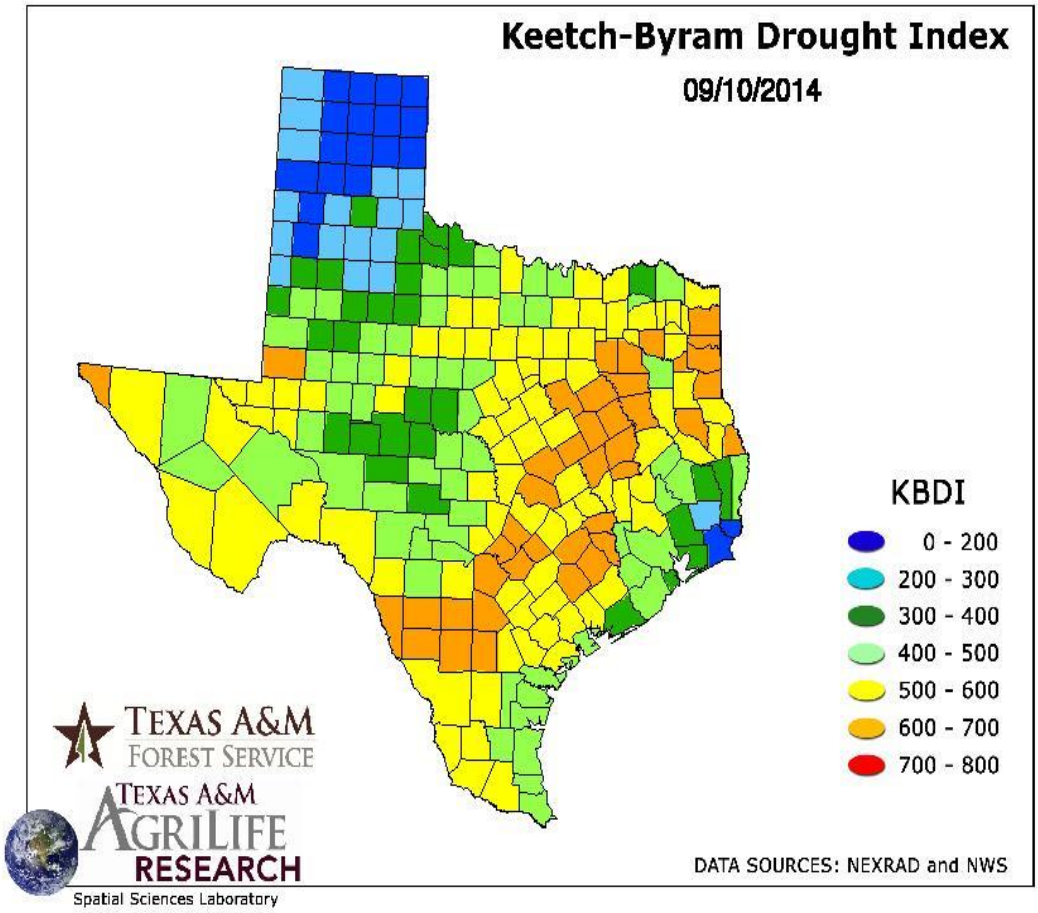
Potential Wildfire Damages and Losses In Hopkins County

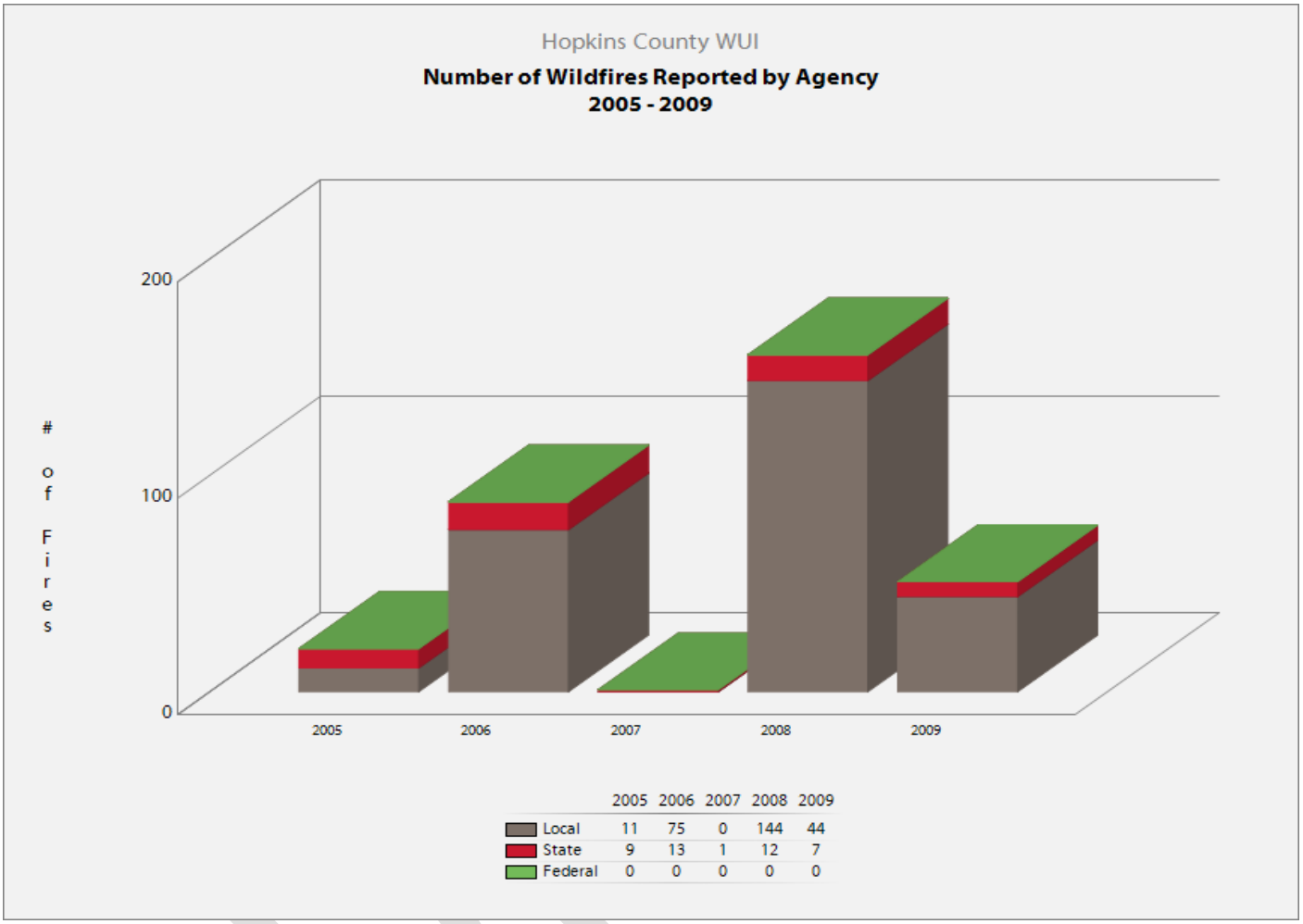
The "urban wildfire interface" is the geographical area where combustible homes are mixed with combustible vegetation. The determination of specific wildfire hazard sites depends on several factors.

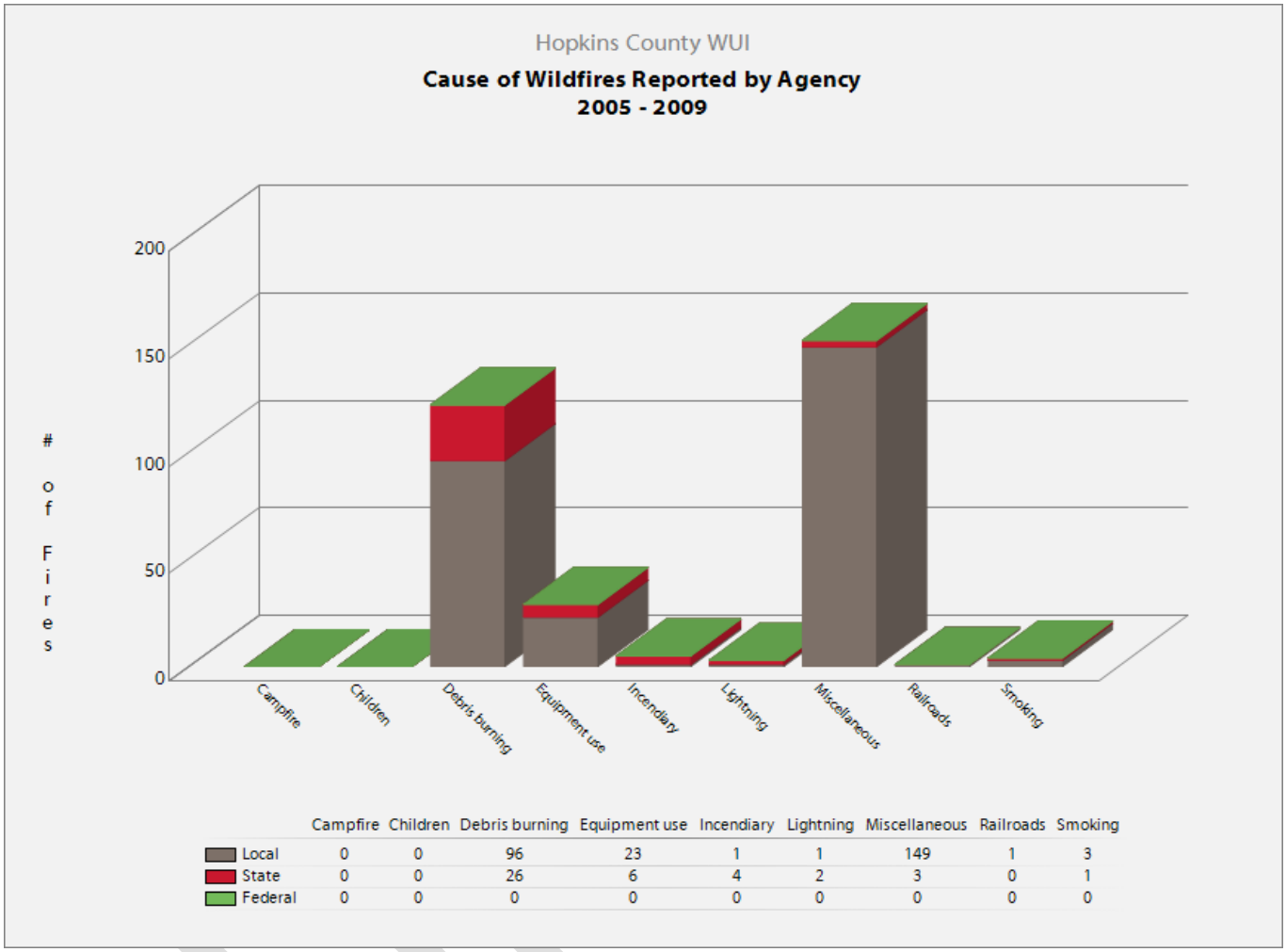
- Topographic location and fuels;
- Site/building construction and design;
- Defensible space;
- Accessibility;
- Fire protection response; and
- Water availability.

PAST OCCURRENCES OF WILDFIRES IN HOPKINS COUNTY
In august of 2011 251 of the 254 Texas Counties had a burn ban.

Hopkins County residents are served by a variety of local fire departments Texas Forest Service Map, Figure 2.14 shows that since December 1, 2005, there have been 242 large fires in Texas, and 1,388,286 acres have been burned. There have been 2,148 wildland fires, and 1,417,967 acres have been burned. No estimate is available for potential dollar damages from Wildland fires.
Figure 2.10 shows the current (September 10, 2014) KBDI for Hopkins County at 600-700. **Keetch-Byram Drought Index (KBDI)** is an index used to determining forest fire potential. The drought index is based on a daily water balance, where a drought factor is balanced with precipitation and soil moisture (assumed to have a maximum storage capacity of 8-inches) and is expressed in hundredths of an inch of soil moisture depletion.
The drought index ranges from 0 to 800, where a drought index of 0 represents no moisture depletion, and an index of 800 represents absolutely dry conditions. Presently, this index is derived from ground based estimates of temperature and precipitation derived from weather stations and interpolated manually by experts at the Texas Forest Service (TFS) for counties across the state. Researchers at Texas A&M University are working with the TFS to derive this index from AVHRR satellite data and NEXRAD radar rainfall within a GIS.




Hopkins County WUI
Number of Wildfires Reported by Agency
2005 - 2009
# of Fires
200
100
0
2005
2006
2007
2008
2009
2005 2006 2007 2008 2009
Local 11 75 0 144 44
State 9 13 1 12 7
Federal 0 0 0 0 0



	Campfire	Children	Debris burning	Equipment use	Incendiary	Lightning	Miscellaneous	Railroads	Smoking
Local	0	0	96	23	1	1	149	1	3
State	0	0	26	6	4	2	3	0	1
Federal	0	0	0	0	0	0	0	0	0

Outdoor Burn Bans

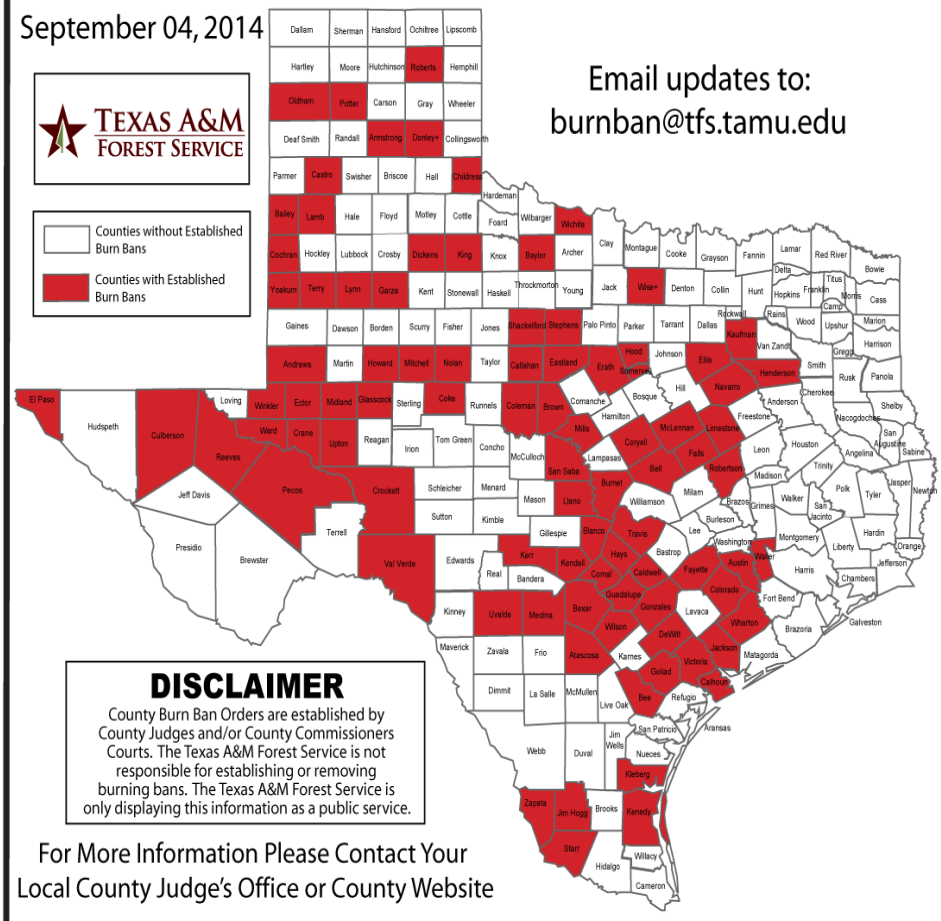
September 04, 2014

TEXAS A&M FOREST SERVICE

Counties without Established Burn Bans

Counties with Established Burn Bans

Email updates to:
burnban@tfs.tamu.edu



DISCLAIMER

County Burn Ban Orders are established by County Judges and/or County Commissioners Courts. The Texas A&M Forest Service is not responsible for establishing or removing burning bans. The Texas A&M Forest Service is only displaying this information as a public service.

For More Information Please Contact Your Local County Judge's Office or County Website

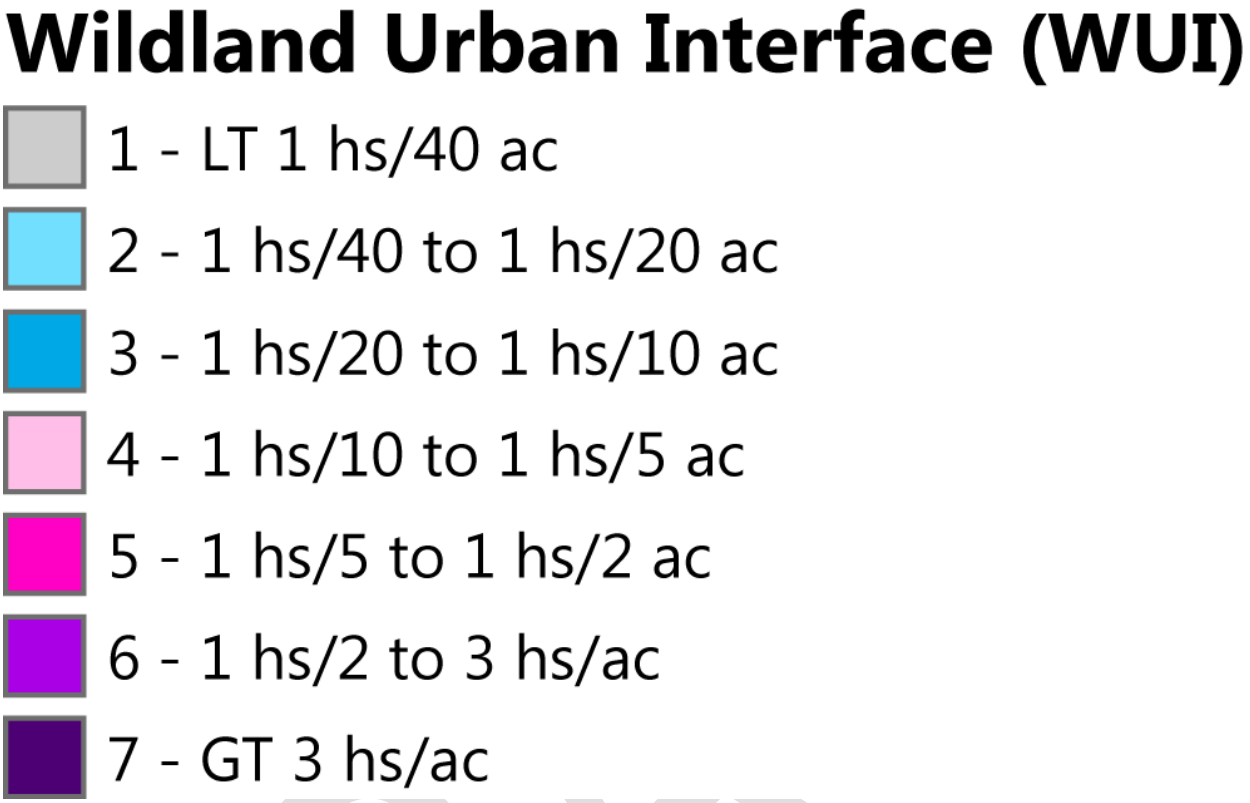
Counties with Burn Bans: 90

Andrew
Armstrong
Atascosa
Austin
Bailey
Baylor
Bee
Bell
Bexar
Blanco
Brown
Burnet
Caldwell
Calhoun
Callahan
Castro
Childress
Cochran
Coke
Coleman
Colorado
Coma
Coryelll
Crane
Crockett
Culberson
DeWitt
Dickens
Donley+
Eastland
Ector
El Paso
Ellis
Erath
Falls
Fayette
Garza
Glasscock
Goliad
Gonzales
Guadalupe
Hays
Henderson
Hood
Howard
Jackson
Jim Hogg
Kaufman
Kendall
Kenedy
Kerr*
King
Kleberg
Lamb
Limestone
Llano
Lynn
McLennan
Medina
Midland
Mills
Mitchell
Navarro
Nolan
Oldham
Pecos
Potter
Reeves
Roberts
Robertson
San Saba
Shackelford
Somervell
Starr
Stephens
Terry
Travis
Upton
Uvalde
Val Verde
Victoria
Waller
Ward
Wharton
Wichita
Wilson
Winkler
Wise+
Yoakum
Zapata

Link to see if your county is under a RED FLAG WARNING: http://www.srh.noaa.gov/data/index.php
Burn Ban RSS feed available at http://tfsfrp.tamu.edu/wildfires/BurnBan.xml

+ - Burn Ban is ONLY during a Red Flag Warning day
* - Burn Ban in effect check with County for specifics

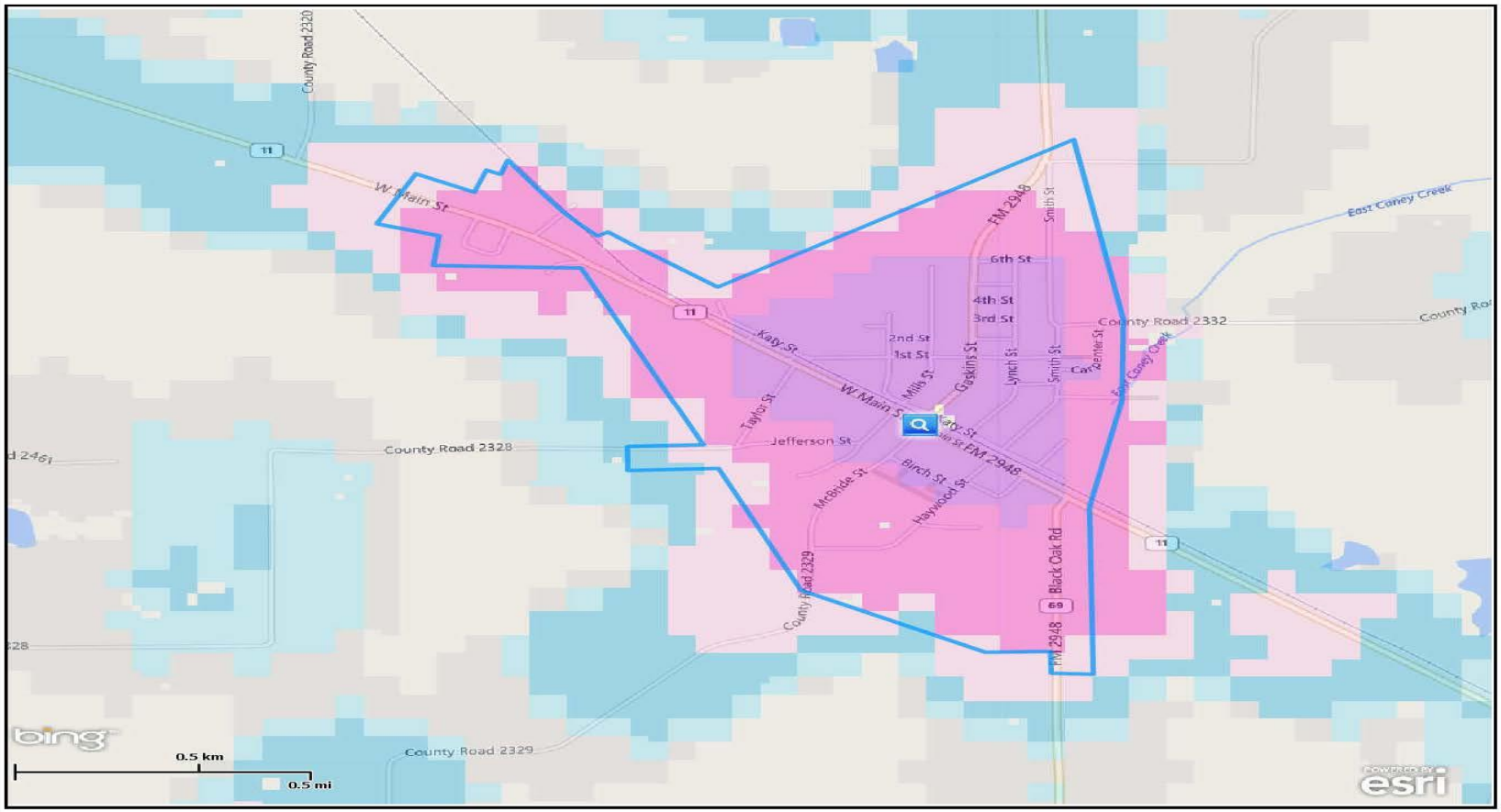
Legend for the following Wildland Urban Interface maps



Legend:

LT=less than
hs=house
ac=acre
GT=greater than

Como WUI



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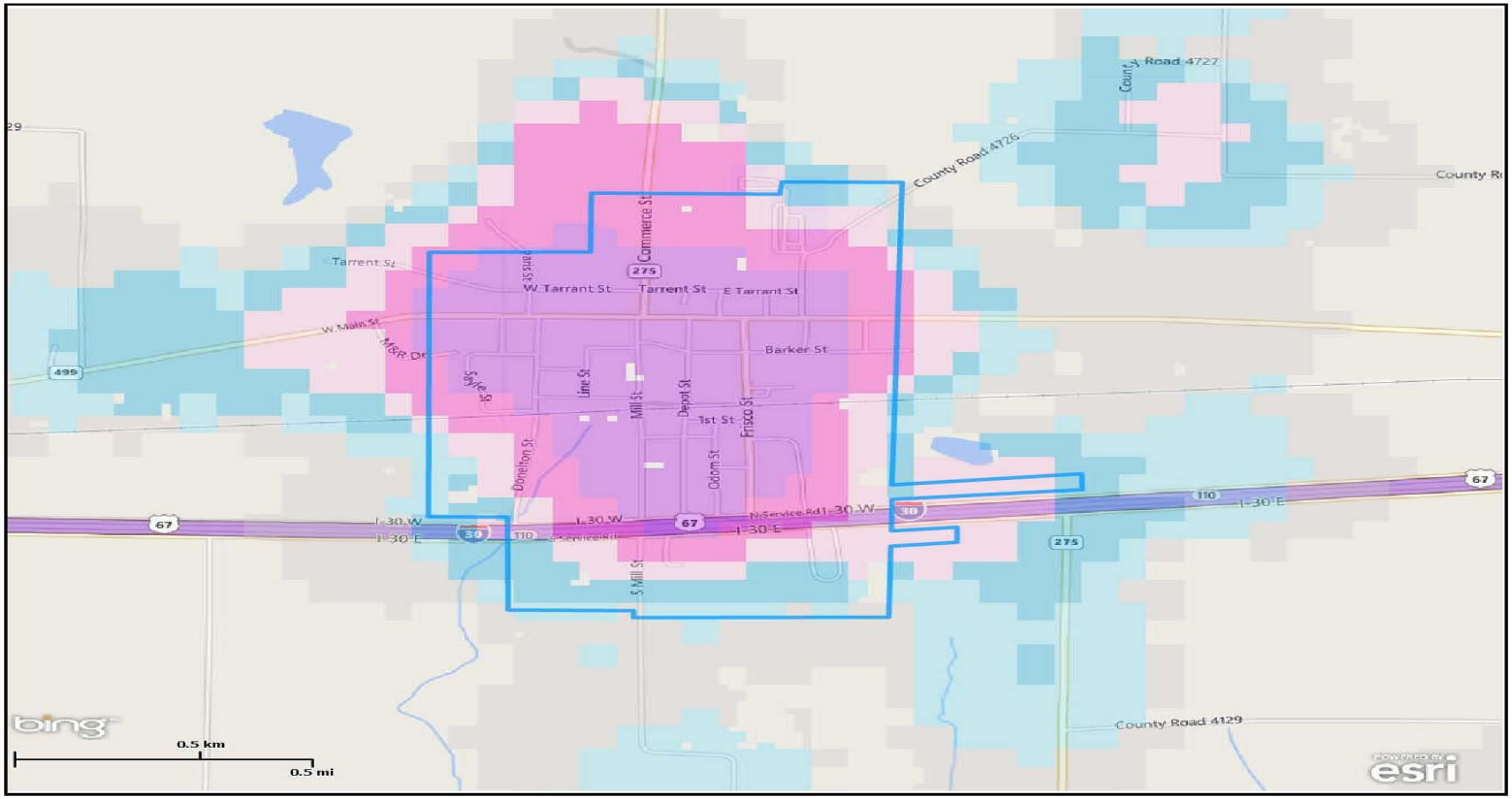
Texas Wildfire Risk Assessment 2010
www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

Cumby WUI



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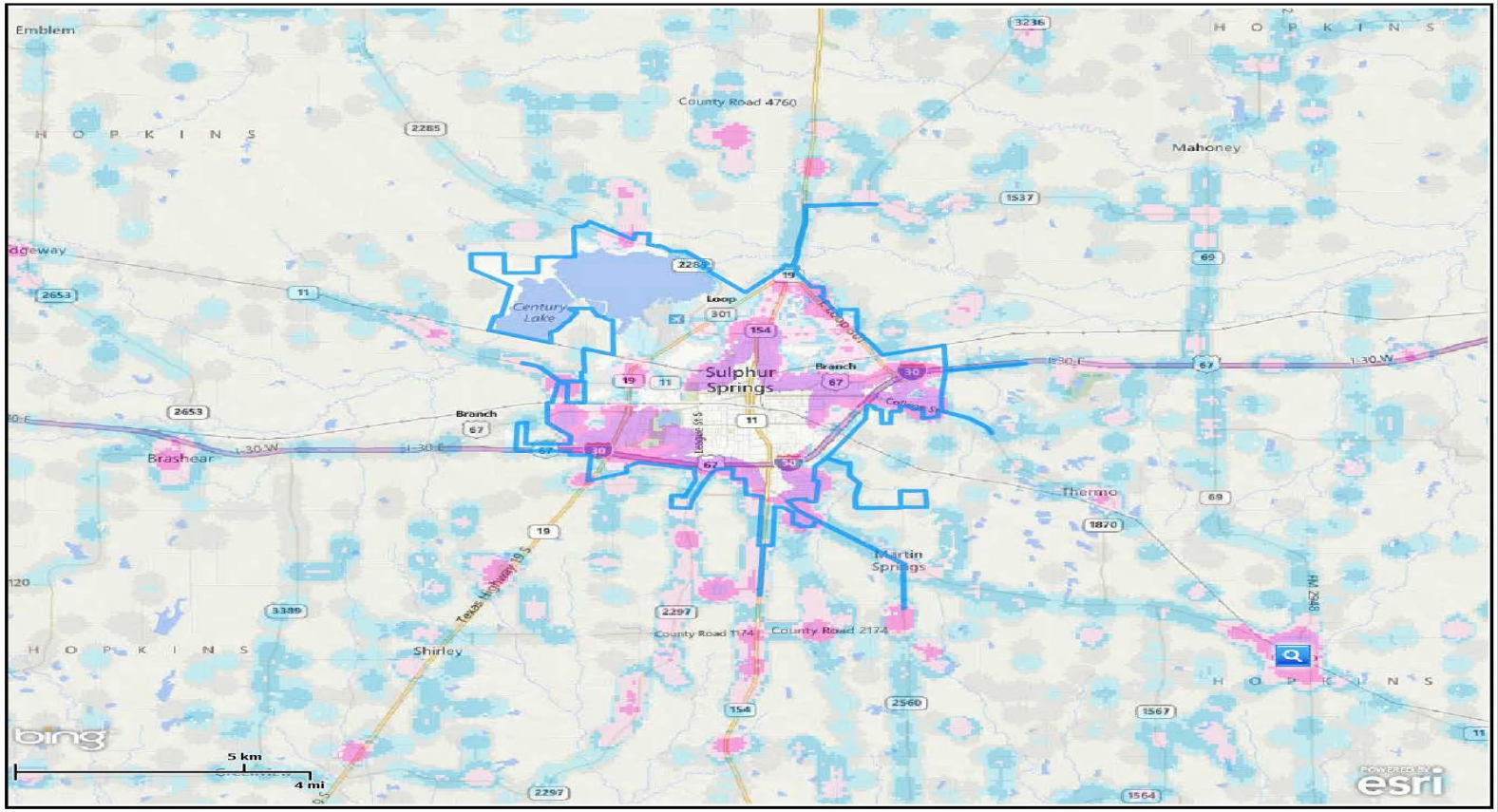
Texas Wildfire Risk Assessment 2010
www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

Sulphhur Springs WUI



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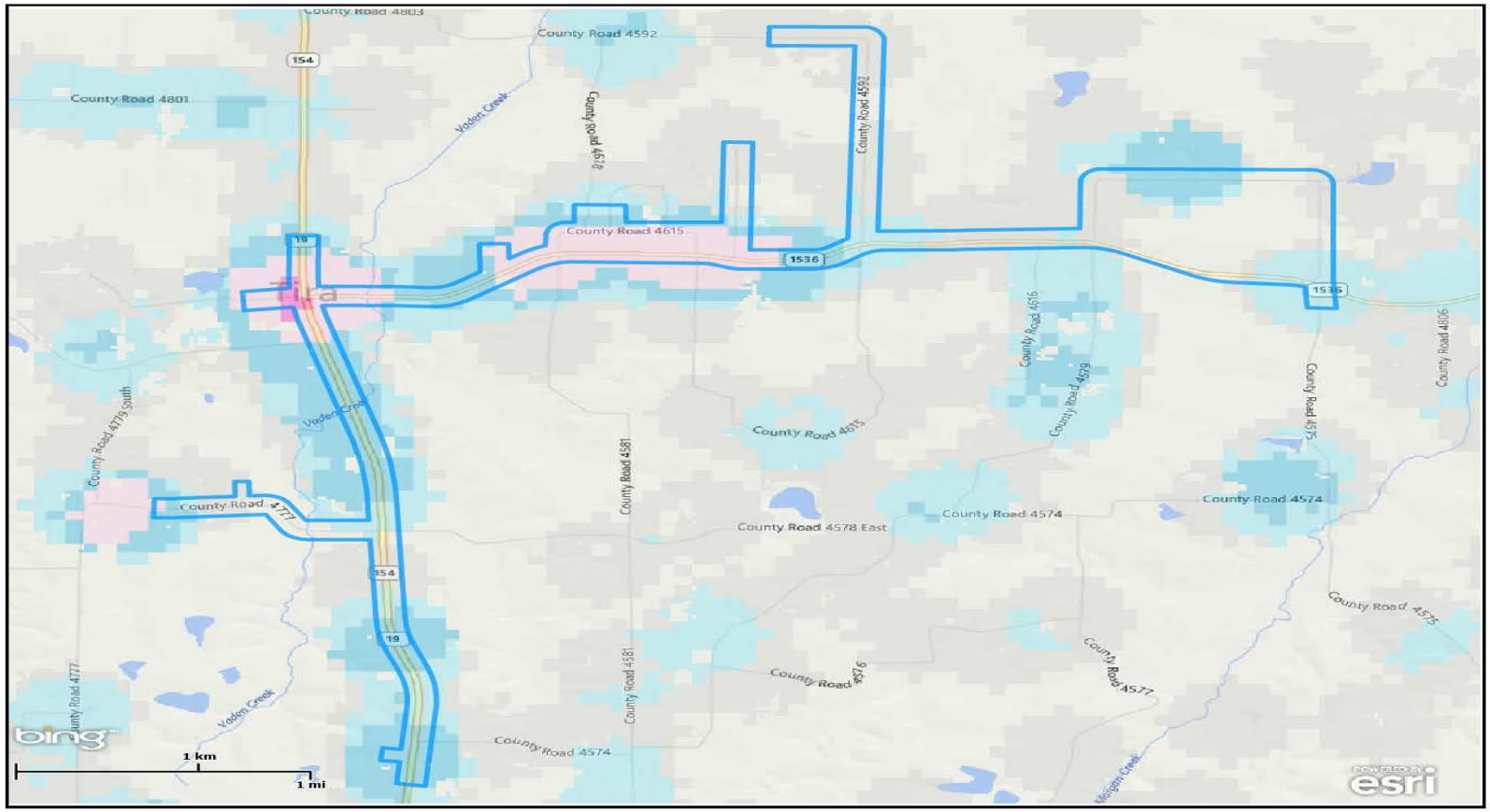
Texas Wildfire Risk Assessment 2010
www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

Tira WUI



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Texas Wildfire Risk Assessment 2010
www.texaswildfirerisk.com

TEXAS A&M FOREST SERVICE

WILDFIRES IN HOPKINS COUNTY

Hopkins County Wildfire Risk					
COMMUNITY	**POTENTIAL IMPACT 45%**	**PROBABLITY 30%**	**Warning 15%**	**Duration 10%**	**RISK**
Hopkins Unincorporated	Substantial PRI 4	Highly Likely PRI 4	< 6 hrs. PRI 4	< Week PRI 3	High 3.9
Como	Substantial PRI 4	Unlikely PRI 1	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85
Cumby	Substantial PRI 4	Unlikely PRI 1	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85
Sulphur Springs	Substantial PRI 4	Highly Likely PRI 4	< 6 hrs. PRI 4	< Week PRI 3	High 3.9
Tira	Substantial PRI 4	Unlikely PRI 1	< 6 hrs. PRI 4	< Week PRI 3	Medium 2.85

Probability*:* Historical weather conditions indicate that the probability of occurrence is highly likely. The threat of fires cannot be eliminated but public education and the use of prescribed burns can be used to better manage this hazard in Hopkins County and participating jurisdictions.

Vulnerability: The most vulnerable month for wildfires is July. However, Como, Cumby, Sulphur Springs and Tira have never been threatened by wildfires.

Historically, the danger lies in the rural areas of Hopkins County. Should a fire occur in Como, Cumby, Sulphur Springs, or Tira, framed homes and mobile homes would be very susceptible. The only acreage that is rated at even a moderate level (661 acres) is found in the rural parts of the county.

Hopkins County Wildfire Threat by Acreage							
			Como	Cumby	Sulphur Springs	Tira	Hopkins County
		Non-Burnable	1	1	4036	13	24,192
	1	Low	530		9185	894	280,486
	2			526			202,467
	3	Moderate					661
	4						
	5	High					
	6						
	7	Very High					

Impact: Data is not available to determine the extent that each fire must reach before it runs out of control. There were 318 fires reported to the Texas Forestry Service between 2006 and 2009.. The KDBI Levels of 200 (moderate) to 800 (extreme) are considered when mitigating wildfires. The county and participating jurisdictions will consider the full range of the KDBI scale when mitigating wildfires. See Damage Assessment tables on page 29 for estimates of financial impacts.

Estimated Structure loss at 25%	
Como	$3,093,668
Cumby	$2,885,605
Sulphur Springs	$169,558,441
Tira	Estimates not Available

Location: Due to heavy vegetation and dry conditions wildfire events in Hopkins County are possible any time during the year. All of Hopkins County and the jurisdictions of Como, Cumby, Sulphur Springs and Tira could possibly be affected, depending on where the wildfire started.

Summary: There are no Hopkins County "Communities at Risk" listed in the Federal Register. The Texas register of "Communities at Risk." However, 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 Hopkins County are particularly at risk. However, most of the fires have been small and easily contained.

SECTION IV
MITIGATION GOALS AND LONG TERM STRATEGY

GOALS

Mitigation Plan Goals

The Hopkins County Mitigation Action Plan goals describe the direction that Hopkins 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.

Hopkins County Actions

After careful consideration the Hopkins County Hazard Mitigation Team has decided to select new actions for the plan due to the following:

- There was no little or no activity during the five year period from 2007-2012 regarding the initial Hopkins County Hazard Mitigation Plan.
- Many of the existing action items no longer meet FEMA acceptable standards.
- The current actions may no longer represent the best way to address the identified hazards.
- New data and changing climate conditions have provided a new perspective for the plan's actions.

Hopkins County recognizes the importance of dedicated involvement regarding the integration of the plan into existing county and participating jurisdiction plans and budgets and codes. Hopkins County has initiated a proactive course of action that includes annual reviews and reports to the Hopkins County Commissioners Court and the city councils of Como, Cumby Sulphur Springs and Tira.

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

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

Hopkins County and Jurisdiction Hazards

Como Hazards

Como Flood Mitigation Action #1
Construct waste water overflow tank to contain overflow issues that currently exist during flash flooding.

Como Flood Mitigation Action #2
Disseminate PSA's, Newspaper Articles through local media about dangers of flooded county roads and to "Turn Around; Don't Drown."

Como Tornado Mitigation Action #1
Construct a FEMA approved Safe Room for Citizens

Como Tornado Mitigation Action #2
Establish building codes for new buildings to meet minimum wind speed resistance standards.

Como Winter Storm Mitigation Action #1
Install backup generators at water and waste stations to protect water supply from contamination during power outages

Como Winter Storm Mitigation Action #2
Inform and educate the community regarding the hazards of falling limbs and trees. (i.e. highline dangers, damage to structures, personal injury.)

Como Thunder Storm Mitigation Action #1
Participate in County wide emergency storm alert system.

Como Thunder Storm Mitigation Action # 2
Educate residents on the importance of NOAA weather radios in homes and businesses

Como Hail Mitigation Action #1
Develop and maintain a daily weather database.

Como Hail Mitigation Action #2
Educate residents of the likelihood of hailstorms and the importance of being properly insured.

Como Drought Mitigation Action #1
Conduct public workshops on conserving water, xeriscaping and managing drought impact.

Como Drought Mitigation Action # 2
Replace municipal appliances or equipment with water-saving models or parts.

Como Extreme Heat Mitigation Action #1
Provide a cooling center for citizen in extreme heat events

Como Extreme Heat Mitigation Action #2
Conduct fan drives for low-income and elderly who cannot afford air conditioning

Como Wild Fire Mitigation Action #1
Conduct a fire prevention campaign targeting defensible space around your home.

Como Wild Fire Mitigation Action # 2
Clear dense vegetation away from areas that are close to buildings or dwellings

Como Earthquake Mitigation Action #1
Participate in the county wide emergency evacuation exercise.

Como Earthquake Mitigation Action #2
Inform citizens on the importance of having a 72 hour disaster kit and how to implement it.

Como Dam Failure Action
Dam Failure is not an identified Hazard for Como

Cumby Hazards

Cumby Flood Mitigation Action #1
Participate in the "Turn Around Don't Drown Program"

Cumby Flood Mitigation Action # 2
Disseminate PSA's, Newspaper Articles through local media about dangers of flooded county roads

Cumby Tornado Mitigation Action #1
Construct FEMA standard community safe room

Cumby Tornado Mitigation Action #2
Participate in County wide storm alert system.

Cumby Winter Storm Mitigation Action #1
Purchase generators for water and sewage facilities

Cumby Winter Storm Mitigation Action #2
Inform and educate the community regarding the hazards of falling limbs and trees. (i.e., highline dangers, damage to structures, personal injury.

Cumby Thunder Storm Mitigation Action #1
Install Lightning Grade Surge Protectors for city computer system

Cumby Thunder Storm Mitigation Action #2
Install lightning prediction sensors in school yards and parks

Cumby Hail Mitigation Action #1
Develop and maintain a daily weather database.

Cumby Hail Mitigation Action #2
Educate residents of the likelihood of hailstorms and the importance of being properly insured.

Cumby Drought Mitigation Action #1
Conduct public workshops on conserving water, xeriscaping and managing drought impacts.

Cumby Drought Mitigation Action #2
Establish water rationing protocol for times of intense drought

Cumby Extreme Heat Mitigation Action #1
Radio/TV/Newspapers PSA's advising public of heat advisories and how to prevent heat related injury or death

Cumby Extreme Heat Mitigation Action #2
Provide cooling centers to assist the elderly and young.

Cumby Wild Fire Mitigation Action #1
Implement a vegetation management program to reduce the danger of wildfire reaching dwellings.

Cumby Wild Fire Mitigation Action #2
Conduct a wildfire education program stressing the dangers of trash burning in Cumby

Cumby Earthquake Mitigation Action #1
Participate in the county wide emergency evacuation exercise

Cumby Earthquake Mitigation Action #2
Inform citizens on the importance of having a 72 hour disaster kit and how to implement it.

Cumby Dam Failure
Dam Failure is not an identified hazard for Cumby

Sulphur Springs Hazards

Sulphur Springs Flooding Mitigation Action #1
Increase the size of ditches to accommodate flash flood waters in flood prone areas

Sulphur Springs Flooding Mitigation Action #2
Change the building codes for new and existing structures to reflect the most current standards. (NFIP)

Sulphur Springs Tornado Mitigation Action #1
Update and maintain outdoor early warning systems

Sulphur Springs Tornado Mitigation Action #2
Disseminate information at public events and in local newspaper regarding tornado safety.

Sulphur Springs Winter Storm mitigation Action #1
Develop a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms

Sulphur Springs Winter Storm mitigation Action #2
Purchase emergency mobile generators to use with emergency equipment during power outages

Sulphur Springs Thunderstorm Mitigation Action # 1
Participate in County wide emergency storm alert system.

Sulphur Springs Thunderstorm Mitigation Action # 2
Update existing building codes to protect structures from wind damage

Sulphur Springs Hail Mitigation Action #1
Develop and maintain a daily weather database.

Sulphur Springs Hail Mitigation Action #2
Educate residents of the likelihood of hailstorms and the importance of being properly insured.

Sulphur Springs Drought Mitigation Action #1
Conduct public workshops on conserving water, xeriscaping and managing drought impacts.

Sulphur Springs Drought Mitigation Action #2
Establish water rationing protocol for times of intense drought

Sulphur Springs Extreme Heat Mitigation Action #1
Radio/TV/Newspapers PSA's advising public of hazards of heat and heat advisories.

Sulphur Springs Extreme Heat Mitigation Action #2
Conduct fan drives for low-income and elderly who cannot afford air conditioning

Sulphur Springs Wildfire Mitigation Action #1
Implement a vegetation management program to reduce the danger of wildfire reaching dwellings.

Sulphur Springs Wildfire Mitigation Action #2
Conduct a wildfire education program stressing the dangers of trash burning in Sulphur Springs.

Sulphur Springs Earthquake Mitigation Action #1
Participate in the county wide emergency evacuation exercise

Sulphur Springs Earthquake Mitigation Action #2
Inform citizens on the importance of having a 72 hour disaster kit and how to implement it.

Sulphur Springs Dam Failure Mitigation Action #1
Educate property owners near high hazard dams of the potential of a dam failure.

Sulphur Springs Dam Failure Mitigation Action #2
Implementing an inspection, maintenance and enforcement program to help ensure continued structural integrity of dams and levees.

Tira Hazards

Tira has very limited income. The county provides police, road and water to this tiny jurisdiction that is spread out over several miles. Tira will mitigate tornadoes, thunderstorms, hail, wildfire and earthquakes.

Tira Flooding
Tira has no floodplain and no history of flashflood.

Tira Tornado Mitigation Action #1
Storm Shelter Awareness Campaign to work with private and public shelter owners to make existing shelters available for neighbors.

Tira Tornado Mitigation Action # 2
Reinforce Community Center bracing to make it more resistant to high winds.

Tira Thunderstorm Mitigation Action #1
Disseminate information at public events and at the community center regarding tornado safety.

Tira Thunderstorm Mitigation Action #2
Participate in County wide emergency storm alert system.

Tira Hail Mitigation Action #1
Develop and maintain a daily weather database.

Tira Hail Mitigation Action #2
Educate residents of the likelihood of hailstorms and the importance of being properly insured.

Tira Wild Fire Mitigation Action #1
Purchase new firefighting equipment for volunteers

Tira Wild Fire Mitigation Action # 2
Conduct a wildfire education program stressing the dangers of trash burning in Tira

Tira Earthquake Mitigation Action #1
Participate in the county wide emergency evacuation exercise

Tira Earthquake Mitigation Action #2
Inform citizens on the importance of having a 72 hour disaster kit and how to implement it.

Hopkins County Hazards

Hopkins County Flood Mitigation Action #1
Install road signs to clearly mark roads that are prone to flooding. (NFIP)

Hopkins County Flood Mitigation Action #2
Inform citizens of dangers of driving on roadways and bridges that are flooded. Use NOAA "Turn Around, Don't Drown" (NFIP)

Hopkins County Tornado Mitigation Action #1
Designate safe haven shelter locations in the county.

Hopkins County Tornado Mitigation Action #2
Distribute NOAA weather radios to limited-income residents that live in high risk areas such as mobile home parks.

Hopkins County Winter Storm Mitigation Action #1
Purchase emergency mobile generators to use with emergency equipment during power outages.

Hopkins County Winter Storm Mitigation Action #2
Implement a county wide emergency alert phone alarm system.

Hopkins County Thunder Storm Mitigation Action #1
Place lightning prediction sensors in school yards and parks.

Hopkins County Thunder Storm Mitigation Action #2
Educate the residents on the importance of NOAA weather radios in school homes businesses and how to operate them properly.

Hopkins County Hail Mitigation Action #1
Develop and maintain a daily weather database.

Hopkins County Hail Mitigation Action #2
Educate residents of the likelihood of hailstorms and the importance of being properly insured.

Hopkins County Drought Mitigation Action #1
Conduct public workshops on conserving water, xeriscaping and managing drought impacts.

Hopkins County Drought Mitigation Action #2
Replace appliances or equipment wear with water-saving models.

Hopkins County Extreme Heat Mitigation Action #1
Conduct a local fan drive as community service project

Hopkins County Extreme Heat Mitigation Action #2
Radio/TV/newspapers PSA's advising public of hazards of heat and heat advisories

Hopkins County Wild Fire Mitigation Action #1
Purchase new firefighting equipment that will clear areas of heavy undergrowth in order to protect buildings subject to wildfire/urban interface.

Hopkins County Wild Fire Mitigation Action #2
Conduct a wildfire education program stressing the dangers of trash burning in Hopkins County.

Hopkins County Earthquake Mitigation Action #1
Conduct a county wide emergency evacuation exercise.

Hopkins County Earthquake Mitigation Action #2
Inform citizens on the importance of having a 72 hour disaster kit and how to implement it.

Hopkins County Dam Failure Mitigation Action #1
Implement an inspection, maintenance and enforcement program to help ensure continued structural integrity of dams and levees.

Hopkins County Dam Failure Mitigation Action #2
Educate the public regarding dam vulnerability due to vandalism.
Instruct county residents to report any suspicious behavior around dams on private or public property.

In all natural disasters through time, man needs to attach meaning to tragedy, no matter how random and inexplicable the event is. **Nathaniel Philbrick , American Author**

Comprehensive Range of Specific Mitigation Actions Tables

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

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

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

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

Como Flood Mitigation Action #1	Construct waste water overflow tank to contain overflow issues that currently exist during flash flooding
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	FEMA and other grant sources
Estimated Cost	High (25k +)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	Could help protect new buildings from contaminated water overflow
Effect on Existing Buildings	Could help protect existing building from contaminated water overflow.
Comments:	

Como Flood Mitigation Action #2	Disseminate PSA's, Newspaper Articles through local media about dangers of flooded county roads and to "Turn Around; Don't Drown."
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Como/Hopkins County
Estimated Cost	Low (0-10K)
Responsible Agency	City
Estimated Completion Time	1 year
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Como Tornado Mitigation Action #1	Construct a FEMA approved Safe Room for Citizens
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	FEMA Grant
Estimated Cost	High (25k+)
Responsible Agency	Como/FEMA
Estimated Completion Time	High 3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Como Tornado Mitigation Action #2	Establish building codes for new buildings to meet minimum wind speed resistance standards.
Mitigation Goal/Objective	Goal #4: Partnerships and Implementation
Priority	Low
Funding Source(s)	City
Estimated Cost	Low (0-10K)
Responsible Agency	City
Estimated Completion Time	8 years
Effect on New Buildings	Provides additional protection for high winds.
Effect on Existing Buildings	NA
Comments:	Como currently has no building codes

Como Winter Storm Mitigation Action #1	Install backup generators at water and waste stations to protect water supply from contamination during power outages
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	FEMA & other grants
Estimated Cost	Medium (10-25k)
Responsible Agency	City of Como/FEMA
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Como Winter Storm Mitigation Action #2	Inform and educate the community regarding the hazards of falling limbs and trees. (i.e. highline dangers, damage to structures, personal injury.)
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Como/ Hopkins County
Estimated Cost	Low (0-10K)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Como Thunderstorm Mitigation Action #1	Participate in County wide storm alert system.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness Goal #4: Partnerships and Implementation Goal #5: Emergency Services
Priority	High
Funding Source(s)	City of Como/Hopkins County
Estimated Cost	Medium (10-25k)
Responsible Agency	Hopkins County
Estimated Completion Time	1 year
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Como Thunderstorm Mitigation Action # 2	Educate residents on the importance of NOAA weather radios in homes and businesses
Mitigation Goal/Objective	Goal #2: Public Awareness.
Priority	High
Funding Source(s)	City
Estimated Cost	Low (1-10K)
Responsible Agency	City
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Como Hail Mitigation Action #1	Develop and maintain a daily weather database.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City of Como
Estimated Cost	Low (0-10K)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	By monitoring local weather patterns we can better predict the likelihood of storms

Como Hail Mitigation Action # 2	Educate residents of the likelihood of hailstorms and the importance of being properly insured.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Como
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	Being properly insured can help with rebuilding.

Como Drought Mitigation Action #1	Conduct public workshops on conserving water, xeriscaping and managing drought impact.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	City of Como/County Agent
Estimated Cost	Low (0-10K)
Responsible Agency	City
Estimated Completion Time	4 years
Effect on New Buildings	By managing landscape could prevent foundation problems.
Effect on Existing Buildings	By managing landscape could prevent foundation problems.
Comments:	

Como Drought Mitigation Action # 2	Replace municipal appliances or equipment with water-saving models or parts.
Mitigation Goal/Objective	Goal #3: Natural Systems Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City
Estimated Cost	Low (1-10K)
Responsible Agency	City
Estimated Completion Time	On-going
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	This could save money by cutting water usage

Como Extreme Heat Mitigation Action #1	Provide a cooling center for citizen in extreme heat events.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	NA
Estimated Cost	Low (1-10k)
Responsible Agency	City
Estimated Completion Time	4 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	Working together with churches and business groups

Como Extreme Heat Mitigation Action #2	Conduct a fan drives for low-income and elderly who cannot afford air conditioning
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	NA
Estimated Cost	Low (0-10K)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	Working with churches and business to fund project.

Como Wild Fire Mitigation Action #1	Conduct a fire prevention campaign targeting defensible space around your home.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City/Texas Forest Service
Estimated Cost	Low (0-10k)
Responsible Agency	City of Como
Estimated Completion Time	2 years
Effect on New Buildings	Raises awareness of wildfire/urban interface
Effect on Existing Buildings	Raises awareness of wildfire/urban interface
Comments:	

Como Wild Fire Mitigation Action # 2	Clear dense vegetation away from areas that are close to buildings or dwellings
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #3: Natural Systems Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	City/ County/State
Estimated Cost	Medium (10-25K)
Responsible Agency	City
Estimated Completion Time	5 years
Effect on New Buildings	Protects new structures from wildfire dangers
Effect on Existing Buildings	Protects existing structures from wildfire dangers
Comments:	

Como Earthquake Mitigation Action #1	Participate in the county wide emergency evacuation exercise.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	Hopkins County/Como
Estimated Cost	Low (0-10k)
Responsible Agency	County/Como
Estimated Completion Time	6 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Como Earthquake Mitigation Action #2	Inform citizens on the importance of having a 72 hour disaster kit and how to implement it.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness
Priority	High
Funding Source(s)	Hopkins County/Como
Estimated Cost	Low (0-10k)
Responsible Agency	County/Como
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

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

Cumby Flood Mitigation Action #1	Participate in the "Turn Around Don't Drown Program"
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	NA
Estimated Cost	NA
Responsible Agency	City of Cumby
Estimated Completion Time	4 years
Effect on New Buildings	Protects structures from flood damage
Effect on Existing Buildings	Protects structures from flood damage
Comments:	

Cumby Flooding Mitigation Action # 2	Disseminate PSA's, Newspaper Articles through local media about dangers of flooded county roads.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	NA
Estimated Cost	Low (0-10k)
Responsible Agency	City of Cumby
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Cumby Tornado Mitigation Action #1	Construct FEMA standard community safe room
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #5: Emergency Services
Priority	High
Funding Source(s)	NA
Estimated Cost	Low (0-10k)
Responsible Agency	City of Cumby
Estimated Completion Time	1 year
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Cumby Tornado Mitigation Action #2	Participate in County wide storm alert system.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Cumby
Estimated Cost	Low (0-10k)
Responsible Agency	NA
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Cumby Winter Storm Mitigation Action #1	Purchase generators for water and sewage facilities
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Low 8 + years
Funding Source(s)	FEMA & other grant money
Estimated Cost	Medium (10-25k)
Responsible Agency	City of Cumby
Estimated Completion Time	8 years
Effect on New Buildings	Protect new buildings from waste water contamination.
Effect on Existing Buildings	Protect existing buildings from waste water contamination.
Comments:	

Cumby Winter Storm Mitigation Action #2	Inform and educate the community regarding the hazards of falling limbs and trees. (i.e., highline dangers, damage to structures, personal injury.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Cumby
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	Raise awareness of damage from falling limbs/trees.
Effect on Existing Buildings	Raise awareness of damage from falling limbs/trees.
Comments:	

Cumby Thunderstorm Mitigation Action #1	Install Lightning Grade Surge Protectors for city computer system.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City of Cumby
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Cumby Thunderstorm Mitigation Action #2	Install lightning prediction sensors in school yards and parks.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA and other grant money
Estimated Cost	High (25k +)
Responsible Agency	FEMA and City
Estimated Completion Time	7 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Cumby Hail Mitigation Action #1	Develop and maintain a daily weather database.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City of Como
Estimated Cost	Low (0-10K)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	By monitoring local weather patterns we can better predict the likelihood of storms

Cumby Hail Mitigation Action # 2	Educate residents of the likelihood of hailstorms and the importance of being properly insured.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Como
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	Being properly insured can help with rebuilding.

Cumby Drought Mitigation Action #1	Conduct public workshops on conserving water, xeriscaping and managing drought impacts
Mitigation Goal/Objective	Goal #2: Public Awareness Goal #3: Natural Systems
Priority	High
Funding Source(s)	City/County/State
Estimated Cost	Low (0-10k)
Responsible Agency	City/County Extension
Estimated Completion Time	1 year
Effect on New Buildings	Could help protect foundations from cracking
Effect on Existing Buildings	Could help protect foundations from cracking
Comments:	

Cumby Drought Mitigation Action #2	Establish water rationing protocol for times of intense drought
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of Cumby
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Cumby Extreme Heat Mitigation Action #1	Radio/TV/Newspapers PSA's advising public of heat advisories and how to prevent heat related injury or death.
Mitigation Goal/Objective	Goal #2: Public Awareness Goal #5: Emergency Services
Priority	High
Funding Source(s)	City of Cumby
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	1 year
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Cumby Extreme Heat Mitigation Action #2	Provide cooling centers to assist the elderly and young
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation Goal #5: Emergency Services
Priority	High
Funding Source(s)	City of Cumby
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Cumby Wild Fire Mitigation Action #1	Implement a vegetation management program to reduce the danger of wildfire reaching dwellings.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	City of Cumby, Hopkins County/Texas Forest Service? Grants
Estimated Cost	Medium (10-25k)
Responsible Agency	City
Estimated Completion Time	5 years
Effect on New Buildings	Protect from Urban/Wildfire interface
Effect on Existing Buildings	P:rotect from Urban/Wildfire interface
Comments:	This will require a joint effort of local and state funding and manpower.

Cumby Wild Fire Mitigation Action #2	Conduct a wildfire education program stressing the dangers of trash burning in Cumby.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness Goal #5: Emergency Services
Priority	High
Funding Source(s)	City of Cumby/Hopkins County
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	Preventing fires that could spread to homes and businesses
Effect on Existing Buildings	Preventing fires that could spread to homes and businesses
Comments:	

Cumby Earthquake Mitigation Action #1	Participate in the county wide emergency evacuation exercise
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness Goal #4: Partnerships and Implementation Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	Hopkins County/Cumby
Estimated Cost	Low (0-10k)
Responsible Agency	County/Cumby
Estimated Completion Time	6 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Cumby Earthquake Mitigation Action #2	Inform citizens on the importance of having a 72 hour disaster kit and how to implement it.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness
Priority	High
Funding Source(s)	Hopkins County/Cumby
Estimated Cost	Low (0-10k)
Responsible Agency	County/Cumby
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

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

Sulphur Springs Flooding Mitigation Action #1	Increase the size of ditches to accommodate flash flood waters in flood prone areas
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #3: Natural Systems Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	City of Sulphur Springs
Estimated Cost	Medium (10-25k)
Responsible Agency	City
Estimated Completion Time	4 years
Effect on New Buildings	Protection from flood damage
Effect on Existing Buildings	Protection from flood damage
Comments:	

Sulphur Springs Flooding Mitigation Action #2	Change the building codes for new and existing structures to reflect the most current standards. (NFIP)
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	NA
Estimated Cost	Low (0-10k)
Responsible Agency	City of Sulphur Springs
Estimated Completion Time	6 years
Effect on New Buildings	Protection from flood damage
Effect on Existing Buildings	Protection from flood damage
Comments:	

Sulphur Springs Tornado Mitigation Action #1	Update and Maintain outdoor early warning system
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #5: Emergency Services
Priority	Low
Funding Source(s)	FEMA/other grant money/city
Estimated Cost	High (25k+)
Responsible Agency	City/FEMA
Estimated Completion Time	8 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Sulphur Springs Tornado Mitigation Action #2	Disseminate information at public events and in local newspaper regarding tornado safety.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Sulphur Springs
Estimated Cost	Low (0-10K)
Responsible Agency	City
Estimated Completion Time	1 year
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Sulphur Springs Winter Storm mitigation Action #1	Develop a pre-emptive strategy for removing dead limbs and overhangs that might fall during winter storms.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	Sulphur Springs
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	Could protect New building from falling limb and tree damage
Effect on Existing Buildings	Could protect New building from falling limb and tree damage
Comments:	

Sulphur Springs Winter Storm mitigation Action #2	Purchase emergency mobile generators to use with emergency equipment during power outages
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA and other grant money
Estimated Cost	Medium (10-25K)
Responsible Agency	City/FEMA
Estimated Completion Time	5 years
Effect on New Buildings	Protection from water overflow or contamination.
Effect on Existing Buildings	Protection from water overflow or contamination.
Comments:	

Sulphur Springs Thunderstorm Mitigation Action # 1	Participate in County wide emergency storm alert system.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	Sulphur Springs
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	On going
Effect on New Buildings	Protect new structure from falling limbs and trees.
Effect on Existing Buildings	Protect existing building from falling limbs and trees.
Comments:	

Sulphur Springs Thunderstorm Mitigation Action # 2	Update existing building codes to protect structures from wind damage
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	New buildings would have additional protection from high winds.
Effect on Existing Buildings	
Comments:	

Sulphur Springs Hail Mitigation Action #1	Develop and maintain a daily weather database.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City of Como
Estimated Cost	Low (0-10K)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	By monitoring local weather patterns we can better predict the likelihood of storms

Sulphur Springs Hail Mitigation Action # 2	Educate residents of the likelihood of hailstorms and the importance of being properly insured.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Como
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	Being properly insured can help with rebuilding.

Sulphur Springs Drought Mitigation Action #1	Conduct public workshops on conserving water, xeriscaping and managing drought impacts.
Mitigation Goal/Objective	Goal #2: Public Awareness Goal #3: Natural Systems
Priority	High
Funding Source(s)	Sulphur Springs
Estimated Cost	Low (0-10k)
Responsible Agency	City/County Extension Office
Estimated Completion Time	3 years
Effect on New Buildings	Possibly protect foundations from cracking,
Effect on Existing Buildings	Possibly protect foundations from cracking,
Comments:	

Sulphur Springs Drought Mitigation Action #2	Establish water rationing protocol for times of intense drought.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #3: Natural Systems Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	City of Sulphur Springs
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	5 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Sulphur Springs Extreme Heat Mitigation Action #1	Radio/TV/Newspapers PSA's advising public of hazards of heat and heat advisories.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Sulphur Springs
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Sulphur Springs Extreme Mitigation Action #2	Conduct fan drives for low-income and elderly who cannot afford air conditioning
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	City/ donations
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	5 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Sulphur Springs Wildfire Mitigation Action #1	Implement a vegetation management program to reduce the danger of wildfire reaching dwellings.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #3: Natural Systems Goal #4: Partnerships and Implementation
Priority	Medium
Funding Source(s)	City of Sulphur Springs
Estimated Cost	Medium (10-25k)
Responsible Agency	City
Estimated Completion Time	6 years
Effect on New Buildings	Reduces fire risk
Effect on Existing Buildings	Reduces fire risk
Comments:	

Sulphur Springs Wildfire Mitigation Action #2	Conduct a wildfire education program stressing the dangers of trash burning in Sulphur Springs.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness Goal #3: Natural Systems
Priority	High
Funding Source(s)	City of Sulphur Springs
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	3 years
Effect on New Buildings	Reduces Fire Risk
Effect on Existing Buildings	Reduces Fire Risk
Comments:	

Sulphur Springs Earthquake Mitigation Action #1	Participate in the county wide emergency evacuation exercise
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness Goal #4: Partnerships and Implementation Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	Hopkins County/Sulphur Springs
Estimated Cost	Low (0-10k)
Responsible Agency	County/Sulphur Springs
Estimated Completion Time	6 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Sulphur Springs Earthquake Mitigation Action #2	Inform citizens on the importance of having a 72 hour disaster kit and how to implement it.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness
Priority	High
Funding Source(s)	Hopkins County/Sulphur Springs
Estimated Cost	Low (0-29k)
Responsible Agency	County/Sulphur Springs
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Sulphur Springs Dam Failure Action #1	Educate property owners near high hazard dams of the potential of a dam failure and inform owners of signs to watch for that might signal a weakening of the dam and who to contact if suspicious activity is spotted.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of Sulphur Springs
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	3 years
Effect on New Buildings	Would help protect vulnerable property from flooding due to dam break.
Effect on Existing Buildings	Would help protect vulnerable property from flooding due to dam break
Comments:	

Sulphur Springs Dam Failure #2	Implement an inspection, maintenance and enforcement program to help ensure continued structural integrity of dams and levees
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	City of Sulphur Springs
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	7 years
Effect on New Buildings	Would help protect vulnerable property from flooding due to dam break.
Effect on Existing Buildings	Would help protect vulnerable property from flooding due to dam break
Comments:	

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

Tira Tornado Mitigation Action # 1	Storm Shelter Awareness Campaign to work with private and public shelter owners to make existing shelters available for neighbors.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	FEMA
Estimated Cost	High (25k+)
Responsible Agency	City
Estimated Completion Time	7 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	Small communities in tornado alley need safe room protection for their residents.

Tira Tornado Mitigation Action # 2	Reinforce Community Center bracing to make it more resistant to high winds.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Tira Thunderstorm Mitigation Action 1	Participate in County wide emergency storm alert system.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	Tira
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	7 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Tira Thunderstorm Mitigation Action 2	Disseminate information at public events and at the community center regarding tornado safety.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Tira/ County
Estimated Cost	Low (0-10K)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	Help warn of incoming severe weather
Effect on Existing Buildings	Help warn of incoming severe weather
Comments:	

Tira Hail Mitigation Action #1	Develop and maintain a daily weather database.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	High
Funding Source(s)	City of Como
Estimated Cost	Low (0-10K)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	By monitoring local weather patterns we can better predict the likelihood of storms

Tira Hail Mitigation Action # 2	Educate residents of the likelihood of hailstorms and the importance of being properly insured.
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Como
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	Being properly insured can help with rebuilding.

Tira Wild Fire Mitigation Action #1	Purchase new firefighting equipment for volunteers
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #5: Emergency Services
Priority	Low
Funding Source(s)	FEMA Grants/other grants
Estimated Cost	High (0-10k)
Responsible Agency	City/FEMA
Estimated Completion Time	8+ years
Effect on New Buildings	Help protect new structures
Effect on Existing Buildings	Help protect existing structures
Comments:	

Tira Wild Fire Mitigation Action # 2	Conduct a urban/wildfire education program stressing the dangers of trash burning in Tira
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	City of Tira
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	3 years
Effect on New Buildings	Could decrease wildfire threat
Effect on Existing Buildings	Could decrease wildfire threat
Comments:	

Tira Earthquake Mitigation Action #1	Participate in the county wide emergency evacuation exercise
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness Goal #4: Partnerships and Implementation Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	Hopkins County/Tira
Estimated Cost	Low (0-10k)
Responsible Agency	County/Tira
Estimated Completion Time	6 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Tira Earthquake Mitigation Action #2	Inform citizens on the importance of having a 72 hour disaster kit and how to implement it.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness
Priority	High
Funding Source(s)	Hopkins County/Tira
Estimated Cost	Low (0-10k)
Responsible Agency	Hopkins county/Tira
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

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

Hopkins County Flood Mitigation Action #1	Install road signs to clearly mark roads that are prone to flooding. (NFIP
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness
Priority	High
Funding Source(s)	State of Texas
Estimated Cost	Low (0-10l)
Responsible Agency	Hopkins County and Texas Hwy. Dept.
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Flood Mitigation Action #2	Inform citizens of dangers of driving on roadways and bridges that are flooded. Use NOAA "Turn Around, Don't Drown" (NFIP)
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness
Priority	High
Funding Source(s)	Hopkins County, FEMA, State
Estimated Cost	Low (0-10k)
Responsible Agency	Hopkins County
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Tornado Mitigation Action #1	Designate safe haven shelter locations in the county.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation Goal #5: Emergency Service
Priority	Medium
Funding Source(s)	Hopkins County
Estimated Cost	Medium (10-25k)
Responsible Agency	County
Estimated Completion Time	5 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Tornado Mitigation Action #2	Distribute NOAA weather radios to limited-income residents that live in high risk areas such as mobile home parks
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	Hopkins County/FEMA Grant
Estimated Cost	Low (0-10K)
Responsible Agency	Hopkins County
Estimated Completion Time	5 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Winter Storm Mitigation Action #1	Purchase emergency mobile generators to use with emergency equipment during power outages.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	FEMA Grant
Estimated Cost	High (25k+)
Responsible Agency	Hopkins County/FEMA
Estimated Completion Time	6 years
Effect on New Buildings	Could reduce damage to buildings by supplying needed power for water treatment plants, etc.
Effect on Existing Buildings	Could reduce damage to buildings by supplying needed power for water treatment plants, etc.
Comments:	

Hopkins County Winter Storm Mitigation Action #2	Distribute brochures and conduct workshops about home emergency plans
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	FEMA Publications
Estimated Cost	Low (0-10k)
Responsible Agency	Hopkins County VFD's and EMC
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Thunderstorm Mitigation Action #1	Restore County Wide storm alert system to working order.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation Goal #5: Emergency Services
Priority	High
Funding Source(s)	County and State
Estimated Cost	Medium (10-25k)
Responsible Agency	County
Estimated Completion Time	3 years
Effect on New Buildings	
Effect on Existing Buildings	
Comments:	

Hopkins County Thunderstorm Mitigation Action #2	Educate the residents on the importance of NOAA weather radios in schools, homes, businesses and how to operate them properly
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Hopkins County
Estimated Cost	Low (0-10k)
Responsible Agency	Hopkins County
Estimated Completion Time	5 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Drought Mitigation Action #1	Conduct public workshops on conserving water, xeriscaping and managing drought impacts
Mitigation Goal/Objective	Goal #2: Public Awareness Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	Hopkins County/State of Texas
Estimated Cost	Low (0-10k)
Responsible Agency	County/County Extension office
Estimated Completion Time	4 years
Effect on New Buildings	Could help protect foundations from shifting soil
Effect on Existing Buildings	Could help protect foundations from shifting soil
Comments:	

Hopkins County Drought Mitigation Action #2	Replace worn appliances or equipment with water-saving models.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #3: Natural Systems
Priority	Low
Funding Source(s)	Hopkins County
Estimated Cost	Medium
Responsible Agency	County
Estimated Completion Time	On-going
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Extreme Heat Mitigation Action #1	Conduct a local fan drive as community service project.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	Hopkins County/Fund Raisers
Estimated Cost	Low (0-10k)
Responsible Agency	Hopkins County
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Extreme Heat Mitigation Action #2	Radio/TV/newspapers PSA's advising public of hazards of heat and heat advisories
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	High
Funding Source(s)	Hopkins County
Estimated Cost	Low (0-10k)
Responsible Agency	County
Estimated Completion Time	2 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Wild Fire Mitigation Action #1	Purchase new firefighting equipment that will clear areas of heavy undergrowth in order to protect buildings subject to wildfire/urban interface.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #3: Natural Systems
Priority	Medium
Funding Source(s)	FEMA and other Grant money
Estimated Cost	High (25k+)
Responsible Agency	Hopkins County
Estimated Completion Time	5 years
Effect on New Buildings	Would help protect new building from wildfire.
Effect on Existing Buildings	Would help protect existing buildings from wildfire.
Comments:	

Hopkins County Wild Fire Mitigation Action #2	Conduct a wildfire education program stressing the dangers of trash burning in Hopkins County
Mitigation Goal/Objective	Goal #2: Public Awareness
Priority	Medium
Funding Source(s)	Hopkins County
Estimated Cost	Low (0-10k)
Responsible Agency	County
Estimated Completion Time	6 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Earthquake Mitigation Action # 1	Conduct a county wide emergency evacuation exercise.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness Goal #4: Partnerships and Implementation Goal #5: Emergency Services
Priority	Medium
Funding Source(s)	Hopkins County/jurisdictions
Estimated Cost	Medium (10-25k)
Responsible Agency	Hopkins County
Estimated Completion Time	6 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Earthquake Mitigation Action #2	Inform citizens on the importance of having a 72 hour disaster kit and how to implement it.
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness
Priority	High
Funding Source(s)	Hopkins County/ Jurisdictions
Estimated Cost	Low (0-10k)
Responsible Agency	County Emergency Team
Estimated Completion Time	3 years
Effect on New Buildings	NA
Effect on Existing Buildings	NA
Comments:	

Hopkins County Dam Mitigation Action #1	Implement an inspection, maintenance and enforcement program to help ensure continued structural integrity of dams and levees.
Mitigation Goal/Objective	Goal #1: Protect Life and Property
Priority	Medium
Funding Source(s)	City of Sulphur Springs
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	7 years
Effect on New Buildings	Would help protect vulnerable property from flooding due to dam break.
Effect on Existing Buildings	Would help protect vulnerable property from flooding due to dam break
Comments:	

Hopkins County Dam Mitigation Action #2	Educate the public regarding dam vulnerability due to vandalism. Instruct county residents to report any suspicious behavior around dams on private or public property
Mitigation Goal/Objective	Goal #1: Protect Life and Property Goal #2: Public Awareness Goal #4: Partnerships and Implementation
Priority	High
Funding Source(s)	City of Sulphur Springs
Estimated Cost	Low (0-10k)
Responsible Agency	City
Estimated Completion Time	3 years
Effect on New Buildings	Would help protect vulnerable property from flooding due to dam break.
Effect on Existing Buildings	Would help protect vulnerable property from flooding due to dam break
Comments:	

SECTION V
COMMITMENT, ADOPTION, IMPLEMENTATION, MAINTENANCE

PLAN MAINTENANCE

This section documents the formal process that Hopkins County will utilize to ensure that the mitigation action plan remains active. This includes a schedule for monitoring and evaluating and improving the Plan annually beginning at the time of FEMA's Final Approval and producing a plan revision every five years. The Hopkins County Judge and Emergency management Coordinator will be responsible for implementing the action items that affect Hopkins County. The City Managers and/or Mayors will be responsible for implementing action items that affect the Cities. The county will integrate public participation throughout the plan maintenance process. This section will also explain how Hopkins County government intends to incorporate the mitigation strategies outlined in the plan into existing mechanisms such as Capital Improvement Plans, and Building Codes. The County will have the opportunity to implement recommended mitigation actions items through existing programs and procedures by resolutions.

City Building Divisions are responsible for administering the building codes in local municipalities. After the adoption of the mitigation plan, they will work with the State Building Code Office to make sure that minimum standards are enforced. There is no Capital Improvement Plan in place. Hopkins County and the jurisdictions will incorporate the mitigation plan recommendations into their budgeting processes. The jurisdictions will incorporate the mitigation recommendations using the building codes through Ordinances. In addition, the Hazard Mitigation Team will work with appropriate county and state agencies to review, develop and ensure that building codes are adequate to mitigate or prevent damage by natural hazards.

Hopkins 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. The Hopkins 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 Hopkins 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.

Monitoring and Implementation

The Hopkins County Commissioners will be responsible for adopting the Hopkins 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 Hopkins 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, Hopkins County/City will formally adopt it and gain eligibility for Hazard Mitigation Grant Program funds.

The Hopkins County Judge or his designee will serve as the leader who will insure that the plans are being monitored, incorporated and revised. The county judge or his/her designee will communicate by telephone and e-mails to ensure that mitigation continues to be a working part of the county and city plans. Hopkins County and its jurisdictions will meet at a minimum of annually to review what progress has been made and to consider recommended changes. The County Judge or his designee will expect a report on the findings from each participant within one month after the review meeting. The county judge or his designee will have the authority to approve or disapprove of the actions within the plan.

A funding source has been listed for each identified action. This source may be used when the jurisdiction begins to seek funds to implement the actions. An implementation time period or specific implementation date also has been assigned to each action as an incentive for seeing the action through to completion and to gauge whether actions are timely implemented. Participating jurisdictions will integrate implementation of their mitigation action plans with other, existing planning mechanisms such as capital improvement plans, long range growth plans, master storm water and drainage plans, and regional planning efforts. Jurisdictions will ensure that the actions contained in the mitigation action plans are reflected in these other planning efforts on an annual basis. These other planning efforts will be used to advance the mitigation strategies of the jurisdictions.

Plan Incorporation

Planning Mechanism	Method of Incorporation
Annual Budget Review; Hopkins County Como Cumby Sulphur Springs Tira	Delta County, Pecan Gap, and Cooper will review the Plan and mitigation actions therein when conducting their annual budget review. When allocating funds for upcoming operating and construction budgets, high priority mitigation actions will be reviewed during City Council and Commissioner Court meetings. Each identified staff member/planning Team member will be responsible for bringing mitigation actions to their respecting city council/board meeting to discuss feasibility of the potential project in terms of the availability of funds, grant assistance and preliminary cost benefit review.
Emergency Planning: Hopkins County Como Cumby Sulphur Springs	The Plan will be consulted during the updated to each jurisdiction's local emergency and/or disaster recovery plan. Risk assessment and vulnerability data will be pulled from the plan and reviewed in conjunction with the review, renewal or re-writing of an Emergency Operations or Management Plan. This data will either be included within the new emergency planning mechanism or included as an appendix. Mitigations projects that relate to prevention and protection will also be reviewed for relevance to determine if they should be included.
Comprehensive/Capital Improvements: Hopkins County	Before any updates to the Comprehensive/Capital Improvement Plans (CIP) are conducted, Delta County, Pecan Gap and Cooper will review the risk assessment and mitigation strategy sections of

Como Cumby Sulphur Springs	the Plan, as limiting public spending in hazardous zones if one of the most effective long-term mitigation actions available to local governments. Profile information and data regarding NFIP compliance and maintenance will be reviewed in conjunction with any CIP that is developed. If new census or land use data is available, this information should be added to the Plan Update.
Flood Plain Management and Fire Protection: Hopkins County Como Cumby Sulphur Springs	The Plan will be utilized in updating and maintaining floodplain management and fire protection plans, as the goals of both planning mechanisms are similar. In updating or maintaining these plans the Plan will be consulted for NFIP compliance and flood risk and wildfire risk and extent. Information from these sections will be reviewed for inclusion. In addition, mitigation actions that address wildfire and flood will be reviewed for inclusion by jurisdiction.

Coordinating Committee

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

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

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

Formal Review Process

To prevent issues regarding meeting the goals of The Hopkins 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. The first meeting will occur one year after the update approval date and a minimum of one meeting will occur annually. The County Judge **or his/her designated appointee** will be responsible for contacting the Hazard Mitigation Committee members and organizing the annual meeting. Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the plan.

The committee will review the hazards, goals and actions items to determine their relevance to changing situations in the county, as well as changes in State or Federal policy, to ensure they are addressing current and expected conditions. 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.

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.

Hopkins County is committed to supporting the cities, communities and other jurisdictions in the planning area as they implement their mitigation plans. Hopkins 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 Hopkins 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.

A public meeting will be held after each annual evaluation **or when deemed necessary by the Hazard Mitigation Committee (or county judge).** The meetings will provide the public an opportunity for which they can express its concerns and opinions about the Plan.

R E S O L U T I O N

SAMPLE

WHEREAS, the County of Hopkins and the Jurisdictions of Como, Cumby, Sulphur Springs and Tira recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Hopkins and the Jurisdictions of Como, Cumby, Sulphur Springs and Tira each have recognized the need to prepare a Mitigation Action Plan Five Year Update; and

WHEREAS, the County of Hopkins and the Jurisdictions of Como, Cumby, Sulphur Springs and Tira have decided to jointly prepare one Mitigation Action Plan Five Year Update.

THEREFORE BE IT RESOLVED that the County of Hopkins and the jurisdictions of Como, Cumby, Sulphur Springs and Tira hereby jointly adopt and approve said Mitigation Action Plan Five Year Update; and

BE IT FURTHER RESOLVED that the Hopkins County Judge and the Mayors of Como, Cumby, Sulphur Springs and Tira shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan Five Year Update including its review and maintenance, for the County of Hopkins, and the jurisdictions of Como, Cumby, Sulphur Springs and Tira in accordance with this resolution.

RESOLVED THIS _____ DAY OF _____, 2015.

_____
County Judge, Hopkins County

ATTEST_____
County Clerk

Hopkins County Hazard Mitigation
Kick-off Team Meeting
October 17, 2014

Name	Representing	Address	E-Mail	Phone
FLOYD PAYTON	TIRA			903-945-3218
Genevieve Burtchell	ATCOG			
Brent Smith	Hopkins Co EMS			
Mario Villarino	Hopkins Extension	1200B Houston Street	m-villarino@tamu.edu	903-885-3443
Jason Ricketson	Sulphur Springs P.D.			
Robert Newson	Hopkins County			
Butch Adams	H.C. Sheriff	832 CR 2310 SS TX	steriff@hopkinscountytx.org.	
Dan Shipp	ATCOG			
T. Kevin Yates	HCFD	1286 TEXAS ST.	kyates@hopkinscountytx.org	903-243-3883

ATTENDANCE ROSTER

Team Meeting
FOR
HAZARD MITIGATION PLAN-5 year Update
HOPKINS COUNTY COURTHOUSE
Thursday, November 13, 2014
10:00 am

NAME	REPRESENTING
Corey Anderson	City of Cerulean
SCOTT SEWELL	CITY OF CUMBY
Dana Shipp	ATCOG
	HOPKINS

Minutes of Hopkins County Hazard Mitigation
September 15, 2014
Hopkins County Courthouse

Don Shipp and Genevieve Burtchell from the Special Projects Division of the Ark-Tex Council of Governments met with County Judge Robert Newsom and Kevin Yates, Hopkins county emergency management coordinator to introduce them to the Hazard Mitigation Process. Judge Newsom is the new county judge, replacing Judge Chris Brown who is the new ATCOG executive director.

Mr. Shipp presented a program explaining the basic aspects of hazard mitigation and defining the responsibilities of the participating members of the team. Mr. Shipp also explained the ATCOG role in plan development. Ms. Burtchell assisted in answering questions regarding Hazard Mitigation and the planning process. A copy of the November 2007 plan and a draft of the updated Hazard Mitigation plan to date were also provided for the participants.

Judge Newsom will develop a list of possible team members that will serve in the planning process.

Mr. Shipp has agreed to contact individuals recommended by the County Judge to serve on the planning team.

Hopkins County
Kick-Off Meeting
October 17, 2014

The Hopkins County Team Meeting was held at the Hopkins County Courthouse Commissioner's Court. A PowerPoint presentation was presented by Don Shipp, Hazard Mitigation Planner for the Ark-Tex Council of Governments. The presentation discussed the different phases of Hazard Mitigation Planning. Handouts were given to the participating members that included the contents of the PowerPoint presentation with areas for notes and a sample sheet of action ideas.

All of the hazards were reviewed and discussed. It was decided that dams and earthquakes would still be listed as a possible natural hazard, although there is no history of either taking place in Hopkins County. It was noted that oil and gas fracking had begun in Hopkins County and some neighboring counties. This activity caused concern because of the possible link between fracking and earthquakes. It was noted that most of the dams in Hopkins County were in areas where there would be little or no damage from a break. It was noted that the Main Street Dam could cause some problems if it failed.
.
Fire and Thunderstorms were identified as the most common type of natural hazards in the county.

Team Meeting
November 13, 2014
Hopkins County Courthouse

An overview of Hazard Mitigation planning was presented to members who were unable to attend the original team meeting kickoff of October 17, 2014. There were three team members in attendance for the meeting. Power Point slides were discussed regarding the Mitigation Process.

Beth Wisenbaker, prescient one commissioner expressed concern over dams that existed in her prescient. She wanted to make sure that their safety was considered when developing the dam failure section of the plan. Mrs. Wisenbaker stressed the importance of hazard mitigation to the other participants.

A lively discussion took place with all participants taking part. Examples of FEMA approved actions were handed out to give the group an idea of choices that could be made when choosing actions. Presenter, Don Shipp, stressed the importance of developing actions that reflect current needs by the communities served.

Scott Sewell, police chief of Cumby was very interested in the idea of safe rooms. Gary Anderson, mayor of Como also commented on the safe room projects.

Discussion also covered flood plain maps, tornado protection and integrating the plan into the emergency management plan.

APPENDIX

Information from previous plan prior to update

Data

Statistics

Maps

HAZARDOUS MATERIALS SPILLS

Beginning with the update of January 2015 Hazardous Materials Spills will no longer be considered because they do not constitute a Natural Hazard.

Hazardous materials are chemical substances that can be released and pose a threat to the public and/or the environment. These materials are commonly called "HAZMAT". Most incidents occur in transportation accidents and industrial accidents. A HAZMAT accident can occur anytime and anywhere. Hazardous materials are transported on our highways, railways and pipelines. These materials can be explosive, flammable, poisonous or radioactive.

The presence of hazardous chemicals does not necessarily mean that the community is at risk. To evaluate the dangers chemicals may create it is useful to understand the difference between hazard and risk.

Hazards in chemical properties generally cannot be changed. Chlorine is toxic when inhaled or ingested; propane is flammable. There is little that can be done with these chemicals to change their toxicity or flammability.

Risk usually is evaluated based on several variables, including the likelihood of a release occurring, the inherent hazards of the chemicals combined with the quantity released, and the potential impact of the release on the public and the environment. If the likelihood of a catastrophic release (such as a transportation spill) occurring is extremely low, but the number of people who could be affected if it occurred is large, the overall risk may still be low because of the low probability that a release will occur. If a release occurs relatively frequently and a large number of people could be affected, the overall risk to the public is high.

Hazardous Material Information System

(Taken from "A National Risk Assessment for Selected Hazardous Materials in Transportation", Argonne National Laboratory, Argonne, Illinois)

This report detailed a quantitative risk assessment of selected hazardous materials on a national basis over an eleven-year period (1985-1995).

The HMIS was established in 1971 to fulfill the requirements of the Hazardous Materials Control Act of 1970. General reporting requirements apply to air, rail, water, and highway transportation and are outlined in 49 CFR 171.15 and 171.16. The requirements mandate that if any of the conditions listed below exist as a direct result of a hazardous materials incident occurring during transportation, the carrier must notify DOT and, in certain circumstances, other regulatory agencies at the earliest opportunity. These conditions include:

- A person being killed,
- A person receiving injuries that require hospitalization,
- Property damage in excess of $50,000
- An evacuation of the general public that lasts 1 or more hours,
- Closing of one or more major transportation arteries or facilities for 1 or more hours, and

- Interruption of the operational flight pattern or routine of an aircraft.

The HMIS database contains information on 104,338 hazardous materials incidents that occurred from 1985 to 1995.

Yearly and Total Numbers of Incidents Recorded in the HMIS Database
Table 2.13

Year	Highway	Rail
1985	4,418	926
1986	4,684	919
1987	5,018	963
1988	4,708	1,029
1989	6,157	1,264
1990	7,388	1,343
1991	7,697	1,185
1992	7,893	1,159
1993	10,577	1,078
1994	14,173	1,190
1995	13,000	1,223
Total	86,113 (83.2%)	12,279 (11.9%)

(Figures do not include Air, Water)
(For highway transportation, 85% of the incidents occur during loading and unloading)

Number of Fatalities, Major Injuries, Minor Injuries, and Persons Evacuated, 1985-1995
Table 2.14

	Rail				Highway			
Year	**Fatalities**	**Major Injuries**	**Minor Injuries**	**No. Evac.**	**Fatalities**	**Major Injuries**	**Minor Injuries**	**No. Evac.**
1985	0	9	44	-	8	10	185	-
1986	1	6	53	-	16	45	184	-
1987	0	0	25	-	10	18	225	-
1988	0	9	26	-	14	24	91	-
1989	0	5	31	-	8	28	190	-
1990	0	11	62	6,229	8	30	280	5,752
1991	0	8	68	6,849	10	17	314	3,571
1992	0	13	102	23,640	16	32	415	4,777
1993	0	2	58	5,854	12	25	473	11,556
1994	0	12	83	10,015	11	42	383	7,984
1995	0	8	63	6,146	6	19	279	5,780
Total	1	83	615	61,273	119	290	3,019	39,758

Top 10 Materials Responsible for Fatalities, 1985-1995
Table 2.15

Rank	Chemical	Fatalities	Percentage of Total
1	Gasoline	76	63.3
2	LP Gas	16	13.3
3	**Petroleum crude oil**	4	3.3
4	Aviation fuel	3	2.5
5	Ethyl hexanol	3	2.5
6	Fuel oil	2	1.7
7	Pain	2	1.7
8	Anhydrous ammonia	1	0.8
9	Toluene	1	0.8
10	**Hydrochloric acid**	1	0.8

Annual Transportation-Related Risks
Table 2.16

Risk Type	Fatalities	Injuries
Motor vehicles, including large trucks	41,616	2,250,000
Large trucks	5087	132,700
Large trucks carrying HAZMAT	250	6,600
Rail accidents (grade crossing)	544	1,691
Rail accidents (non-grade crossing)	586	16,338
Risks due to hazardous materials releases only		
Gasoline transportation	11	21
Highway LP gas transportation	4.2	15
Explosives transportation	0.49	1.4
Total TIH * materials transportation	2.3	85
Total highway/rail risk for HAZMAT releases	18	122

*Toxic by Inhalation

SUMMARY

Every year, more than 40,000 Americans die and several hundred thousand are injured in transportation-related incidents, mainly from motor vehicle accidents. A small number of these fatalities and injuries result from the unintentional release of hazardous materials during transport. For example, during each of the past 15 years, approximately 10 people died as a result of fires that occurred in gasoline-truck accidents, with truck drivers accounting for approximately 7 of the 10 deaths. Since 1985, only one fatality and a handful of injuries have occurred as a result of accidents involving the transportation of chlorine in the United States. In addition, unlike gasoline-truck fires, which typically affect only the people involved in the accident, releases of toxic chemicals can kill and injure people located relatively far from the accident. Sheltering and evacuation are the two primary means of mitigating HAZMAT spills.

Potential Damage/Loss From Hazardous Spills

There are several U. S. Highways traversing Hopkins. County. There is a risk for hazardous material contamination. In the event of a major emergency through the county, there are ample response capabilities from Sulphur Springs and other cities located near U.S. Highway 30. There is no history of a major spill in the county. The potential for a spill is low and there is insufficient data available to complete a risk analysis for the county.

..Texas Commission on Environmental Quality (TCEQ) Response

The TCEQ emergency response team is on 24-hour call year-round for response to oil and hazardous substance spills, emergencies, and human-caused disasters. The staff is prepared to lead the response and cleanup at an incident when appropriate, provide planning or planning support, and assess groundwater contamination and health risks. The Environmental Release Hotline number is **1-800-832-8224.**

Probability: Hopkins County has a total of 33 (**HAZUS**) facilities that produce or store hazardous materials. There is no appreciable history of spills or releases of hazardous materials during transport. The probability of a hazardous materials transportation incident is low but not impossible. (See Table 2.1.0)

Vulnerability: The majority of the releases at a site are small, affecting only the building of origin and, in a few instances, immediately adjacent buildings. Vulnerability to the release or spill of a hazardous material is moderate, and depends upon the amount and type of material spilled or released, and the location of the accident.

Geographic area that would be affected: Sulphur Springs would be affected by a spill since there are several facilities located in that area, as depicted by Figure 1.7, and Sulphur Springs is located on Interstate 30, as well as Highways 67,19, 154, and 11 all go through Sulphur Springs. Como would also be affected due to Highway 11. Cumby is located near Interstate 30 and would be affected. Pipelines also run near Como, as well as Cumby. Tira is located approximately 3 miles from Highway 19 and also has two pipelines running nearby. Railways run east and west throughout Hopkins County, running through Sulphur Springs. A railroad line also runs along Highway 11 in Southeastern Hopkins County through Sulphur Springs and veers west along Interstate 30 through the County to Hunt County. This area of the County would be affected if there was a spill from the railroad cars. These railroads are depicted on Figure 1.5

County HAZMAT Site Inventory
Table 2.17

Number	Name
1	AP Green Refractories Company
2	The Hon Company
3	Texas Utilities Mining Company
4	Borden Inc.
5	Challenge Door Company
6	Ocean Spray Cranberries Inc.
7	A. P. Green Ind.
8	Nordstrom Valves Inc.
9	Star Specialty Foods Inc.
10	Associated Milk Producers Inc.
11	DEMPCO Paint and Manufacturing Company
12	Texas Industrial Disposal Inc.
13	Ruan Leasing Company
14	Federal Express Corp.
15	TU Electric
16	Town and Country Cleaners
17	BTR Valve Sealants Inc.
18	Mobile Pipeline Birthright Station
19	SWATSELL Inc.
20	Texas UTIL-MONT Mine Factory
21	Rockwell International
22	ECHO Publishing Company
23	Price Ford Sales Company
24	Sherwin Williams Company
25	Cannon Craft Company
26	Jerry Vititow Trucking
27	Warren Petroleum Company
28	Bordon Cultured Products
29	Copy Products
30	General Telephone of the Southwest
31	Wal-Mart Stores
32	Gober and Merrell
33	Buster Paving Company

RESOLUTION

WHEREAS, the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Hopkins County Judge and the Mayors of Sulphur Springs, Cumby, Como, and Tira shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira in accordance with this resolution.

RESOLVED THIS 22ND **DAY OF** October, **2007.**

Cletis Millsap

County Judge, Hopkins County

ATTEST Debbie Shirley

County Clerk

240

RESOLUTION

No. 948

WHEREAS, the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Hopkins County Judge and the Mayors of Sulphur Springs, Cumby, Como, and Tira shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira in accordance with this resolution.

RESOLVED THIS 6 **DAY OF** November **, 2007.**

Yolander Williams
Mayor, City of Sulphur Springs

ATTEST Dale Roberts
City Secretary

241

RESOLUTION 10-2007

WHEREAS, the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, Tira hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Hopkins County Judge and the Mayors of Sulphur Springs, Cumby, Como, and Tira shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira in accordance with this resolution.

RESOLVED THIS 23RD DAY OF OCTOBER, 2007.

Mayor, City of Cumby

ATTEST

City Secretary

RESOLUTION

WHEREAS, the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Hopkins County Judge and the Mayors of Sulphur Springs, Cumby, Como, and Tira shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira in accordance with this resolution.

RESOLVED THIS 19th **DAY OF** October, **2007.**

Mayor, City of Como

ATTEST _____
City Secretary

243

RESOLUTION

WHEREAS, the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira recognize their vulnerability and the many potential hazards shared by all residents; and

WHEREAS; the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira each have recognized the need to prepare a Mitigation Action Plan; and

WHEREAS, the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira have decided to jointly prepare one Mitigation Action Plan.

THEREFORE BE IT RESOLVED that the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira hereby jointly adopt and approve said Mitigation Action Plan; and

BE IT FURTHER RESOLVED that the Hopkins County Judge and the Mayors of Sulphur Springs, Cumby, Como, and Tira shall mutually appoint a Hazard Mitigation Coordinator to coordinate all aspects of the Mitigation Action Plan including its review and maintenance, for the County of Hopkins and the Cities of Sulphur Springs, Cumby, Como, and Tira in accordance with this resolution.

RESOLVED THIS 30th **DAY OF** October, **2007.**

John Hadley
Mayor, City of Tira

ATTEST Jan Vaughn
City Secretary

244

PUBLIC MEETINGS

MEETING NUMBER 1: Tuesday, May 13, 2003, held at Sulphur Springs Civic Center. A Power Point presentation was given to county commissioners and public. Presentation covered requirements of Mitigation Action Plan for elected officials. There were 15 people in attendance. See attached attendance list.

MEETING NUMBER 2: September 15th, 2003. Notice of public meeting given in Sulphur Springs newspaper. Meeting took place at Noon, at the Holiday Inn Restaurant. Representatives were present from County Emergency Management, County Fire and Rescue, Salvation Army, Hopkins County Sheriff's Department, and Hopkins County Fire & Rescue. See public notice and attached attendance list.

MEETING NUMBER 3: FEMA Hazard Mitigation Action Plan for Hopkins County meeting held Monday, September 22, 2003 at Hopkins County Commissioners' Courtroom, first floor of the Courthouse, 118 Church Street, Sulphur Springs. See attached public notice, agenda, and minutes of meeting.

MEETING NUMBER 4: Notice of public meeting posted for public viewing inside and outside Hopkins County Courthouse for public to have access to where all Commissioners' Court agendas are posted. FEMA Hazard Mitigation Action Plan for Hopkins County meeting held Monday, October 13, 2003, Hopkins County Commissioners' Courtroom, first floor of Courthouse, located at 118 Church Street in Sulphur Springs. See attached public notice, agenda, and minutes of meeting.

These Plans and annexes were filed with FEMA in the 1970's by Rex Morgan. The Basic Plan and annexes must be updated each year, but when done annually a simple form stating any changes is all that is required to be submitted, in order to keep our records up to date. This has not been done in the past four years. Since no updates were submitted to FEMA they dropped our entire plan. So at this time Hopkins County has had to start over and resubmit the entire Plan and Annexes. Chris & I are facing difficulty in obtaining information from some departments because this work was done once, and not kept current, so some of these departments are not willing to give up their information or time once again. I have confidence that Chris & I can obtain the information needed in order to get our Annexes complete, however we would like the Court to understand that we are facing deadlines and we are having to look to other sources for information. Please understand our circumstances and work with us on our Environmental Departments which are having to take a lower priority in order for us to get the Annexes complete and deadlines met.

When Chris & I took these positions, the Basic Plan had been completed, but not sent in for approval, and none of Annexes had been accomplished. Since that time, Chris & I have been gathering information in order to complete the required Annexes, so that our county will benefit from grants and FEMA funding in our future.

Respectfully Submitted,

Chris Hill

Amy Sells

706

NOTICE OF REGULAR MEETING

TIME: 10:00 A.M.
DATE: October 13th., 2003
PLACE: In The Commissioners' Courtroom On The First Floor Of The Hopkins County Courthouse Located At 118 Church St., Sulphur Springs, TX.

I. Invocation
II. Pledge Of Allegiance To The Flag
1. AMERICAN FLAG:
2. TEXAS FLAG: "Honor the Texas Flag; I Pledge Allegiance to Thee, Texas, One and Indivisible."

03 OCT 10 AM 9:35
DEBBIE SHIRLEY
COUNTY CLERK
BY _____ DEPUTY
HOPKINS COUNTY, TEXAS

The Following Items Will Be Considered By Commissioners' Court For Discussion And/Or Action:
The Court May Go Into Executive Session To Discuss Legal Matters.

ORDER OF BUSINESS

1. The Court To Declare A Quorum.
2. The Court To Approve The Minutes Of The Previous Meetings.
   A. Special Meeting Held On September 18, 2003 In The Commissioners' Courtroom On The First Floor Of The Courthouse Located At 118 Church St., Sulphur Springs, TX.
   B. Regular Meeting Held On September 22, 2003 In The First Floor Conference Room Of The Courthouse Located At 118 Church St., Sulphur Springs, TX.
   C. Special Meeting Held On September 25, 2003 In The Commissioners' Courtroom On The First Floor Of The Courthouse Located At 118 Church St., Sulphur Springs, TX.
3. The Court To Consider Approving The Road Closure/Abandonment Of County Road 4727 At The Point Past Garland McCord's And Deborah Ridgeway's Driveways, 775 Feet, To The Intersection Of County Road 4727 With County Road 4724. County Road 4727 Past These Points Is An Unpaved Dirt Road And Does Not Provide Access To Their Properties Or Any Other Properties.
4. The Court To Open Bids On Trucks For Precinct 2.
5. The Court To Hold A Public Meeting To Address The "Fema Hazard Mitigation Action Plan For Hopkins County".
6. The Court To Meet With The Constable, Larry Argenbright, To Discuss His Vehicle.
7. The Court To Consider Approving A Mutual Aid Agreement Between Hopkins County And Rains County For Emergency Management.
8. The Court To Consider Approving An Ordinance For The Collection Of Fees For A Permit Issued Relating To The Sell Of Alcoholic Beverages Pursuant To V.T.C.A., Alcoholic Beverage Code, Section 11.38
9. The Court To Consider Acting On Bids On 2004 Trucks For The Sheriff's Department Pursuant To The County Purchasing Act.
10. Consent Agenda:
    A. Approval Of Utility Easements, Burial Of Telephone Cables And Construction Of Water Distribution Facilities:
       1. The Court To Approve A Request From Farmers Electric Cooperative, Inc. To Construct Electrical Power Distribution Facilities Along And Across County Road 1157 And 1158 In Precinct 1.
11. The Court To Consider Approving Budget Amendments And Line Item Transfers.
    A. Salary Budget For The 8th Judicial District Attorney's Office.
12. The Court To Approve Bills, Revenue And Expenses, Financial Statements And Contracts.
13. The Court To Approve Personnel Matters.
    A. Hiring One (1) Budgeted Employee For The Position Of Full-Time Dispatcher.
14. The Court To Approve Resolutions And Proclamations.
    A. The Month Of October As "Czech Heritage Month"
    B. Proclaim The Week Of October 6 through October 11, 2003 As National 4-H Week In Hopkins County.
15. The Court To Consider Citizen's Comments.

Cletis Millsap
CLETIS MILLSAP, COUNTY JUDGE
HOPKINS COUNTY, TEXAS

STATE OF TEXAS X

COUNTY OF HOPKINS X

I, Debbie Shirley, County Clerk of Hopkins County, Texas, do hereby certify that the above and foregoing notice was filed in my office this 10th., day of October, 2003, at 10:00 A.M.

Given under my hand and seal this the 10th., day of October, 2003.

Debbie Shirley
DEBBIE SHIRLEY, COUNTY CLERK
HOPKINS COUNTY, TEXAS

Worksheet #3a Inventory Assets step 3

Date: June, 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, Hopkins County, Census Tract Sector 3

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	11,169	374	3.35	965,961,000	22,533,933	2.33	31,960	913	2.85
Commercial	185	141	76	197,467,000	21,619,720	11	31,960	*N/A	*N/A
Industrial	41	17	41.5	48,418,000	71,493,460	147	31,960	*N/A	*N/A
Agricultural	14	0	0	2,109,000	0	0	31,960	0	0
Religious/ Non-profit	16	7	43.7	17,772,000	1,050,170	6	31,960	*NA	*N/A
Government	1	6	600	3,247,000	4,979,930	152	31,960	*N/A	*N/A
Education	1	0	0	11,926,000	0	0	31,960	0	0
Utilities	10,058.85 kms	*N/A	*N/A	957,432,000	*N/A	*N/A	31,960	0	0
Total	****11,436**	****545**	****764.55**	****1,216,900,000**	****121,677,213**	****318.33**	**31,960**	**913**	**2.85**

*NA – Not Available Source: (1990) HAZUS, Census 2000

**-Excluding Utilities 2003 County Tax Appraisal Dist.

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Worksheet #3a Inventory Assets step 3

Date: June, 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, Hopkins County, Census Tract Sector 7

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	11,169	0	0	965,961,000	0	0	31,960	0	0
Commercial	185	0	0	197,467,000	0	0	31,960	0	0
Industrial	41	0	0	48,418,000	0	0	31,960	0	0
Agricultural	14	0	0	2,109,000	0	0	31,960	0	0
Religious/ Non-profit	16	0	0	17,772,000	0	0	31,960	0	0
Government	1	0	0	3,247,000	0	0	31,960	0	0
Education	1	0	0	11,926,000	0	0	31,960	0	0
Utilities	10,058.85 kms	*N/A	*N/A	957,432,000	*N/A	*N/A	31,960	0	0
Total	****11,436**	***0**	***0**	****1,216,900,000**	***0**	***0**	**31,960**	**0**	**0**

*NA – Not Available Source: (1990) HAZUS, Census 2000

**-Excluding Utilities 2003 County Tax Appraisal Dist.

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Worksheet #3a Inventory Assets step 3

Date: June, 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, Hopkins County, Census Tract Sector 2

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	11,169	0	0	965,961,000	0	0	31,960	0	0
Commercial	185	0	0	197,467,000	0	0	31,960	0	0
Industrial	41	0	0	48,418,000	0	0	31,960	0	0
Agricultural	14	0	0	2,109,000	0	0	31,960	0	0
Religious/ Non-profit	16	0	0	17,772,000	0	0	31,960	0	0
Government	1	0	0	3,247,000	0	0	31,960	0	0
Education	1	0	0	11,926,000	0	0	31,960	0	0
Utilities	10,058.85 kms	*N/A	*N/A	957,432,000	*N/A	*N/A	31,960	0	0
Total	**11,436	**0	**0	**1,216,900,000	**0	**0	31,960	0	0

*NA – Not Available Source: (1990) HAZUS, Census 2000

**-Excluding Utilities 2003 County Tax Appraisal Dist.

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?		X
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Worksheet #3a Inventory Assets step 3

Date: *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, Hopkins County, Census Tract Sector 1

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	11,169	0	0	965,961,000	0	0	31,960	0	0
Commercial	185	0	0	197,467,000	0	0	31,960	0	0
Industrial	41	0	0	48,418,000	0	0	31,960	0	0
Agricultural	14	0	0	2,109,000	0	0	31,960	0	0
Religious/ Non-profit	16	0	0	17,772,000	0	0	31,960	0	0
Government	1	0	0	3,247,000	0	0	31,960	0	0
Education	1	0	0	11,926,000	0	0	31,960	0	0
Utilities	10,058.85 kms	*N/A	*N/A	957,432,000	*N/A	*N/A	31,960	0	0
Total	****11,436**	****0**	****0**	****1,216,900,000**	****0**	****0**	**31,960**	**0**	**0**

*NA – Not Available Source: (1990) HAZUS, Census 2000

**-Excluding Utilities 2003 County Tax Appraisal Dist.

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	X	
2. Do you know whether your critical facilities will be operational after a hazard event?	X	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?		X
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Worksheet #3a Inventory Assets step 3

Date: June, 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, Hopkins County, Census Tract Sector 3

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	11,169	374	3.35	965,961,000	22,533,933	2.33	31,960	913	2.85
Commercial	185	141	76	197,467,000	21,619,720	11	31,960	*N/A	*N/A
Industrial	41	17	41.5	48,418,000	71,493,460	147	31,960	*N/A	*N/A
Agricultural	14	0	0	2,109,000	0	0	31,960	0	0
Religious/ Non-profit	16	7	43.7	17,772,000	1,050,170	6	31,960	*NA	*N/A
Government	1	6	600	3,247,000	4,979,930	152	31,960	*N/A	*N/A
Education	1	0	0	11,926,000	0	0	31,960	0	0
Utilities	10,058.85 kms	*N/A	*N/A	957,432,000	*N/A	*N/A	31,960	0	0
Total	****11,436**	****545**	****764.55**	****1,216,900,000**	****121,677,213**	****318.33**	**31,960**	**913**	**2.85**

*NA – Not Available
**-Excluding Utilities

Source: (1990) HAZUS, Census 2000
2003 County Tax Appraisal Dist.

Task B. Determine whether (and where) you want to collect additional inventory data.

	Y	N
1. Do you know where your greatest damages may occur in your hazard areas?	X____	
2. Do you know whether your critical facilities will be operational after a hazard event?	X____	
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X____	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X____	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?	X____	
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X____	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X_____	

Table 1.3
Comparisons

People Facts	Hopkins County	Texas
Population 2001 estimate	32,191	21,235,018
Population percent change, April 1, 2000-July 1, 2001	0.7%	2.3%
Persons under 5 years old, percent 2000	6.5%	7.8%
Persons under 18 years old, percent 2000	26.1%	28.2
Persons 65 years old and over, percent 2000	15.2%	9.9%
White person, percent 2000	85.1%	71.0%
Black or African American persons, percent 2000	8.0%	11.5%
American Indian and Alaska Native persons, percent 2000	0.7%	0.6%
Female persons, percent, 2000	51.0%	50.4%
Persons reporting some other race, percent 2000	4.6%	11.7%
Persons of Hispanic/Latino origin, percent 2000	9.3%	32.0%
White persons not of Hispanic/Latino origin, percent 2000	81.2%	52.4%

Table 1.4
Economy

Business Quick Facts	Hopkins County	Texas
Private non-farm establishments, 1999	754	467,087
Private non-farm employment, 1999	9,947	7,763,815
Private non-farm employment, percent change 1990-1999	39.1%	32.4%
Non-employer establishments, 1999	1,995	1,236,927
Manufacturers' shipments, 1997 ($1000)	526,142	297,567,003
Retail sales, 1997 ($1000)	357,220	182,516,112
Retail sales per capita, 1997	$11,851	$9,430
Minority-owned firms, percent of total, 1997	Fewer than 100 firms	23.9%
Women-owned firms, percent of total, 1997	21.4%	25.0%
Housing units authorized by building permits, 2000	33	141,231
Federal funds and grants, 2001 ($1000)	1,423	850,380

Table 1.5
Quarterly Sales Tax Report

City	Year	Quarter	Gross Sales $	Outlets (avg.)
Hopkins County	2002	1, 2, 3, and 4	706,420,554	772
Sulphur Springs	2002	1, 2, 3, and 4	615,514,000	484
Como	2002	1, 2, 3, and 4	4,067,614	9
Cumby	2002	1, 2, 3, and 4	3,808,498	20

Table 1.6
Employed Civilian Population 16 Years and Over
Hopkins County

Occupation	Number	Percent
Population 16 years and over (Employed)	14,451	100
Management, professional, and related occupations	3,686	25.5
Service occupations	2,014	13.9
Sales and office occupations	3,530	24.4
Farming, fishing and forestry occupations	463	3.2
Construction, extraction, and maintenance occupations	1,770	12.2
Productions, transportation, and material moving occupations	2,988	20.7
Industry		
Agriculture, forestry, fishing and hunting, and mining	1,110	7.7
Construction	1,163	8.0
Manufacturing	2,012	13.9
Wholesale trade	795	5.5
Retail trade	2,130	14.7
Transportation and warehousing, and utilities	1,044	7.2
Information	220	1.5
Finance, insurance, real estate, and rental and leasing	668	4.6
Professional, scientific, management, administrative	618	4.3
Educational, health and social services	2,619	18.1
Arts, entertainment, recreation, and food services	772	5.3
Public administration	472	3.3
Other services	828	5.7

Table 1.7
Workers

Class of Worker (Of Total Table 1.5)	Number	Percent
Private wage and salary workers	10,819	74.9
Government workers	1,891	13.1
Self-employed workers in own business	1,638	11.3
Unpaid family workers	103	0.7

Table 1.8
Income (1999)

	Number	Percent
Households	12,303	100
Less than $10,000	1,624	13.2
$10,000 to $14,999	1,091	8.9
$15,000 to $24,999	1,944	15.8
$25,000 to $34,999	1,950	15.8
$35,000 to $49,999	2,187	17.8
$50,000 to $74,999	1,965	16.0
$75,000 to $99,999	744	6.0
$100,000 to $149,999	482	3.9
$150,000 to $199,999	108	0.9
$200,000 or more	208	1.7
Median household income (dollars)	38.580	(x)

Table 1.9
Education

Educational Attainment	Number	Percent
Population 25 years and over	21,003	100
Less than 9th grade	2,118	10.1
9th to 12th grade, no diploma	3,425	16.3
High school graduate (includes equivalency)	7,497	35.7
Some college, no degree	4,177	19.9
Associate degree	625	3.0
Bachelor’s degree	2,120	10.1
Graduate or professional degree	1,041	5.0
Percent high school graduate or higher	73.6	(x)
Percent bachelor’s degree or higher	15.1	(x)

Table 1.10
Housing

County Units	Number	Percent
Total housing units	14,020	100
Units built 1939 or earlier	1,235	8.8
Units built 1940 to 1959	2,282	16.3
Units built 1960 to 1969	1,893	13.5
Units built 1970 to 1979	3,357	23.9
Units built 1980 to 1989	2,945	21.0
Units built 1990 to 1994	829	5.9
Units built 1995 to 1998	1,020	7.3
Units built 1999 to March 2000	459	3.3

Table 1.11
Hopkins County Finances

Taxing Unit Name	Total Tax Rate	$ Total Levy
Hopkins County	0.500000	4,974,047
Sulphur Springs	0.405880	2,236,415
Sulphur Springs ISD	1.415410	10,208,725
Como	0.250000	24,489
Como-Pickton ISD	1.195000	907,720
Cumby	0.454890	51,436
Cumby ISD	1.230000	392,086

(Window on State Government)

INVENTORY CLASSIFICATION BY OCCUPANCY CLASS
Hopkins County
Table 1.12

TYPE	VALUE $
Residential	$131,123,050
Apartments	$74,870
Vacant Lots	$1,711,980
Agriculture	$366,609,140
Commercial	$9,823,210
Mobile Homes	$10,971,530
Industrial	$3,673,680
Schools	$18,262,120
Commercial Lots	$17,470
TOTAL	$542,267,050

Table 1.14

Hopkins County Profile

POPULATION	
County Population	
Census 2000:	31,960
Census 1990:	28,833
Census 1959:	23,490
Population of the County Seat (Sulphur Springs)	
Census 2000:	14,551
Census 1990:	14,062
GENERAL INFORMATION	
County Size in Square Miles	
Land Area:	785
Water Area:	8
Total Area:	793
Population Density (per Square Miles) 2000	
Per Capita Income (BEA)	$21,711
Median Per Capita Income, 1999 Census	$32,136
Median Household Income, 1999 (Census)	$38,580
Median Family Income, 1999 (Census)	$17,182
Poverty (1999)	
Percent of Population in Poverty	15.69
Percent Population Under 18 in Poverty	19.67
COUNTY FINANCES	
Property taxes, 2001 (Comptroller)	
Total County tax Rate:	$0.4950000
Total Market Value:	$1,480,278,476
Total Appraised Value Available for County Taxation:	$1,015,107,233
Total Actual Levy:	$5,023,873
Average Wage Per Job (BEA)	
2001:	$24,452
200:	$23,866
1990:	$17,086
ROAD AND BRIDGE EXPENDITURES, 2001	
County Roads, Construction:	$0
County Roads, Maintenance:	$2,998,133
County Roads, Rehabilitation:	$0
County Bridges, Construction:	$0
County Bridges, Maintenance:	$85,191
County Bridges, Rehabilitation:	$79,333
Right of Way Acquisition:	$0
Utility Construction	$0
Other Road Expenditures:	$0
TOTAL ROAD AND BRIDGE EXPINDITURES	**$3,162,656**

Hopkins County Transportation System Dollar Value ($1000's)
Table 1.15

Description	Value
Highway Roads	1,945,400
Highway Bridges	186,000
Railway Tracks	171,075
Airport Facilities	24,000
Airport Runways	84,000

(From HAZUS)

Hopkins County Utility System Dollar Value ($1000's)
Table 1.16

Description	Value
Potable Water Distribution Lines	385,815
Waste Water Distribution Lines	231,488
Oil Pipelines	4,618
Natural Gas Facilities	4,000
Natural Gas Distribution Lines	154,325
Electric Power Distribution Lines	115,744
Communication Facilities	10,000
Communication Distribution Lines	51,442

(From HAZUS)

Dollar Exposure by Sector Number in $1000's of Dollars
Hopkins County (HAZUS)
Table 1.17

Sector #	Residential	Commercial	Industrial	Agriculture	Religious	Government	Educational	Total
100	64,810	1,220	677	128	0	242	538	67,615
200	105,166	4,746	975	145	1,909	360	2,567	115,868
300	104,571	2,837	3,495	3,495	569	422	0	112,297
400	254,476	86,524	10,381	10,381	6,757	788	4,708	363,996
500	114,650	11,180	18,902	18,902	2,392	332	0	147,593
600	138,883	55,649	10,234	10,234	4,747	422	2,185	212,387
700	118,752	4,437	3,754	3,754	1,398	422	1,928	131,219
800	64,653	874	0	0	0	259	0	65,924

Building Count by Sector Number – Hopkins County Table 1.18

Sector #	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
100	951	1	0	1	0	0	0	953
200	1,417	6	0	1	2	0	2	1,428
300	1,439	3	3	3	1	0	0	1,449
400	2,594	91	11	2	6	1	4	2,709
500	836	12	13	1	2	0	0	864
600	1,411	64	10	2	4	0	2	1,493
700	1,624	7	4	3	1	0	2	1,641
800	897	1	0	1	0	0	0	899

Residential Square Footage Inventory for Hopkins County Sectors By Sector Number and Type (1,000's of Square Feet) Table 1.19

Sector No.	Single Family	Mobile Home	Multi-Family	Temporary Lodging	Institutional Dormitory	Nursing Home
100	994.5	288.0	0.0	0.0	0.0	0.0
200	1,675.5	298.0	22.0	0.0	0.0	25.1
300	1,704.0	302.0	12.0	0.0	0.0	0.0
400	3,756.0	46.0	670.0	9.5	49.7	0.0
500	1,197.0	0.0	494.0	0.0	183.4	62.1
600	2,079.0	6.0	274.0	67.8	35.7	7.5
700	1,897.5	357.0	26.0	0.0	9.8	0.0
800	1,060.5	190.0	0.0	0.0	0.0	0.0

Commercial Square Footage Inventory for Hopkins County Sectors By Sector Number and Type (1,000's of Square Feet) Table 1.20

Sector No.	Retail	Wholesale	Personal Repair	Professional	Banks	Hospitals	Med Offices	Recreation	Theaters
100	15.6	9.8	4.6	0.0	0.0	0.0	0.0	0.0	0.0
200	33.6	27.8	19.3	19.7	0.0	0.0	0.1	1.9	0.0
300	30.5	17.4	8.4	8.7	0.0	0.0	0.0	0.0	0.0
400	486.7	776.4	218.9	178.8	40.2	70.0	65.4	38.3	3.1
500	46.7	71.8	25.6	58.6	0.0	0.0	18.3	7.2	0.0
600	519.8	233.5	48.7	206.1	19.6	0.0	19.9	88.2	0.0
700	51.4	22.1	19.3	6.0	0.0	0.0	0.0	1.2	0.0
800	0.0	13.2	8.6	0.0	0.0	0.0	0.0	0.0	0.0

Industrial/Agricultural/Religious Square Footage Inventory for Hopkins County Sectors by Sector Number and Type (1,000's of Square Feet) Table 1.21

Sector No.	Heavy Ind.	Light Ind.	Drugs/Food	Metals Processing	Hi-Tech	Construction	Agriculture	Religious
100	4.4	0.0	0.0	5.0	0.0	6.3	11.6	0.0
200	7.6	3.8	4.2	0.0	0.0	7.0	13.2	26.5
300	39.1	7.1	0.0	0.0	0.0	34.8	36.7	7.9
400	17.7	88.0	80.9	1.9	0.0	85.1	32.9	93.8
500	318.2	13.8	65.7	11.7	0.0	28.7	12.5	33.2
600	51.6	19.3	126.8	0.0	0.0	39.5	24.3	65.9
700	48.6	1.2	10.7	15.6	0.0	10.9	48.1	19.4
800	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0

Government/Education Square Footage Inventory for Hopkins County By Sector Number and Type (1,000's of Square Feet) Table 1.22

Sector No.	General Government	Emergency Response	Schools	Colleges
100	4.3	0.0	8.6	0.0
200	6.4	0.0	41.0	0.0
300	7.5	0.0	0.0	0.0
400	14.0	0.0	75.2	0.0
500	5.9	0.0	0.0	0.0
600	7.5	0.0	34.9	0.0
700	7.5	0.0	30.8	0.0
800	4.6	0.0	0.0	0.0

Hopkins County
ENVIRONMENTAL PROFILE

Population
Table 1.23

Number	**Value (Rank)**
Population in 2000	31,960 (87)
Population Projected for 2020	38,938 (85)

Water Quality Table 1.24

Indicator	**Value (Rank)**
Toxics Released to Surface Waters, 1999 (Pounds)	0 (56*)
Number of State Wastewater Discharge Permits, 2000	19 (42)
Total Permitted Discharge (Millions of Gallons Per Day)	5.75 (66)
Number of Quality Impaired Surface Water Bodies, 1998	0 (123*)

Water Quantity Table 1.25

Indicator	**Value (Rank)**
Total Water Use 1997 (Acre-Feet)	16,015 (114)
Surface Water Use, 1997 (Acre-Feet)	11,348 (63)
Ground Water Use, 1997 (Acre-Feet)	4,667 (132)
Water Used for Irrigation, 1997 (Acre-Feet)	2,825 (120)
Per Capita Water Use 1997 (Gallons per Day)	171 (70)
Projected Total Water Use, 2020 (Acre-Feet)	16,314 (145)
Total Number of Active Surface Water Rights Permits, 2000	11 (153)
Total Authorized Volume of Water, 2000 (Acre-Feet)	10,446 (125)
Number of Real-Time Stream-flow Monitors in County	0

Land Table 1.26

Indicator	Value (Rank)
Total Area of County (Thousands of Acres)	776 (205)
Area Dedicated to Irrigated Cropland 1997 (Acres)	1,220 (141)
Toxics Released to Land, 1999 (Pounds)	0 (61*)
Toxics Released by Underground Injection, 1999 (Pounds)	0 (13*)
Number of National Superfund Sites, 2000	0 (21*)
Number of State Superfund Sites, 2000	0 (37*)
Number of Contaminated Voluntary Cleanup Sites, 2000	1 (65)

Wildlife and Biodiversity Table 1.27

Indicator	**Value (Rank)**
Number of Eco-Regions Found in the County	1

Air Quality Table 1.28

Indicator	Value (Rank)
Industrial Air Emissions of Criteria Pollutants, 1999 (Tons)	2,929 (100)
Toxics Released to Air, 1999 (Pounds)	12,700 (114)
Additional Cancer Risk Due to Hazardous Air Pollutants (Per 1,000,000 people)	100 (66)
Number of Ambient Air Quality Monitors	0

Waste Table 1.29

Indicator	**Value (Rank)**
Number of Facilities Releasing Toxics, 1999	2 (81)
Total Environmental Releases of Toxics, 1999 (Pounds)	12,700 (114)
Industrial Hazardous Waste Generated, 1997 (Tons)	55.50 9950
Hazardous Waste Managed, 1997 (Tons)	45.07 9980
Facilities with Permits to Treat, Store or Dispose of Hazard Waste, 2000	0 95580
Number of Leaking Underground Storage Tanks, 2001	61 (64)
Number That Still Need to be Cleaned Up, 2001	28 (45)
Number of Municipal Solid Waste Landfills Operating, 1996	0 (139*)
Volume of Landfills in, 1996 (Acres)	0 (139*)

Energy

Table 1.30

Indicator	**Value (Rank)**
Number of Power Plants, 1999	0 (86*)
Total Number of Oil Wells, 2000	141 (159)
Number of Regular Producing Oil Wells, 2000	63 (164)
Total Number of Gas Wells, 2000	38 (145)
Number of Regular Producing Gas Wells, 2000	10 (154)

*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.

SULPHUR SPRINGS
Table 1.32
Comparisons

People Facts (percent 2000)	Number	Percent
Population 2000	14,551	100
Persons under 5 years old	984	6.8
Persons 18 years and older	10,779	74.1
Persons 65 years and older	2,553	17.5
White persons	11,570	79.5
Black or African American persons	2,076	14.3
American Indian and Alaska Native	101	0.7
Asian persons	58	0.4
Female persons	7,741	53.2
Persons reporting some other race	537	3.7
Persons of Hispanic or Latino origin	1,191	8.2
White persons, not of Hispanic/Latino origin	13,360	91.8

Table 1.33
Income

Households	5,812	100
Less than $10,000	881	15.2
$10,000 to $14,999	569	9.8
$15,000 to $24,999	909	15.6
$25,000 to $34,999	981	16.1
$35,000 to $49,999	1,023	17.6
$50,000 to $74,999	868	14.9
$75,000 to $99,999	223	3.8
$100,000 to $149,999	203	3.5
$150,000 to $199,999	71	1.2
$200,000 or more	84	1.4
Median household income (dollars)	30,403	(x)

Table 1.34
Education

Educational Attainment	Number	Percent
Population 25 years and older	9,554	100
Less than 9th grade	981	10.3
9th to 12th grade, no diploma	1,608	16.8
High school graduate (includes equivalency)	3,329	34.8
Some college, no degree	1,718	18.0
Associate degree	234	2.4
Bachelor's degree	1,107	11.6
Graduate or professional degree	577	6.0
Percent high school graduate or higher	72.9	(x)
Percent bachelor's degree or higher	17.6	(x)

Housing

Sulphur Springs Units	Number	Percent
Total housing units	6,488	100
Units built 1939 or earlier	603	9.3
Units built 1940 to 1959	1,270	19.6
Units built 1960 to 1969	964	14.9
Units built 1970 to 1979	1,707	26.3
Units built 1980 to 1989	1,327	20.5
Units built 1990 to 1994	241	3.7
Units built 1995 to 1998	266	4.1
Units built 1999 to March 2000	110	1.7

Table 1.36
Poverty Status 1999

Below poverty level	Number	Percent
Families	491	(x)
Percent below poverty level		12.6
Individuals	2,309	(x)
Percent below poverty level		16.4

Table 1.37
Sulphur Springs Finances

Total taxable value	$585,496,917
2000 City tax rate	$0.405880
Actual levy	$2,376,415

INVENTORY CLASSIFICATION
BY OCCUPANCY CLASS Sulphur Springs Table 1.38

TYPE	VALUE $
Residential	$290,537,304
Apartments	$13,452,100
Vacant Lots	$14,057,459
Agriculture	$12,259,620
Commercial	$115,856,586
Mobile Homes	$1,196,440
Industrial	$30,271,480
Schools	$26,333,300
Hospitals	$5,805,550
TOTAL	$509,769,839

The following chart shows property/content values for specific structures for the City of Sulphur Springs

Table 1.39

Address	Department	Year Build	Building Value	Contents Value
Airport Road	Old Terminal	1965	$111,600	$4,000
1313A N. Hillcrest	Service Center	1972	$659,300	$250,000
627 Church	Fire Station	1967	$343,700	$100,000
1100 Gilmer	Fire Station	1964	$96,400	$50,000
Airport Road	Airport	1965	$109,000	$0
201 N. Davis	Old Library	1912	$441,000	Vacant
125 S. Davis	City Hall	1963	$460,800	$140,000
125 S. Davis	Police Department	1978	$544,200	$307,000
Martin Springs	Radio Tower	1987	$2,700	$10,000
150 Hinnant	Administration	1983	$181,200	$25,000
Hwy 67 East	Waste Water	1975	$1,739,453	$500,000
900 Carter	Water Tower	1955	$577,800	$0
1000 College	Water Tower	1966	$783,000	$0
825 Hillcrest	Water Plant	1965	$1,516,930	$1,000,000
1202 College	Technical Center	1996	$1,754,500	$200,000
Buford Park	Pavilion	1997	$15,300	$0
Buford Park	Pool	1953	$120,000	$0
611 N. Davis	Library	2000	$2,609,000	$1,000,000
Hwy 67 East	Smoke House	1988	$16,400	$0
Hwy 67 East	Electric Control	1988	$1,500	$0

(Taken from Personal Property Schedule – Tax Roles)

Specific Structures Continued

Address	Department	Year Build	Building Value	Contents Value
Hwy 67 East	Sludge Press	1993	$20,800	$0
Hwy 67 East	Chemical Bldg.	1987	$19,800	$0
Hwy 67 East	Shelter	1987	$4,300	$0
Hwy 67 East	Lab/Office	1975	$250,100	$10,000
825 Hillcrest	Chemical Storage	1966	$1,500	$0
825 Hillcrest	Storage	1965	$4,000	$0
825 Hillcrest	Pump House	1966	$22,600	$0
825 Hillcrest	Lab/Office	1965	$516,000	$10,000
825 Hillcrest	Ground Tank A	1965	$522,800	$0
825 Hillcrest	Ground Tank B	1985	$772,800	$0
825 Hillcrest	Chlorine Tank	1965	$3,300	$0
825 Hillcrest	Ammonia Tank	1983	$1,400	$0
825 Hillcrest	2 Aluminum Tnks.	1975	$20,800	$0
Airport Road	Hanger #2	1965	$57,900	$0
Airport Road	Hanger#3	1965	$84,300	$0
1313 B Hillcrest	Animal Shelter	1994	$70,400	$25,000
301 CHM Road	Spec Building	2000	$1,411,000	$0
Hwy 67 East	Office/Storage	2000	$68,400	$55,000
Cooper Lake	Pump Station	1996	$500,000	$0
Gosset Lane	Water Tower	2001	$847,200	$0
125 S. Davis	Generator	1999	$13,882	$0
679 Gossett Lane	Light Fix	2001	62,400	$0
679 Gossett Lane	Ped/Bridge	2001	$37,284	$0
679 Gossett Lane	Concessions Stds.	2001	$300,100	$0
679 Gossett Lane	Light Poles	2001	$98,500	$0
679 Gossett Lane	6 Baseball Flds.	2001	$33,780	$0
679 Gossett Lane	Tennis Court	2001	$57,700	$0
1220 Cessna	Airport Terminal	2002	$424,800	$20,000
679 Gossett	Fishing Pier	2002	$12,000	$0
679 Gossett	Water Fall	2002	$30,000	$0
679 Gossett	Gazebo	2002	$12,000	$0
180 Middle	Warehouse	1960	$198,900	$300,000
679 Gossett	Benches	2002	$8,520	$0
1220 Cessna	REDI Light	1965	$137,428	$0
1220 Cessna	45 Ft. Antenna	2002	$2,050	$0
679 Gossett	Maint. Building	2003	$68,932	$40,000
Buford Park	Playground Equip.	1997	$250,000	$0
FM 2285	S.S. Lake/Dam	1974	$3,434,030	$0
Pacific Park	Community Cntr.	1958	$121,550	$0
Main Street	Coleman Lake	1904	$82,500	$0

(Taken from Personal Property Schedule – Tax Roles)

COMO
Table 1.40
Comparisons

People Facts (percent 2000)	Number	Percent
Population 2000	621	100
Persons under 5 years old	55	8.9
Persons 18 years and older	436	70.2
Persons 65 years and older	77	12.4
White persons	557	89.7
Black or African American persons	18	2.9
Female persons	308	49.6
Persons reporting some other race	37	6.0
Persons of Hispanic or Latino origin	119	19.2
White persons, not of Hispanic/Latino origin	502	80.8

Table 1.41
Income

	Number	Percent
Households	216	100
Less than $10,000	30	13.9
$10,000 to $14,999	23	10.6
$14,000 to $24,999	50	23.1
$25,000 to $34,999	32	14.8
$35,000 to $49,999	30	13.9
$50,000 to $74,999	26	12.0
$75,000 to $99,999	14	6.5
$100,000 to $149,999	8	3.7
$150,000 to $199,999	1	0.5
$200,000 or more	2	0.9
Median household income (dollars)	25,962	(x)

Table 1.42
Education

Educational Attainment	Number	Percent
Population 25 years and older	386	100
Less than 9th grade	66	17.1
9th to 12th grade, no diploma	87	22.5
High school graduate (includes equivalency)	148	38.3
Some college, no degree	59	15.3
Associate degree	7	1.8
Bachelor's degree	11	2.8
Graduate or professional degree	8	2.1
Percent high school graduate or higher	60.4	(x)
Percent bachelor's degree or higher	4.9	(x)

Table 1.43
Housing

Como Units	Number	Percent
Total housing units	234	100
Units built 1939 or earlier	40	17.1
Units built 1940 to 1959	39	16.7
Units built 1960 to 1969	37	15.8
Units built 1970 to 1979	58	24.8
Units built 1980 to 1989	40	17.1
Units built 1990 to 1994	13	5.6
Units built 1995 to 1998	5	2.1
Units built 1999 to March 2000	2	0.9

Table 1.44
Poverty Status

Below poverty level	Number	Percent
Families	31	(x)
Percent below poverty level		18.0
Individuals	144	(x)
Percent below poverty level		22.7

Table 1.45
Como Finances

Total taxable value	$9,795,733
2000 City tax rate	$0.250000
Actual levy	$24,489

CUMBY
Table 1.46
Comparisons

People Facts (percent 2000)	Number	Percent
Population 2000	616	100
Persons under 5 years old	24	3.9
Persons 18 years and older	475	77.1
Persons 65 years and older	115	18.7
White persons	601	97.6
American Indian and Alaska Native	4	0.6
Female persons	311	50.5
Persons reporting some other race	6	1.0
Persons of Hispanic or Latino origin	16	2.6
White persons, not of Hispanic/Latino origin	600	97.4

Table 1.47
Income

	Number	Percent
Less than $10,000	58	21.7
$10,000 to $14,999	16	6.0
$15,000 to $24,999	31	11.6
$25,000 to $34,999	57	21.3
$35,000 to $49,999	50	18.7
$50,000 to $74,999	32	12.0
$75,000 to $99,999	12	4.5
$100,000 to $149,999	6	2.2
$150,000 to $199,999	3	1.1
$200,000 or more	2	0.7
Median household income (dollars)	30,547	(x)

Table 1.48
Education

Educational Attainment	Number	Percent
Population 25 years and over	446	100
Less than 9th grade	48	10.8
9th to 12th grade, no diploma	65	14.6
High school diploma (includes equivalency)	187	41.9
Some college, no degree	76	17.0
Associate degree	7	1.6
Bachelor's degree	38	8.5
Graduate or professional degree	25	5.6
Percent high school graduate or higher	74.7	(x)
Percent bachelor's degree or higher	14.1	(x)

Table 1.49
Housing

Cumby Units	Number	Percent
Total housing units	295	100
Units built 1939 or earlier	80	27.1
Units built 1940 to 1959	69	23.4
Units built 1960 to 1969	50	16.9
Units built 1970 to 1979	30	10.2
Units built 1980 to 1989	44	14.9
Units built 1990 to 1994	4	1.4
Units built 1995 to 1998	14	4.7
Units built 1999 to March 2000	4	1.4

Table 1.50
Poverty Status 1999

Below poverty level	Number	Percent
Families	13	(x)
Percent below poverty level		7.0
Individuals	74	(x)
Percent below poverty level		11.9

TIRA

Table 1.52
Comparisons

People Facts (percent 2000)	Number	Percent
Population 2000	248	100
Persons under 5 years old	8	3.2
Persons 18 years and older	195	78.6
Persons 65 years and older	57	23.0
White persons	239	96.4
American Indian and Alaska Native	0	0
Female persons	121	48.8
Persons reporting some other race	5	2.0
Persons of Hispanic or Latino origin	2	0.8
White persons, not of Hispanic/Latino origin	246	99.2

Table 1.53
Income

	Number	Percent
Less than $10,000	4	4.7
$10,000 to $14,999	7	8.2
$15,000 to $24,999	6	7.1
$25,000 to $34,999	15	17.6
$35,000 to $49,999	19	22.4
$50,000 to $74,999	23	27.1
$75,000 to $99,999	5	5.9
$100,000 to $149,999	6	7.1
$150,000 to $199,999	0	0.0
$200,000 or more	0	0.0
Median household income (dollars)	47,639	(x)

Table 1.54
Education

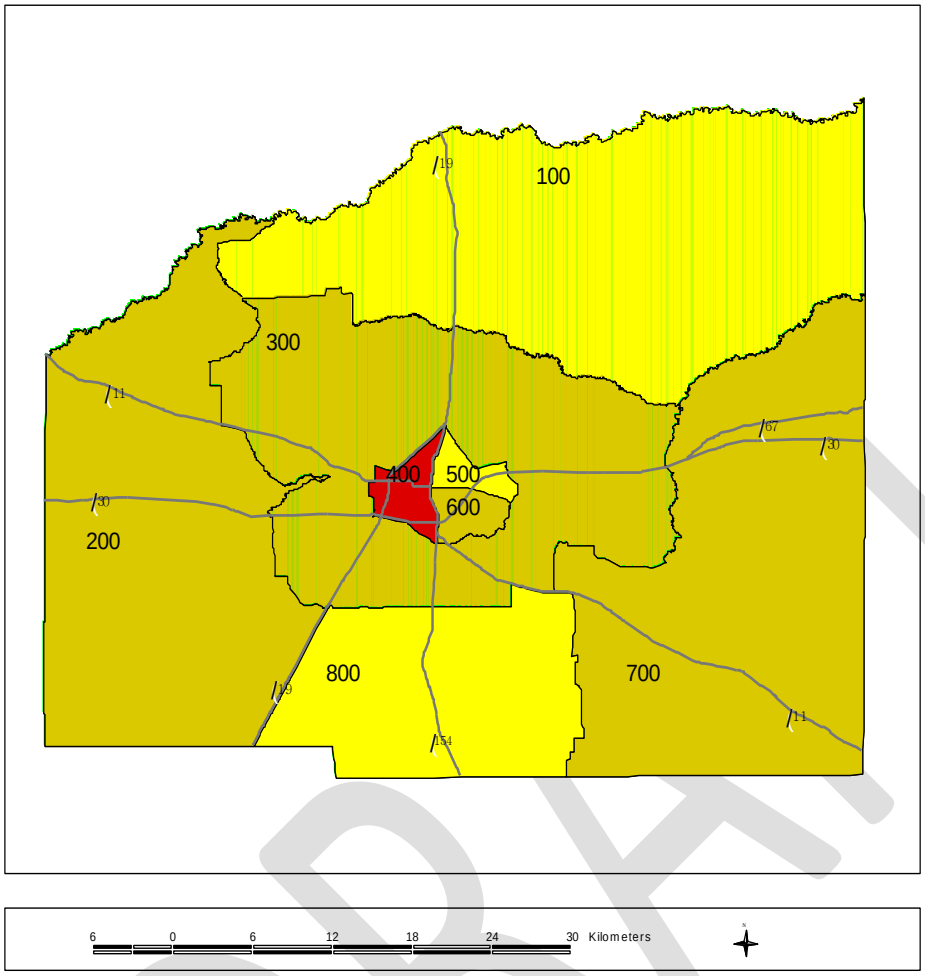
Educational Attainment	Number	Percent
Population 25 years and over	202	100.0
Less than 9th grade	24	11.9
9th to 12th grade, no diploma	23	11.4
High school diploma (includes equivalency)	74	36.6
Some college, no degree	45	22.3
Associate degree	0	0.0
Bachelor's degree	22	10.9
Graduate or professional degree	14	6.9
Percent high school graduate or higher	76.7	(x)
Percent bachelor's degree or higher	17.8	(x)

Table 1.55
Housing

Cumby Units	Number	Percent
Total housing units	120	100.250
Units built 1939 or earlier	10	8.3
Units built 1940 to 1959	25	20.8
Units built 1960 to 1969	20	16.7
Units built 1970 to 1979	17	14.2
Units built 1980 to 1989	21	17.5
Units built 1990 to 1994	12	10.0
Units built 1995 to 1998	11	9.2
Units built 1999 to March 2000	4	3.3

Table 1.56
Poverty Status 1999

Below poverty level	Number	Percent
Families	4	(x)
Percent below poverty level		4.7
Individuals	16	(x)
Percent below poverty level		5.8



Hopkins County

Mitigation Action Plan

Sectors

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3775 - 4577
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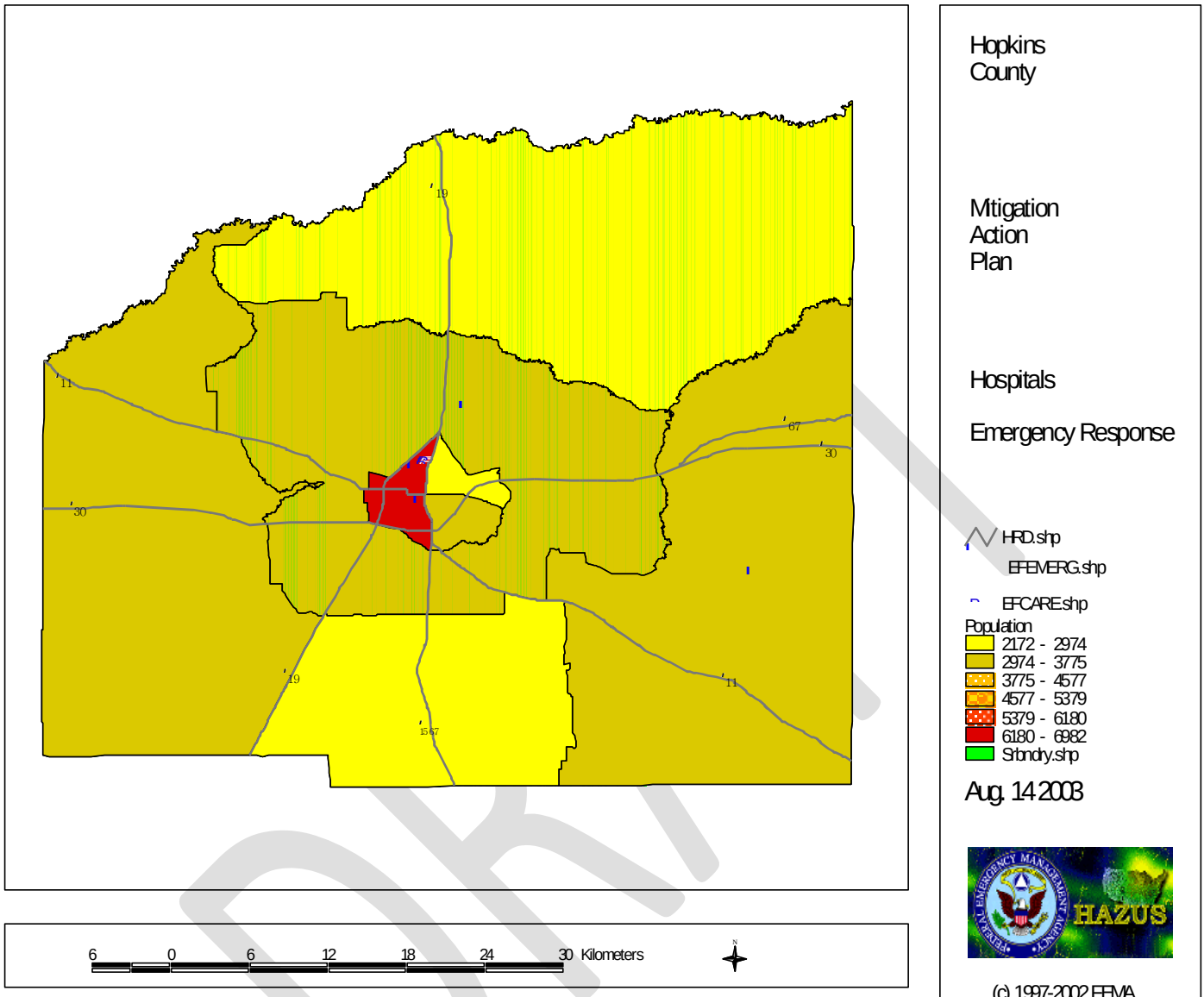
5379 - 6180
6180 - 6982
Srbndry.shp

Sep. 10 2003



igure 1.1

County Sectors

Figure 1.2

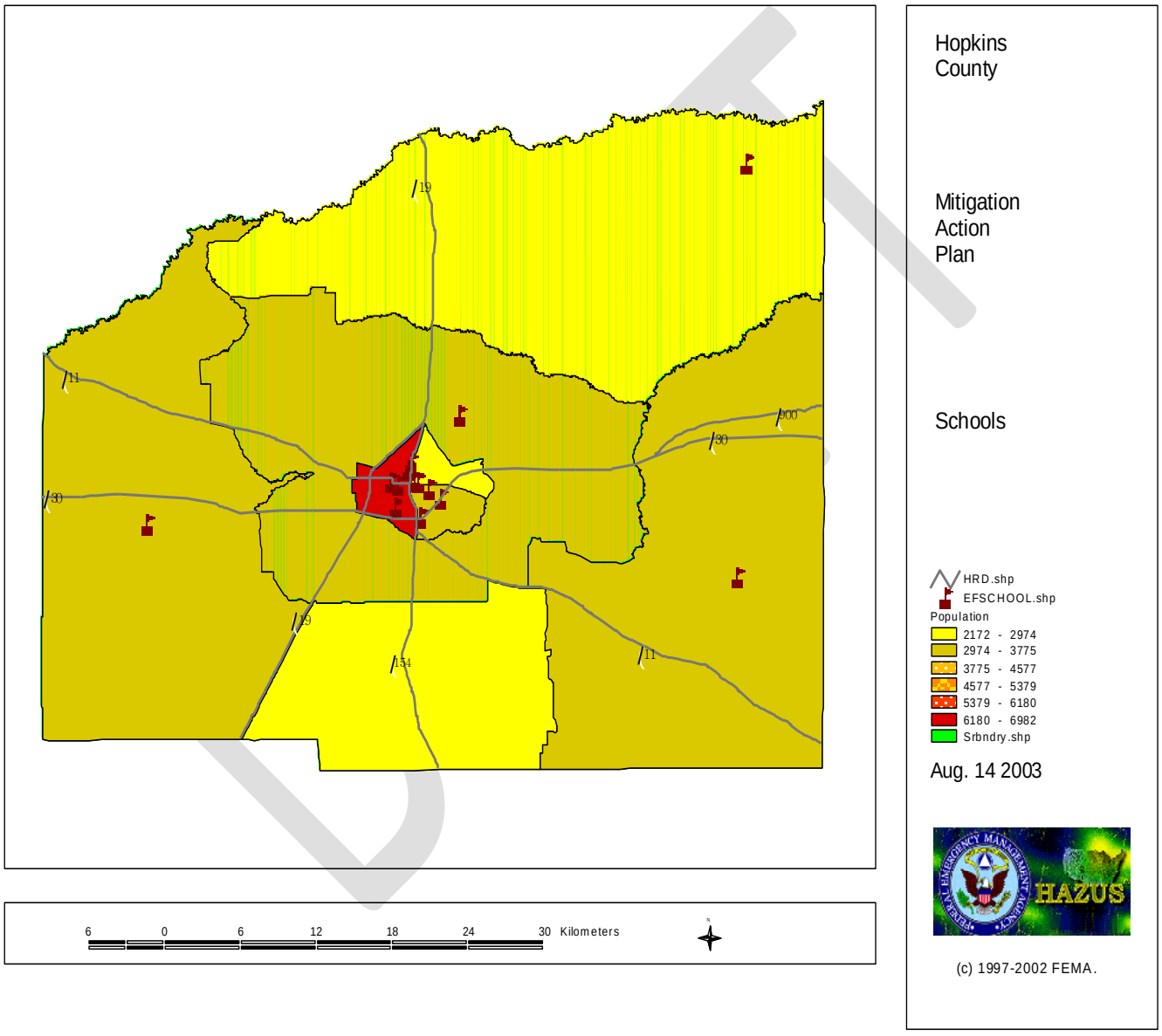
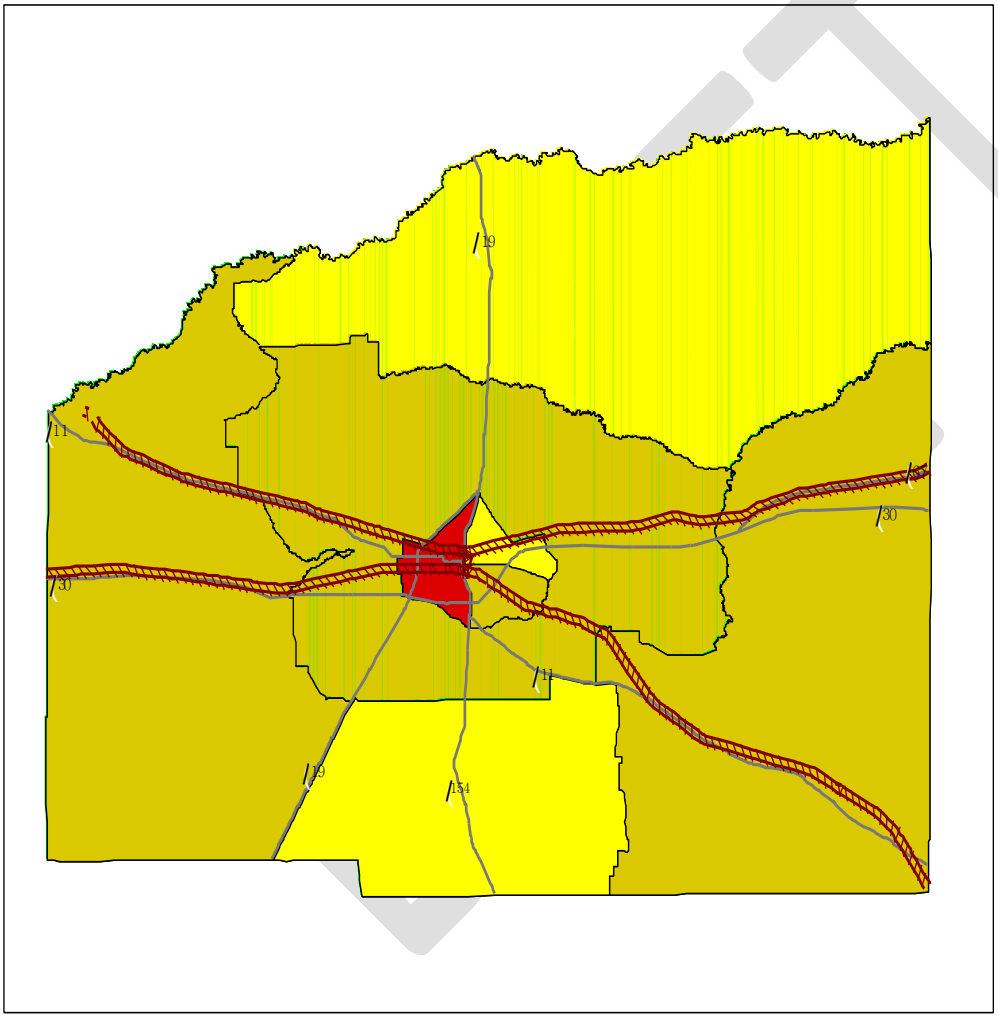


Figure 1.3
County Schools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11
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154
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6 0 6 12 18 24 30 Kilometers
Hopkins
County
Mitigation
Action
Plan
Railways
RTR.shp
HRD.shp
Population
2172 - 2974
2974 - 3775
3775 - 4577
4577 - 5379
5379 - 6180
6180 - 6982
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Aug. 14 2003
HAZUS
(c) 1997-2002 FEMA.

Figure 1.5

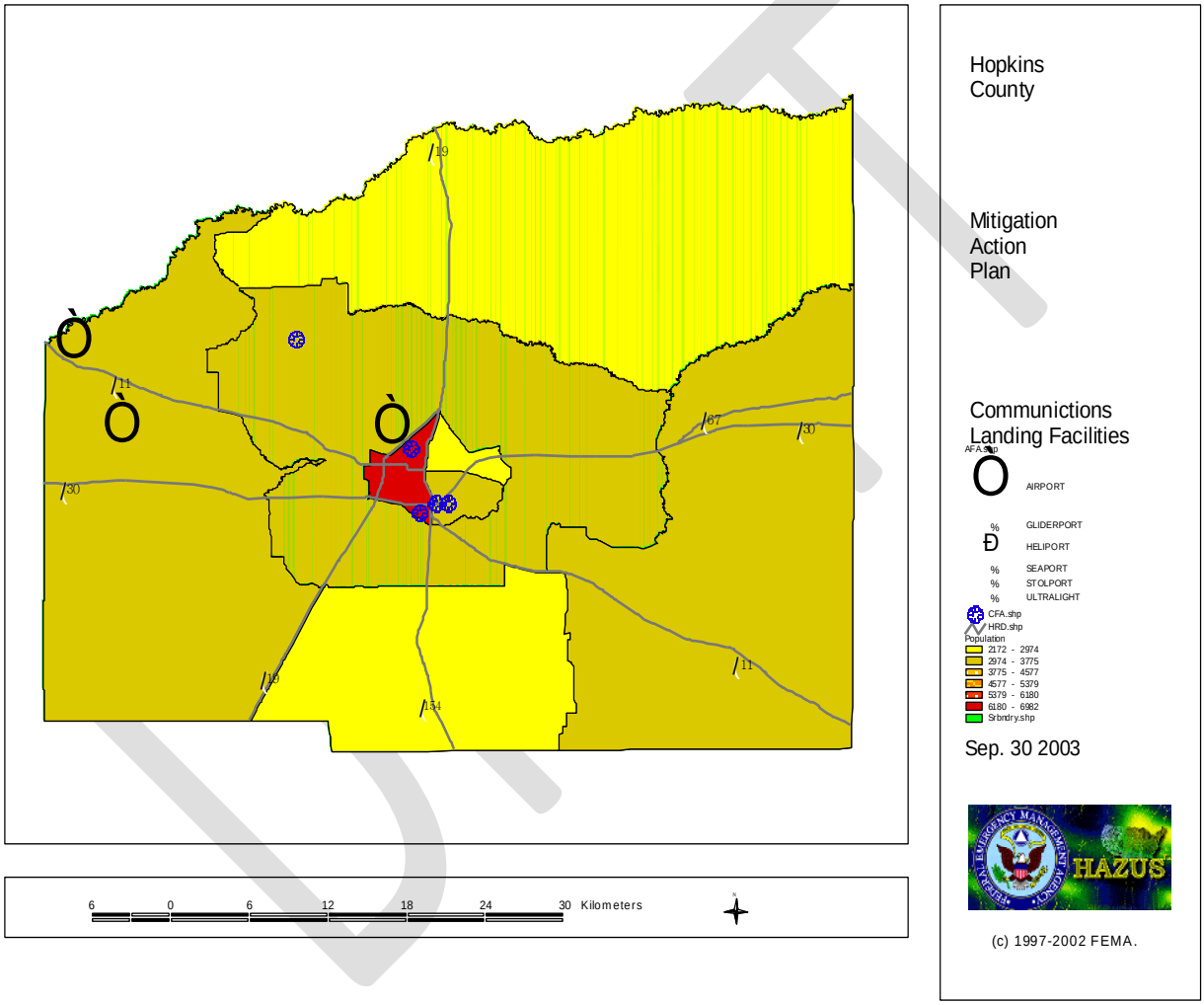

Figure 1.6
County Landing Facilities
Communications

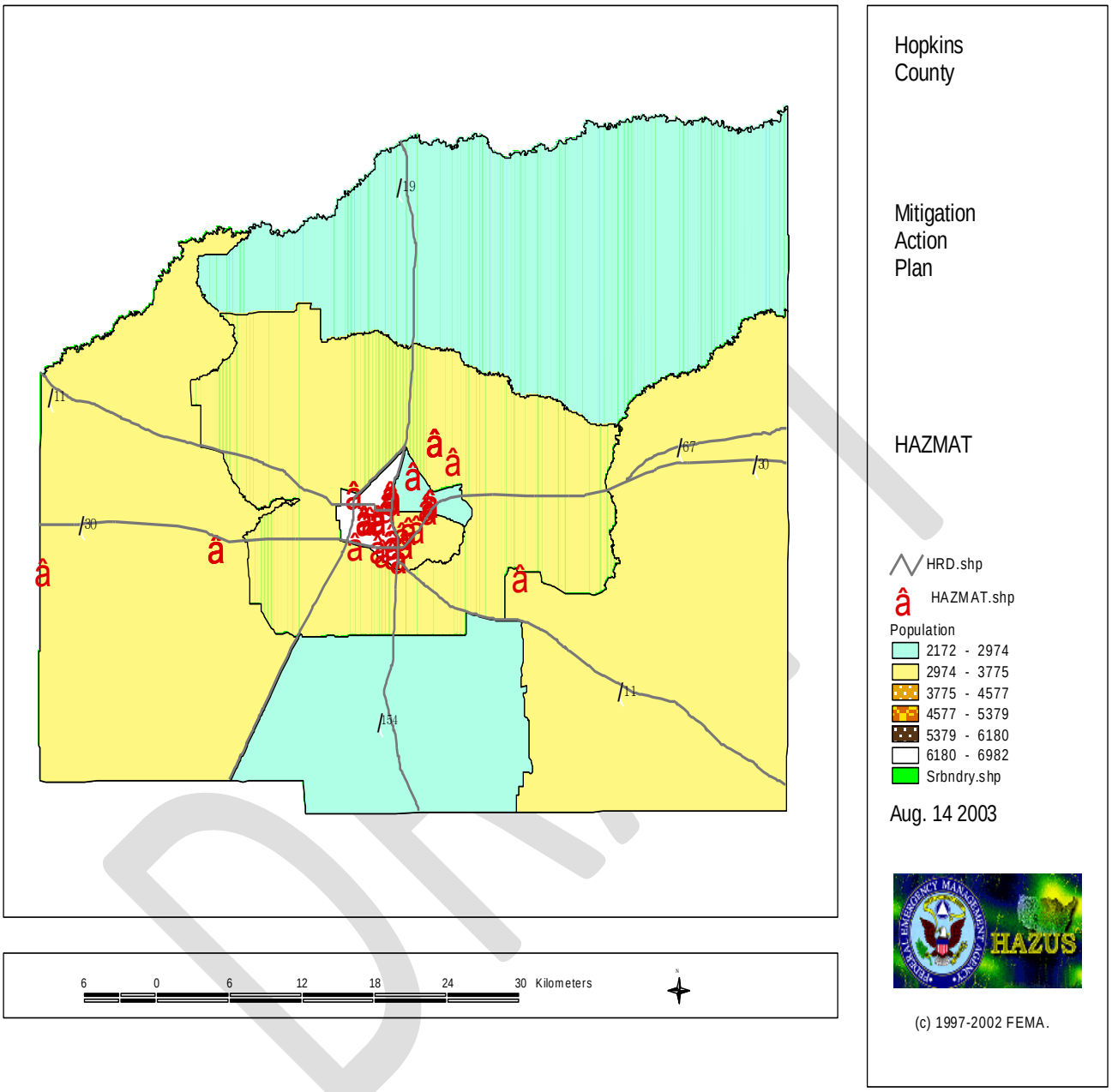

Figure 1.7
HAZMAT Facilities

Figure 1.8

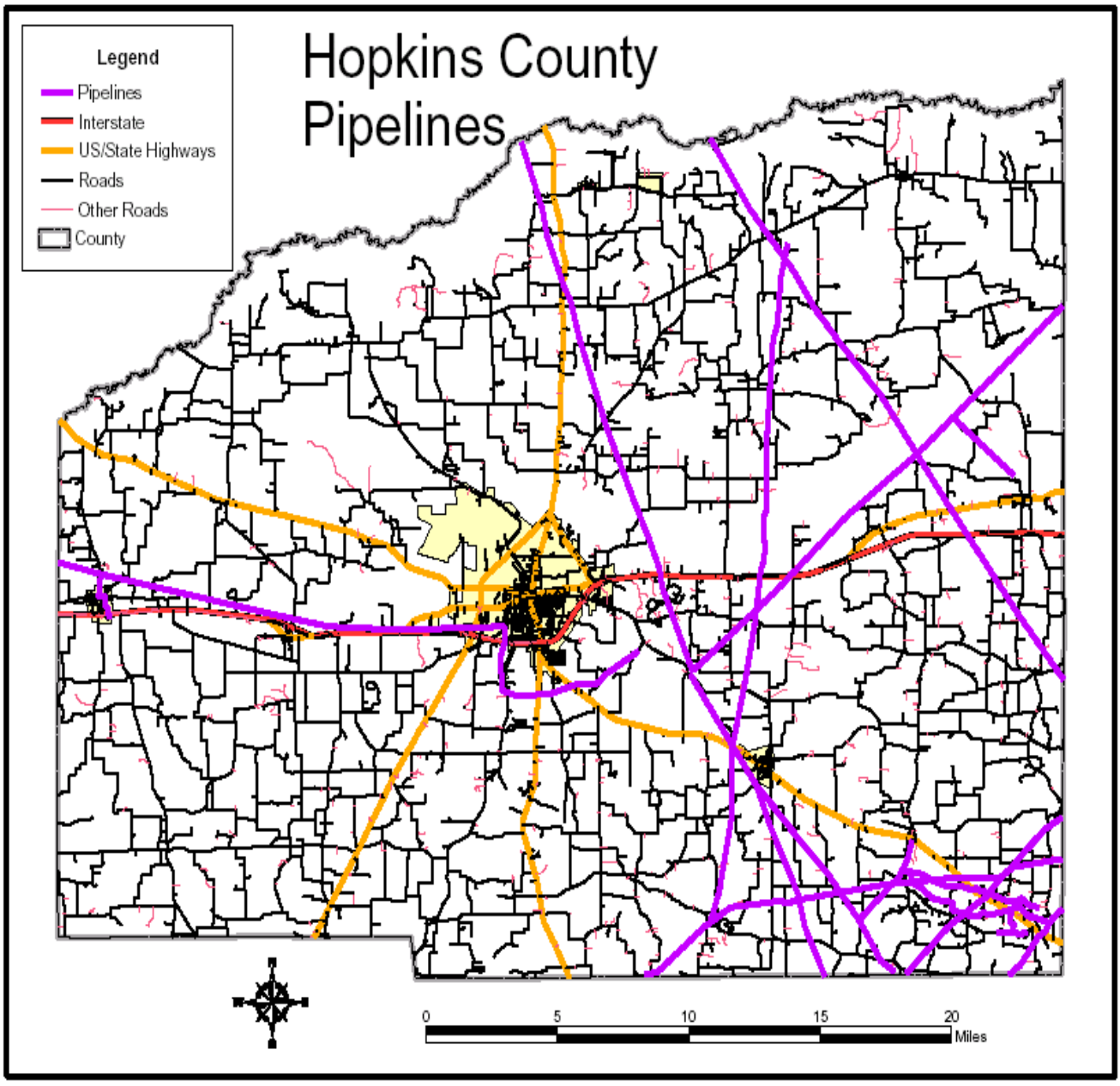
Hopkins County
Pipelines
Legend
Pipelines
Interstate
US/State Highways
Roads
Other Roads
County
0
5
10
15
20
Miles

Figure 1.9
Sulphur Springs Flood Plain

The city of Sulphur Springs has a total of 11,200 acres inside the city limits. The 100-year flood plain covers approximately 3,136 acres or 28% of the total acreage. The total taxable value of all property in the city is approximately 585.5 million dollars. A 100-year flood event would cause moderate damage. There would be some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations would be necessary. No record of repetitive flood losses in Sulphur Springs.